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# Legislative approaches to sustainable agriculture and natural resources governance

FAO LEGISLATIVE STUDY 114

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by
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## Preface

Influenced by international trends, as well as in response to population, climate, resource and development needs, the standards, norms, mechanisms and incentives in natural resources law at the national level have evolved in recent years. Natural resources laws are influenced by developments in the international arena, either through international treaties that are binding or through 'soft law' instruments that are not legally binding but nevertheless have widespread adherence among governments, or that provide principles that guide and shape national legislation. National legislation is also influenced by the political, social, economic, environmental, cultural and historical landscape in the country, as well as needs and priorities that are specific to that country. This book encompasses a broad range of natural resource sectors, with discrete chapters on water, land, forestry, fisheries, mining, petroleum and agriculture. Given this broad range of areas, the focus of the publication is narrowed to provide an overarching holistic perspective that is supportive of a systems-thinking approach. Recognizing that there are many useful publications elsewhere that detail extensively the specific regulatory elements of sound laws in the respective areas, this book offers the specific prism of highlighting approaches that embrace the pillars of sustainable development, i.e. approaches that recognize and are informed by economic, social and environmental considerations and impacts. This book serves to track developments in natural resources legislation from the perspective of international sustainable development principles with a view to creating a publication that reflects up-to-date trends and thinking in natural resources governance, enhances the knowledge base in this field, and offers general guidance to countries in regulation of their natural resources.

This book has been developed under the aegis of the Development Law Branch (LEGN) of the Food and Agriculture Organization of the United Nations (FAO) and the Law Division of the United Nations Environment Programme (UNEP). Both the Law Division and LEGN are

centres of international expertise and research, that are committed to promoting the design of workable and appropriate legal frameworks.

LEGN seeks to support the rule of law in all of its work. It provides legislative advice to member countries of FAO in areas within its mandate, that is, on food, land, water, fisheries, plants, animals, forestry, wildlife and national parks, the environment and biodiversity, as well as general agricultural issues (institutions, trade, economic reform, etc.). LEGN provides legal advisory services to governments, by helping them to prepare laws, regulations, agreements and other legal texts, advise on institutional structures and compliance with international law.

The Law Division supports countries by providing technical assistance and advisory services to developing countries and countries with economies in transition. It seeks to advance the application of international environmental law, governance and policy to assist countries to implement legal and policy measures that address emerging environmental challenges. The Law Division also leads the international community in developing environmental law, by facilitating harmony and inter-linkages among environmental conventions and supporting states to implement their treaty obligations.

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## Acronyms and abbreviations

| | |
|---|---|
| ACHPR | African Commission on Human and Peoples' Rights |
| AMP | Aquaculture management plans |
| AMR | Anti-microbial resistance |
| ASM | Artisanal and Small-Scale Mining |
| CBD | Convention on Biological Diversity |
| CDM | Kyoto Protocol Clean Development Mechanism |
| CFS | Committee on World Food Security |
| CITES | Convention on International Trade in Endangered Species of Wild Flora and Fauna |
| COP | Conferences of the Parties |
| CSD | Commission on Sustainable Development |
| CSR | Corporate social responsibility |
| EAA | Ecosystem approach to aquaculture |
| EAF | Ecosystem approach to fisheries |
| EC | European Council |
| EIA | Environmental impact assessment |
| EIS | Environmental impact statement |
| EITI | Extractive Industries Transparency Initiative |
| EMFF | European Maritime and Fisheries Fund |
| EU | European Union |
| FAO | Food and Agriculture Organization of the United Nations |
| FCA | Fishing cooperative association |

| | |
|---|---|
| FLEGT | European Union's Forest Law Enforcement, Governance and Trade |
| FMP | Fisheries management plan |
| FPIC | Free, Prior and Informed Consent |
| GAP | Good agricultural practices |
| GAPP | Generally Accepted Principles and Practices |
| GGFR | Global Gas Flaring Reduction Partnership |
| GHG | Greenhouse gas |
| GIS | Geographical information system |
| GM | Genetically modified |
| GMO | Genetically modified organism |
| HACCP | Hazard Analysis and Critical Control Points |
| IAS | Invasive alien species |
| IFOAM | International Federation of Organic Agriculture Movements |
| ILA | International Law Association |
| ILO | International Labour Organization |
| IOPP | International Oil Pollution Prevention |
| IP | Indigenous Peoples |
| IPCC | Intergovernmental Panel on Climate Change |
| ISO | International Standards Organization |
| ISTA | International Seed Testing Association |
| ITPGRFA | International Treaty on Plant Genetic Resources for Food and Agriculture |
| IUCN | International Union for Conservation of Nature |
| IUU | Illegal, unreported and unregulated |
| IWRM | Integrated Water Resource Management |

| | |
|---|---|
| LAT | Legal assessment tool |
| LEGN | Development Law Branch of the Food and Agriculture Organization of the United Nations |
| LMO | Living modified organism |
| MCS | Monitoring, control and surveillance |
| MDG | Millennium Development Goal |
| MPA | Marine protected area |
| MRL | Maximum residue level |
| MTA | Material transfer agreement |
| NGO | Non-governmental organization |
| NTFP | Non-timber forest product |
| OECD | Organisation for Economic Co-operation and Development |
| OHCHR | Office of the United Nations High Commissioner for Human Rights |
| PES | Payments for Ecosystem Services |
| PPP | Public-private partnership |
| RBO | River Basin Organizations |
| REDD+ | Reduced Emissions from Deforestation and Degradation |
| RIA | Regulatory impact assessment |
| RPE | Remuneration of Positive Externalities |
| SDG | Sustainable Development Goal |
| SEEA | System of Environmental-Economic Accounting |
| SIA | Social impact assessment |
| SME | Small and medium-sized enterprise |
| SSF | Small-scale fisher |

| | |
|---|---|
| SWF | Sovereign Wealth Fund |
| TAC | Total allowable catch |
| UN | United Nations |
| UN DESA | United Nations Department of Economic and Social Affairs |
| UNCED | United Nations Conference on Environment and Development |
| UNCLOS | United Nations Convention for the Law of the Sea |
| UNCS | United National Consumer Supplier |
| UNDP | United Nations Development Programme |
| UNDRIP | United Nations Declaration on the Rights of Indigenous Peoples |
| UNECE | United Nations Economic Commission for Europe |
| UNEP | United Nations Environment Programme |
| UNEP-WCMC | United Nations Environment Programme World Conservation Monitoring Centre |
| UNFCC | United Nations Framework Convention on Climate Change |
| UNGA | United Nations General Assembly |
| UNSC | United Nations Security Council |
| USAID | United States Agency for International Development |
| VMS | Vessel monitoring system |

# Chapter 1. Introduction to sustainable development

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## 1.1. Introduction

As the cumulative demands of more than 7.5 billion people are faced with decreasing resources, the Great Acceleration Planetary Dashboard (IGBP, n.d.), which tracks human impacts on Earth systems according to a set of 24 global indicators, offers data to show that the last 60 years have seen the most significant changes in the interactions human beings have had with the planet. Data, discourses and the quantification of environmental impacts are typically human-centric. Indeed, the Planetary Boundaries framework illustrates this in the estimates that humanity has transgressed four of the environmental planetary boundaries within which human beings can operate safely (Steffen *et. al*, 2015), namely for climate change, biodiversity loss, land-system change and altered global nitrogen cycles. The premise of these types of research is that surpassing these limits could result in irreversible environmental changes, and that staying within the established thresholds reduces the associated risks to society.

The United Nations (UN) Secretary-General has reiterated that competition over land, water, minerals and other natural resources will continue to be a source of conflict unless resources management prioritizes equity and the benefit of the local community; conversely, shared resources can be a cooperation among communities and countries (UN Security Council, 2018). United Nations Department of Economic and Social Affairs (UN DESA) 2017 data (UN DESA, 2017), gives illustrative snapshots of some significant challenges facing humanity that are touched upon in this book: 767 million people living below the poverty line in 2013; natural disasters caused economic losses worth an average of USD 250–300 billion annually, with a disproportionate impact on small and vulnerable countries; persistent gender inequality deprives women and girls of their basic rights and opportunities; more than 2 billion people reside in areas with excess water stress; around 1 in 10 children were engaged in child labour in 2012 and more than half of them (85 million) were exposed to hazardous forms of work. Up to 795 million people are still undernourished (FAO, 2018). Against this backdrop it is estimated that by 2030, the world population will be 8.5 billion, driven by growth in

developing countries and a majority of this number will reside in urban areas (FAO, 2018).

The interaction and interrelatedness of natural variability and human-caused factors, show that the latter triggers a series of responses in the earth system, which in turn have further impacts (that are not necessarily linear patterns) but interact in such manner as to sometimes mitigate, and other times amplify, the original human impact (Steffen *et al.,* 2004). It is on the basis of the recognition that human activities have impacts that "cascade and have multiple effects on many scales" (Steffen *et al.*, 2004), that this book presents its discussion of sustainable approaches to natural resources governance. Initial approaches to sustainable development in legislation addressed the spheres of environmental, social and economic as distinct goals without a recognition of the linkages and interactions.

This book seeks to explore how legislation, which is the backbone of governance and enforcement systems, accommodates and makes provision for the connections among economic (and social) activities that may have more than one (non-linear) social or environmental impact. Legislation from different countries espouse varying approaches to sustainable development of natural resources that may (successfully or otherwise) reflect the countries particular needs and context, as well as drafting style and legal system. The range of legislative examples are offered to illustrate how countries have recognized and addressed these connections and linkages. The inherently dynamic nature of sustainable development approaches requires regulatory frameworks to be subject to continuous examination, review and adaptation. Thus, this book may offer a snapshot of approaches in the last decade or so, and recognizes that the speed of legislative approval often lags behind policy and advances in science.

This publication seeks to contribute to the knowledge-base in this field generally, and specifically, it seeks to offer broad guidance to countries in the regulation of their natural resources by illustrating how other countries have legislated on a particular issue. Notwithstanding, this book is not intended to serve as a manual on how to regulate each

sector, and does not detail all the specific elements required to do so. Rather, it presents a selection of some of the key elements for sustainable governance, drawing attention to the provisions that allow a macro-level view of the linkages and connections that recognizes impacts in more than one pillar of sustainable development.

The book is structured in chapters that address select natural resource sectors that reflect the mandates of both FAO and UNEP. Starting with cross-cutting issues (Chapter 2), the book highlights legislative practices in land (Chapter 3); water resources (Chapter 4); fisheries (Chapter 5); mining (Chapter 6); oil and petroleum (Chapter 7); forestry (Chapter 8); and agriculture (Chapter 9).

## 1.2. The sustainable development concept

There are myriad interpretations of the definitions and components of sustainable development. Sustainable development has been defined, in the framework of the Sustainable Development Goals (SDGs), (see Section 1.2.1), as "development that meets the needs of the present without compromising the ability of future generations to meet their own needs." The primary thrust of sustainable development is that economic exigencies must be considered alongside the need to both protect the environment and also to ensure social equity through equal access to resources and in such manner that "leaves no-one behind". Thus, the concept of sustainable development is predicated on three core and interconnected elements: economic growth, social inclusion and environmental protection. These requisite elements interact continuously; and any solutions to addressing challenges in one respect must consider the effects and costs upon all three.

### 1.2.1. A brief history of global targets for sustainable development

The term 'sustainable development' received widespread recognition following the World Commission on Environment and Development (WCED) 1987 report entitled *Our Common Future*, popularly cited as the Brundtland Report. This seminal Report called for action around

key themes: population and human resources; food security; species and ecosystems; energy; industry; and the urban challenge. The Report underscored the "interlocking crises", recognizing that:

> We have in the past been concerned about the impacts of economic growth upon the environment. We are now forced to concern ourselves with the impacts of ecological stress – degradation of soils, water regimes, atmosphere, and forests upon our economic prospects (WCED, 1987).

The Report underlined that development should be geared towards meeting basic human needs and eradicating poverty, while recognizing environmental limitations and identifying constraints or facilitators such as technology and governance.

Sustainable development underpinned discussions at the 1992 United Nations Conference on Environment and Development (UNCED) also known as the (Rio) Earth Summit. A negotiated consensus among 150 country leaders resulted in Agenda 21, a global action plan for sustainable development. In 1993 the General Assembly established the Commission on Sustainable Development (CSD), as the United Nations body mandated with implementing outcomes of the 1992 Conference.[1] Another milestone came in 2002 at the World Summit on Sustainable Development to renew global commitment towards implementation of Agenda 21. Among the outcomes was the Johannesburg Plan of Implementation, which guided government activities as regards key commitments and targets for sustainable consumption and production, as well as 'Type II' Partnerships (which heralded greater participation and integration of non-state actors in solutions for sustainable development).

In 2000, the UN Millennium Declaration ushered nations into a global partnership to reduce extreme poverty, through the establishment of eight time-bound targets. These were commonly known as the Millennium Development Goals (MDGs), and the final Report (UN DESA, 2015) offered evidence of how the setting of the 15-year global targets

[1] See: UN Division for Sustainable Development Goals, n.d.

galvanized the process of lifting millions of individuals out of poverty, empowered women and girls, made improvements to health and well-being, among other successes. The MDGs were a precursor to the most recent global efforts to align human development to a more sustainable trajectory.

### 1.2.2. Sustainable Development Goals

In 2015, the United Nations General Assembly (UNGA) formally adopted the 2030 Agenda for Sustainable Development as a "plan of action for people, planet and prosperity" and a set of 17 SDGs with 169 associated targets (2030 Agenda, 2015). Alongside priorities such as poverty eradication, health, education, and food security and nutrition, it sets out a wide range of economic, social and environmental objectives. Although not a legally-binding instrument, the adoption of Agenda 2030 confirmed the willingness of states to adopt the SDG framework for national strategies and policies, and to work towards global and national implementation. Agenda 2030 contains numerous references to the interlinked nature of the goals as indivisible, and reiterates the balance of the three pillars of sustainable development: economic, social and environmental. The emphasis on interrelatedness can be illustrated using Goal 6 (Ensure availability and sustainable management of water and sanitation for all). Without sustainable water resources, sanitation and the supply of safe water, progress in many other areas, including health, education and poverty reduction, will remain constrained.

Box 1.1 outlines some of the legal targets and indicators included in the SDGs. It should be noted that legal provisions and guarantees will be needed to reach the overall goals and targets, whether or not there are specific legal indicators.

**Box 1.1**
**Sustainable Development Goals and selected legal targets and indicators**

**Goal 1: End poverty in all its forms everywhere**

**Target 1.4:** By 2030, ensure that all men and women, in particular the poor and the vulnerable, have equal rights to economic resources, as well as access to basic services, ownership and control over land and other forms of property, inheritance, natural resources, appropriate new technology and financial services, including microfinance.

*Indicator 1.4.2:* Proportion of total adult population with secure tenure rights to land, with legally recognized documentation and who perceive their rights to land as secure, by sex and by type of tenure.

**Goal 2: End hunger, achieve food security and improved nutrition and promote sustainable agriculture**

**Goal 3: Ensure healthy lives and promote well-being for all at all ages**

**Goal 4: Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all**

**Target 4.7:** By 2030, ensure that all learners acquire the knowledge and skills needed to promote sustainable development, including, among others, through education for sustainable development and sustainable lifestyles, human rights, gender equality, promotion of a culture of peace and non-violence, global citizenship and appreciation of cultural diversity and of culture's contribution to sustainable development.

*Indicator 4.7.1:* Extent to which: (i) global citizenship education; and (ii) education for sustainable development, including gender equality and human rights, are mainstreamed at all levels in: (a) national education policies; (b) curricula; (c) teacher education; and (d) student assessment.

**Goal 5: Achieve gender equality and empower all women and girls**

**Target 5.1:** End all forms of discrimination against all women and girls everywhere.

*Indicator 5.1.1:* Whether or not legal frameworks are in place to promote, enforce and monitor equality and non-discrimination on the basis of sex.

**Box 1.1** *(cont.)*

**Target 5.a:** Undertake reforms to give women equal rights to economic resources, as well as access to ownership and control over land and other forms of property, financial services, inheritance and natural resources, in accordance with national laws.

*Indicator 5.a.1:* (a) Proportion of total agricultural population with ownership or secure rights over agricultural land, by sex; and (b) share of women among owners or rights-bearers of agricultural land, by type of tenure.

*Indicator 5.a.2:* Proportion of countries where the legal framework (including customary law) guarantees women's equal rights to land ownership and/or control.

**Target 5.5:** Ensure women's full and effective participation and equal opportunities for leadership at all levels of decision-making in political, economic and public life.

*Indicator 5.5.1:* Proportion of seats held by women in: (a) national parliaments; and (b) local governments.

*Indicator 5.5.2:* Proportion of women in managerial positions.

**Goal 7: Ensure access to affordable, reliable, sustainable and modern energy for all**

**Goal 8: Promote inclusive and sustainable economic growth, employment and decent work for all**

**Target 8.8:** Protect labour rights and promote safe and secure working environments for all workers, including migrant workers, in particular women migrants, and those in precarious employment.

*Indicator 8.8.2:* Level of national compliance of labour rights (freedom of association and collective bargaining) based on International Labour Organization (ILO) textual sources and national legislation, by sex and migrant status.

**Goal 9: Build resilient infrastructure, promote sustainable industrialization and foster innovation**

**Box 1.1** *(cont.)*

**Goal 10: Reduce inequality within and among countries**

**Target 10.3:** Ensure equal opportunity and reduce inequalities of outcome, including by eliminating discriminatory laws, policies and practices and promoting appropriate legislation, policies and action in this regard.

**Goal 11: Make cities inclusive, safe, resilient and sustainable**

**Goal 12: Ensure sustainable consumption and production patterns**

**Goal 13: Take urgent action to combat climate change and its impacts**

**Goal 14: Conserve and sustainably use the oceans, seas and marine resources for sustainable development**

**Target 14.6.1:** Progress by countries in the degree of implementation of international instruments aiming to combat illegal, unreported and unregulated fishing.

**Target 14.b:** Provide access for small-scale artisanal fishers to marine resources and markets.

*Indicator 14.b.1:* Progress by countries in the degree of application of a legal/regulatory/policy/institutional framework which recognizes and protects access rights for small-scale fisheries.

**Target 14.c:** Enhance the conservation and sustainable use of oceans and their resources by implementing international law as reflected in the United Nations Convention on the Law of the Sea, which provides the legal framework for the conservation and sustainable use of oceans and their resources, as recalled in paragraph 158 of *The future we want.*

*Indicator 14.c.1:* Number of countries making progress in ratifying, accepting and implementing through legal, policy and institutional frameworks, ocean-related instruments that implement international law, as reflected in the United Nations Convention on the Law of the Sea, for the conservation and sustainable use of the oceans and their resources.

**Box 1.1** *(cont.)*

**Goal 15: Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss**

**Goal 16: Promote peaceful and inclusive societies for sustainable development, provide access to justice for all and build effective, accountable and inclusive institutions at all levels**

**Target 16.3:** Promote the rule of law at the national and international levels and ensure equal access to justice for all.

**Target 16.b:** Promote and enforce non-discriminatory laws and policies for sustainable development.

**Target 16.10:** Ensure public access to information and protect fundamental freedoms, in accordance with national legislation and international agreements.

*Indicator 16.10.2:* Number of countries that adopt and implement constitutional, statutory and/or policy guarantees for public access to information.

**Goal 17: Strengthen the means of implementation and revitalize the global partnership for sustainable development**

*Extracted from:* ECOSOC, 2017.

The SDGs go further than, and improve upon, the MDGs in a number of respects, in particular in addressing rural areas and making better linkages among the various goals, and through a stronger human rights anchoring and the emphasis on "leaving no one behind". The emphasis given to an integrated approach in this 2030 roadmap favours the implication that regulatory frameworks should also follow suit. Legislation that, either by it design or its implementation, ruptures economic growth from the environmental base on which it is dependent, or that marginalizes certain segments of the population, cannot be considered sustainable regardless of impressive fiscal outcomes. Care should be taken to ensure that well-intended sustainable development

policies are not enshrined in legislation in a manner as to create perverse incentives. The latter can be illustrated by regulatory incentives for first generation biofuel production designed to diversify energy sources, that indirectly result in a promotion of agricultural land-use in favour of crops for fuel rather than food, which negatively impacts on food security, health and related factors. In even worse cases, laws underpinned by misguided policies may lead to conversion of sensitive habitats such as forest areas for expanded agricultural uses.

### 1.2.3. Interdependent and interrelated

The language of the interconnection between the three pillars of sustainable development in Agenda 2030 is reminiscent of the human rights paradigm, where rights are recognized as being "indivisible, interdependent and interrelated". This phrase was coined in the Vienna Declaration on Human Rights. In particular the latter two elements, interrelation and interdependence, reflect how the realization of one human right depends, wholly or in part, upon the fulfilment of others. The Agenda 2030 commitment to "leaving no one behind" mirrors the language of (universal) human rights. The Declaration on the Right to Development also integrates human rights with the concept of development (Declaration on the Right to Development, 1986), and Article 1.1 states that the right to development is an inalienable human right, and all peoples are entitled to enjoy economic social cultural and political development. The holistic nature of this right reflects the multi-faceted approach inherent in sustainable development by embracing national and international dimensions, the full range of rights, social justice and equity, self-determination and full sovereignty over natural wealth and resources, and pro-poor growth (OHCHR, 2011). Although different levels of development are in the Agenda, states are nonetheless expected to implement the targets within the context of country realities, capacities and resources.

A human rights-based approach can guide national-level implementation of Agenda 2030 and the fulfilment of the SDGs can have concomitant effects for the realization of human rights. This is further explored in Chapter 2 of this book.

### 1.2.4. The three dimensions of sustainability: using systems thinking

The concept of systems thinking may offer an approach to ensure that policy and legislative solutions are multi-faceted (for more on legislation as a tool of policy, see Section 2.7 of Chapter 2). Systems-thinking proposes a shift in perspective from analysing constitutive parts to looking at processes and relationships as part of the whole context, i.e. all the interdependent elements in dynamic systems.[2] Such a holistic perspective highlights leverage points and the patterns resulting from interconnections, and facilitates a practical selection of measures towards particular outcomes while avoiding unintended consequences (UNEP, 2016a). For example, the ecosystems approach, a common feature in much of the recent legislation in fisheries and forestry sectors, utilizes systems-thinking to better determine how ecosystems function. Some commentators view that sustainable development is not merely a balancing act between economics and environment as distinct entities; rather the perspective should be that "economic and cultural activities are integrated into natural processes in a cyclic fashion so as not to degrade the environment upon which economic prosperity and social stability rest" (Flint, 2004).

## 1.3. Approach, scope and limitations of the Study

In its review of laws that enshrine and promote sustainable development approaches, this book does not seek to be exhaustive of all the possible mechanisms to best achieve sustainable development outcomes for a particular sector. Rather it seeks to provide illustrative snapshots of key provisions in national legislation that demonstrate how countries have recognized the interplay among the three pillars of sustainability. In other words, the Study seeks to highlight connections among the three pillars made in different types of legislation.

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[2] For more on systems thinking see: Waters Center for Systems Thinking, 2019; UNEP, n.d.(a); and Center for Ecoliteracy, 2012.

Elements of good practice can be found in different pieces of legislation across the globe. The themes selected in the chapters are based on responsiveness of highlighted solutions to specific challenges that are faced globally and that are likely to arise in the coming years. **This should not be taken to mean that the legislative provisions selected as examples in this book are implemented or enforced well (or at all) or that such provisions have resulted in successful outcomes.** Given the multitude of factors at play, it is possible that an issue highlighted as **legislative** good practice, is at the same time **significantly undermined** by other laws in place, or institutional weaknesses and challenges, scant resources or adverse political forces. In the same vein, effective institutions buttressed by strong political will, for example, may generate sustainability results even where legislation is weak.

Furthermore, the chapters very narrowly highlight very specific provisions of a legal text that consider different elements of sustainability; and even in such cases, not all the composite elements on a legislative article or section are discussed, much less the rest of the law. **This means that even for provisions that may be identified as good practice or reflecting a number of key elements relevant to offer sustainable solutions, there may be weaknesses, inaccuracies and gaps in the rest of the text or broader legislative framework that may undermine the overall utility or impact of the highlighted provision.** Discussions of the provisions thus occur in isolation of the rest of the text, broader legal framework, institutional context and implementation realities of that particular country. In other words, while parts of a law are highlighted in isolation to underscore key elements that recognize linkages **among the three pillars**, the Study has not expanded this emphasis on linkages to include all the relevant matters that a regulator should pay attention to, least of which is legislative coherence. A true systems approach for legislating within an area would have a micro-level starting point, for example, a watershed within a region in a country. This book takes a sectoral approach, for ease of understanding by country regulators whose entry points are often, at least at the present time, from the prism of a particular sector, so that a high-level overview can enable the exploration of linkages. A second

factor in the selection of a sectoral legislation analysis approach was also feasibility challenges, given the breadth of topics to be covered in this book. In any legislative exercise, an analysis of the full political, cultural, social, environmental and economic implications would be required first, including a mapping of stakeholder interests, and an examination of multi-sector legislation and policies. Although not in detail, some of the methodology for such approach is captured in Section 2.7 of Chapter 2 of the book. Finally, it should be noted that some of the legislation cited may be repealed or amended by the time of publication of this book; nonetheless the illustrative value of inter-sectoral linkages and connections remains.

Therefore, the selection of provisions for discussion under the various chapters is not an endorsement of any particular law, but rather a distillation of select elements, principles, measures and features that seek to move the framework towards a more sustainable footing. Where reference is made to the three pillars of sustainability for ease of discussion, there are no hard boundaries between the categories; instead, groupings should be considered fluid, with the understanding that subjects discussed within the categories typically fall under more than one pillar of sustainability. The basic premise of this book is to further integrated approaches, and so the very exercise of extracting and analysing various elements for this book should remain within that perspective; i.e. that these are *parts of a broader whole*.

In line with the premise that this Study does not seek to offer a comprehensive guidance on effective regulation of a given sector, and recognizing there are many alternative publications that offer such details, this book does not enumerate the key elements of international treaties and guidelines which influence sustainable approaches at the national level. Though not the main avenue of focus in this Study, the influence of international instruments on national legislation should be borne in mind by the reader. Each chapter contains appendices with a non-exhaustive list of the key international instruments that countries should consider when reviewing or developing legislation within a sector.

Practical limitations to the Study should also be highlighted here. In canvassing such a broad range of legislation often with unofficial translations from the original language, various drafting styles and traditions may influence the way provisions are presented, what is clear and succinct in one jurisdiction may be vague or ambiguous when interpreted by the rules of another. Therefore, the focus is not significantly on drafting styles as this varies from country to country, although it should be underscored that clarity, accuracy and precision are fundamental principles of legislative drafting. Efforts were made to display broad geographic spread, and offer insight into different jurisdictions, regions, legal systems and drafting styles. Accordingly, limitations in scope of legislation reviewed also exists considering that the author reviewed texts in English, French, Spanish and Portuguese; however, for other countries, the author relied on official and unofficial English translations that are generally available. This leaves a raft of legislation from various jurisdictions that may offer excellent examples but have not been selected for focus here. All the interpretations of legislation cited, regardless of original language, are necessarily the specific views, interpretation and understanding of the author and may not reflect the actual intention of the drafting country. On a related point, judicial interpretation of statutes for the countries where this has significance in generating law, is beyond the scope of review.

A key limitation to the approach of selecting legislation to review is that in countries where there is no official legislation consolidation process or system, updates and amendment are harder to trace. There were instances during research where excellent legislative examples were found and only subsequently, after much digging, were repeals of those provisions uncovered that had not been reflected in legislative databases and consolidation systems. Though attempts have been made to reflect the most recent versions of a cited law at the time of writing, and to be accurate in the reference numbers of such law, the risk that legislation cited has been repealed still exists. This book may offer a snapshot of approaches in the last decade or so, and recognizes that the speed of legislative approval often lags behind policy discourse and advances in science. Although new policies may also take time to garner support,

legislative processes in most countries take considerably longer to receive approval and promulgation (see Chapter 2 on the legislative reform process). In terms of temporal scope, the review was restricted largely to texts that were promulgated from 2007 onwards (or with amendments from 2007 onwards) with some exceptions, in order to highlight the most recent practices. In order to capture macro-level linkages and practices (and on feasibility grounds), this book focuses largely on primary legislation as an indication of firm and lasting political will enshrined as binding norms, and as the locus of legal texts where intersectoral principles and mechanisms are likely to be found. Exceptionally, some secondary regulations are referenced to illustrate key regulatory points to be emphasized.

It is important to note that as illustrations of sector-specific legislation, there should not be an automatic assumption, when taking a holistic and integrated approach, that all relevant issues addressed need to be raised in the same instrument. For example, certain safeguards that mitigate concerns about provisions in one instrument may be found in another. Thus, the legislative framework must be taken as a whole for a country. Similarly, the development of legislation in any sector should be consistent with, and take into consideration other legislation (and underpinning policies) and in such manner as is consistent with the hierarchy of legislation. This again emphasizes that not all relevant information would necessarily be found in the same instrument. The section on legislative drafting in Chapter 2 provides more details on considerations for drafters and policy-makers.

There may be many different perceptions of the role of law in development, and the efficacy of legislation or law as a tool to affect the goals of sustainable development. Different legal systems accept change at various speeds and to varying degrees. In addition, administrative laws, the use of litigation and the role of the judiciary and other legal institutions vary enormously from country to country. Thus, this book discourages the simplistic view that a reader could take the provisions highlighted as part of legislative reform activities and adopt them wholesale without the necessary policy, legal and institutional mapping beforehand.

Finally, it should always be considered that as new challenges emerge that inspire better ways of dealing with them, best practices and examples must evolve as well.

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## Non-legally-binding international instruments

*Declaration on the Right to Development*. UNGA, A/RES/41/128, 4 December 1986. (also available at http://www.ohchr.org/EN/ProfessionalInterest/Pages/RightToDevelopment.aspx).

*Transforming Our World: The 2030 Agenda for Sustainable Development*. UNGA, A/RES/70/1, adopted 2015. (also available at https://sustainabledevelopment.un.org/content/documents/21252030%20Agenda%20for%20Sustainable%20Development%20web.pdf).

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This Chapter should be read in conjunction with each of the chapters that follow as it reviews a broad range of cross-cutting themes that are common and relevant to the various natural resource sectors addressed in this book. While this Chapter is by no means an exhaustive review of the themes raised, the intention is to offer context and background to each of the chapters, and points towards the range of issues that affect regulation of a give sector. The objective of this Chapter is therefore to introduce generally applicable principles and issues in a broad manner, while specifics relating to a particular sector are highlighted in the relevant chapter.

## 2.1. International instruments

### 2.1.1. Recognition of sustainable development in international instruments

Multilateral agreements form the overarching international legal obligation to address particular issues. An analysis of sustainable development approaches espoused in numerous international instruments, and the reflection of these principles, mechanisms and approaches is beyond the scope of this undertaking. Many sectoral studies and publications address the range of elements derived from relevant international instruments that are to be incorporated in national legislation. Notwithstanding, several international instruments warrant brief mention in this Chapter, given their implications for multiple sectors addressed in this Study. This section seeks to demonstrate the widespread acceptance of sustainable development as demonstrated by binding environmental and non-environmental agreements that reference the concept. For example, the environment-focused Convention on Biological Diversity makes many references to the 'sustainable use of biological resources', defining this phrase as:

> The use of components of biological diversity in a way and at a rate that does not lead to the long-term decline of biological diversity, thereby maintaining its potential to meet the needs and aspirations of present and future generations (CBD, 1992).

Another example, the trade-focused Marrakesh Agreement Establishing the World Trade Organization stated that Member States:

> Relations in the field of trade and economic endeavour should be conducted with a view to [...]expanding the production of and trade in goods and services, while allowing for the optimal use of the world's resources in accordance with the objective of sustainable development, seeking both to protect and preserve the environment and to enhance the means for doing so in a manner consistent with their respective needs and concerns at different levels of economic development (Preamble).

Non-legally-binding instruments also recognize sustainable development. The United Nations Declaration on the Rights of Indigenous Peoples (UNDRIP) calls for a recognition that "indigenous knowledge, cultures and traditional practices contribute to sustainable and equitable development and proper management of the environment" (Preamble). Paragraph 8 of the Monterrey Consensus on financing for development states that "a holistic approach to the interconnected national, international and systemic challenges of financing for development – sustainable, gender-sensitive, people-centred development – in all parts of the globe is essential" (United Nations, 2002). The New Delhi Declaration on the Principles of International Law Related to Sustainable Development (2002) developed under the aegis of the International Law Association (ILA), identified a list of non-exhaustive principles, set out in Box 2.1, for pursuing sustainable development.

**Box 2.1**
**International Law Association (ILA) New Delhi Declaration on the Principles of International Law Related to Sustainable Development**

1. The duty of States to ensure sustainable use of natural resources.
2. The principle of equity and the eradication of poverty.
3. The principle of common but differentiated responsibilities.
4. The principle of the precautionary approach to human health, natural resources and ecosystems.
5. The principle of public participation and access to information and justice.
6. The principle of good governance.
7. The principle of integration and interrelationship, in particular in relation to human rights and social, economic and environmental objectives.

A number of instruments recognize the interlinkages of various sectors directly. The Voluntary Guidelines on the Responsible Governance of Tenure of Land, Fisheries and Forests in the Context of National Food Security (see Box 2.2) contains a framework for good governance by highlighting mechanisms to enable access to resources to be more equitable, to prevent arbitrary loss of tenure rights and prevent discrimination, to enhance participatory decision-making and to enable swift resolution before conflicts spiral into significant political and social crises. The Voluntary Guidelines are highlighted here as an instrument that recognizes the interconnections between the governance of various types of natural resources addressed in this book. Tenure rights to land, fisheries and forests are often interlinked and rural livelihoods may depend on access to various natural resources contemporaneously. Furthermore, the Guidelines are underpinned by a human rights approach and demonstrate how the governance of tenure may affect the enjoyment of various human rights.

**Box 2.2**
**Voluntary Guidelines on the Responsible Governance of Tenure of Land, Fisheries and Forests in the Context of National Food Security**

The Voluntary Guidelines:

- set out principles and internationally accepted standards for practices for the responsible governance of tenure to guide strategies, policies, legislation, programmes and activities at country-level;
- prioritize achieving sustainable livelihoods, social stability, housing security, rural development, environmental protection, and sustainable social and economic development;
- emphasize legal recognition and allocation of tenure rights and duties, including customary tenure systems and informal tenure rights;
- provide a reference for transfers and other changes to tenure rights and duties;
- outline the administrative aspects of effective governance of tenure;
- set out ways to prepare for and implement strategies for climate risks and emergencies; and
- offer ways to promote, implement, monitor and evaluate principles and mechanisms contained in the Voluntary Guidelines.

*Source:* FAO, ed., 2012.

The 2019 United Nations Declaration on the Rights of Peasants and Other People Working in Rural Areas also has implications for the governance of a number of sectors in this book. This Declaration defines a peasant as a person engaged in small-scale agricultural production (including artisanal livestock raising, pastoralism, fishing, forestry, hunting and agricultural handicrafts), who relies significantly on household labour and who has a special dependency on land. It affirms the duty of states to grant equal access to services and healthcare facilities to peasants, enable them to receive training and education, as well as access to social security and employment programmes. It also requires such persons to have "equal access to, use of and management of land and natural

resources, and to equal or priority treatment in land and agrarian reform and in land resettlement schemes."

Bilateral and regional agreements may also be underpinned by sustainable development themes. The Cotonou Partnership Agreement between the European Union and the African Caribbean and Pacific countries (the Cotonou Agreement, 2000) in a number of articles reaffirms that the objectives of the partnership is poverty reduction and eradication consistent with the objectives of sustainable development. The Agreement stipulates that cooperation shall be *"directed towards sustainable development centred on the human person … this entails respect for and promotion of all human rights"* (Article 9(1)).

### 2.1.2. Regional instruments confirming the nexus between human rights and the environment

A number of regional-level instruments integrate human rights in natural resources governance for a sustainable development approach. For example, in the European region, the Aarhus Convention on Access to Information, Public Participation in Decision-Making and Access to Justice in Environmental Matters (1998) affirms human rights principles in the context of the environmental dimension of sustainable development. The text espouses an individual's right to access environmental information, i.e. to receive environmental information that is held by public authorities. It also enshrines the right to participate in environmental decision-making; public authorities must allow stakeholders the opportunity to comment on proposed policies, laws or projects, and such inputs are to be considered in decision-making (this includes follow-up on the final decision that is taken by the authority). As an obligation under the Convention, national legislation must provide for a right to redress, through a review procedure before a court or other hearing or appeals body.

The African Commission on Human and Peoples' Rights (ACHPR) Resolution on a Human Rights-Based Approach to Natural Resources

Governance (2012) recalls a number of key principles found in other international instruments, affirming that:

> The State has the main responsibility for ensuring natural resources stewardship with, and for the interest of, the population and must fulfil its mission in conformity with international human rights law and standards.

It also confirms that the state must take measures to ensure public participation, including the free, prior and informed consent of communities, in decision-making related to natural resources governance. This instrument calls upon states to establish a clear legal framework for sustainable development as it impacts on natural resources in such manner as would make the realization of human rights a prerequisite for sustainability (Section 2). The Resolution promotes regional efforts to promote natural resources legislation that respect human rights, and in Section 3, calls for independent monitoring and accountability mechanisms that ensure human rights are justiciable and that extractive industries and investors are legally accountable in the host country. Section 4 directs states to: ensure independent social and human rights impact assessments that guarantee free prior informed consent; offer effective remedies; provide fair compensation; protect women, indigenous and customary people's rights; carry out environmental impact assessments, including impact on communities; and ensure public participation.

## 2.2. Good governance

The various definitions of governance evidence the complexity and dynamic nature of what governance comprises. For FAO, the concept of governance constitutes the formal and informal rules, organizations, and processes through which public and private actors articulate their interests; frame and prioritize issues; and make, implement, monitor, and enforce decisions. Thus, within this ambit are the rules and frameworks, as well as constitutive processes, for the formation, adaptation, revision and deconstruction of these frameworks. The public's relationship with the state is under constant evolution, with trends towards greater regulation in some sectors and some countries, or de-regulation in other

areas and jurisdictions. The locus of interventions may be at the supranational level, particularly considering shared or transboundary resources, or certain resources may also require devolution of management to local levels or co-management arrangements. These issues are explored particularly in Chapter 4 on water resources governance and Chapter 5 on fisheries governance.

The United Nations Environment Programme (UNEP) establishes that:

> Environmental governance is a key driver for the achievement of sustainable development. The undivided nature of the environment and its inextricable links with the social and economic dimensions of sustainable development relies on good decision making processes, effective institutions, policies, laws, standards and norms (UNEP, n.d.(a)).

The governance of natural resources must necessarily consider the regulatory systems outside of the sector-specific controls; this view embraces a holistic perspective that is encouraged under systems-thinking and is a standard approach in legislative review and analysis. In this Study, the governance focus is primarily on regulatory frameworks, specifically legislation, and the use of legislation to enable good governance. Therefore, through the sustainable development prism, the focus is on governance that furthers economic development, social inclusion and environmental protection.

The concept of *good* governance is equally nebulous, but again many common principles emerge. The United Nations Office of the High Commissioner for Human Rights (OHCHR) has indicated that while there is no universally accepted definition of good governance, this concept includes:

> Respect for human rights and the rule of law, effective participation, multi-actor partnerships, political pluralism, transparent and accountable processes and institutions, an efficient and effective public sector, legitimacy, access to knowledge, information and education, political empowerment of people, equity, sustainability, and attitudes and values that foster responsibility, solidarity and tolerance (OHCHR, 2011).

It can thus be said that good governance is less a universally applicable and uniform blueprint but rather a set of recognized principles applicable to varying contexts and circumstances. Illustrations in the chapters that follow will provide evidence for how these principles are applied and given effect through legislation.

Good governance principles have influenced legal and institutional reforms across the globe, but the sustainable development discourse highlights the need for improvement in the realization and implementation of these principles everywhere, particularly in developing countries. In its sectoral analyses, this book takes note of how the following key principles, advocated by the FAO framing of governance, are applied in natural resources legislation. These are: participation, transparency, accountability, legitimacy, equality and fairness, efficiency and effectiveness, and rule of law (abbreviated as PANTHER – see Section 2.3.2; FAO, 2013a). It will be seen that these good governance principles are largely identical to principles that cut across all human rights.

Finally, in looking at governance arrangements, attention should be paid to public institutions and ensuring that regulatory decisions are made objectively, impartially and without conflict of interest or bias. The Organisation for Economic Co-operation and Development (OECD) has set out key principles in the design of sound governance frameworks that contribute to these goals. These include clarity in the roles and mandate of regulators and public institutions; mechanisms to prevent undue influence and maintain public trust, accountability and transparency; mechanisms to foster engagement with regulated parties; ensuring appropriate funding is available for the regulator's activities; and the importance of evaluating the performance of the regulating institution in achieving its mandate (OECD, 2014).

## 2.3. A human rights-based approach

### 2.3.1. Foundational principles for sustainable development

Good governance and human rights are mutually reinforcing. While human rights principles offer the norms that guide regulatory frameworks, the implementation of human rights relies on a conducive and enabling governance environment (OHCHR, 2011).

Human rights are inherent to all human beings, and cannot be taken away, except in specific situations and according to due process. Human rights are indivisible, interrelated and interdependent; this means that no type of right is superior to another, and it is recognized that improvement of one right facilitates advancement of and can be contingent upon, another. Chapter 1 of this book showed similar language in reference to the indivisibility and universality of the SDGs in Section 1.2.3.

A human rights-based approach has shifted from the margins to espousing the foundational principles that underpin development. Agenda 2030 sets human rights as a cornerstone for global sustainable development, affirming that the Agenda is firmly anchored in the Universal Declaration of Human Rights (1948) and international human rights treaties (para. 10). In paragraph 19, the Agenda reiterates the responsibilities of all countries to respect, protect and promote human rights and fundamental freedoms for all, without distinction of any kind. The Agenda is "to be implemented in a manner that is consistent with the... obligations of states under international law" (para. 18), meaning gaps, conflicts or ambiguities should be interpreted in a manner that is consistent with international human rights agreements (OHCHR, 2016). The human rights-sustainable development nexus is not new. For example, the 2002 New Delhi Declaration of Principles of International Law Relating to Sustainable Development recognizes human rights as a source of law on sustainable development. Agenda 2030 expressly identifies a human rights-based approach as a framework for the shaping of policies and strategies.

A human rights-based approach to sustainable development gives primacy to the concept of social equity, i.e. a fair and just distribution of economic and environmental costs and benefits, and the ability to participate in decision-making processes. Ensuring social equity means including disadvantaged or marginalized groups in society, which may, depending on the context, include women, youth and children, the elderly, indigenous groups, and ethnic minorities. A human rights-based approach enshrined in legislation offers legal backing to render governments and other actors accountable.

A human rights-based approach is predicated on the view that *people* are the central locus of sustainable development and that rights are a central aspect of development. The human rights paradigm uses the individual as the basis for which rights and obligations relate, and can be a useful prism with which to view social and economic dimensions of sustainability as well as environmental aspects in so far as many environmental aspects are framed from a human-centric perspective. A human rights perspective may also use a collective, community or group of people, as the starting point for protections for example, in the context of indigenous peoples' rights that are inherently collective in nature.

Human rights and environmental protection are strongly connected. The UNEP calls to attention core dimensions of this interrelationship.[3] First, as a clean environment is a pre-requisite to the enjoyment of human rights, the state has a duty to ensure the level of environmental protection necessary to allow the full exercise of protected rights. Furthermore, human rights such as access to information, participation in decision-making, and access to justice in environmental matters, are necessary components to sound environmental management. The right to a safe, adequate or healthy and ecologically-balanced environment, although debated as a right itself, is considered a precondition for the realization of other human rights including rights to life, food, health and an adequate standard of living. Guidance is available on practical and concrete examples of states and other actors who have successfully

[3] See the following website for further information on UNEP's work on Human Rights and the Environment: UNEP, 2017.

and innovatively implemented human rights obligations related to environmental protection and management (UNEP, 2016b).

### 2.3.2. Human rights procedural principles

This section provides a brief overview of the human rights principles of the PANTHER framework developed by FAO (FAO, ed., 2009), highlighted here as the core procedural rights through which substantive human rights can be achieved and can also be used to address broader development challenges. It should be reiterated that these procedural principles are also interrelated and interdependent. For example, ensuring a participatory approach to law-making enhances transparency and accountability. Ensuring participation is as broad and representative as possible reduces the likelihood of policy capture by influential interests and groups. Also, transparency through information accessibility strengthens accountability and participation, and prevents corruption and mismanagement of resources.

#### a. Participation

Individuals should participate in the planning, design, monitoring and evaluation of decisions that affect their rights. The principle of participation means that people should be able to determine their own well-being. In the context of the environment, Principle 10 of the Rio Declaration of the United Nations Conference on Environment and Development (1992), affirmed that environmental issues are best handled with the participation of all concerned citizens. The effectiveness of stakeholder participation is contingent upon a consideration of socio-economic and institutional contexts, and a selection of appropriate tools to foster participation (for example public hearings, stakeholder bodies, website forums, etc.). Participation may span the right to have access to information and to communicate views (see Box 2.3 on Participation in this section, and Box 2.6 on Free, Prior and Informed Consent in Section 2.4.1), as well as the opportunity to participate direct in decision-making. Examples of more formal mechanisms for the direct participation in the use, protection, management and allocation of natural resources

are co-management options explored further in Chapter 5 on Fisheries and Chapter 8 on Forestry.

**Box 2.3**
**Participation**

The principle of participation posits that people should enjoy non-discriminatory, full, free, meaningful and empowering participation in decision-making processes that affect their lives and well-being. Providing mechanisms for stakeholders' active participation in decision-making goes a long way to prevent and remedy breaches of their rights. Participation is a crucial component of successful policies and legal frameworks, which also contributes to peoples' empowerment and human dignity. Recent legal trends have seen the expansion of stakeholder involvement in both decision-making and implementation, for example, through devolution of management powers to local councils and interested groups. In addition, ensuring that perspectives of interested communities are taken into account when policies and legislation are being formulated often results in greater compliance.

Formal representation of different stakeholders in various types of decision-making or advisory bodies can increasingly be seen in fisheries management laws. A key consideration when formulating legal mechanisms to accommodate stakeholder participation is that active, free and meaningful participation is available to all. In this regard it is important to consider culturally sensitive issues related to participation, particularly related to gender, that may exist in a society.

*Extracted from:* Skonhoft and Gobena, 2009.

### b. Accountability

Accountability means ensuring that rights are protected and fulfilled by holding to account those responsible for implementation. Public officials are answerable to the people they serve for their actions and decisions. Mechanisms for accountability that can be incorporated into legislation include: a clear assignment of functions and powers, monitoring and information systems, annual reports of performance, audits, public

meetings, and appeal or complaint systems. Anti-corruption action plans may be used to monitor transparency, accountability, participation, and equity indicators (UNDP-SIWI and WIN, 2012). In terms of institutions that can be set up in legislation, options range from specifically-mandated anti-corruption commissions to other types of oversight bodies responsible for ensuring that safeguards are complied with or that benefits are shared.

Clear and simple appeal processes may be included in legislation in order to prevent administrative, technical, legal and procedural errors, and to counter corruption. For example, appeals may relate to the issuance or denial of a licence; and decisions on development projects with social, economic or environmental impacts. Appeals on technical or administrative grounds may be found in sectoral legislation, although general constitutional or administrative legislation may govern the appeals process through court systems on matters of law. Depending on the legal system, a judicial court may have the power to review any administrative decisions at any time and such judicial verdict may override any administrative decision issued completely, or on matters of law only.

The challenge of corruption is particularly relevant for any extractive industries, for example, granting oil or mining concessions or for sectors such as forestry or fishing. In the petroleum and mining sectors, the combination of factors such as large-scale construction, monopolies and high demand for the resource coupled with the complexity of resource management increases the avenues for corrupt practices (UNDP-SIWI and WIN, 2012). Corruption weakens the rule of law and has been seen to discourage investments and divert financial resources away from addressing public concerns and the improvement of services, resulting in inefficient and unequal allocation of resources and inequalities in distribution of services (UNDP-SIWI and WIN, 2012).

Different legislative options to enhance accountability for the enforcement of rights related to natural resources management are explored further in the various sector chapters.

### c. Non-discrimination and equality

All human beings are born free and equal in dignity and rights. Any discrimination on the basis of race, colour, ethnicity, gender, age, language, sexual orientation, religion, political or other opinion, national, social or geographical origin, disability, property, birth or other status as established by human rights standards, is a violation of human rights. In addition to specifically prohibiting discrimination, applying this principle in legislation means addressing policies or practices which may appear to be neutral but have a discriminatory outcome or result because of a disadvantaged starting point of one group or segment of society. An example of remedial provisions can be seen in laws that pay particular attention or give special treatment to traditionally marginalized groups. Equality and non-discrimination are complementary.

### d. Transparency

Transparency means that legislation should be made public. Rights-holders must be provided with essential information about the decision-making process and who is to be held accountable. Transparency, a precondition for meaningful participation, also includes the provision of information on the performance of institutions, for example, those tasked with the management of resources or distribution of payments, and how effective these bodies are in achieving their mandate. The duty of a competent authority in compiling relevant data on the quality or quantity of a resource, for example, or other monitoring or management data, is also important for transparency purposes.

### e. Human dignity

Human dignity refers to the absolute and inherent worth that a person possesses by virtue of being human. This is often expressed in national Constitutions (as well as in legislation) in explicit recognition of the duty of officials to respect the worth and dignity of persons. Part II of Tunisia's *Constitution (2014)* enshrines human dignity as a fundamental right, Article 29 of Kyrgyzstan's *Constitution (2010)* protects the honour and dignity of persons, while Nepal's *Constitution (2015)* reiterates the right to live with dignity.

### f. Empowerment

The principle of empowerment promotes the idea that persons have the means to change their own lives. In legislation this may mean including provisions for awareness-raising, education campaigns and capacity-building, or even fiscal incentives that may, for example, lift persons out of poverty by helping them to improve their livelihoods. This principle may also entail the ability to seek remedies for violations of their human rights, and thus its connection to other principles is evident.

### g. Rule of law

Sustainable Development Goal (SDG) 16 seeks to promote peaceful and inclusive societies for sustainable development, provide access to justice for all and to build effective, accountable and inclusive institutions at all levels. Without access to justice and the rule of law, all other rights are endangered, and the provisions that foster sustainable development that will be explored in the sector chapters can be severely hampered or negated all together. The rule of law spans adherence to the law, equally enforced and independently adjudicated laws, and also the creation of an enabling environment for the empowerment of individuals. The United Nations Security Council (UNSC) 2004, defines the rule of law as:

> A principle of governance in which all persons, institutions and entities, public and private, including the State itself, are accountable to laws that are publicly promulgated, equally enforced and independently adjudicated and which are consistent with international human rights norms and standards. It requires, as well, measures to ensure adherence to the principles of supremacy of law, equality before the law, accountability to the law, fairness in the application of the law, separation of powers, participation in decision-making, legal certainty, avoidance of arbitrariness and procedural and legal transparency (Section III(6)).

This quote emphasizes the connection between rule of law and human rights. The rule of law is broader than just technically accurate and well-drafted legislation, as it extends to implementation and enforcement. The UNEP, in its 2019 report on environmental rule of law, places primacy on enforcement (see Box 2.4, and see Section 2.8 of this Chapter

on enforcement challenges). Sound legislation requires functioning and adequately resourced institutions in order to offer the predictability, security and flexibility needed to foster development. Conversely, poorly designed and implemented laws can inhibit effective government control, subvert incentives, impede civil society and stifle innovation and private sector development. Legislation also offers a foundation for the use of other tools, legal, financial or industry-wide standards. This Study does not postulate that legislation is the sole means for achieving the rule of law, a rights-based approach or ultimately good governance, but it uses analysis of legislation from around the world to examine trends on how human rights and sustainable development are furthered through legislation.

**Box 2.4**
**Environmental rule of law**

The UNEP's 2019 global assessment on environmental rule of law found that environmental legislation has proliferated 38-fold since 1972 and yet weak enforcement is identified as the key common denominator in limiting environmental protections that are offered by legal frameworks. Environmental rule of law covers environmental law as well as de facto implementation and enforcement practices, and in doing so, benefits extend beyond the environment and affects social and economic development as well. Environmental rule of law encompasses institutional mandates of environmental competent authorities and engagement and interactions among private sector, civil society and government – in addition to legislation. The Report recommends pilot testing approaches in diverse contexts to strengthen environmental rule of law, and then adapting and scaling up such approaches.

*Source:* UNEP, 2019.

One of the composite elements of the rule of law is access to justice. Indeed, rights systems have to have a foundation in law, offer effective enforcement and enable an individual to seek justice for breach of rights (FAO, 2016a). Access to justice means that formal requirements are not excessive or complicated for individuals to comply with, and

administrative procedures are reasonable (e.g. time allowed to bring cases to court, or the length of time it takes to resolve legal disputes). Information regarding rights and how to access the legal system should be freely available, and accessible to vulnerable groups, including linguistic or ethnic minorities. Legal aid should be made available to those who may not be able to afford legal services.

Effective rule of law also requires independence, competence and impartiality by judicial bodies and any decisions and remedies issued should be promptly and fully enforced. Access to justice may not necessarily involve courts and the formal legal system. In the context of natural resources, the use of various forms of dispute resolution, including customary or traditional dispute resolution bodies and mechanisms, may offer swift, effective and inexpensive solutions.

## 2.4. Issues common to multiple sectors under the social pillar of sustainability

### 2.4.1. Local communities and indigenous peoples

Many different pieces of legislation cited in this Study refer to local communities as implicitly inclusive of indigenous peoples, although there is a distinction between the two terms. Local community is a generic term which refers to people that live on or in the areas adjacent to the natural resource in question. The term "indigenous peoples" however, refers to groups who enjoy a distinct culture from a majority of the population, although there is no internationally recognized definition. Further to Article 1.2 of the International Labour Organization (ILO) Indigenous and Tribal Peoples Convention No. 169, self-identification as 'indigenous' or 'tribal' is seen as the central and decisive element. Thus, a legislation that refers to a 'local community although inclusive of indigenous peoples that may form part of such community, does not necessarily identify their distinct status and thus may or may not, depending on the jurisdiction, confer the rights accorded by international law to such peoples.

Indigenous peoples make up an estimated 5 percent of the world's total population but comprise approximately 15 percent of the global poor (UN, 2006). Indigenous women may face discrimination on the basis of their gender as well as their ethnicity. Indigenous peoples are disproportionately affected by environmental degradation, politico-economic marginalization and development activities that negatively affect their livelihoods, cultural heritage and the natural resources on which they depend.

Ensuring legal clarity over their rights to resources is informed by certain core principles. Foremost among them is the right to self-determination, which is enshrined in the International Covenant on Civil and Political Rights (1966) and the International Covenant on Economic, Social and Cultural Rights (1996), which includes the right to determine their political status and freely pursue their economic, social and cultural development. Furthermore, the identity of indigenous people is inextricably linked with the continuation of their traditions and the preservation of their ancestral lands and territories (FAO, 2010). Indigenous groups rights are often framed as collective rights, for example, with regard to their traditional knowledge or with regard to the lands, territories and natural resources that they have traditionally occupied and used. Segments of indigenous peoples, such as women, may warrant particular focus as they tend to be the target of various types of discrimination.

The 2007 UNDRIP, although not a legally-binding text, offers the most affirmative global commitment to date. The text enshrines the rights of indigenous peoples over the lands, territories and resources which they have traditionally owned, occupied or otherwise used or acquired, and furthermore encourages states to legally recognize such rights, with due respect to the customs, traditions and land tenure systems of the indigenous peoples concerned. The UNDRIP recognizes the need to:

> Respect and promote the inherent rights of indigenous peoples which derive from their political, economic and social structures and from their cultures, spiritual traditions, histories and philosophies, especially their rights to their lands, territories and resources (UNDRIP, 2007, Preamble).

In this regard, Box 2.5 sets out an excerpt of key provisions relating to land and natural resources.

**Box 2.5**
**United Nations Declaration on the Rights of Indigenous Peoples (UNDRIP): Summary of rights of indigenous peoples (IPs) and duties of the state relating to land and natural resources**

**Article 8 (2)(b):**
The duty of states to provide effective mechanisms for prevention of, and redress for any action that seeks to or results in dispossession of IPs' lands, territories or resources.

**Article 32:**
The right of IPs to develop or use of their lands or territories and other resources.

The duty of states to consult and cooperate with IPs through representative institutions and obtain their free and informed consent prior to the approval of any project affecting their lands or territories and other resources, particularly in connection with minerals and water.

The duty of states to ensure effective mechanisms for just and fair redress for any such activities, and that mitigation measures are taken against adverse environmental, economic, social, cultural or spiritual impact.

**Article 25:**
The right of IPs to maintain and strengthen their distinctive spiritual relationship with their traditionally owned or otherwise occupied and used lands, territories, waters and coastal seas and other resources.

**Article 26:**
The right of IPs right to own, use, develop and control the lands, territories and resources which they have traditionally owned, occupied or otherwise used or acquired.

The duty of the state to legally recognize and protect these resources in such manner as respects the customs, traditions and land tenure systems of IPs.

**Box 2.5** *(cont.)*

**Article 27:**
The duty of states to establish, together with IPs, independent and impartial processes that embrace IP customs and land tenure systems, in order to adjudicate the spectrum of rights of IPs to their land and resources.

**Article 28:**
The right of IPs to redress including restitution, fair and equitable compensation for land and resources that have been confiscated, occupied, used or damaged without their free, prior and informed consent. Compensation shall be equal in quality, size and legal status of land or resources, or of monetary compensation equivalent.

**Article 29:**
The right of IPs to conserve and protect the environment and productive capacity of their lands and natural resources.

The duty of states to set up assistance programmes for this purpose without discrimination.

The duty of states to prevent storage or disposal of hazardous materials on lands of IPs, and to protect, monitor and restore the health of IPs where affected by such materials.

**Article 30:**
The duty of states not to carry out military activities in lands and territories of IPs unless justified by pressing public interest or agreed upon with IPs through appropriate consultations with representative institutions.

Article 20 affirms their right to maintain and develop their distinct political, economic, social and cultural identities and characteristics as well as their legal systems. This Declaration also sets out the Free, Prior and Informed Consent (FPIC) framework in key circumstances; the concept is further examined in Box 2.6.

As a legally-binding text, ILO Convention No. 169 safeguards the rights of indigenous peoples to the natural resources pertaining to their lands and

these rights include the right of these peoples to participate in the use, management and conservation of these resources (Article 15.1). This ILO text mandates consultation, with the objective of achieving agreement or consent in the following cases: for legislative or administrative measures (Article 6.1a); where the state retains ownership of mineral or sub-surface resources, prior to exploration or exploitation of such resources (Article 15.2); prior to relocation of such communities, which should take place only with their free and informed consent (Article 16); during the alienation of their lands or transmission of rights outside their own communities (Article 17); and with regard to special vocational training programmes (Article 22).

**Box 2.6**
**Free, Prior and Informed Consent (FPIC)**

Free, Prior and Informed Consent (FPIC) is a specific right that pertains to indigenous peoples. It allows them to give or withhold consent to a project, proposal or measure that may affect them or their territories. Once they have given their consent, they can withdraw it at any stage. Furthermore, FPIC enables indigenous peoples to negotiate the conditions under which the programme or measure will be designed, implemented, monitored and evaluated.

**Free:** means consent given voluntarily and without coercion, intimidation or manipulation. A process that is self-directed by the community from whom consent is being sought, unencumbered by coercion, expectations or timelines that are externally imposed.

**Prior:** means consent is sought sufficiently in advance of any authorization or commencement of activities.

**Informed:** this comprises the nature of the engagement as well as the type and content of information that should be provided prior to seeking consent.

**Consent:** means collective decision made by the right-holders and reached through customary decision-making processes of the communities.

*Extracted from:* FAO, n.d.(a).

Particularly important for extractive industries such as mining, oil exploration and forestry, FPIC addresses the power differentials between local communities and governments (or extractive companies) and facilitates consensus on when and where to carry out certain activities and on arrangements for compensation and the sharing of benefits. Legislative provisions can include provisions that balance the negotiating power of the parties, for example, by requiring negotiations in the local language, mandating the sharing of all available data on the proposed activities including profits and benefits, allowing the community an opportunity to refuse consent, and instituting grievance or dispute resolution mechanisms (Buxton and Wilson, 2013). Ecuador's *Constitution (No. 449 of 2008)* grants indigenous peoples the rights to be consulted before the adoption of a legislative measure that might affect any of their collective rights, stipulating their right:

> ... To free prior informed consultation, within a reasonable period of time, on the plans and programmes for prospecting, producing and marketing non-renewable resources located on their lands and which could have an environmental or cultural impact on them; to participate in the profits earned from these projects and to receive compensation for social, cultural and environmental damages caused to them. The consultation that must be conducted by the competent authorities shall be mandatory and in due time. If consent of the consulted community is not obtained, steps provided for by the Constitution and the law shall be taken (Article 57[4–7]).

Although international human rights instruments are directed towards the state's duty to protect and enforce rights (therefore are not legally-binding on companies), some companies have made a commitment to respecting ILO Convention No. 169 in their company policy (either in relation to human rights in general or indigenous peoples specifically). The role of business enterprises as specialized organs of society with specific functions and responsibilities, particularly with regard to human rights, is recognized in the United Nations Guiding Principles on Business and Human Rights (see Box 2.7 and also Section 2.6.3 on business sustainability). In addition, international finance institutions also require loans for investments to consider indigenous peoples' rights among other environmental and social safeguards.

**Box 2.7**
**Extracts from Guiding Principles on Business and Human Rights: Implementing the United Nations 'Protect, Respect and Remedy' Framework (UNHRC, 2011)**

3. In meeting their duty to protect, States should:
   a. Enforce laws that are aimed at, or have the effect of, requiring business enterprises to respect human rights, and periodically to assess the adequacy of such laws and address any gaps;
   b. Ensure that other laws and policies governing the creation and ongoing operation of business enterprises, such as corporate law, do not constrain but enable business respect for human rights;
   c. Provide effective guidance to business enterprises on how to respect human rights throughout their operations;
   d. Encourage, and where appropriate require, business enterprises to communicate how they address their human rights impacts.

11. Business enterprises should respect human rights. This means that they should avoid infringing on the human rights of others and should address adverse human rights impacts with which they are involved.

13. The responsibility to respect human rights requires that business enterprises:
   a. Avoid causing or contributing to adverse human rights impacts through their own activities, and address such impacts when they occur;
   b. Seek to prevent or mitigate adverse human rights impacts that are directly linked to their operations, products or services by their business relationships, even if they have not contributed to those impacts.

15. In order to meet their responsibility to respect human rights, business enterprises should have in place policies and processes appropriate to their size and circumstances, including:
   a. A policy commitment to meet their responsibility to respect human rights;
   b. A human rights due diligence process to identify, prevent, mitigate and account for how they address their impacts on human rights;
   c. Processes to enable the remediation of any adverse human rights impacts they cause or to which they contribute.

### 2.4.2. Gender equality and sustainable development

Gender equality, rooted in human rights, is a development goal. Achieving gender equality and empowering all women and girls is at the heart of SDG 5. Furthermore, gender equality is a driver of progress across all development goals. Women have an important role in rural economies, natural resource management and food production, processing, conservation and marketing. Women constitute 45 percent of the agricultural labour force in developing countries, out of the 1.3 billion rural poor that use and manage natural resources, and therefore an understanding of the role of women, and gender and culture dimensions of natural resources management, is integral to reversing environmental degradation.[4] Women manage natural resources daily in their roles as farmers and household providers. Typically, they are responsible for growing subsistence crops, and often have unique knowledge of local crop species. To meet family needs, rural women and girls walk long distances to collect fuel wood and water. Despite their reliance on natural resources, women have less access to and control over them than men. Usually it is men who put land, water, plants and animals to commercial use, and this is often more valued than women's domestic uses (FAO, 2009d).

Gender inequality is most evident in access to land; custom prohibits women from owning land in many countries, and these limitations have significant repercussions in other areas. Without secure land rights, farmers have limited access to credit – and little incentive – to invest in improved management and conservation practices. Women's limited entitlements force them to use subsistence agricultural practices that may have detrimental impacts, even though they are knowledge holders of good practices. Women farmers have limited access to irrigation networks or, when they do, to irrigation management decisions. Membership of water users' associations is often linked to land ownership.

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[4] See: FAO, n.d.(b).

It should be noted that in some rural regions, gender gaps are reversed, with men and boys experiencing marginalization or missing potential, bringing to the fore the need to engage all members of the community in a true gender empowerment and integration process (FAO, ed., 2013). Gender analysis helps clarify the specific and often different needs, vulnerabilities, and coping strategies of women and men, so that they can be more adequately addressed.

In the extractive sector, while the context is different, the challenges and outcomes for women remain similar. The participation of women in mining varies among regions; Asia having the lowest with less than 10 percent and Africa having at least a 40–50 percent female artisanal and small-scale mining (ASM) workforce, although this figure may be higher given that this activity is illegal in many countries (Hinton, Veiga and Beinhof, 2003). Women in ASM are typically excluded from decision-making, consultation, and equivalent compensation, and in some cases from training and employment opportunities (AMDC, 2015).

Legislation can play a role in supporting specific types of government intervention, such as support the formation of cooperatives that encourage women's membership, and promoting gender equality in hiring and training by companies. Legislation that is aware of and responsive to the ways empowerment can be realized, for example, through affirmative obligations to protect women's rights, by ensuring women's participation in decision-making bodies and by facilitating access to assets, resources, services and opportunities. Requiring competent authorities to gather gender disaggregated data also helps capture 'invisible' contributions to a sector that have previously escaped policy-making, management and governance. These measures can make significant gains in supporting gender equality, and its concomitant effects on the achievement of other sustainable development priorities. Consistency in the legal framework as a whole is also important; for example, property rights should be consistent across land and other natural resources legislation as well as inheritance, family and other types of legislation that may contain references to the women's property rights.

## 2.5. Issues common to multiple sectors under the environment pillar of sustainability

This section introduces two major themes that are prevalent to all the sectors in this Study. As the sector chapters are inherently environment focused, this section is a brief overview of those two major themes that cut across all sectors and are critical to sustainable development.

### 2.5.1. Biodiversity conservation

Biodiversity and ecosystems feature across many of the SDGs and associated targets. The SDG 15 is devoted to "protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss". Biodiversity is at the centre of many economic activities, particularly those related to crop and livestock agriculture, forestry, and fisheries.

The Convention on Biological Diversity defines biological diversity as:

> The variability among living organisms from all sources including, *inter alia*, terrestrial, marine and other aquatic ecosystems and the ecological complexes of which they are part; this includes diversity within species, between species and of ecosystems (CBD, 1992).

The Millennium Ecosystem Assessment warned that approximately 60 percent of the ecosystems supporting life on Earth were being degraded or used unsustainably and that the consequences of degradation would worsen in the coming 50 years (World Bank, ed., 2006). The loss of biodiversity is widely regarded as one of the key challenges of the sustainable development agenda, and thus conservation of biodiversity has high priority, together with sustainable use. The fair and equitable sharing of the benefits arising from the use of genetic resources is another core tenet of the Convention on Biological Diversity (see Box 2.8). To fulfil this objective, the users of genetic resources and associated traditional knowledge must ensure that the communities conserving those resources benefit equitably from the financial gains from such access.

**Box 2.8**
**Overview of the Convention on Biological Diversity (CBD) and its Protocols**

The objectives of the CBD are threefold: (i) to conserve biological diversity; (ii) to use its components in a sustainable way; and (iii) to share fairly and equitably the benefits arising from the use of genetic resources. The Cartagena Protocol on Biosafety governs how living modified organisms (LMOs) resulting from modern biotechnology can be moved from one country to another. The Cartagena Protocol establishes an advance informed agreement procedure that provides and facilitates decision-making on the import of LMOs. The Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from their Utilization to the Convention on Biological Diversity (Nagoya Protocol) focuses on the third pillar of the CBD, and by doing so serves to also contribute to the other two pillars, i.e. conservation of biological diversity and the sustainable use of its components. The Nagoya Protocol applies to genetic resources (and benefits arising from their utilization) as well as traditional knowledge associated with the latter. The Nagoya Protocol sets out the obligations for contracting Parties in relation to *access* to such resources (for example, establishing fair and transparent rules and procedures including for prior informed consent and mutually agreed terms, and frameworks for access permits). *Benefit sharing* mechanisms are to be designed in such manner as to ensure fair and equitable sharing on mutually agreed terms and can include monetary or non-monetary compensation such as royalties. For the purposes of *compliance*, among other measures, Parties commit to cooperation in case of violation of another jurisdiction's requirements.

The fair and equitable sharing of benefits is explored in the context of forestry in Chapter 8 of this book.

The Strategic Plan for Biodiversity 2011–2020 and its 20 Aichi Biodiversity Targets adopted under the Convention on Biological Diversity has been recognized as setting the global framework for priority actions on biodiversity. The 2030 Agenda is consistent with other existing international commitments, including the Strategic Plan for Biodiversity. The SDGs and the Strategic Plan are mutually supportive

and reinforcing,and therefore the implementation of one contributes to the achievement of the other (CBD *et al.*, 2016).

### a. Ecosystems approach

The ecosystems approach to natural resources governance is recognized as a useful tool to protecting biodiversity. The central tenets of this approach are that ecosystems must be governed as a natural unit and that ecosystem management is also a social process. While the term "ecosystem approach" appears to imply that the approach is primarily environment-oriented, the approach adopted by FAO explicitly states the importance of taking into account all the essential components of sustainability (ecological, social and economic). This means considering that the sustainability of a resource depends on all its different parts. In addition to sector-based approaches, the need for developing adequate institutional frameworks to address multisectoral management is also emphasized (FAO, 2012a).

An ecosystem approach puts people and their natural resources use at the centre of the decision-making framework, while also recognizing the need to safeguard the integrity of the natural environment. An ecosystem approach would thus be suitable in protected areas management, as both a biodiversity conservation tool and a consideration of the social ramifications of such designations on local communities. The Protected Planet Report 2016 highlights the potential role of protected areas in addressing harmful incentives that further biodiversity reduction, regeneration of fish stocks, and climate change areas (UNEP-WCMC and IUCN, 2016). Legislation can create various categories ranging from strict protection to multiple-use protected areas, but this must be done in a manner that is cognizant of the rights of local communities and indigenous people that may have had traditional access and use of a proposed protected area. Critical for the latter will be a consultative process of demarcation zones and also the process for which an area can be classified as protected.

Laws that further inter-agency and cross-sectoral cooperation will bring together diverse stakeholder interests. Nonetheless, the application of

the ecosystems approach may be subject to limitations in its practical application in many developing countries owing to the technical, human and financial capacities that are required in bringing together multiple disciplines, perspectives and stakeholders.

### b. Contribution of traditional knowledge to biodiversity

There is a growing recognition of the contribution of indigenous peoples' traditional knowledge to ecosystem management, biodiversity conservation, and climate change adaptation. For example, there is evidence that pastoral systems based on mobility and diversity of livestock are supportive of a healthy ecosystem, and can be complementary to other land uses such as wildlife conservation (UN, 2014). The vast majority of the world's genetic resources, and a considerable part of global biodiversity, are located on indigenous peoples' territories (UN, 2014).

Traditional knowledge and resources of indigenous peoples is vulnerable to biopiracy and the use of such knowledge and resources without permission. Article 8(j) of the CBD on traditional knowledge, innovations and practices, commits governments to respect, preserve and maintain the traditional knowledge of indigenous communities relevant for the conservation and sustainable use of biological diversity. The Akwé Kon Guidelines provide general parameters on the incorporation of environmental and social (including cultural) considerations of indigenous and local communities into impact assessment procedures.[5] Legislation developed in alignment with the Nagoya Protocol will evidence established conditions for access to genetic resources, and the incorporation of key concepts such as 'mutually agreed terms' could be framed in a manner that is most conducive to local and country contexts. Peru's *Law No. 27 811 (2002)* confers explicit protection of indigenous people's traditional knowledge, and sets out provisions for registers, FPIC procedures, licensing agreements, benefit sharing mechanisms and the establishment of a fund for the development

[5] Voluntary guidelines for the conduct of cultural, environmental and social impact assessments regarding developments proposed to take place on, or which are likely to impact on, sacred sites and on lands and waters traditionally occupied or used by indigenous and local communities.

of indigenous peoples. It also uses legal mechanisms such as reversal of the burden of proof on the defendant when infringement of the rights of an indigenous people possessing specific collective knowledge is alleged (Article 44).

### 2.5.2. Climate change

#### a. Introduction to climate change

Extreme weather events that are largely attributed to climate change affect the health, safety, security and livelihoods of people and communities around the world, but also the natural environment itself. Greenhouse gas emissions from human activities currently stand at their highest levels in history, causing an increase in the world's average surface temperature. The entry into force of the Paris Agreement in 2016 marked a commitment by the global community to limit temperature increase to below 2 °C, and in consideration of the grave risks, to strive for 1.5 °C above pre-industrial levels. The SDG 13 calls for urgent action to combat climate change and its impacts. The associated targets of SDG 13 focus on the integration of climate change measures into national policies, the improvement of education, awareness-raising and institutional capacity on climate change mitigation, adaptation, impact reduction and early warnings. Under Goal 13, the United Nations Framework Convention on Climate Change (UNFCCC) is acknowledged as the primary international, intergovernmental forum for negotiating the global response to climate change.

**Box 2.9**
**United Nations Framework Convention on Climate Change (UNFCCC) and related instruments**

The objective of the UNFCCC is to stabilize greenhouse gas emissions at a level that would prevent dangerous anthropogenic (human induced) interference with the climate system. Article 2 of the UNFCCC stresses that:

> Such a level should be achieved within a time-frame sufficient to allow ecosystems to adapt naturally to climate change, to ensure that food production is not threatened, and to enable economic development to proceed in a sustainable manner.

In setting out its core principles, the UNFCCC set out the common but differentiated obligations of developing and developed countries, noting the latter's responsibility to take the lead in actions, as well as the former's special needs not only in dealing with the adverse aspects of climate change but also with regard to bearing disproportionate burdens under the Convention. The text states:

> Any policies and measures [...] should be appropriate for the specific conditions of each Party and should be integrated with national development programmes, taking into account that economic development is essential for adopting measures to address climate change" (Article 3).

Annual conferences of the parties (COPs) coordinate international responses and provide opportunities to gauge progress.

The Kyoto Protocol set emission reduction targets for the main greenhouse gases (GHG), originally binding 37 industrialized countries (known as Annex I Parties) in recognition of their higher contribution to the current levels of GHG in the atmosphere. The Doha Amendment heralded new commitments covering the period 2013–2020. The Kyoto Protocol set out frameworks for: (i) international emissions trading; (ii) the Clean Development Mechanism (CDM); and (iii) Joint Implementation. Of particular note to this Study, the CDM allows developed countries to meet a part of their greenhouse gas reduction obligations through offset projects in developing countries that promote sustainable development through investment, knowledge and technology transfer.

**Box 2.9** *(cont.)*

Owing to the requirement of 'additionality', afforestation and reforestation are viable carbon sequestration initiatives, while projects for reducing deforestation or forest degradation or through agricultural are not eligible. To address this, REDD+ (which stands for the reduction of emissions from deforestation and forest degradation, and fostering of conservation, sustainable management of forests, and enhancement of forest carbon stocks) is a climate solution developed by UNFCCC Parties to support the preservation of forest stocks in developing countries through results-based payment mechanisms for actions that reduce or eliminate carbon emissions from forests. Chapter 8 on forestry discusses legislative provisions for other types of Payment for Ecosystem Services mechanisms.

The Paris Agreement seeks to galvanize global action through a commitment to keep global temperature rise this century well below 2 °C above pre-industrial levels, and to seek to limit the temperature increase even further to 1.5 °C. The Agreement also lays the groundwork for financing, technology, and capacity building, to support climate change action by developing countries. Parties to the Agreement commit to report regularly on their emissions and implementation activities.

The Intergovernmental Panel on Climate Change (IPCC) recognizes the interconnectedness of sustainable development and climate change. Climate change influences natural living conditions and thus, social and economic development. Priorities and approaches to development also have impacts on greenhouse gas (GHG) emissions emissions as well as the exposure to, and resilience towards, climate change impacts.

### b. Impact of climate change in different parts of the world

Between 2000 and 2004, of the 262 million people affected annually by disasters related to weather and climate, more than 98 percent lived in developing countries and the vast majority were dependent mainly on agriculture and fisheries for their livelihoods. In 2010 alone, a total of 385 natural disasters killed more than 297 000 people worldwide,

affected more than 217 million others and caused almost USD 124 billion worth of economic damages (FAO, 2012a). The yearly cost of infrastructure that is resilient to climate change is around USD 1.2 trillion to USD 1.5 trillion for developing countries, resulting in a yearly USD 700 billion gap in financing (Kyte, 2014).

### c. Overview of types of responses

The IPCC postulates that climate policies can be more effective when consistently embedded within broader strategies designed to make national and regional development paths more sustainable. This is predicated on the assumption that the impact of climate variability and change and associated policy responses will affect the ability of countries to achieve sustainable development goals. Conversely, the pursuit of those goals will also in turn affect the opportunities for, and success of, climate policies.

Addressing climate change impact involves a variety of approaches across sectors, which may range from reducing emissions from industry and transport, to conserving forests, oceans and other ecosystems that serve as carbon sinks, and from promotion of technologies and incentives that lower pollution and energy consumption to better planning for disaster preparedness. Actions to address climate change typically fall under various categories: preparation and disaster risk reduction; mitigation; and adaptation. Legislation can accommodate measures under these categories to varying degrees.

A recent study has estimated that there are globally, in excess of 1 200 climate change or climate change-relevant laws, representing a twentyfold increase in two decades; although the rate at which new laws are passed has decreased from over 100 new laws per year in 2009–2013 to roughly 40 new laws in 2016 (Nahmany, *et al*., 2017).

While the focus of climate change-related legislation in developing countries is largely on resilience, disaster risk reduction and the protection of natural resources, various examples show more developed countries incorporate these provisions in addition to variations of capping (and

trading) of emissions mechanisms. The Republic of Korea's *Framework Act on Low Carbon, Green Growth (Act No. 9 931 of 2010)* provides the legal basis for implementing policy measures addressing climate change. The Act emphasizes the realization of a low-carbon society through basic principles and plans for coping with climate change and energy policies, reducing greenhouse gases, reporting on greenhouse gas emissions and energy consumption, establishing an integrated greenhouse gas information management system, introducing a cap-and-trade scheme, assessing the impacts of climate change and implementing adaptation measures. It promotes sustainable development by promoting 'green' living and buildings, eco-tourism and related education and public relations initiatives. Australia's (Victoria) *Climate Change Act (No. 5 of 2017)* provides a legislative foundation to "manage climate change risks, maximize the opportunities that arise from decisive action, and enable a transition to a climate resilient community and economy with net zero emissions by 2050." The Act requires the government to develop a five-year Climate Change Strategy every five years that establishes how Victoria will meet its targets and adapt to the impacts of climate change. It requires Adaptation Action Plans for key systems that are either vulnerable to the impacts of climate change, or essential to ensure Victoria is prepared (from 2021). A system of periodic reporting is also established to provide transparency, accountability and to ensure the community remains informed.

## 2.6. Issues common to multiple sectors under the economic pillar of sustainability

### 2.6.1. Permits, concessions and licences – exploitation of resources

Permits, licences and concessions regulate how, and according to which requirements, individual persons or legal entities may access and use resources. The sector chapters will delve further into the specific environmental and social considerations when issuing permits, licences and other types of concessions for access to or use of a particular resource. Brief mention is made here only to highlight that these tools

span most of the sectors addressed in this Study; the individual chapters set out some common parameters and requirements, but also the diverse operating contexts in which these tools are used.

In regard to permits and other types of approvals, legislation often articulates the eligibility criteria, any applicable conditions and compliance requirements, and the grounds for issuing the approval, denial or revocation. Legislation, quite often secondary legislation, may contain details on associated procedures to obtain approvals such as the prescribed period for decision-making, and in the form of written responses to the application. Examples are offered in the sector chapters in a way that illustrates a consideration of the various pillars of sustainability.

### 2.6.2. Payments for ecosystem services

Payments for Ecosystem Services (PES) is a market mechanism that offers fiscal (or other benefits) to incentivize natural resource managers and users towards the continued or improved provision of ecosystem services as such (FAO, 2011a). In other words, PES schemes involve the transactions by a public or private entity for the provision of ecosystem services and benefits, to the provider who is securing those services. The encouragement of environmental protection and other benefits in this manner marks a move away from classic 'command-and-control approaches' that discourage or penalize activities that harm the environment (Greiber, 2011). The PES schemes are predicated on the establishment of appropriate prices for ecosystem services (which is contingent on political will as well as technical capacity to ascribe a fiscal value to an ecosystem or activity). Such initiatives are underpinned by legally-binding agreements, together with an overall enabling regulatory context that is characterized by good governance and that offers certain guarantees.

Three types of PES schemes can be discerned in global practices: private schemes, public schemes and trading schemes. While the objective of all of these mechanisms is the conservation or restoration of ecosystem services, each type differs substantially from the other with regard to

the stakeholders, level of development and governance structure in the jurisdiction, and complexity of arrangements (Greiber, 2011). As regards private PES schemes, these initiatives do not require a specific PES legal framework, but are still contingent on a strong rule of law and a robust framework for enforcing contracts (for example, where the legal framework offers sufficient remedies for breach or non-compliance with contract obligations). Private individuals or entities are often eligible provided certain requirements are met (such as general contract conditions relating to age, acting freely, etc., or a legislative stipulation that PES contracts are entered into with legal entities rather than individuals). Private PES schemes are often limited to the local scale (Greiber, 2011). On the other hand, public PES schemes require at a minimum, a clear legislative foundation and mandate for the respective regulatory authority to enter into a PES agreement. Where arrangements to pay individuals becomes excessively complex, arrangements may be catered instead towards development of the local community as a whole. The third type of PES, trading schemes (cap-and-trade), may cover different types of ecosystem services, carbon emissions reduction, biodiversity conservation, etc., and also requires a supportive legislative framework. Each of these types entail inherent difficulties as well as advantages. The key message is that context is the driving force behind a solution to be selected.

The importance of appropriate legal frameworks for the development of PES schemes also depends significantly on the scale of the scheme. Water-related PES schemes are usually developed at a more local level, whereas the Reduced Emissions from Deforestation and Degradation (REDD+) regimes (addressed further in Chapter 8 on forestry) can be described as top-down multiple-level PES arrangements (Greiber, 2011). Under REDD+ schemes, financing flows from international or national public or private sources, to national then subnational structures. Subsequently, PES payments are remitted to project-level participants. This necessarily requires enabling legislation that sets up the benefit disbursement mechanisms (in particular establishing clear and equitable rules for benefit-sharing) and a review of a range of related legislation to ensure consistency and avoid any potential barriers to implementation.

Finally, it should be highlighted that globally, the concept of PES has moved beyond the concept of rewarding environmental gains, and increasingly embraced recognition of its impact more broadly on poverty reduction. The next generation of green economy legislation may emphasize a reframing of PES with broader reference to socio-economic co-benefits in addition to environmental ones. The FAO refers to this paradigm as Remuneration of Positive Externalities (RPE) as it moves beyond environmental concerns in the strict sense in order to cover all sustainability dimensions.

### 2.6.3. Business sustainability

Although not a legislative trend that features in the selected chapters of this Study, a look at an integrated approach to sustainable development would not be complete without a brief mention of the contribution of the private sector towards sustainable development goals. Business sustainability is an approach increasingly adopted by businesses of all sizes to enable the commercial entity to become more efficient and profitable by recognizing and limiting negative social and environmental externalities of its activities. Taken a step further, sustainable business models can also address social and environmental challenges, and in doing so leverage benefits to the company's bottom line through an increase in customers or brand recognition. Businesses that are cognizant of their environmental, social and financial impacts are able to make better decisions, compete effectively, build a more loyal customer base, and attract and retain employees. An awareness of the impacts on people, planet and profits, i.e. the "triple bottom line", parallels the three pillars of sustainable development. Furthermore, business sustainability is not limited to addressing a company's impacts on these three dimensions, but rather creating resilience and mitigating risks through an understanding that environmental and social factors affect the ability of the business to survive and thrive. Businesses that integrate sustainability into their operation model recognize that there are emerging opportunities through new products or services that can address sustainable development challenges.

There has been recognition at national and international levels that governments alone cannot be expected to work towards sustainable development. Indeed, the SDG framework intends to bring in companies and other non-state actors to contribute towards the achievement of the SDGs. The inclusion of businesses in sustainable development actions was foreshadowed by the 2002 Johannesburg Summit, which heralded the onset of partnership initiatives for sustainable development as a departure from agreements exclusive to governments. The agreements entered into under the aegis of the Summit involved national governments, international institutions, the business community, labour groups, non-governmental organizations, and other actors. The Summit outlined that public-private partnerships were an important tool in the achievement of sustainable development. At the same time, it should be noted that coordinated international approaches that favour and incentivize broad private sector action can serve as a useful stimulus in counties where the markets themselves offer relatively little pressure for businesses to be sustainable.

The 2015 inter-governmental agenda for financing the SDGs – the Addis Ababa Action Agenda – emphasizes the role of private sector investment, global value chains and international trade as key drivers for meeting the SDGs. The UN Global Compact, which guides businesses in implementing the SDGs, directs companies to first do business responsibly and then pursue opportunities to solve societal challenges through business innovation and collaboration. The UN Global Compact's Ten Principles offer guidance for business strategies and operations, recognizing that good practices or innovation in one area cannot make up for doing harm in another.

The chapters in this Study highlight legislative trends and thus, do not delve into private sector sustainability certification schemes as these are primarily voluntary. Multi-stakeholder sustainability standards, established across many economic sectors, can be transformative to the companies involved and to the sector in which they are applied. The extant proliferation of private standards significantly moves industry actors beyond mere compliance with the legislative imperatives prescribed by government, towards (typically more stringent) market

dictates and consumer preferences that encompass environmental and social standards. As promoted by the UN Global Compact, credible and mission-driven sustainability standards and certification systems are therefore well-placed to become tools for SDG implementation by companies and other supply chain actors.

At present, the business dimensions of sustainability are market driven, and depend largely on decisions by the directors or managers within a business as to whether sustainability features in any form in their business models. However, in 2014, India became the first country to mandate corporate social responsibility (CSR) through Section 135, an amendment of the *Companies Act (1956)*. This section obligates companies of a certain turnover and profitability to spend 2 percent of their average net profit for the three years prior, on CSR. Such company is required to set up a CSR Committee under its Board that is responsible for deciding upon CSR policy (which should be made public). Guidelines that accompany this initiative elaborate eligible categories for spending: hunger and poverty, education, health, gender equality and women's empowerment, skills training, environment, social enterprise projects, and the promotion of rural and national sports. Views on the impact of mandatory CSR may be mixed, and some may emphasize the need for transparent reporting to avoid accusations of 'greenwashing'.

In light of the global consensus on the role of businesses in contributing to sustainable development, and of tentative steps taken by countries such as India to legislate on the matter, legislative developments in this area may well evolve rapidly in coming years.

## 2.7. Legislative reform

Law-makers should draft legislation in a manner that most effectively achieves desired policy outcomes. In the following summary of key elements of legislative review and drafting, it should be recalled that the procedures and methods for legislative reform are relevant to all the sector chapters in this Study. Detailed guidance for legislative reform processes and drafting are elaborated in research and publications elsewhere (Rosenbaum, 2007), and at country-level can be found in

national Constitutions, legislation on law-making, and national drafting manuals. Much guidance is available on regulatory reform; for example, the OECD has issued a number of recommendations that focus on good regulatory practices. This vast body of guidance focuses on the procedures and best practices to develop regulations that are of good quality, perform according to expected objectives and are effective and efficient.

### 2.7.1. Legislative analysis

Any legislative review or drafting process for a particular sector should begin with an analysis of the Constitution, which may enshrine different social, economic and environmental rights as well as provide an indication of the branches of government responsible for legislating upon and enforcing those rights. An examination of the country's international, regional or bilateral agreements will enable an identification of legally-binding obligations that should be reflected in national legislation. Although monist legal systems do not require incorporating these commitments in legislation (as required in dualist systems), and conflicting provisions in national legislation are typically considered null and void to the extent of the conflict, it behoves law-makers to ensure that there are no ambiguities in the legislative framework. An extensive analysis of existing regulatory frameworks (policy, legal and institutional) will yield an understanding of existing policy and technical gaps, contradictory provisions, and overlaps in institutional mandates. A review of regulatory frameworks involves compiling relevant policy documents and legislation, as well as carrying out institutional and stakeholder mapping exercises. Legislation stock-taking and review will include all 'vertical' levels of legislation (primary and subsidiary), as well as 'horizontal' linkages with other sectors that may have a bearing on the particular sector under review. The latter is essential for a holistic approach to sustainable governance, and is explored at different junctures in the subsequent chapters.

Legislative analysis should enable an identification of existing implementation and enforcement challenges. The gaps between the law (*de jure*) and practice (*de facto*) may undermine legislative provisions

that are beneficial for sustainable development, but are not being enforced. New legislation is unlikely to work any better until these issues are examined and rectified. Implementation challenges stem from scarce technical, financial or human resources, but also as a result of a lack of genuine political will, demand-driven illegal access to or trading in resources, or a failure by regulators to anticipate modes of enforcement and costs of implementation.

### 2.7.2. Weighing regulatory options: impact assessments

Following the extensive analysis stage, drafters should outline the key policy matters to be addressed in the law, with the firm understanding that legislation is one of several tools to give effect to the policy. It should be recalled that legislation may not necessarily be the best or cheapest option to achieve a particular outcome. Ideally, a regulatory impact assessment (RIA) should be carried out prior to the implementation of such policy or legal instrument. This process essentially allows the drafter to identify the effects of various regulatory and legislative options available. Increasingly this impact assessment is used to understand the impact of various regulatory options in terms of the three dimensions of sustainability (economic, social and environmental). Such assessment, although ideally comprehensive, need not involve extensive statistical or financial data that may in itself be difficult or costly to gather. The RIA is a challenging exercise in many countries, but certain basic requirements such as the consistent application of clear screening criteria and the consultation of stakeholders can be used in any context. The multi-disciplinary approach inherent in RIA processes renders this mechanism useful in identifying unforeseen impacts, selecting the most favourable regulatory option and understanding the various linkages and connections within a system. A well-designed RIA can improve regulatory coherence by highlighting trade-offs, identifying distributional effects and determining who will bear the costs or risks (OECD Council, 2012). A greater focus on sustainable development, poverty reduction, pro-poor or gender-sensitive approaches would mean varied (favourable) weighting of assessment criteria, reflecting these parameters to prioritize options that minimize negative impacts

or yield greater benefits to certain marginalized groups, stakeholders or priority issues.

Several chapters highlight the importance of sound and accurate data gathered from statistical systems and monitoring mechanisms in guiding the design of regulatory frameworks, and in supporting a determination of the most favourable regulatory option. Many countries struggle to collect, analyse, store and apply data relating to implementation and compliance, and many face challenges in maintaining data on the status of their natural resources. There is limited capacity to use statistical evidence to understand the linkages between the environment and the economy. In this regard it may be useful to highlight the UN DESA System of Environmental-Economic Accounting (SEEA) Central Framework – see Box 2.10. The SEEA is a "guide to integrating economic, environmental and social data into a single, coherent framework for holistic decision-making" (UN DESA, n.d.(a)). The SEEA brings together information on water, minerals, energy, timber, fish, soil, land and ecosystems, pollution and waste, from multiple accounts into "a single measurement system … [achieved by] applying [standardized] accounting concepts, structures, rules and principles to different sets of environmental information" (UN DESA, n.d.(a)).

**Box 2.10**
**System of Environmental-Economic Accounting Central Framework**

The Central Framework covers measurement in three main areas:

**Environmental flows:** The flows of natural inputs, products and residuals between the environment and the economy, and within the economy, both in physical and monetary terms.

**Stocks of environmental assets:** The stocks of individual assets, such as water or energy assets, and how they change over an accounting period due to economic activity and natural processes, both in physical and monetary terms.

**Economic activity related to the environment:** Monetary flows associated with economic activities related to the environment, including spending on environmental protection and resource management, and the production of 'environmental goods and services.'

*Extracted from:* UN DESA, n.d.(a).

### 2.7.3. Consultations and participation of stakeholders

Legislative reform should be as participatory a process as possible. While being a characteristic of good governance frameworks, this principle also enhances compliance of stakeholders with the rules set out in the legislation as a result of an increased perception of legitimacy, a greater sense of ownership of arrangements and a better understanding of the underlying policy goals. Consultations throughout the review and drafting process will enable the legislation to be as responsive as possible to the needs and priorities of stakeholders. A stakeholder mapping exercise provides a holistic view of a range of perspectives, challenges and outcomes. Such exercise enables the identification of all stakeholders, public or private, and by its nature considers a range of social, economic and environmental perspectives.

Legislative analysis across all relevant sectors will reveal the spread of mandates assigned to relevant institutions and facilitate an identification

of gaps, inconsistencies and duplication of responsibilities. Overlaps in institutional mandates assigned by law creates the authority to legal challenge, duplicative responsibilities or no controls (owing to the confusion), and a waste of resources that may be scarce. An institutional analysis would consider not only the legal mandates, but also the functions, resources and capacities at various levels of government. The chapters that follow will demonstrate that mechanisms to improve institutional coordination, cooperation and integration across different ministries or departments contribute to a systems approach for sustainable development of the sector. Conversely, specific bodies may be set out with a broad mandate to look at environmental impacts of a range of sectors. As an example, the Mauritius *Environment Protection Act (No. 19 of 2002, as amended in 2008)* sets up a National Environment Commission as the competent environmental authority. Among its duties are ensuring coordination and cooperation between public departments, local authorities and other government organizations engaged in environmental protection programmes (FAO EAF-Nansen Project, 2016). In addition, many countries expressly stipulate the principle of international cooperation in the management of resources in national legislation. The management of natural resources can be transboundary, and the obligations of related international and regional agreements are often reflected in national legislation.

In addition to legislative processes that are participatory and characterized by broad consultation, the content of legislation itself should reflect participatory approaches, transparency and the duty to consult where relevant. The chapters on water, fisheries and forestry will demonstrate the increasing use of participatory or co-management approaches by local communities and government authorities to sustainably manage resources. Nonetheless, it should be noted that where political, social, economic and ecological conditions are unfavourable for motivating and sustaining local management, a supportive legal framework may not make much difference (AfDB, 2010).

Laws should be communicated to and understood by stakeholders. Clearly drafted provisions contribute to compliance, reduce the possibility of arbitrary interpretation by government officials and facilitate the

task of the judiciary. Legal clarity is achieved when legislation is drafted in a simple and unambiguous manner, with carefully circumscribed discretionary powers.

## 2.8. Enforcement, implementation and compliance

An insufficient accounting of modalities and costs of compliance, implementation and enforcement, often limits the beneficial impact of well-drafted and technically sound legislation. Regulators should identify areas where a strong command and control system (i.e. establishing a rule and then punishing violators) can be implemented alongside a more collaborative approach to how resources should be managed (through education, for example). Mechanisms to determine compliance typically involve some kind of inspections, where specially appointed public officials are endowed the power to enter land or premises (including vessels and vehicles) and to seize objects, documents and other evidence of wrongdoing through official procedures. Alternative mechanisms for compliance may shift the burden on a licensee, or resource user or owner – for example, the duty to keep records – to demonstrate evidence of compliance with requirements.

As noted in Section 2.3., the resolution of legal disputes may be hampered by a court system that is overburdened and underfinanced. In such cases, administrative penalties (such as suspension of licences or imposition of financial penalties) may be more appropriate options to criminal or civil penalties. Administrative sanctions that are subject to appropriate safeguards to ensure transparency and prevent corruption may offer swift resolution or effective remedy for violations. Remedies may include fines, injunctions and temporary prohibitions, corrective actions and damages. Penalties should be weighted according to the severity of the offence, and severity can be assessed in terms of seriousness, quantity, and wilfulness or negligence on the part of the offender. Regulators should have a range of response mechanisms available to them that recognize the objective of a particular sanction or remedy: whether it is punitive, a deterrent, or whether it is necessary to remove a specific risk to a resource, person or group of people. Enforcement sanctions such as

criminal, civil or administrative penalties should not be, or be perceived to be, arbitrary or discriminatory.

The regulatory framework should provide for mechanisms for appeals against regulatory decisions and enforcement actions; such mechanisms should be readily accessible, be procedurally fair and allow for due process. Appeals mechanisms contribute to good governance, accountability and transparency goals. Due process rights include among other aspects, the right to appeal decisions in a timely manner and the right to be informed of the grounds for decisions taken by the government.

## 2.9. Key chapter messages

**Binding and non-binding environmental, trade and other types of international instruments** elucidate widespread recognition and promotion of sustainable development globally. Some instruments, including at regional level, expressly integrate a human rights-based approach in the context of natural resources governance.

**Governance** is a complex and dynamic system of rules, institutions and processes in which interests and responsibilities are framed, implemented and enforced, at supranational, national and local levels. The sustainable development approach underscores that good governance principles should underpin legislative reform initiatives.

**A human rights-based approach** has shifted from the margins to espousing the foundational principles that underpin development. Agenda 2030 sets human rights as a cornerstone for global sustainable development. A human rights-based approach prioritizes social equity and the fair and just distribution of economic and environmental costs and benefits. Key procedural human rights principles include: participation; accountability; non-discrimination and equality; transparency; human dignity; and rule of law.

**Indigenous peoples** are disproportionately affected by environmental degradation, politico-economic marginalization and development activities that negatively affect their livelihoods, cultural heritage and the

natural resources on which they depend. Legislation must contain clear rights with regard to indigenous communities, and recognize that the identity of indigenous peoples is inextricably linked with their traditions relating to natural resources on which they depend.

**Gender equality,** rooted in human rights, is a driver of progress across all development goals. Legislation that is responsive to women's empowerment contains features such as an affirmative obligation to protect women's rights, provisions that ensure women's participation in decision-making bodies and through mechanisms that facilitate access to assets, resources, services and opportunities.

**Biodiversity** is at the centre of many economic activities, particularly those related to crop and livestock agriculture, forestry, and fisheries. The ecosystems approach espouses that ecosystems must be governed as a natural unit and that ecosystem management is also a social process. The ecosystem approach puts people and their natural resources use at the centre of the decision-making framework, while also recognizing the need to safeguard the integrity of the natural environment. Traditional knowledge maintained by indigenous peoples contributes to biodiversity conservation.

**Climate change** policies should be consistently embedded within broader strategies, understanding that impacts, responses and associated socio-economic activities will affect sustainable development. Actions to address climate change fall under various categories: preparation and disaster risk reduction; mitigation; and adaptation. Legislation can accommodate measures under these categories to varying degrees.

**Permits, licenses and concessions** regulate how, and according to which requirements, individual persons or legal entities may access and use resources. Legal provisions often articulate the procedures, any applicable conditions, grounds for approval, denial or revocation) for permits and other types of approvals. Also included in legislation are eligibility criteria, compliance requirements of the permit holder, a prescribed period for decision-making and required communications with the applicant.

**Payments for Ecosystem Services (PES)** is a market mechanism that offers fiscal (or other benefits) to incentivize natural resource managers and users towards the continued or improved provision of ecosystem services. More recently, the concept of PES has been expanded to include socio-economic co-benefits, in addition to environmental aspects. The FAO refers to this paradigm as **Remuneration of Positive Externalities (RPE).**

**Business sustainability** seeks to make a commercial entity more efficient and profitable by recognizing environmental and social externalities, thus focusing on the "triple bottom line", i.e. people, planet and profit. The SDG framework intends to bring in companies and other non-state actors to contribute towards the achievement of SDGs.

**Legislative analyses** should begin with an analysis of the Constitution, the country's international, regional or bilateral agreements and the existing regulatory frameworks (policy, legal and institutional) in order to determine the existing policy, the legal and technical gaps and weaknesses, contradictory provisions, and overlaps in institutional mandates. Legislative analyses should also enable an identification of existing implementation and enforcement challenges.

**Regulatory impact assessments** embrace a systems approach by employing methodologies to identify economic, social and environmental impacts and distributional effects.

**Consultations** throughout the review and drafting process will enable the legislation to be as responsive as possible to the needs and priorities of stakeholders.

**Compliance, implementation and enforcement** costs and modalities should always guide the design of regulatory frameworks to ensure successful performance of such frameworks in meeting regulatory objectives.

# Appendix A. Key international instruments to guide national legislation

## I. Legally-binding instruments

### Economic

Agreements under the World Trade Organization (also available at https://www.wto.org).

### Environment

*Convention on Biological Diversity* (CBD), adopted in Nairobi, 22 May 1992, and open for signature in Rio de Janeiro, 5 June 1992. (also available at https://www.cbd.int/doc/legal/cbd-en.pdf).

- *Addis Ababa Principles and Guidelines for the Sustainable Use of Biodiversity,* 2004. (also available at https://www.cbd.int/doc/publications/addis-gdl-en.pdf).
- *Aichi Targets,* 2010. (also available at https://www.cbd.int/sp/targets/).
- *Bonn Guidelines on Access to Genetic Resources and Fair and Equitable Sharing of the Benefits Arising out of their Utilization,* adopted in the Hague, April 2002. (also available at https://www.cbd.int/doc/publications/cbd-bonn-gdls-en.pdf).
- Cartagena Protocol on Biosafety, 2000. (also available at https://treaties.un.org/doc/Publication/UNTS/Volume%202226/v2226.pdf).
- *CBD Guidelines: The Ecosystem Approach,* 2004. (also available at https://www.cbd.int/doc/publications/ea-text-en.pdf).
- Ecosystem Approach Sourcebook. (also available at https://www.cbd.int/ecosystem/sourcebook/).

- *Guiding Principles for the Prevention, Introduction and Mitigation of Impacts of Alien Species that Threaten Ecosystems, Habitats or Species,* 2000. (also available at https://www.cbd.int/doc/decisions/cop-06-dec-23-en.pdf).
- *Nagoya Protocol on Access and Benefit-sharing,* 2010. (also available at https://www.cbd.int/abs/).

*Convention on International Trade in Endangered Species of Wild Fauna and Flora* (CITES), 3 March 1973, amended 1979 and 1983. (also available at https://www.cites.org/eng/disc/text.php).

*Convention on Migratory Species* (CMS or Bonn Convention), 23 June 1979. (also available at http://www.cms.int/en/legalinstrument/cms; http://www.cms.int/sites/default/files/instrument/CMS-text.en_.PDF).

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# Chapter 3. Land legislation

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This Chapter should be read in conjunction with Chapter 2 on themes that are common to all the sectoral chapters in this book. The diverse illustrative snapshots of legislative elements on select subjects offer an aerial view to demonstrate how countries have captured the interplay between social, economic and environmental exigencies, while using the very narrow and specific lens of highlighted legislative provisions. The reader should not infer that the examples selected are necessarily successfully implemented, or result in the desired impact; the Chapter does not examine country contexts, allocation of resources, political priority or any of the myriad factors that may affect successful implementation and enforcement. Assessing the effectiveness, regulatory performance and range of potential externalities is an undertaking that is highly context-specific. Accordingly, the examples here do not make recommendations that are applicable to all jurisdictions, but rather draw attention to the way in which different countries have approached sustainable governance of the resource.

While this Chapter explores sustainability dimensions from the narrow lens of sectoral legislation, i.e. land-specific or soil-specific laws, it should be emphasized that in practice, an approach that recognizes inter-sectoral linkages and policy coherence, necessarily involves a contemporaneous examination of legislation on all land-related natural resources, land-dependent activities such as agriculture, as well as other sectors including, among others, the environment, investment, taxation, infrastructure, housing, tourism and local government administration.

## 3.1. The importance of land and soil to sustainable development

The first sectoral chapter examined in this publication is land, deliberately because it is the resource upon which other natural resources are intrinsically, physically, ecologically and legally connected. Land (and by extension its governance) is not only an issue of geomorphology and soils, but the mineral deposits beneath, climate and water resources, the dependent plant and animal life, and the human activities reliant upon, and impacted by this resource. According to FAO, land and soil support human and other terrestrial ecosystems in the following ways:

as a reserve of wealth for individuals and communities; as a foundation for human infrastructure; as a source of food, fibre, fuels and other materials; as a habitat for plants, animals and micro-organisms; as a co-determinant in the global energy balance and the global hydrological cycle, including flood regulation and water purification; as a storehouse of minerals, including carbon sequestration; as a climate regulator; as cultural heritage; and as a buffer, filter or modifier for pollutants.[6] Changes in one of the factors, has impact on the others, and thus, in any sustainability discourse, ecosystem dynamics and the importance of their relationships in planning and management of land resources is paramount.

Given the inherently broad and intricate network of interdependent ecosystems, this Chapter cannot look at all possible legal issues and solutions. The discussions in the sections that follow select various legislative avenues with regard to enabling spatial planning for sustainable land management, sustainable soil management, and tenure and associated issues.

## 3.2. Drivers, requirements and incentives for sustainable practices

**Drivers of land use change and the factors influencing incentives of key stakeholders is critical to understand in the development of legislation; particularly as private incentives may diverge from social or environmental objectives** (TerrAfrica, 2009). A land evaluation exercise would determine the suitability for a range of uses that offers the optimum use of land. The latter may involve modelling optimization techniques, and dialogue and consensus building among divergent groups (FAO, 2017a). Legislation may reflect incentives and mechanisms to optimize the efficiency and value of particular land uses. This could be by providing support to improve profitability of agricultural production, or alternatively by setting aside environmentally protected areas, or by allocating particular land for commercial or urban development. Subject to appropriate safeguards that prevent abuse

[6] See: FAO and UNEP, 1999, and FAO, 2015c.

(some risks and considerations are discussed in Section 3.2.8 in the context of agricultural investments), land leasing arrangements may revive land that is degraded by converting such zones for agricultural, industrial or even environmental or other productive uses. Another strategy is to incentivize private landowners through payments for managing land in a manner that provides social or environmental goods (such as payments for ecosystem services schemes that are explored at length in Chapter 8 on Forestry Governance).

**Evaluations of land use options involve the consideration of a range of factors.** These include: identifying the risks and benefits of status quo land uses; determining alternative uses that are physically, socially, economically, environmentally and culturally feasible; highlighting factors affecting sustainability over time and the need for recurrent inputs; and finding ways to mitigate adverse effects (FAO, 2017a). However, it bears remembering that land value is attributed to the value attached to specific land uses by various stakeholders (FAO, 2017a). Such values are influenced more often by socio-economic factors than environmental ones, thus rendering aspects such as ecosystem services or vulnerability to climate change as undervalued or underestimated. In this context, land use and land resource planning can be used to determine economic, social and environmental dimensions of various options and thus be used to build consensus among stakeholders through informed decision-making processes (FAO, 2017a).

**Legislation may promote the use of market based or fiscal incentives for particular land use and management.** Kenya's *Community Land Act (2016)* empowers the competent authority to support or advance research and development into the "creation, application and implementation of instruments, including market-based instruments, to support, enhance and implement the purposes of the Act, its objectives and policies in or proposed for a regional plan" (Section 23). The guiding principles of this Act recall the provisions of the Kenyan Constitution's principles of governance, and the text requires any incentive mechanism developed

under the Act to adhere to fundamental tenets. These include, as stated in Article 10 of the Constitution:

> Rule of law, the participation of the people; human dignity, equity, social justice, inclusiveness, equality, human rights, non-discrimination and protection of the marginalized; good governance, integrity, transparency and accountability; and sustainable development.

Under this Act the competent authority is further empowered to support conservation, environmental and agricultural values by facilitating financing or cost-sharing initiatives for environmental conservation, the protection of agricultural land, or the enhancement of natural scenic or aesthetic values of land.

**Legislation may promote certain sustainable technologies or practices.** Viet Nam's *Land Law (No. 45/2013/QH13)* encourages investment in land, including scientific and technological approaches for land protection and improvement, as well as for reclamation of wasteland and unused land (Article 9). Although limited to the use of land for raw materials for construction, this Law also requires that users adopt appropriate technology measures to exploit and use the land suitably and economically, and to avoid damage to productive land and the environment (Article 155). In addition, land use plans must consider scientific and technological advancements regarding land use (Articles 39 and 40). Although the text does not state what such policies are, Article 144 also tasks the state with adopting policies for infrastructure and technology development in areas planned for high-productivity and high-quality rice cultivation.

**Legislation may provide legal foundations for the use of technology, and such technology may affect regulatory goals and outcomes, as well as offer data to enable evidence-based decision-making.** Technology, for example, through geographical information systems (GIS), can support decision-making for spatial planning purposes. Countries are increasingly developing national spatial data infrastructure that compiles a range of spatial information for the purposes of spatial planning. For example, the Bahamas *Spatial Data Infrastructure Act, 2014 (No. 9 of 2014)* concerns the system of geospatial data collection

and storage, and establishes the country's National Geographic Information Systems Centre, the Geospatial Advisory Council and Spatial Data Infrastructure Program. The Bahamas Spatial Data Infrastructure (BSDI), which is the technical institutional and policy framework for accessing, exchange and using spatial information, is to be used to guide community environmental policies and any activities which may impact the environment.

**In some developed countries, subsidies and other fiscal incentives may create preferences for certain types of practices or methodologies of land management by individual or community owners.** Examples could be, depending on the context, conservation agriculture, agroforestry and integrated crop livestock systems, and specifics on farm practices for soil fertility improvement, water conservation and irrigation. Other examples at a wider landscape scale can be targeted towards erosion control, water harvesting, and grazing management in rangelands. Specific practices relating to soil management, such as avoiding soil disturbance and protecting soil structure, organic cover, and overall function (further examined in Section 3.4) can be found in soil-specific legislation. However, it should be recalled that the recommended practices, which are technical in nature, may not necessarily feature in legislation; in fact, such details on practices that may change frequently are not recommended for primary legislation (which is the main focus of this Study). As noted in Chapter 2, the level of detail (and the frequency of updates) render technical guidance on practices and technologies best placed in lower level instruments that can be frequently amended to keep pace with scientific developments.

**The concept of 'user-driven' means that land users such as farmers, herders and fishers, as well as those who use forest or mineral resources or use land for industry, recreation or tourism, must be considered in legislation.** Land legislation may refer to rules to be complied with by land users, to ensure that collective decisions are respected. Ecuador's *Framework Law of Rural Lands and Ancestral Territories (No. 711 of 2016)* links the right to land ownership with the obligation to comply with social and environmental requirements,

and offers an illustration of how the different pillars of sustainable development are recognized and balanced. Article 10, for example, sets out various state initiatives to incentivize rural landowners towards sustainable agricultural production and food sovereignty. As an example, entrepreneurship programmes and projects that better integrate small and medium-sized producers in supply chains and supply programmes. The Law establishes a preferential regime of incentives in favour of rural family farming, small and medium agricultural producers and peasant organizations, communes, communities, and indigenous peoples. The social dimension of rural land ownership is evidenced through agricultural production systems that are sustainable, guarantee food sovereignty, the generation of family work or employment, improved agro-industry and increased agricultural export (Article 11). Specifically, the social dimension of land means recognition that use or ownership rights do not affect other individual or collective rights. Article 12 sets out the environmental dimension of rural land ownership, which is sustainable development and the rational use of soil, the conservation of agrobiodiversity and the protection of watersheds. Production systems are expected to optimize the biophysical characteristics of the natural environment. Like the social dimension, use or ownership rights must not affect other individual or collective rights. Similarly, Article 170 of Viet Nam's *Land Law (No. 45/2013/QH13)* sets out the obligation of land users, primarily that of using the land for the purposes in which it was intended and registered, including requirements relating to the ground below the surface and the space above the land. Users are required to take measures to protect the land, to comply with environmental protection rules and generally, not to cause damage to the rights and interests of other land users. In some countries, user requirements are specific to the type of land (e.g. farmland or wetlands).

## 3.3. Land tenure

Land is a source of food security, cultural identity, income and shelter, but also a source of political tension and competition for access to resources. This importance of land to sustainable development is predicated upon secure tenure rights and equitable access to land; also, secure tenure

rights contribute to sustainable land management and sustainable use of associated natural resources.

**Tenure essentially refers to the way land is held by individuals, families, communities, corporate entities or other persons and for this reason, tenure arrangements can affect practices that contribute to or work against sustainable land management.** Tenure systems determine who can use which resources for how long and under what conditions (FAO, ed., 2012). Tenure systems that are often complex and susceptible to weak governance, may involve varying challenges associated with food security, environmental degradation and climate change, the extraction of resources and the productive uses of land. Secure access to land and secure tenure rights improve livelihood opportunities, wealth creation and support poverty alleviation (FAO, 2008a). Clear and secure tenure arrangements, buttressed by strong governance, can contribute to sustainable social and economic development through the inclusion of traditionally marginalized groups, enabling food security and poverty eradication, supporting sustainable livelihoods, enabling social stability and housing, and fostering environmental protection. It follows that governance of land tenure is inextricably linked with access to and management of other natural resources, such as water or mineral resources. Section 2.1.1. of Chapter 2 highlights the *Voluntary Guidelines on the Responsible Governance of Tenure of Land, Fisheries and Forests in the Context of National Food Security* as comprehensive guidance in this area.

**Legislation should establish a framework for the transparent administration of tenure rights.** In looking at land tenure arrangements, the principal factors to consider are: the degree to which rights are recognized; the level of protection against others; the duration of rights; and whether land rights can be bequeathed (Mitchell, 2011). A detailed examination of definitions and categories of the full range of tenure rights requires a separate publication devoted entirely to these issues and how to address them in legislation, and indeed, these are available elsewhere. Box 3.1 offers a summary of elements that should feature in national legislation for the recognition and protection of tenure rights. Some of these elements are further addressed below.

**Box 3.1**
**Key requirements in national legislation for security of land tenure**

The following list offers key elements to enable the recognition and protection of legitimate tenure rights by national legislation:

- Clearly define and publicize all categories of legitimate tenure rights;
- Recognize and protect the full range of legitimate tenure rights within a country;
- Make legitimate customary tenure rights equal in weight and stature to "formal", certified rights;
- Establish administrative processes that are simple, clear, streamlined, local and easy for rural communities to use to claim and defend their tenure rights;
- Explicitly protect women's tenure rights and establish women's right to hold or own tenure rights;
- Where tenure is shared or held in common, vest formal tenure rights in all community members as a coherent group;
- Explicitly protect communal areas, customary rights of way and other shared resource use and access rights;
- Balance protection for customary and indigenous tenure rights with provisions for gender equality and respect for human rights; and
- Ensure consultations before the state allocates tenure rights for investment ventures, infrastructure projects or conservation purposes. This process should include mechanisms to ensure that consultations are participatory and include a significant majority of a community's residents; occur in the local language and allow all community members to ask as many questions as they would like;involve disclosure of all relevant information about the planned investment or project; allow communities an authentic opportunity to reject the proposed project; are duly documented, the consultation outcomes recorded and result in a binding agreement between indigenous peoples or local communities, the investor and, if appropriate, the relevant government.

*Sources:* FAO, ed., 2012; FAO, 2016b.

### 3.3.1. Recognition of sustainable resources management in connection with land tenure

**Tenure rights associated with land are inextricably linked with the access to natural resources associated with the land, and sustainable management of such resources.** Rights to land are often framed as a "bundle of rights" owing to: the overlapping rights to use the land (e.g. for grazing and cropping, or to access water or other resources); control and development rights (rights on how the land can be used); the right to occupy; the right to withdraw benefits from the land; to prevent the access of others; and transfer rights (to sell, lease or bequeath the land) (Mitchell, 2011). Rights can be shared, seasonal or can be in the form of other temporary access rights. Access to land and resources such as fisheries, forestry or mineral resources is regulated through systems of land tenure which establish who can use which resources, for how long, and under what conditions (FAO, ed., 2012). It therefore follows that it is important for the productive use of land and conservation of its resources that security of tenure is afforded to those who use, manage and are in possession of the land. Finally, one of the critical requirements for payment schemes for environmental benefits is the existence of clear land tenure rules, implementation and enforcement. Payments for Ecosystem Services schemes explored in later chapters in this Study are predicated on transparent and clear tenure of land among other aspects.

**Legislation should accommodate overlapping rights over the same resource, for example, granting different types of use in different seasons; a piece of land may offer multiple uses and users** (FAO, 2016b). This may include rights of way and other easements, for example, to shared water points, or to forests, or to grazing lands. Angola's *Decree approving the General Regulation for Land Concession (No. 58 of 2007)* stipulates that community rural land is that which is occupied and used by families in local rural communities, in accordance with custom or law, and includes supplementary areas for shifting cultivation, transhumance corridors for access of livestock to water sources, and pasture and crossings, whether or not subject to the easement regimes.

**Legislation also creates rules, requirements and incentives for landowners relating to environmental functions and conservation.** The Australian (New South Wales) *Local Land Services Act (No. 51 of 2013)* offers financial assistance and incentives to landholders, including, but not limited to, incentives that promote land and biodiversity conservation. The list of land services includes: agricultural production; biosecurity, and plant health and animal health emergencies; animal welfare; chemical residue prevention; natural resources management and planning; travelling stock and watering places; and the control and movement of stock. The competent authority is tasked with administering, delivering or funding local land services, developing governance arrangements for their delivery, preparing a state strategic plan, and levy rates and contributions or land. India's (Jammu and Kashmir) *Prohibition on Conversion of Agricultural Land for Non-Agricultural Purposes Act (No. 16 of 2010)* prohibits the conversion of agricultural land for non-agricultural purposes without permission issued by the competent authority (Section 6). Similarly transfers of land through sales, lease, or other right cannot be made for such land to a non-agriculturalist (Section 12). Transfers of land, other than irrigated land, can be made to landless labourers, village artisans or other persons to construct a dwelling place or shop, provided size parameters are not exceeded (Section 12). Kenya's *Agriculture (Farm Forestry) Rules (Cap. 318, 2009)* promote farm forestry for the purposes of water, soil and biodiversity conservation, carbon sequestration and other environmental services. Among the rules of this text is the maintenance of a 10 percent tree cover on holdings, protection of land prone to degradation and seedling production plans.

**Legislative provisions recognize the duty of local communities and indigenous peoples to sustainably manage land and related natural resources, and the obligations of third parties to share the benefits from exploitation of land that has been managed by local communities.** Canada's *First Nations Land Management Act (S.C. 1999, c. 24, as amended in 2017)* – see Section 3.2.4 for further details – stipulates that standards of environmental protection established by First Nations must be equivalent to other statutory environmental laws in

the state (Section 21). Furthermore, First Nation laws on environmental assessment must establish regimes that are applicable to all projects that are taken on First Nation land that are approved, regulated, funded or undertaken by the First Nation. Mexico's (Jalisco) *Law No. 21746/LVII/06 on the rights and development of indigenous peoples and communities (2006)* states programmes for the sustainable use of natural resources by indigenous communities will be financed through regional funds or trusts. Mozambique's *Resolution approving the Statute of the Community Land Initiative Foundation (iTC-F) (No. 35 of 2016)* establishes a body for the participation of communities in the benefits arising from the exploitation of land and other natural resources and for the settlement of disputes. The iTC-F is designed to support the development of local, rural and urban communities, based on sustainable land and natural resources use, and the equitable and inclusive sharing of benefits arising from their exploitation. This body is tasked with supporting processes that enable sustainable use by compliance with environmental measures, and encouraging investment by the communities themselves (including economic partnerships between local communities). More broadly, Mozambique's *Decree creating the Consulting Forum on Land (No. 42 of 2010)* establishes the Forum as an organ for consultation regarding access to and use of land. The platform enables inclusive debate, allows for the bringing together of various public stakeholders, civil society, interest groups, local communities and institutions, with mandates and interests in land management and administration. The Forum's guiding principles are participation in such manner as to reflect the concerns of society, inclusiveness and representativeness, respect for diversity, social responsibility and coordination among various stakeholders. The responsibility for coordination of the broad consultative group is charged to the ministry responsible for land (Article 3). The group comprises public stakeholders responsible for: agriculture, state administration, tourism, mineral resources, planning, environment, women and social action, finance, industry and commerce, energy, fisheries, education, culture, local authorities, professional land surveyors and engineers and other stakeholders with an interest in its discussions. This body is also tasked with rendering opinions on the principles of zoning and spatial planning to direct investment in rural

areas and, advising on inter-sectoral coordination mechanisms for the adoption of a more integrated and efficient system of land management and administration.

### 3.3.2. Addressing gender-based discrimination and challenges

**The positive impacts of gender-equitable land tenure for poverty reduction, food security and rural development have been recognized in different regions around the world, yet discrimination, either in customary or statutory law, or in practice, persists.** Women produce a majority of food in developing countries, and through labour mobility, divorce or death, an increasing number of women are heads of households; yet women have insecure tenure rights. In matrilineal societies, access to land is granted via female descendants and therefore male spouses and children may be disadvantaged, however even in these contexts, decision-making for allocation of land rights and land tenure is still generally made by men. In some countries, while statutory land law is gender-equitable, with clear rights for women, customary law or traditions may not be. In many cases, rural marriages are not registered, making the union beyond the protections of statutory inheritance laws. Some laws allow the application of customary laws, but only in so far as they are compatible with Constitutional provisions on gender equity. Notwithstanding, the de facto situation of discrimination (beyond the scope of this Study) still persists owing to the fact that many persons subject to customary laws are not aware of their statutory rights and would in any event find them difficult to enforce. The legal intricacies that surround men and women's access to land and indicators of positive and supportive elements in the regulatory framework have been captured by FAO in a Legal Assessment Tool (LAT) for Gender Equitable Land Tenure (see Box 3.2). Women should be aware of and know their rights.

**Box 3.2**
**FAO Legal Assessment Tool (LAT) for gender-equitable land tenure**

The LAT supports countries in identifying strengths, weaknesses and opportunities in the legal framework for gender-equitable land tenure. The LAT can be applied to identify the sources of gender differentiation in legislation and to determine the appropriate course of action for reform. It is useful in providing an overall view of practices on the ground of land tenure to enable regulators to focus initiatives in specific areas. The LAT contains 30 legal indicators categorized under the following clusters:

1. Ratification of human rights instruments.
2. Elimination of gender-based discrimination in the Constitution.
3. Recognition of women's legal capacity.
4. Gender equality of rights with respect to nationality.
5. Gender equality in property rights.
6. Gender equality in inheritance.
7. Gender-equitable implementation, dispute mechanisms and access to justice.
8. Women's participation in national and local institutions enforcing land legislation.

*Source:* FAO, 2019a.

Indicator 5.a.2 for SDG 5 (see Chapter 1, Section 1.2.2 for more on the SDGs) is a *de jure* (legal) indicator, as follows 'Proportion of countries where the legal framework (including customary law) guarantees women's equal rights to land ownership and/or control'. This indicator measures progress towards its corresponding Target 5.a.2, which measures the extent of women's disadvantages in ownership of and rights to land, as well as equal legal rights to land ownership. In combination, this Indicator and Target provide a basis for policy measures aimed at securing equal opportunities and access to rights and resources,

identified through the use of six proxies, which can be used to guide gender-specific interventions in legislation. These are: 1) encouraging joint registration of land, compulsory or encouraged, through economic incentives; 2) the requirement of spousal consent for land transactions (which is used to protect widows and orphans); 3) equal inheritance rights irrespective of gender; 4) allocating financial resources to support women's ownership and control over land; 5) the protection of women's land rights in customary arrangements; and 6) women's participation in land management and administration institutions.

**Legislation should explicitly protect women's tenure rights. Women should be able to hold titles in their own names where this is available for men.** Malawi's *Customary Land Act (No. 19 of 2016)* directs decision-making authorities to "treat the rights of women and other vulnerable groups to occupy or use or have an interest in land, not less favourably than the rights of men". Kenya's *Community Land Act (No. 27 of 2016)* makes a requirement of registered communities making decisions on customary rights of occupancy, to have regard to:

> [...] equality of all persons including (i) equal treatment of applications for women and men; and (ii) non-discrimination of any person on the basis of gender, disability, minority, culture or marital status (Section 14(4)(c)).

In the *Community Land Regulations (2017)* issued under this Act, the land management committee is to ensure benefit-sharing agreements guarantee sustainable use of land and equitable distribution of benefits, including minority groups, women and persons with disabilities. Ethiopia's (Southern Nations, Nationalities and Peoples) *Rural Land Administration and Utilization Proclamation (No. 110 of 2007)* also specifically recognizes the right of women and rural youth who wish to engage in agriculture to use rural land. Female household heads have full right of use of their land holdings. This Proclamation also asserts the equal rights of husbands and wives in use of their common land holdings, without loss of land holding upon marriage if such holding was held individually previously (Article 5). The preamble of this statute recognizes that ensuring women's land holding right is necessary for agricultural productivity and to enable environmental protection.

### 3.3.3. Protecting marginalized or vulnerable groups

**Land legislation should protect the rights of vulnerable groups including, for example, youth or those displaced as a result of a natural disaster.** Persons with informal or insecure seasonal land rights and other use rights that are impacted by natural disasters should not be arbitrarily deprived of access to the land; many persons with such rights may not have records to prove their rights (Mitchell, 2011). Liberia's *Land Commission Act (No. 767 of 2008)* requires the competent authority to consider and make recommendations regarding the equitable access to, and security of, tenure in land for youth and other categories of persons who may be disadvantaged in terms of land tenure. El Salvador's *Legislative Decree – Special Law for legalization of property rights and regularization of possession to people of limited economic resources and people affected by natural phenomena (No. 79 of 2012)* establishes a special legal regime to swiftly make official the possession of property rights, and therefore legal certainty and clarity, to persons of limited economic resources and people affected by natural disasters. Any person in possession of rural property that meets prescribed requirements may enter his or her title in the register following the procedure set out in the law.

### 3.3.4. Customary and community land

**Customary rights refer to the rules, institutions and practices, governing a particular resource that have over time, gained social legitimacy and become embedded in the fabric of, and are adhered to by, a particular community** (FAO, 2016b). Tenure regimes are typified by collective rights over natural resources that reflect both individual and community identity, tradition and spirituality. Upwards of 2 billion people globally access resources through customary tenure regimes according to (USAID, 2011). Customary tenure regimes represent many different land types and ecosystems, economies, cultures and social relations, and even within a single country, the tenure systems are often complex and range widely. Communities that form part of these systems rely on access to and control over these resources for food security and livelihoods. Also, the traditional knowledge of the groups

under customary tenure systems play an important role in determining land management. However, these traditional systems are under threat, owing to, among other reasons, the loss of access to land as a result of increasing competition (e.g. in favour of carbon credit schemes, mineral or oil extraction and food production) (FAO and ITPS, 2015a). Land registration that is transparent and participatory, and systems that provide security of tenure, with clear and inalienable rights over land and natural resources, are therefore critical to support the livelihoods and ways of life of communities that live under customary systems.

Prior to the discussion on customary tenure rights, it should be noted that where one or more customary legal system is found alongside the formal state legal system, a situation of legal pluralism exists. This concurrence may result in the use of different and conflicting rules and legal paradigms to decide on situations of dispute or conflict. Certain actors often prefer one forum over the other; urban investors may seek formal court orders or stamped government certificates as proof of their land rights, while the rural poor may feel their land rights are best protected by the local customary system. This may create uncertainty within both systems.

### a. Constitutional provisions

**Constitutional recognition is the strongest protection of any right, and many jurisdictions reference land or property rights to varying degrees in such instruments.** Constitutions may grant ownership of all the land to the state or allow for a regime of both private and state ownership. Constitutions may also recognize customary tenure as a legal form of tenure. It should be emphasized that customary rights may be de facto legitimate, or may be unchallenged in the community or country, but may not necessarily be legally recognized by law or by the Constitution.

Fiji's *Constitution (2013)* protects customary rights over the lands of specifically named indigenous groups, and protects such lands from alienation, except to the state under the strictures of Article 27, which sets out the conditions for compulsory acquisitions for public purposes. Section 29 protects land rights in leasehold or freehold more broadly.

Samoa's *Constitution (as last amended in 2013)* renders it unlawful to make any alienation or disposition of customary land or of any interest in customary land. No interest in customary land is capable of being taken for the payment of the debts of any person. The Constitution empowers Parliament to grant leases over customary land or interests in customary land, and may also acquire such land for public purposes. Kenya's *Constitution (2010)* contains extensive provisions on land and property. Section 66 grants the Government to carry out land use planning and tasks Parliament with promulgating legislation to ensure that investments in property benefit local communities and their economies. Article 63 establishes community lands as:

> Land lawfully registered in the name of group representatives under the provisions of any law; land lawfully transferred to a specific community by any process of law; any other land declared to be community land by an Act of Parliament; and land that is lawfully held, managed or used by specific communities as community forests, grazing areas or shrines; ancestral lands and lands traditionally occupied by hunter-gatherer communities; or lawfully held as trust land by the county governments, but not including any public land held in trust by the county government.

The Constitution requires that "community land shall vest in and be held by communities identified on the basis of ethnicity, culture or similar community of interest."

Article 68 contains instructions to Parliament to revise sectoral land use laws in accordance with the principles of land policy (Article 60) that include: (a) equitable access to land; (b) security of land rights; (c) sustainable and productive management of land resources; (d) transparent and cost-effective administration of land; (e) sound conservation and protection of ecologically sensitive areas; (f) elimination of gender discrimination in law, customs and practices related to land and property in land; and (g) encouragement of communities to settle land disputes through recognized local community initiatives consistent with this Constitution. Ecuador's *Constitution (No. 449 of 2008)* espouses redistributive policies in Article 281 to allow access of farmers to land, water and other productive resources. Article 282 empowers the state to regulate the use and access to land that "has social and environmental

functions". Article 57 contains an explicit protection of the lands of indigenous communities, as being inalienable, immune from seizure and free from taxes. Communities have the right to maintain possession of their ancestral lands, and to use and conserve the natural resources found on their lands. The Constitution also enshrines the right of free, prior and informed consultation, regarding plans for the use or exploitation of non-renewable resources found on their lands and that may affect them. This provision also guarantees their right to share in the benefits of such exploitation and to receive compensation for damages. The state guarantees recognition of community rights under conditions of equality and equity between women and men.

### b. Legislation

The emphasis in this section on reconciling statutory (written or formal rules on tenure), and the varying ways in which this is done, should not be taken to mean that formal tenure systems are superior or desirable to informal, local, customary or indigenous arrangements. Customary systems can be effective for their purpose (FAO, 2016b). What is proposed here is that national legislation recognize the full range of customary tenure rights and paradigms within a country in a manner that allows for flexibility and adaptability over time. The specific ways in which this is done will vary from country to country, and it should be emphasized here that codification may be the best option, although that may be an option for only some countries.

**There is a range of examples of statutory recognition of customary rules and arrangements around the world, varying in scope, wording, strength and effect.** The Plurinational State of Bolivia's Law *Making the 46 Articles of the United Nations Declaration on the Human Rights of Indigenous Peoples as Law (No. 3 760 of 2007)* directly incorporates, as the title suggests the provisions of the UNDRIP – see Chapter 2 for an excerpt of key provisions of UNDRIP relating to land and natural resources. The Plurinational State of Bolivia also makes specific provisions for indigenous groups in certain areas and states where tenure is held in common, rights vest in the entire community as a coherent group. *Law protecting the indigenous territory and Isiboro*

*Secure – Tipnis National Park (No. 180 of 2011)* declares the prescribed area as:

> Sociocultural and natural patrimony, a zone of ecological preservation, of historical significance and the ancestral lands of Chimán, Yuracaré and Mojeño-Trinitario indigenous peoples … whose protection and conservation are of primary interest of the Plurinational State of Bolivia.

This statute declares the territory as intangible (indivisible, imprescriptible, inalienable and an irreversibly protected area) and thus, any settlements and de facto occupations by persons not belonging to those groups is prohibited. The status of protected area is a guarantee of conservation, sustainability and integrity of life systems, the functionality of ecological cycles and natural processes in harmonious coexistence with the Earth.

The Mexican (Jalisco) *Law Number 21746/LVII/06 on the rights and development of indigenous peoples and communities (2006)* guarantees that indigenous peoples may benefit for any of the forms of land tenure: *ejidal*, communal or private (Article 12). Where works or projects affect the local community, the relevant *ejidal*, communal or traditional authorities must be given an opportunity to make a representation on the matter. The state and federal authorities are to preserve the unity of the territories consisting of *ejidal* or communal lands (Article 29). Article 31 states that the modalities of transmission of the land rights of indigenous peoples shall be recognized and respected by the administrative and judicial authorities, and such communities are to have access to the natural resources of their lands as guaranteed by Article 27 of the Mexican Constitution.

Angola's *Decree approving the General Regulation for Land Concession (No. 58 of 2007)* stipulates that community rural land used by local communities may enjoy the rights of occupation, possession, use and enjoyment of communal rural lands according to custom, but within the limits of legislation. The official demarcation of rural community land requires hearings that involve local communities and the institutions of traditional power. The text contains an Annex that sets out the form of

the title. Article 19 makes clear that community rural land, subject to the common domain scheme, may not be alienated.

**The tension between customary laws and fundamental principles in the Constitution or other legal instruments, for example, with regard to gender equality or other forms of discrimination, can often be addressed in legislation.** In some jurisdictions customary rules are given primacy in the specific geographical area in which they are prevalent. For example, under Nigeria's (Federal Capital Territory) *Customary Court Act (No. 8 of 2007)*, under Article 18, customary law shall be deemed to be binding where such person: is an indigenous person where the customary law is in force; is in a location where such law is applicable; makes a customary law of inheritance claim in respect of the property; or agrees to be bound by customary law. Article 17 establishes that for matters arising from inheritance, the applicable customary law shall be that which governed the deceased. However, a customary court established under the Act is charged with administering the foregoing matters in so far as such law is not "repugnant to natural justice, equity and good conscience nor incompatible either directly or by necessary implication with any written law for the time being in force." The South African *Reform of Customary Law of Succession and Regulation of Related Matters Act (No. 11 of 2009)* establishes as its objective, the modification of the customary laws of succession, so as to provide for the devolution of certain property in terms of the law of intestate succession; and to clarify laws of succession and property with regard to persons subject to customary law. This statute makes a direct reference to the provisions of the *Intestate Succession Act (1987)* that will apply, and prevail in specific instances outlined in the text.

**Legislation should legally recognize the legitimate tenure rights and the rights of communities that use land and related resources as commons.** Commons are subject to a range of flexible bundles of tenure rights, held permanently or temporarily by different rights holders, with fixed or fluid boundaries, that can be renegotiated, modified, rescinded and agreed upon by the community (FAO, 2016c). Commons are viable if they are governed collectively; and where tenure rights are secure, these arrangements have been recognized as providing incentives for

sustainable use of the related natural resources (FAO, 2016c). Legislation may allow a responsibility and power be accorded to local structures for governance of the commons (subject to conditions such as inclusivity, accountability and sustainable management). This includes empowering marginalized and vulnerable groups within those communities. Procedural rules would have to accommodate the diversity and flexibility of rights allocations to commons. The state would therefore focus its support on ensuring governance is directed towards environmental sustainability and economic viability. Importantly, any partnerships or contracts with investors should not damage local livelihoods, infringe on tenure rights to commons or violate related rights – for a related discussion see Section 3.2.8.

**Legislation may recognize tenure rights of a community vested in the entire group, buttressed through the registration of title in the entire community, and the creation of a fiduciary relationship between tenure management bodies and community members.** Malawi's *Customary Land Act (No. 19 of 2016)*, defines customary land as that which is within the boundaries of a Traditional Land Management Area (other than government or reserved land), and that is designated under the *Land Act* or any written law or administrative procedure, or any land agreed upon by a land committee claiming jurisdiction over that land. The responsible authority is tasked with issuing a certificate of customary land in the name of a Traditional Authority, in the prescribed form, for every Traditional Land Management Area. Any person who is aggrieved by a determination of a land committee may appeal to a customary land tribunal established for each Traditional Land Management Area. Such land committee, whose key role is to manage the land within its area in a trustee capacity, is to be comprised of a group village headman, and six other local community members, three of which should be women. The land committee is compelled to act in accordance with the principle of sustainable development, as pertains to the relationship between land use, natural resources and the environment. This Act also goes further in requiring the land committee to "consult and take into account the view of" public authorities. A person who is aggrieved by a decision of a customary land tribunal may appeal

to a district land tribunal, which if not resolved shall be forwarded to the Central Land Board. Canada's *First Nations Land Management Act (S.C. 1999, c. 24, as amended in 2017)*, defines 'First Nation' to mean a band of groups named in the schedule, and states that land belonging to such groups means "reserve land to which a land code applies and includes all the interests or rights in, and resources of, the land that are within the legislative authority of Parliament". The *Framework Agreement on First Nation Land Management (Framework Agreement) (1996)* referenced in the text, explicitly states that First Nations have an inherent right to manage their reserve lands and resources, providing these indigenous groups with the option to establish their own land codes for governance of their resources. The statute reiterates that First Nations that wish to establish a land management system, may adopt a land code applicable to all land in a reserve of that First Nation, and such code is to include *inter alia*: the general rules applicable to the use and occupancy (including under leases and licences, etc.); the rules and procedures with regard to revenue from natural resources from First Nation land (and related accountability requirements); a community consultation process for the development of general rules for the use, occupation and possession of First Nation land and the division of interests or rights in First Nation land; and a mechanism for dispute resolution. The Act also sets out other management aspects relating to the land code, eligibility to vote, legal capacity, and powers to manage. Guatemala's *Regulation for recognition and declaration of communal lands implementing Decree No. 41-2005 – Law on the Registry of Cadastral Information (2008)* sets out the manner in which communal lands are recognized and registered in the cadastre. The requirements for lands to be registered as communal, for farming or indigenous communities include: current possession by farming or indigenous community, and special administration of that land. For farming groups such administration is based on solidarity, cooperation and common needs and interests, and for indigenous groups the administration is based on cultural identity and customary rules through collective memory and reiterative use. For indigenous communities, historical membership and the exercise of rights of property including possession from time in memoriam, is required. In the stages of registration, the rights of effective participation and the opportunity to

defend their rights is guaranteed to both groups, through representation. Vanuatu's *Custom Land Management (No. 33 of 2013, as amended in 2014)* "formalizes the recognition of customary" institutions (*nakamals*) and custom area land tribunals to determine the rules regarding the use and ownership of land. The Act establishes that the final decisions of such customary institutions, become recorded interests in land which are "binding in law and are not subject to appeal to, or judicial review by, any court of law" (Article 1).

Box 3.3 highlights seven key considerations extracted from *Statutory recognition of customary land rights in Africa: an investigation into best practices for lawmaking and implementation* (FAO, 2010a), which demonstrates the features of law that seeks to successfully harmonize statutory and customary land rights. These recommendations encourage the integration of statutory and customary legal systems in such manner as enables strengthening of tenure security and ensures the rights and protection of rural communities.

**Box 3.3**
**Seven key features of legislation that harmonizes statutory and customary land rights**

1. Flexibly allow for the full range of customs within a nation to be expressed and practiced while implementing restrictions that impose basic human rights standards on customary practices, protect against intra-community discrimination, and ensure alignment with the national constitution.
2. Create local land administration and management structures that: come out of – and look much like – existing local and customary land management structures; are easily established; are low cost both to the state and for users; are highly accessible; and leverage local individuals' intimate knowledge of local conditions.
3. Establish administrative processes and dispute resolution mechanisms that are simple, clear, streamlined, local, and easy for rural communities to use to claim, prove and protect their land rights.
4. Establish appropriate checks and balances between customary/local leadership and state officials, create new, supervisory roles for land administrators, and ensure direct democracy and downward accountability to the people.
5. Include accessible, pragmatic and appropriate mechanisms to safeguard against intra-community discrimination against women, widows and minority groups.
6. Protect community land claims and create real tenure security while allowing for investment in rural areas, ensuring that all development will be sustainable, integrated, and beneficial for local communities.
7. Establish good governance in land administration by: creating appropriate mechanisms to ensure the law's enforcement; penalizing state officials who are contravening the law's mandates; and setting up dispute resolution mechanisms that allow for appeal of customary, community-level decisions up into the national justice system.

*Extracted from:* FAO, 2010a.

### 3.3.5. Pastoralist land rights

The FAO estimates approximately 200 million pastoralists utilize rangelands that cover a third of the world's land surface (FAO, 2016d). The use of rangelands for livestock production can be clustered according to species, geography and ecology, and there are differences in the systems used in drylands in African regions, for example, and those found in Australia and the United States of America, that are characterized by fenced ranges and unambiguous tenure (FAO, 2001).

**In many regions, particularly in Africa, pastoralism is under threat from various sources and legislation has responded with solutions.** Some of the challenges include blocked migration routes and water points, loss of grazing land, the encroachment of farming into the best grazing areas, a lack of services such as schools and health care, and the possibility of violence where there are tensions over land rights (FAO, 2016d). The United Republic of Tanzania's *Grazing-land and Animal Feed Resources Act (No. 13 of 2010)* requires grazing lands to be demarcated under land planning legislation (Section 16), and preserves the right of way for stock-driving for purposes of providing access to water, dipping, marketing facilities and other services that are not within the grazing-land. Lands are to be set aside for grazing and can be communally or privately owned by livestock keepers. The authorities are required to prohibit, restrict, limit or control entry into grazing land for purposes of cultivation, mining, establishment of wildlife protected areas or any other use other than livestock keeping. Legislation should protect persons undertaking livestock rearing or farming, and related conservation activities and some countries forbid the redistribution (reallocation) of farmer or pastoralist land holdings in most cases. Where legislation makes proposals regarding redistribution, mechanisms should accompany these requirements to ensure that beneficiaries can have appropriate livelihoods and standards of living from the land and the associated resources.

**Mobility makes pastoralism one of the most resilient forms of agriculture given that it produces food in the most dry, cold, hot or mountainous regions.** The Niger's *Ordinance on pastoralism*

*(No. 29 of 2010*) stipulates that mobility is a fundamental right of pastoralists, nomadic and transhumant pastoralists (Article 3). Mobility is recognized as a rational and sustainable way of exploiting pastoral resources. Any appropriation of the pastoral area that is in the public domain is prohibited (Article 5). Land intended for the route and passage of cattle is reserved. Mobility is to be exercised in accordance with statutory and customary laws. Rural concessions that hinder the mobility of pastoralists and their herds as well as their free access to pastoral resources are prohibited. Generally speaking, legislation should incorporate provisions that seek to increase the resilience of pastoralism systems through disaster risk reduction management strategies and early warning systems. Contingency plans for dealing with uncertain climatic conditions or other climate risks such as droughts and floods may also be considered.

**Legislation may recognize the role of pastoralists in environmental protection and biodiversity conservation, but should also ensure that there are mechanisms in place to prevent degradation as a result of grazing practices.** Pastoralists use and preserve livestock breeds that are adapted to the environment. Grazing provides ecosystem services, fertilization of soil and carbon sequestration. Legislation may establish mechanisms for monitoring of pastoral land so that its renewable resources are maintained and its yield sustained, and impose restrictions or prohibitions to enable the rehabilitation of the land. The United Republic of Tanzania's *Grazing-land and Animal Feed Resources Act (No. 13 of 2010)* describes developments on grazing land to include vegetation management to stimulate the growth of plants, livestock management and marketing infrastructure and environmental conservation and water resources protection, to be carried out in accordance with sustainable management principles (Section 18). The authorities are to collect and analyse trends, conditions and other factors affecting use of grazing lands to enhance sustainability and productivity of the land (Section 19). The Niger's *Ordinance on pastoralism (No. 29 of 2010)* sets out the duty of pastoralists to preserve the environment and to monitor and control their animals (Article 4). The state is to use environmental and social impact assessments as well as environmental and social management plans to manage grazing areas.

**Pastoralist communities are often marginalized and may typically be excluded from making the decisions that affect them.** The Niger's *Ordinance on pastoralism (No. 29 of 2010*) establishes that pastoralists are to be represented by persons they select, in decision-making bodies concerning natural resources management. The settlement of rural conflicts is brought before joint conciliation commissions sitting at the level of villages, tribes, groups, provinces and other units presided over by the traditional chief of the area.

### 3.3.6. Registration to protect rights and provide legal security

Rights of usufruct or ownership rights are often set out in a framework land law, underpinned by regulations that may detail different types of use (or provisions for enforcement), or in primary legislation that addresses aspects such as land planning, land registration and titling, etc.

**Legislation on land titles and registration should espouse good practices in customer service and registry operations and provide effective and efficient complaints mechanisms.** The *Land Title Registration Act (No. 51 of 2011)* of Bermuda establishes the Land Title Registry Office, and establishes contents of land registers, such as a description of the land with a map establishing geographic boundaries, any appurtenances, information on the proprietorship, and any specifics with regard to encumbrances. The statute establishes the grounds for which titles must be registered and sets out different rules for different types of ownership (tenancies in common, rights subject to a mortgage, etc.). Namibia's *Flexible Land Tenure Act (No. 4 of 2012)* is established specifically to create alternative forms of land title that are simpler and cheaper to administer than existing forms of land title; and also, to provide title security to those who live in informal settlements or that are provided low-income housing. It seeks to economically empower the target persons by way of the rights granted. Under Section 10, a person that has land hold title rights has the same rights as an owner under common law, and has an undivided share in the common property, irrespective of the size of the plot. The Act identifies the transactions that must be performed by registration in the land register in order to be valid. It offers preliminary steps and other procedural details before

various types of title can be established. Transparency is critical for all aspects of land administration.

Generally, legislation must require records to be indexed so that they can be searched, found and used, and where records are digitized the variety of legal issues should be identified and addressed such as the legal status of digital copies of paper records (FAO, 2017b). Over time, discrepancies may occur between parcel records and geographical reality as the defining landscape or other features of a parcel disappear, and larger parcels are subdivided into smaller ones. The law should offer a simple administrative process to correct this (for example, where the holders of the adjoining parcels are in agreement) (FAO, 2017b). In some jurisdictions, only a judicial decision can alter records, and thus, owners accept what exists on the deed as an alternative to paying the costs of lengthy court cases.

**A related issue is land consolidation, which straddles land planning and land tenure matters. Land consolidation involves exchanges, readjustment or reallocation of land parcels.** While voluntary approaches are recommended, state practice is often to use majority-based approaches, which normally require an increased majority of landowners to be approved. Fragmentation of smallholder parcels may increase production costs associated with farming. However, land consolidation may not be useful where fragmentation provides benefits such as risk reduction or crop diversification. This highlights the need to ensure legislation includes the appropriate safeguards to ensure measures are socially, economically and environmentally sustainable, and gender sensitive (FAO, ed., 2012). Under Thailand's *Agricultural Land Consolidation Act (B.E. 2 558 of 2015)* "land consolidation" means the development of plots of agricultural land:

> To increase production and reduce production cost by consolidating several plots of land in the same area to reorganize the lands, arrange irrigation system, construct roads or transportation routes on farms, level the ground, nourish the soil, plan the production and distribution of agricultural produce, including exchange, transfer, acceptance of assignment of right to land, providing hire-purchase of land and other acts concerning agricultural land consolidation (Section 4).

The Act sets out the responsibilities of various institutions that are involved in such consolidation process, including a committee of representatives from multiple local and province level authorities, and agricultural departments. Relating to the benefits of a water management system, for example, under Section 18 proposals are required to demonstrate the boundaries of the area where agricultural water management is to be made, the water source to be used, the number of agricultural users and type of operation, feasibility considerations and any demonstrated benefit to the local community. Latvia's *Land Management Law (2014)* sets out the principles for land consolidation by first setting out the required process for consolidation (for example, grounds for proposals, assessments, cadastral surveys, funding, etc.). Proposals are to be submitted in conformity with spatial development planning documents and conditions imposed by local laws, as well as which includes the inputs and views of stakeholders.

**In the case of land leasing**, it is important that legislation introduces the concept of monitoring to track the quality and productivity of the land during user turnovers. An understanding of how user activities impact land degradation can be used to guide future activities.

**Governments may also grant free land under social security schemes.** The Russian Federation's (Kostroma) *Regional Law on allotment of plots of land free of charge in ownership to some categories of citizens (No. 668-5-ZKO of 2015, as amended by Regional Law No. 710-5-ZKO of 2015)* provides for free, allotments of public land to some categories of citizens. The categories include: multi-child families (with three or more dependent children); single-parent families; and disabled persons. Land plots are to be granted within the boundaries of municipal district of permanent residence, and are allotted on a one-time basis for the following purposes: individual housing construction; and subsidiary small-holding and family farming. Cuba's *Decree Law on Social Security of Land Usufructs (No. 298 of 2012)* provides another, albeit different, example of a social security scheme connected to land, which caters to land users that cultivate tobacco, coffee and cocoa. This welfare system offers protection to covered persons and family members who work on the land, covering maternity leave, old age, temporary

or permanent total disability and, in case of death, to the beneficiary's family. Family members who work on the land are also included in the registration file of the Land Tenure Registry.

**In some countries, loans are made available to enable the purchase of lands.** The Plurinational State of Bolivia's *Supreme Decree – Policy on access to land and productive development (No. 28 160 of 2005, as amended by Decree No. 795)* aims to establish a national policy of access to land and productive development, as a complementary tool to those established in the *Law of the National Agrarian Reform Service*, in order to benefit communities and associations of indigenous people, peasants and settlers who do not own or have insufficient land. The instrument comprises a land access component (through which loans can be made for the purchase of productive land), a community investments component (which involves a direct financing transfer mechanism for co-financing of investments managed by a public institution) and a technical assistance component. The conditions for qualifying under these assistance schemes are: membership in associations or community organizations; a prescribed annual family income; and other requirements relating to land ownership.

### 3.3.7. Dispute resolution and appeals

The pressure on land resources from competing interests requires legislative provisions on dispute resolution that are clear, and that speak to the prevailing contextual realities of the country. Disputes may occur within or between families, between individuals or communities and private companies or the state (FAO, 2016b). Dispute settlement is an important factor in protecting legitimate tenure rights, and is one of the key functions of the law. Formal court procedures may work alongside customary systems and alternative dispute mechanisms (such as negotiation, mediation, conciliation, early neutral evaluation and expert determination). Customary mechanisms may be formally recognized by the statutory system and the legislation should determine the legal weight of resolutions that emanate from customary dispute settlement bodies. More narrowly, in terms of disputes involving customary rights, legislative provisions in various jurisdictions are fairly similar. What is

critical is that where formal procedures and systems are used, these services are accessible in terms of resources involved (e.g. including the provision of legal aid), languages and procedures used, and proximity to the parties in terms of location (e.g. through mobile services for remote communities). The use of formal and informal justice institutions can work to ease court backlogs, and shorten the time it takes to address and resolve the dispute.

**Land laws often identify the specific competent authority for handling such matters.** In Lesotho, for example, the *Land Administration Authority Act (No. 9 of 2010)* creates the statutory body tasked with land registration and maintaining records regarding all land rights. This body is also responsible for addressing registration and cadastre complaints and disputes pertaining to boundaries, and registry and cadastre information (Section 5). Under the country's *Land Act (No. 8 of 2010)*, land courts are established to deal with disputes, actions and proceedings relating to land. The tasks granted to Kenya's Land Commission under the *National Land Commission Act (No. 5 of 2012)* include applying traditional dispute resolution mechanisms in land conflicts and encouraging alternative dispute resolution mechanisms in land dispute handling and management. The country's *Community Land Act (2016)* prescribes that a registered community may use alternative methods of dispute resolution mechanisms, including traditional ones (Section 39). Members of a registered community can resolve disputes using internal mechanisms set out in community by-laws. The Act further stipulates that a court (or any other dispute resolution body) is to apply the customary law prevailing in the area "in so far as it is not repugnant to justice and morality and inconsistent with the Constitution." Section 40 requires mediation to take in any setting that facilitates negotiation and settlement. The mediator can convene meetings and establish ground rules for the conduct of the parties; and where an agreement is reached, such agreement is to be recorded in writing and signed by the parties. Where a dispute is referred to arbitration, and where the parties fail to agree on the appointment of arbitrators, then the *Arbitration Act (No. 4 of 1995)* applies. In a final instance, parties may refer the matter to court. Djibouti's *Decree establishing the National Early*

*Warning and Reaction Mechanism for Pastoral and Urban Conflicts (CEWERU) (No. 2013-110/PR/DFAIT)* establishes the CEWERU system to collect and verify information on alerts relating to conflicts. The body is tasked with analysing information and developing response strategies and implementing capacity-building programmes for its members and actors concerned with conflict prevention and response.

**Dispute mechanisms for land matters are not exclusively housed in land legislation.** Angola's *Law approving the Conflict Mediation and Conciliation Norm (No. 12/2016)* sets out the norms on mediation and conciliation procedures as alternative dispute resolution mechanisms (for many types of disputes including land). The Law establishes basic principles, such as preserving human dignity and the principles of equality and impartiality, that are to guide dispute settlement processes. The Law also sets out rules constraining the actions and decisions of mediators and private conciliators. Côte d'Ivoire's *Law on the status of kings and traditional chiefs (No. 2014-428 of 2014)* sets out the designation of various heads of various levels: kings, provinces, cantons, tribes and villages and establishes a National Chamber of Kings and Traditional Chiefs comprising the aforementioned chiefs. Among its functions are to initiate mediation missions for the prevention and management of crises and conflicts; and issue an advisory opinion on matters of national interest.

**Legislation also should provide for a system of appeals against determinations that are made by a competent authority.** Malawi's *Customary Land Act (No. 19 of 2016)* states that any person aggrieved by a decision of a land committee has thirty days to appeal to a customary land tribunal (Section 40). The latter has the power to amend an adjudication record and demarcation map, correct errors or direct a land clerk to carry out further investigations. Where an adjudication adversely affects a person not party to the proceedings, the tribunal is required to give that person the opportunity to be heard before making its decision. Further dissatisfaction with the decision of the customary tribunal can enable an applicant to appeal to the District Tribunal of Traditional Authorities. In cases where a local government authority has determined that district adjudication shall be applied to land within a Traditional

Land Management Area, the local government authority shall empower a land clerk to be in charge of and to exercise general supervision and control over the adjudication process. Where a person is aggrieved by a decision of the land clerk, such person may appeal to the Land Tribunal and further to the Central Land Board.

### 3.3.8. Protecting tenure rights in the context of large-scale agricultural investments

Disputes and conflicts arising from large-scale land acquisitions for large-scale agricultural investments has risen in profile in recent years in a number of developing countries. Ensuring land tenure security for the poorest and most marginalized farmers, while balancing productive and sustainable use of land by those with the resources to do so, is a policy balance that must be well reflected in legislation (FAO, 2015a).

Legislation that addresses investment promotion, approval and monitoring involving land may cut across a number of different types of laws (investment, contracts, commercial codes, forestry, agriculture, water, environmental protection, etc.). Certainly, tenure aspects must come into play in considering a conducive framework for foreign or domestic investment.

**Investment projects involving land and related natural resources must be subject to community participation in decision-making and participation in any benefits relating to such investments. Legislation granting land or resource rights should respect existing legitimate tenure rights, and allow for the continuation of livelihoods relating to the resource as well as protecting the environment.** Allowing the participation of the local community, where users are involved in decision-making processes is recommended, so that their priorities are accommodated in the investment design and approval process (FAO, 2015a). Under Kenya's *Land Act (No. 6 of 2012)* Section 12, the Land Commission is to set aside land for investment purposes, and requires that in doing so, this body ensures that the investments in the land benefit local communities and their economies. The Commission is tasked with making specific rules for the allocation of public land

concerning: forms of ownership and access to land under all tenure systems; the procedure and manner of setting aside land for investments; procedures to be followed with respect to auction and disposition of land; and mechanisms of benefit sharing with local communities whose land has been set aside for investment. Furthermore, the country's *Community Land Act (2016)* sets out benefit-sharing agreement requirements in relation to investments in community land (Section 36). Following a free, open and consultative process, an agreement shall be reached which includes: an environmental, social, cultural and economic impact assessment; stakeholder consultations and engagement; continuous monitoring and evaluation of impacts; payments of compensation and royalties; technology transfers and other community benefits. This agreement is to be entered into between the investor and the community (the latter approves by two-thirds of the adult members). A registered community may also make rules relating to land management and administration which may govern how investments are managed on their land, including the terms of any leases granted.

**The specific areas of the country that are targeted for investments should not clash with existing customary rights over such land or resources. The recognition of customary rights, as well as the implementation of gender-neutral inheritance rights may mitigate the risk of investment incentives depriving existing land users of their rights** (FAO, 2015a)**.** Peru's *Legislative Decree for the Simplification of Access to Land for Priority Investment Projects (No. 1 333 of 2017)* seeks to facilitate infrastructure works of national interest, with prioritization for investment determined by the Minister of Economy and Finance and the head of the competent sector. A special unit in the investment promotion agency is responsible for identifying the property rights in areas of prioritized investment projects and the legal status of such rights and the various forms of possession, occupation, and ownership.

**Protecting land rights may require the cooperation of many ministries and non-government actors; and therefore, legislation that establishes clear mandates, accountability, oversight and monitoring is important.** Legislative safeguards to protect certain stakeholder rights from being sacrificed for a seemingly more lucrative

investment centre on transparency may include: impact assessments, community consultations for investments on public land, and explicit restrictions for using the land of persons that are traditionally marginalized. Safeguards are most critical during the approval process; potential investors should register proposals for full review, due diligence is critical, free and informed participation and consultation should be mandatory, and impact assessments should be made widely available (FAO, 2015a).

## 3.4. Spatial planning

**Sustainable land management is the optimal use of land resources in its various forms for the production of goods to meet evolving human needs over time, which include the environmental functions of land resources** (FAO and UNEP, 1999). Land use can cause declines in biodiversity and the overall degradation of soil, water and natural vegetation, or alternatively, land can be used in such manner as is protective of the environment. Sustainable land management comprises the principles, mechanisms and practices that protect the land itself or that enhance the goods and services provided by the ecosystem as a whole. As the interactions between different land components are driven by climate and human activities, sustainable land management is critical to reverse the trend from degradation to sustainability.

**Spatial planning can integrate economic, social and environmental priorities at different scales and for competing uses of natural resources to achieve optimal land uses for evolving human needs (including environmental protection).** Land suitability evaluations are useful for resource potential assessments and also to integrate management options with land uses and socio-economic determinants (FAO, 2017a). Spatial planning should be an inherently participatory, 'people-centred' and cyclical process. It involves land evaluation (an assessment of the resource base), the identification of needs and challenges, the selection and implementation of optimum land management approaches, and a monitoring system to provide evidence-based decisions and understanding of impacts to inform future planning (FAO, 2017a). The options identified through this process embrace the

needs of multiple sectors operating in a landscape. Indeed, the process should integrate stakeholders and decision-makers at farm, landscape, regional and national level, and from multiple sectors. Such approach values the interconnected relationships between a range of land uses (which includes gender dimensions) and reconciles public, private and community interests as well as all tenure rights (including periodic rights) (FAO, ed., 2012).

The term 'land use planning' is often used interchangeably with 'spatial planning' in national legislation; spatial planning can be seen to be a more holistic term through its embodying of other types of natural resources.

### 3.4.1. Objectives and guiding principles for spatial planning

Spatial planning provisions in legislation establish the overall strictures, requirements and institutions through which decisions are made as to permissible land uses in a given area.

**In guiding the decision-making in land use arrangements, legislation often sets out core requirements, objectives and principles applicable to the development and implementation of planning instruments as well as the institutional arrangements.** Mexico's *Decree Approving the Sectoral Program of Agrarian, Territorial and Urban Development 2013–2018,* aligns the titular program with the National Development Plan and frames territorial planning in such manner as to ensure it is geared towards the well-being of people and efficient land use. Planning should cater for orderly growth of human settlements, and sustainable cities that facilitate mobility and enhance the quality of life of its inhabitants. Tonga's *National Spatial Planning and Management Act (No. 7 of 2012)* states as its object, the establishment of a land management system that is fair and orderly and promotes sustainable use and development. Such approach is required to include the conservation of natural resources, ecological processes and genetic diversity. Uruguay's *Law on Norms for land use and sustainable development (No. 18 308 of 2008)* explicitly recognizes that territorial planning is the set of cross-cutting actions of the State geared towards improving the quality of life of the population, social

integration and environmentally sustainable use of natural and cultural resources (see Box 3.4 for an extract of the Law's goals in relation to territorial planning).

**Box 3.4**
**Uruguay's *Law on Norms for Territorial Planning and Sustainable Development (No. 18 308 of 2008)***

**Article 4**
Territorial planning comprises:

a. The elaboration of strategies for sustainable development, use and management of the territory in terms of social, economic, urban and ecological objectives, through planning.

b. The establishment of criteria for the location of economic and social activities.

c. The identification and definition of areas under the Special Protection Administration regime, due to their ecological, patrimonial, landscape, cultural and conservation interest in the environment and natural resources.

d. The identification of risk areas due to the existence of natural phenomena or dangerous installations for human settlements.

e. The definition of equipment and infrastructures and of strategies to consolidate the human settlements system.

f. The forecast of territory for the purposes and uses foreseen in the plans.

g. The design and adoption of management instruments and procedures that promote land planning.

h. The preparation and implementation of programmes, projects and actions with territorial incidence.

i. The promotion of studies for the identification and analysis of the political, social and economic processes from which the modalities of occupation and ordering of the territory derive.

**Legislation may establish the core framework that must be followed by all administrative levels in the planning process.** South Africa's *Spatial Planning and Land Use Management Act (No. 16 of 2013)* includes tenets such as the predication of decision-making on environmental sustainability, social equity and territorial cohesion; the cooperation of public entities; consultation of public and private sectors; and the promotion of public participation in the processes of preparation, implementation, monitoring, evaluation and revision of territorial planning instruments. The Act calls for the "equitable distribution of the burdens and benefits of the urbanization process between public and private actors", and prioritizes "the recovery of the highest values that can be generated by land uses and allocations." The statute seeks to balance economic development, environmental sustainability and social equity by ensuring a balanced spatial distribution of uses, and the maximum use of existing infrastructures and services. Tonga's *National Spatial Planning and Management Act (No. 7 of 2012)* requires its competent authority to undertake development assessments and coordination to support the preparation and approval of the sustainable land management plan. The statute provides the blueprint for which any national, regional, district, village or site-specific spatial plans shall comply.

**Legislation should require the periodic revision of land use plans to accommodate demographic changes and evolving social needs; this allows the planning instruments to be flexible and evolve alongside changes.** The sustainability principles espoused in the law would still serve as an overall framework. For example, Australia's (Capital Territory) *Planning and Development Act (2007)* requires the competent authority to consider, every five years, whether or not the territory plan should be reviewed, and in making such consideration should consider the Act's objectives, and the statute's sustainability principles (Section 102). If a review is found to be required, the authority is to prepare an environmental assessment (Section 103). Public land management plans are to be reviewed every ten years (Section 332). It should be noted that generally, legislation should be phrased in such manner as allows the flexibility to respond to new opportunities that arise after a plan has been approved and before the next update occurs.

### 3.4.2. Integrated approaches to planning and natural resources management

Sustainable natural resources management recognizes that natural resources and their uses are interconnected, and that an integrated and sustainable approach is required for their administration (FAO, ed., 2012). This concept bridges the agriculture, environment, land, water, rangeland and livestock management and forestry sectors. Regulatory frameworks should harmonize, for example, striking a balance between maintaining long-term productivity of the ecosystem functions (land, water, biodiversity) and increasing productivity (quality, quantity and diversity) of goods and services (FAO, n.d.(c)). Legislation must provide mechanisms that allow for the allocation of various uses in a manner that supports an appropriate balancing of competing interests and accommodates trade-offs, while being responsive and flexible to the particular needs of a locality, region and the country as a whole. While under the overall rubric of land and planning primary legal frameworks, legislation may be developed addressing land management in a particular sector. For land that has been allocated for a specific purpose, legislation may guide and incentivize particular initiatives for development. A coordination of sectors such as agriculture, environmental conservation, industry, recreation, transport, urban dwellings and commercial centres, must be in consonance with the resources that are available, manage trade-offs between the sectors, and satisfy resource users. Where appropriate, formal planning systems may be informed by planning and territorial development methods used by communities with customary tenure systems (FAO, ed., 2012).

**Most spatial planning legislation prioritizes the development of plans that are consistent with plans for the management of different types of natural resources or with sectoral policies generally.** The Australian (South Australia) *Crown Land Management Act (2009)* requires in Section 12 that management plans promote the principles of ecologically sustainable land management, and should be consistent with natural resources plans adopted under separate natural resources legislation. The development principles under Section 7 of South Africa's *Spatial Planning and Land Use Management Act (No. 16 of 2013)* refer

to the principle of good administration whereby all spheres ensure an "integrated approach to land use and land development that is guided by the spatial planning and land use management systems" envisaged under the legislation. This statute also espouses the concept of regional spatial development frameworks, to guide spatial planning, land development and land use management. 'Region' is defined under the Act as a geographical area that is characterized by "distinctive economic, social or natural features" that may coincide or not with administrative boundaries. Here, the concept of an area of land is divided not only in terms of its ecosystem or natural features but also its economic and social ones as well. A regional spatial development framework is required, under Section 19, to reflect the current and expected land uses and set out proposals and guidelines for management that comply with environmental legislation. Under the United Republic of Tanzania's *Land Use Planning Act (No. 6 of 2007),* the competent authority is expected to harmonize resource management sector plans and integrate them into the national land use framework plan (Section 19). In addition, the authority should appraise land use patterns to determine their impact on the quality and quantity of natural resources. All local planning authorities are required to, in collaboration with the environmental authority, establish requirements for the protection of the environment and sustainable use of natural resources (Section 23). The statute indicates that land-use planning should establish a framework for sustainable land use practices, the prevention of land use conflicts, equity and security in access to land, and enable more productive uses of land (Section 4). Box 3.5 demonstrates the matters the statute requires to be considered by all land-use plans prepared by relevant planning authorities.

**Box 3.5**
**The United Republic of Tanzania's *Land Use Planning Act (No. 6 of 2007)***

**Section 28**
All land use plans prepared by relevant planning authorities under this Act shall be relevant at each level, including proposals on the matters relating to:

a. determination or designation of land for various uses including cropland, rangeland, forestland and water sources, fisheries, farming and industrial, factory and workshop land;
b. preservation of protected or traditional and other sensitive areas, parks, game reserves, coastal ecosystems including swamps, beach land and marine parks, biodiversity colonies and other flora and fauna;
c. preservation of the quality and flow of water in a dam, lake, river or aquifer;
d. preservation of any outstanding geographical, physiographical, ecological and archaeological features;
e. historical features of the land;
f. preservation of the scenic view of land;
g. preservation of open space;
h. preservation of defined paths on the land;
i. preservation of the natural contours and features of the land;
j. preservation and restriction of the scope of any activity on the land which has, as its object, the mining and working of minerals or aggregate;
k. promotion or regulation of the scope of any agricultural or pastoral activity on the land;
l. creation and maintenance of works on the land so as to limit or prevent harm to the land and the environment;
m. creation or maintenance of migration corridors for wildlife;
n. creation of buffer zones for the protection of natural forests, forest reserves, water catchments areas, rivers, dams and river banks;
o. designation of areas for small-scale industries to produce low cost building materials and increase employment for human settlements development; and
p. the establishment of new or reorganization of existing settlements and physical infrastructure.

**Legislation may seek to protect the interests of communities' land access and use from possible detrimental effects of economic development projects in rural areas.** Kenya's *Community Land Act (No. 27 of 2016)* requires under Section 20, for registered communities to establish measures to protect critical ecosystems and habitats, and creates incentives for communities and individuals to invest in income generating natural resource conservation programmes. The Act requires an agreement relating to investment in community land to be made subject to a free, open consultative process (Section 36), requiring approval of two-thirds of registered community members. Such agreement shall comprise an environmental, social, cultural and economic impact assessment, stakeholder consultations and involvement of the community, and measures to mitigate negative effects of the investment, among other requirements. Investments may be in the form of forestry, mining, petroleum or other types of concessions, and these arrangements are explored further in the respective chapters. In some countries, legislation may instruct the competent authority to conduct studies and to prepare watershed-based land use plans, that consider the socio-economic development, the natural resources situation, current land use, etc., of the region with full participation of the community.

**Some laws may simply refer to generic considerations that must be accommodated.** A case in point is the Mauritius *Planning and Development Act (No. 32 of 2004)* which establishes three types of development plans (for a locality, for an area, and for a certain theme or subject-matter). Development plans are required to consider, among other aspects, and in relation to the area concerned: the key physical, economic, environmental and social conditions, resources and facilities; the principal purposes; the size, composition and distribution of the population and the justification of policies for the sustainable development of the area (Section 17).

**Spatial planning and zoning instruments can be used to mitigate disaster risks and their distribution.** These instruments can be used to identify risk areas, develop and implement mitigation strategies and can be used in the design of climate change adaptation strategies (Heermans, Ndangiza and Knox, 2015). This approach therefore reduces

the exposure of the population to natural disasters, in particular, it can be used to prevent significant impacts on poor and marginalized persons that are often more exposed given their limited financial resources or their dependence on access to natural resources for livelihood and sustenance. The Philippines *Administrative Order making Local Governments to adopt in planning activities the Guidelines for mainstreaming Disaster Risk Reduction (DRR) in Subnational Development and Land Use/Physical Planning (No. 1 of 2010)* demonstrates how legislation is used to direct local planning to consider disaster management principles and guidelines. Though not a primary law, this instrument is highlighted here as a result of its recognition of the country's vulnerability to natural disasters (owing to its location and geography). The text underlines the impact of such high frequency of disasters on its socio-economic development. The Order directs Local Government Units, particularly provinces, to adopt the DRR Guidelines to enhance natural disaster risk reduction efforts in the local development planning process. Technical assistance and support are to be made available to enable the local administrations to effectively carry this out. Viet Nam's *Land Law (No. 45/2013/QH13)* Article 3, frames the land master plan as serving the objectives of socio-economic development, environmental protection and climate change adaptation (among other factors). Climate change adaptation is to be considered in the development of regular and master plans for land use (Article 35). Adjustments to land use master plans can be made where a natural disaster has changed the land use, purposes, structure and available area (Article 46). Australia's (Queensland) *Planning Act 2016 (No. 25 of 2016)* states as its objective, land use planning that achieves ecological sustainability. The latter is defined to include the maintaining of:

> The cultural, economic, physical and social well-being of people and communities [...] accounting for potential adverse impacts of development on climate change, and seeking to address the impacts through sustainable development (sustainable settlement patterns or sustainable urban design, for example) (Sections 3(2)(c) and (3)(c)(iv)).

Ecological sustainability is also defined to mean achieving economic development that comprises:

> Diverse, efficient, resilient and strong economies, including local, regional and State economies, that allow communities to meet their needs but do not compromise the ability of future generations to meet their needs. (Chapter 1, Section 3(3)(b)).

Climate change, adverse human health and urban congestion are among the detrimental environmental impacts to be avoided or minimized through the Act.

**Legislation may promote integrated landscape management as a means to satisfy the needs of multiple stakeholders from the scale of local landscapes to the subnational, national and transboundary scales.** A landscape is commonly understood to be an area of land containing a variety of ecosystems, including human-dominated ones (FAO, 2017a). Spatial planning facilitates a balancing of trade-offs among stakeholders. The diverse integrated landscape management options that are available have several mutually reinforcing aspects: such as developing a joint vision of long-term and wide-scale landscape goals; adopting a variety of practices that achieve multiple objectives; managing spatial interactions across different land uses and users; establishing institutions for stakeholder dialogue, negotiation and action; and shaping markets and policies to support desired outcomes (FAO, 2017a). Spain's (Murcia) *Law on territorial and urban planning (No. 13 of 2015)* recalls the European Territorial Strategy in integrated management that takes into account the interdependence and diversity of territorial and natural systems, human activities and the environment, through participatory processes and coordination. The Law stipulates 'landscape' is an "expression of the diversity of the common cultural and natural heritage," in furtherance of an integrated approach to management in compliance with the *European Landscape Convention*. Landscape studies are to be commissioned to analyse and assess the impact on the landscape of a specific action, activity or use. The studies should define and describe the main constituents of the landscape (e.g. relief, vegetation, infrastructure) and identify ecological,

cultural, social and economic values. The studies should also analyse positive and negative impacts of the activity on the landscape, offer an analysis of alternative activities and uses, and provide a justification of the recommendation proposed. Such studies are also required to identify what corrective or mitigating actions can be taken in regard to the use or activity. The Landscape Strategy and related documentation on the other hand, is to establish specific measures coupled with programmes for awareness-raising and training, development programmes, monitoring indicators and financing. Protocols for administrative coordination among public authorities are also to be included. The Strategy should be consistent with spatial planning by regional administrations and territorial planning by the relevant authority. The Republic of Korea's *Law on Landscapes* (*No. 12 013 of 2013, as amended by No. 13 726 of 2016)* sets out a framework for the conservation of landscapes and the restoration of damaged landscapes and establishes provisions for landscape plans (for a range of landscape types such as agricultural, seaside, mountainous, etc.). Such plans should include details on its basic objectives, the evaluation of the landscape resources, management measures, the creation of landscape districts, parameters for landscape projects and activities and implementing administration structures. Landscape-scale approaches can be seen elsewhere in legislation, such as the Australian (New South Wales) *Biodiversity Conservation Act (2016),* where market-based conservation mechanisms are envisaged to offset biodiversity impacts of development and land use change at both site-scale and landscape-scale. Under Estonia's *Planning Act (2015),* national spatial plans should set out measures to ensure the preservation and functioning of valuable landscapes. The Act provides for the maintenance of 'green networks' which are defined as a "system of natural and semi-natural biotic communities" that ensure the preservation of ecosystems and landscapes, and that balances the impact of human settlement and economic activities.

### 3.4.3. User driven and participatory planning

**A participatory approach that is consultative and user driven, with adequate time and information provided to enable stakeholders**

**to review and respond to planning proposals is a core tenet of sustainable land management.** Engaging with and seeking the support and views of those affected by decisions prior to taking them contributes to addressing power imbalances between different stakeholders (FAO, ed., 2012). Participatory approaches balance top-down planning that is set by a central-level authority with "bottom-up" processes that accommodate the actual users and stakeholders in a locality – see Section 3.3.4. Cabo Verde's *Legislative Decree on Urban and Spatial Planning (No. 1 of 2006, as amended in 2010)* requires planning processes to include participation, which is defined to mean "civic awareness through access to information and intervention in the procedures for drafting, implementing, evaluating and reviewing land management instruments". This statute further confirms that individuals have "the right and the duty" to participate in the elaboration, implementation and enforcement of land management instruments. Participation is achieved through the competent bodies of three tiers of government (central, regional and local), and through other legal persons governed by public law. In Ethiopia's (Afar) *Rural Lands Administration and Use Proclamation (No. 49 of 2009)*, Article 20 calls for the development of rehabilitation plans for degraded communal land holdings to be prepared with the participation of the community. Article 22 sets out the function of the competent land administration committee as "collaborative administration with the *woreda* or village level" in such manner as engages community participation. Kenya's (Marsabit County) *Planning Act (No. 1 of 2016)* requires the competent authority to promote public participation by integrating non-state actors in planning processes, facilitated by the particular mechanisms elaborated in local government legislation. The Act also calls for the provision of clear and unambiguous information, including environmental assessments, expected development outcomes, and development options and their cost implications to stakeholders (Article 29). Furthermore, each County Assembly is expected to develop legislation for effective citizen participation in compliance with the minimum national requirements.

This approach enhances the capacity of marginalized groups to be involved in decision-making, adds legitimacy and transparency, and promotes social acceptability (Roy and Ferland, 2014). Furthermore,

legislative provisions that foster transparency, accountability and participation mitigate the risk of improper land planning – for example where decisions are skewed in favour of higher value land uses (e.g. industrial or commercial), over seemingly lower financial ones (environmental) where environmental accounting has not taken place. This can be done, for example, through the duty to publish an environmental impact assessment report, and making such reports available for public scrutiny and comment. Legislation should opt for safeguards against abuse of spatial planning powers, which can be particularly sensitive with regard to changes to regulated use. Improved transparency through participation and consultation offers one such type of safeguard mechanism.

There are various types of mechanisms for participation and consultation in legislation, for solutions that are tailored to specific and actual needs, and for better implementation.

### a. Consultations

**Wide participation can be accommodated in legislation through mechanisms for land administration as well as land planning.** Kenya's *Community Land Act (2016)* requires the inventory of community land to be participatory (Section 8). The Cabinet Secretary is to issue a 60-day public notice of intention to survey, demarcate and register community land, and to extend invitations to all interested persons for comments. Registered communities, under Section 15, may elect between seven and fifteen elected representatives to constitute the community land management committee. The latter's functions involve both land planning and land administration: to run daily operations, administer registered community land, coordinate land-use plans and promote cooperation and participation among community members. Any decision to alienate community land (i.e. affecting tenure rights) requires a minimum of two-thirds approval of the registered adult members of the community; other decisions can pass with a simple majority of the members present in a meeting. This Act calls for registered communities to create measures to facilitate the access, use and co-management of forests, water and other resources by communities with customary

rights (Section 20). It also requires the development of procedures for the involvement of communities and other stakeholders in the management and utilization of land-based natural resources. In the latter regard, it is good practice for legislation to include provisions to provide local communities with support during planning processes.

Australia's *Planning and Development Act (No. 7 of 2007)* contains extensive provisions for public consultations on drafts of territorial planning (Sections 63–66), on applications for developments (Sections 152–157), for environmental impact statements (Section 217), and for public land management plans (Section 323). This statute describes the procedures for public consultation notices in detail. For example, the text requires the competent authority to make copies of non-confidential parts of the draft plan and the background papers available for public inspection (and purchase) at the places stated in the consultation notice, during office hours over the consultation period. Comments following such procedure are also to be made available to the public. It is good practice for legislation to also indicate that the competent authorities should provide feedback on how input from participation was accommodated in the planning instruments that are ultimately approved. Australia's (South Australia) *Aboriginal Lands Trust Act (2013)* sets out specific consultation requirements in Section 8 with Aboriginal persons who, in accordance with Aboriginal tradition, have social, economic and spiritual affiliations with, and responsibilities for, Trust Land or any part of it, and any residents on the Trust Land or other persons with an interest in the Trust Land.

In many instances where it is physically impossible for all stakeholders to participate personally in land-use planning, district-level planning, or management of certain issues, this is often addressed through some form of representation of stakeholders. Legislation currently captures these representative mechanisms. However, in the future, technology may enable a greater number of individuals to be more directly involved in negotiations or decision-making, to which legislation will have to adapt (FAO and UNEP, 1999).

### b. Inclusion of marginalized groups

Sustainable land management entails mechanisms to include the rural poor, women, indigenous peoples and other groups that are often marginalized from decision-making that are dependent on natural resources for their livelihoods. Enabling equality between individuals may require taking positive action, including empowerment, in order to promote equitable rights (FAO, ed., 2012). The role of women in sustainable land management, their role in smallholder farming and their disproportionate contribution to livelihoods and food security, may also be recognized in legislation – though in practice relevant provisions may not necessarily feature in land laws. Relevant local community legislation such as Burkina Faso's *Law on the organization of the municipal administration (No. 1-016 of 2005, as amended by No. 1-015 of 2010)*, addresses planning issues and requires the composition of decision-making structures such as the municipality council to have equitable representation of women and ethnic groups. Kenya's *Community Land Act (2016)* contains a number of provisions relating to non-discrimination, and that seek to better integrate marginalized communities in the use and enjoyment of land rights. While not framed specifically in the context of planning as such, the significant provisions nonetheless direct planning priorities. Section 30 of the Act states that women, men, youth, minority or marginalized groups and persons with disabilities "have the right to equal treatment in all dealings in community land". Furthermore, the text prohibits any discrimination against any member of the community "on any ground including race, gender, marital status, ethnic or social origin, colour, age, disability, religion or culture". South Africa's *Spatial Planning and Land Use Management Act (No. 16 of 2013)* requires municipalities, following public consultation, to adopt a land use scheme that includes appropriate categories of land use zoning and regulations for the entire municipal area while considering relevant environmental management instruments and legislation. The land-use scheme is to implement and be consistent with the municipal spatial development framework, promoting economic growth, social inclusion and efficient land development (Section 25). The land use schemes are required to permit

"incremental introduction of land use management and regulation in areas under traditional leadership, rural areas, informal settlements, slums and areas not previously subject to a land use scheme" (Section 24). The Act requires the promotion of affordable housing in residential land development, and land use and development provisions, to promote the effective implementation of national and provincial policies.

Protections for indigenous groups relating to land may be found in special legislation for the protection of such groups. The Brazilian (Paraná) *Law creating the State Council for Indigenous People and Traditional Communities (No. 17 425 of 2012)* creates a statutory body whose functions are to enable and support the participation of indigenous peoples and traditional communities in discussions, proposals, design and implementation of public policies. The Democratic Republic of Congo's *Law (No. 5 of 2011) on the promotion and protection of the rights of indigenous peoples* requires the state to ensure that indigenous peoples are consulted through culturally appropriate mechanisms prior to any formulation or implementation of legislative or administrative measures, or programmes that may affect them. Australia's (South Australia) *Aboriginal Lands Trust Act (2013)* has as one of its objectives, to ensure that Aboriginal people with an interest in certain types of land are consulted, and their views considered, in any decisions relating to that land (Section 5). Further, Article 6 expressly requires that Aboriginal interests in Trust Land should be accounted for and reflected in any decision-making. Rights of access and use, in the context of indigenous persons, has been more broadly explored under Section 3.2.4 of this Chapter.

While mechanisms for participation seek to enable the community to organize itself and empower those in the community that may be excluded, caution should be taken to ensure representation or participation mechanisms do not entrench or continue the exclusionary power dynamics that may marginalize certain segments within that local community.

### 3.4.4. Multi-level management

**Procedures and priorities for land-use planning may vary at the local, provincial or national level; certain elements may have more importance at one level than at others, and different kinds of decisions should be taken at different levels** (FAO and UNEP, 1999). A national land-use policy or a master plan may establish the overall development objectives and set the principles with which subsidiary plans must comply. Central-level functions may involve the establishment of an overall plan, and oversight of its implementation (possibly through a multi-disciplinary and multi-stakeholder mechanism). This level will also be responsible for coordination, dissemination of information, ensuring the appropriate allocation of resources, capacity building and conflict resolution. At subnational level, the plans may involve a particular administrative or geographical area and such plans should conform to the overall master plan. In addition, the time frame should address long- and short-term objectives (FAO and UNEP, 1999).

Participatory approaches are most prevalent and most important at the local level, where objectives and plans are formulated according to local needs. Good interaction and integration between planning levels is important and thus information flow is needed between the vertical levels, with lower levels of planning demonstrating greater degrees of detail and more direct participation of local communities and individuals. "Bottom-up" planning approaches are beneficial in many contexts in that they may entail more localized solutions and benefits, and also generate a greater awareness of problems and opportunities. However, such an approach is at risk of being at odds with national or regional goals and risk a lack of (financing and other) support. At all levels, the involvement of various sectors is important in planning processes to ensure harmonious approaches and to balance various sectoral needs and priorities.

**In many countries, the hierarchical responsibilities and structures of institutions result in a strongly sectoral approach to analysis and planning, and silo programmes, budgets and interventions** (FAO and UNEP, 1997)**. Thus, legislation that allows multi-stakeholder**

**composition of management bodies, and which also allows for a multi-disciplinary approach, will work to address this challenge.** A cogent example of this is South Africa's *Spatial Planning and Land Use Management Act (No. 16 of 2013)* which states in its preamble that municipalities must participate in national and provincial development programmes. Chapter 3 of the Act refers to the three tiers of government land administration (and also refers to specific legislation addressing these layers of government). Section 9 charges the national government to support and strengthen the capacity of provinces and municipalities to adopt and implement an effective spatial planning and land use management system. This monitoring and support role also includes prescribing procedures to resolve and prevent conflicts in the spatial plans and frameworks of five different spheres of government, as well as between a land use instrument and that of any other organ of state. Section 10 further sets out the roles of the province authorities, in making legislation, assisting municipalities with the development of land use schemes, and resolving conflicts relating to land planning and use among different municipalities. Section 11 requires national and provincial governments to consider the "unique circumstances of each municipality" with reference to the executive and legislative powers established in the South African *Constitution (1996)*. Following public consultation, municipalities should adopt a land use scheme that includes appropriate categories of land use zoning and regulations for the entire municipal area while considering relevant environmental management instruments and legislation.

Colombia's *Framework Law (No. 1 454 of 2009)* contains provisions for planning and use that serve towards the increase of capacity and decentralized levels, and the strengthening of local administration. The Law requires land use instruments to buttress cultural identity and territorial development (the latter defined to mean economically competitive, socially just, environmentally and fiscally sustainable, regionally harmonious and culturally relevant). The provisions enable the transfer of competences and decision-making of the central organs towards the relevant local level, with the corresponding allocation of resources. The text highlights the use of such decentralized arrangements

to further the recognition of the geographic, historical, economic, environmental, ethnic and cultural diversity of the country as well as the distinct identity of its regions.

Ecuador's *Framework Law on Land Planning, Use and Management (No. 790 of 2016)* sets out in Article 11, an institutional system that is underpinned by separate legislation on planning and public finance. Regional decentralized autonomous governments are to delimit ecosystems, taking into consideration watersheds and hydrological infrastructure, as well as transport infrastructure. Provincial authorities are to ensure coherence of each canton plan, while the municipal levels classify and manage land use for rural and urban areas in the cantons and districts. An identification of risks, the promotion of environmental quality and social cohesion, will also occur at this level. Any planned works and interventions are required to consider development plans and the relevant plans of other government levels, and to be consistent with the National Development Plan.

## 3.5. Sustainable soil management

Soil management is an integral part of land management and many jurisdictions around the world may address soil within land management instruments or within soil-specific legislation. Alternatively, soil management can also be found in agriculture, land, environmental or even water laws. The regulation of soil, particularly in federated jurisdictions, is often left to regions and provinces to determine specific rules that implement a general national framework law. Legislative provisions may distinguish various soil types and characteristics in order to determine the specific interventions warranted to achieve the appropriate quality for the land use selected (FAO, 2015b). Legislative provisions also focus on: soil quality, primarily on contamination and pollution; on the conservation of soil resources; and on the rehabilitation of degraded areas. Each of these will be examined in turn.

### 3.5.1. Explicit recognition of soil functions

Soil is a finite resource upon which the production of food, feed, fuel and fibre is dependent; soil supports critical ecosystem services, such as water storage, vegetation, carbon storage among others – the loss and degradation of soil is not recoverable within a human lifespan (FAO, 2015b).

**Legislation may recognize that soil functions depend on the combination of physical, chemical and biological properties that result in particular soil qualities, which in turn affect its ecological and productive services** (FAO and ITPS, 2015b). As an example, the Bulgarian *Soils Act (No. 89 of 2007, as amended in 2011)*, identifies the protection of soils and their functions, and the sustainable use of soil and its long-term restoration, as its objectives. Soil function is defined in the text as the:

> Capacity of soils to perform ecological, economic, social and cultural functions such as: (a) biomass production, including in agriculture and forestry; (b) storage, filtering and transformation of nutrients and water; (c) source of raw and prime materials; (d) a physical and cultural environment for humans and their activities; and (e) conservation of biodiversity (habitat, species and genes), of carbon reserves and of the geological and archaeological heritage (Supplementary Provisions, Section 1(20)).

Article 3 establishes that soil protection use and restoration shall be predicated on principles such as an ecosystems approach, sustainable use, preventive control, application of good practices and the 'polluter pays.'

### 3.5.2. Protection of soil from harmful activities and degradation, and promotion of conservation practices

**Legislation may highlight the major threats to soil health and the ecosystem services it provides.** The Status of the World's Soil Resources report identifies ten major threats, which include: soil erosion by water and wind, soil organic carbon loss, soil nutrient imbalance, soil salinization,

soil pollution and contamination, acidification, loss of soil biodiversity, soil sealing, soil compaction and waterlogging (FAO and ITPS, 2015b). Serbia's *Law on Soil Protection (2015)*, explicitly identifies some of these threats, including erosion and landslides; inappropriate agricultural and forest production; uncontrolled land use and management (such as unplanned urbanization); acidification, salinization and alkalizing of land; pollution (from waste, wastewater discharges, emissions, accidents, spills and chemical contamination); exploitation of mineral, gravel, sand; and unauthorized excavations of soil and land.

**Provisions to address soil health challenges are context specific, and require land users to refrain from certain types of activities or actions or to carry out certain actions.** Sri Lanka's *Soil Conservation Regulations (No. 01 of 2009),* which implements the older *Soil Conservation Act (No. 25 of 1951),* uses a lower-level instrument to detail technical land management practices for soil protection. For example, the text prohibits a person from cultivating annual crops in natural vegetation or forest areas, plantation crop areas or in grasslands that are 1 500 metres above sea level. Cultivation activities must incorporate protection measures such as: the cutting of the slope or forming of terraces; the construction of lock and spill drains or stone bunds, conservation platforms, draining channels, or side walls; or the planting of cover crops to stabilize the surface and protect topsoil. The Bulgarian *Soils Act (No. 89 of 2007 as amended in 2011)* prohibits prescribed activities that lead to soil erosion, forbids disposal into soils of pollutant sewage, deforestation of certain areas, and outlaws agricultural practices that lead to salinization or contamination of soils (Article 13). Soil waste disposal standards are to be established by the competent authority (Article 14). Owners of physical infrastructure are required to maintain them in such manner as prevents soil degradation. The Italian (Abruzzo) *Act promoting the use of compostable wastes and soil conditioners to protect soil quality (No. 22 of 2007)* reflects recent trends to promote composting with the dual objective of reducing waste and enhancing soil quality. Article 1 calls for the dissemination of good environmental practices, particularly for the use of compostable waste and soil improvers that serve to protect and enhance soil quality, prevent degradation and encourage the re-

use (and reduction) of organic waste. Soil management techniques are aimed in particular at agricultural areas and green spaces. Subsidies for qualifying farmers are available for the purchase of composted soil for up to a maximum of 50 percent of expenditure (but no more than twice in a five-year period), and also for up to 20 percent of the lease or purchase of machines and equipment for composted soil improvers – the maximum is 30 percent for mountainous and other prescribed areas. Generally speaking, incentives for protection and conservation vary in legislation; ranging from subsidies (e.g. for fertilizer in poor countries, or for equipment for conservation tillage in developed countries) to possible certification for prescribed soil management practices (e.g. organic farming) and for market access (e.g. to qualify as a supplier for a supermarket) (FAO and ITPS, 2015a).

**In some jurisdictions, local inspection authorities can require landowners to take certain actions with respect to land and soil conservation.** Often this is in the form of a 'notice' served to the landowner. The notice specifies the remedial measures and the deadline for such measures. The authority may enter the land to carry out such remedial matters where the owner fails to do so. Given that these are often extensive rights that affect private property, it is important that the legislation contain procedural clarity and safeguards to ensure that private rights are not abused under the guise of public interest.

**Legislation may also specifically address soil degradation through the establishment of schemes for the regeneration of soil quality (often for certain periods of time), buttressed by monitoring plans and targets.** Under Latvia's *Land Management Law (2014)* the land user should take steps to preserve land and soil quality and prevent degradation (Section 4). Where soil degradation is detected, restrictions can be imposed by the authorities to prevent further damage, as well as the institution of a change in land use categorization. The Act calls for soil mapping and land quality evaluations on agricultural and forestland every 20 years. The Australian (New South Wales) *Land Management (Native Vegetation) Code (2018-83)* highlights several principles involved in ecological restoration. These include, for example, that recovery of ecosystem attributes should be based on clear goals

and targets and that full recovery is the goal of ecological restoration regardless of long time frames. Restoration inputs should be dictated by the level of resilience and degradation. The statute also reiterates that social aspects are critical to ecological restoration. Ethiopia's (Oromiya) *Regional National State Rural Land Administration and Use Regulation (No. 151/2012)* Section 22, stipulates that gorge lands or degraded lands shall be protected by planting selective plants like coffee, mango, avocado, and other fodder trees. These types of lands are prohibited for other crops or for free grazing. Highly degraded land shall be protected from interference from humans and livestock for a prescribed period. Such lands may also be given to landholders who are committed to its rehabilitation or for productive uses such as bee keeping. Degraded land, hills and gorges, shall not be classified for residential use. Soil ploughing techniques that erode soil are forbidden, also forbidden are the use of substances on land that harm biodiversity and a land holder must ensure the fertility of soil is maintained. Certain trees may be planted on land, with the appropriate permission, but certain water intensive species like eucalyptus is prohibited. Italy's (Trentino-Alto Adige) *Provincial Act laying down provisions on land reclamation and preservation of farms, and amending certain provincial acts on agriculture (No. 9 of 2007)* provides for the division of parts of the region for land reclamation and soil rehabilitation. The Act also provides for the setting up of consortia engaged in the implementation of such interventions and recognizes reclamation activity as a function of public interest in the protection of soil. Remediation is also carried out in coordination between the public and private spheres in certain parts of the region. Reclamation consortia use programmatic tools created by the Province; the latter is also responsible for approving general plans.

**Degradation of land and soil has also attracted increased legislative attention in recent years, particularly in the context of suitability of soil for agriculture and forestry.** Ukraine's *Resolution of the Cabinet of Ministers validating the National Action Plan for combating land degradation and desertification (No. 271-r of 2016)* pertains to actions relating to improvement of soil fertility, and establishing indicators of soil quality and data relating to land degradation. The Russian Federation's

(Krasnoyarsk) *Regional Law on ensuring fertility of agricultural land (No. 2-434 of 2012)* is focused specifically on agricultural land, setting out a range of requirements for maintaining soil fertility and soil quality. These include state programmes; financing and investment schemes; and inspections schemes that entail agrochemical, phytosanitary, ecological and toxicological parameters. Landowners must use certain methods and practices that protect the soil.

**In the taking of policy decisions for soil conservation or rehabilitation, a careful consideration of unforeseen effects should be borne in mind.** Soil organic matter contributes to soil functions and prevents soil degradation. For example, fertilizers may remedy nutrient-poor soils or certain additions may correct acidic or alkaline soils, but can also result in soil and groundwater contamination (FAO and ITPS, 2015b). Canada's (British Colombia) *Code of Practice for Soil Amendments (B.C. Reg. 210/2007)* encourages the beneficial use of prescribed by-products on land. The Code protects the quality of soil as well as surface and groundwater on sites where the specific by-products are applied. Under this text, the prescribed soil products include: fly-ash derived from the burning of wood, residuals from the primary or secondary treatment of liquid waste from a pulp or paper mill, and residuals from the treatment of water for domestic use or use in industrial processes, or wood residues that have not been treated with any harmful substances. Another case where a mitigation of unintended impacts is the use of fire as a land management tool. Improved soil quality can mitigate the rise of atmospheric carbon dioxide (FAO, 2017c). Depending on the context and except where fire is integral to land management, the use of fire may be avoided or where used, the timing and intensity of burning should aim to limit losses of soil functions (FAO, 2017c). However, such a requirement may be at odds with the cultural practices of indigenous groups that may employ burning, thus legislation should seek to find a way to address the tension. Where fire occurs naturally, legislation may set out measures to minimize erosion and encourage re-vegetation. For example, Australia's (New South Wales) *Land Management (Native Vegetation) Code (2018-83)* permits clearing of native vegetation that only consists of groundcover if such groundcover has been significantly disturbed in the preceding six months, for example by fire (Section 69).

**Plans are also mechanisms mandated in legislation to ensure the protection of soils from certain types of activities.** The Australian (Queensland) *Soil Conservation Act (No. 37 of 1986)* places the onus on a landowner that property plans must specify all the soil conservation measures to be taken. Section 24 establishes a legal basis for the competent authority to enter into a cost-sharing arrangement with an owner for works to be undertaken in implementation of an approved plan. As regards public planning instruments, Viet Nam's *Circular No. 30/2013/TT-BNNPTNT guiding the formulation of plans to use the topsoil and offset the area of wet-rice farm land used for another purpose* sets out parameters for the formulation and approval of master plans on reclamation, restoration and the improvement of local rice farm land and other arable land. Investors are required to comply with the methodologies set out in this text as well as with the master plans (Article 7).

**Some legislative provisions offer specific protection for the topsoil or the humus layer of soil.** Indonesia's *Regulation of the Minister of Trade on prohibition of export of sand, soil and topsoil (including humus)* (*No. 02/M-DAG/PER/1/2007)* as the title suggests, is one example. The Regulation declares as its objective the prohibition of the export of soil and topsoil (including humus) in order to avoid environmental damage. Viet Nam's *Circular No. 30/2013/TT-BNNPTNT guiding the formulation of plans to use the topsoil and offset the area of wet-rice farm land used for another purpose* establishes methods of using the topsoil to improve poor-quality rice farm land and other arable land. Kyrgyzstan's *Law on the protection of fertile soil layer of agricultural land (No. 165 of 2012)*, calls for measures to be based on the following principles: the rational use and conservation of soil for food security; increasing soil fertility as a matter of priority; determining scientifically the impact of various types of activities on the fertile soil layer; monitoring of the status of soil and its qualities; and the protection of soil from pollutants. In some jurisdictions a soil removal permit may be used to restrict the removal of soil, and an exception to such requirement of a permit would be, for example, to prevent flooding or where done in accordance with local planning instruments.

**The soil-water nexus is emphasized in some laws.** China's *Law on Water and Soil Conservation (No. 39 of 2010)* requires water and soil conservation plans to be underpinned by studies on water, soil loss and quality. These plans should contain key methods for prevention and control of loss. Local authorities are directed to take measures such as natural rehabilitation, the planting of trees and grass, and water conservation measures. Italy's (Trentino-Alto Adige) *Provincial Act laying down provisions on land reclamation and preservation of farms, and amending certain provincial acts on agriculture (No. 9 of 2007)* calls for the focus of the reclamation consortia to include improving the productive and environmental value of hydrological basins, ensuring the stability of land and preventing landslides, and enabling the drainage of waters and irrigation of agricultural land. The land-water connection is also visible in Brazil's (Rio Grande do Sul) *Decree creating the Water and Soil Conservation Policy (No. 52 751 of 2015)*. This Decree explicitly recognizes the interplay of productive, social and environmental aspects and seeks to increase the permeation capacity of agricultural land; reduce water erosion rates; and decrease the risk of water scarcity. The legislation promotes collaboration among authorities responsible for agriculture, livestock and irrigation as well as education, sustainable development and the environment, rural development and cooperatives. It also encourages partnerships with the private sector on financing and other aspects of technical assistance projects. Ukraine's *Resolution of the Cabinet of Ministers validating the National Action Plan for combating land degradation and desertification (No. 271-r of 2016)* addresses afforestation programmes and integrates water basin management approaches in drought management plans. The integrated approach to water and soils management is also visible in Ethiopia's (Afar) *Rural Lands Administration and Use Proclamation (2009)* which requires master land-use plans to take into account soil type and weather conditions. Article 20 requires that where soil and water conservation measures are undertaken in rural areas, free grazing is forbidden. Soil conservation and water harvesting are to be instituted in rural lands with a gradient of less than 30 percent. Gullies are to be rehabilitated either privately or by the local community. Biodiversity in rural wetlands is subject to conservation, and should only be utilized in prescribed cases. Lands

that are designated as 'soil development and conservation areas' shall be given adequate protection in order to sustainably preserve them with their entire ecosystems.

### 3.5.3. Addressing pollution through surveys, mapping and remediation mechanisms

**Legislation may require landowners to investigate, assess or remedy pollution or contamination; alternatively, this may be a specific function assigned to the competent authority.** The Bulgarian *Soils Act (No. 89 of 2007, as amended in 2011)* empowers the competent authority to develop inventories through preliminary surveys and research, to undertake detailed surveys that involve risk assessment, to develop projects for restoration in areas with degraded soils, and to monitor and maintain areas with restored soil functions. The competent authority is tasked with an assessment of the condition of the soils, disaggregated by sector of the national economy. Monitoring of qualitative and quantitative indicators of soil condition and changes are also provided for (Article 27). Under Article 21, a register of areas with degraded soils is to be established which should contain information on, *inter alia*: the location, the cause of degradation, the results of a risk assessment, and the budget expended for survey and restoration. Restoration costs are to be borne by the person that caused the damage or the owner of the land. Article 24 calls for the development of a National Programme for Soil Protection, Sustainable Use and Restoration that is subject to an environmental assessment in accordance with environmental legislation. The Programme is also to include priorities, sourcing of funding, a five-year action plan with timelines and competencies listed. This national plan should guide regional and municipal programmes for sustainable use of soil resources. China's *Soil Pollution Prevention and Control Law (2018)* calls for a nationwide soil condition census to take place every decade at minimum. Nationwide monitoring stations are to collect and share data disaggregated by sector, (environmental, agricultural, housing, water resources, forestry and grassland, etc.). Agricultural lands are classified as: priority protection, safe utilization and strict control according to the degree of soil pollution and need for rehabilitation.

**Owing to their technical nature, soil quality standards are set out in administrative instruments or standards and not frequently in primary legislation. These instruments typically set out methodologies and procedures for assessing soil quality or contamination and carrying out risk assessments in relation to land use and any remediation measures.** The Azerbaijan *State Standard for Soil quality – Sampling – Part 5: Guidance on the procedure for the investigation of urban and industrial sites with regard to soil contamination (No. AZS 834-5-2015),* under the aegis of a technical committee on ecology, offers a translation of the International Standards Organization (ISO) standard: *ISO 10381-5:2005 Soil quality – Sampling – Part 5: Guidance on the procedure for the investigation of urban and industrial sites with regard to soil contamination*. The text guides the procedure for the investigation of urban and industrial sites, whether there are grounds for believing soil is contaminated. The text identifies the information to be collected for a risk assessment for the purposes of remedial action plans. Similarly, South Africa's *National Norms and Standards for the Remediation of Contaminated Land and Soil Quality in the Republic of South Africa (GN. 331 of 2014)* provides a uniform methodology to determine contamination status and the applicable criteria and procedures to asses contaminated land. The text also establishes minimum standards for environmental protection measures for remediation activities. The procedures extend to a landowner undertaking site assessment and remediation activity under the county's *National Environmental Management (Waste) Act (No. 59 of 2008)*. Article 5 sets out detailed soil screening values. Finland's *Government Decree on the Assessment of Soil Contamination and Remediation Needs (No. 214 of 2007)* requires an assessment of soil contamination (including an assessment of the hazards to human health and the environment posed by harmful substances), and sets out the grounds for requiring for remediation measures. Some of the parameters of assessment are: the concentration; harmful properties of the substances, soil and groundwater conditions; the existing and future uses of the area; and the probability of exposure in the short or long term (Section 2). The assessment should also identify missing data points and the methodology that was followed in undertaking the assessment. Section 3 stipulates that soil contamination and remediation needs

assessments are triggered if the concentration of harmful substances in the soil exceeds the threshold value prescribed in the text. The Decree also requires representative sampling in the area under assessment.

**Legislation may establish provisions for the management of sites that are in fact contaminated. Land-use plans may be used to protect future soil quality, prioritizing activities that reverse degradation or restore soil quality and functions.** China's *Soil Pollution Prevention and Control Law (2018)* employs a number of mechanisms to enhance soil quality (which are recognized as contributing to public health, and sustainable economic and social development). The Law calls for the development of soil management plans, soil quality standards (such as contamination limits), and soil surveys. The Law advocates research and technology solutions to prevent and manage soil pollution. Peru's *Supreme Decree on the Criteria for the Management of Contaminated Sites (No. 012-2017-MINAM)* sets out a framework for the management of contaminated sites resulting from agricultural production, extractive industries or other activities that entail the use or disposal of chemical substances or hazardous waste (considering aspects such as toxicity, mobility, persistence, etc). The Supreme Decree expressly underlines its complementarity to legislation on environmental remediation funding, and environmental liabilities for mining and petroleum. Remediation phases are identified as being: identification, evaluation and implementation. The monitoring of natural regeneration can be used exceptionally when it is not technically or economically viable to carry out remediation. Monitoring is to be used to determine when a site has been restored to safe or reduced levels of contamination.

## 3.6. Key chapter messages

**Drivers of land-use change** should be understood so that legislation can set incentives and requirements for sustainable land use and ensure that private incentives do not run counter to social objectives. Legislation may promote certain sustainable technologies, practices or subsidies and other fiscal incentives may create preferences for certain types of technology, practices or methodologies for land management.

**Ensuring land tenure security** for the poorest and most marginalized farmers while balancing productive and sustainable use of land by those with the resources to do so is a policy balance that must feature in legislation. Clear and secure tenure arrangements enable food security, reduce poverty, support sustainable livelihoods, enable social stability and housing, and foster environmental protection. Legislation should establish a framework for the transparent administration of tenure rights.

**Secure tenure rights contribute to sustainable land management** and sustainable use of associated natural resources. Legislation should accommodate overlapping rights over the same resource, for example, by granting different types of use in different seasons. Legitimate tenure rights should be legally recognized as well as the rights of communities that use land and related resources as commons. Legislation may allow responsibility and power be accorded to local structures for governance of the commons (subject to conditions such as inclusivity, accountability and sustainable management).

**Indigenous peoples' tenure regimes** are typified by collective rights over natural resources that reflect both individual and community identity, tradition and spirituality. There is a range of examples of statutory recognition of customary rules and arrangements around the world, varying in scope, wording, strength and effect.

**Pastoralist rights** of mobility and a protection of their migration routes should be addressed in legislation, coupled with a recognition of their role as stewards of the environment as well as their duty to protect grazing lands against degradation.

**Women's tenure rights** should be explicitly addressed in legislation that is cognizant of the challenges to women's rights in relation to land and associated resources.

**Dispute resolution provisions** in legislation should be designed to address the pressure on land resources from competing interests. Such provisions should be simple, clear, and cater to the prevailing contextual

realities of the country. Also, legislation should provide for a system of appeals against determinations that are made by a competent authority.

**In connection with large-scale agricultural investments,** safeguards in legislation should be geared towards the protection of existing legitimate tenure rights and the environment, as well as the continuation of livelihoods relating to the resource. Allowing the participation of the local community in decision-making enables their priorities to be accommodated in the investment design and approval process.

**Spatial planning priorities set out in legislation** serve as frameworks for the development of flexible and adaptable land planning instruments formulated at various tiers of government, and facilitate consistency and uniformity in the development of localized plans that ultimately contribute to common goals.

**Integrating land-use planning with planning relating to other natural resources** is a key feature of legislation for sustainable resources management. Spatial planning is multi-level and integrates multiple stakeholders to manage trade-offs among sectors. The process is people-centric and participatory. Integrated landscape management is also used to balance the needs of multiple stakeholders from the scale of local landscapes to the subnational, national and transboundary scales, providing decision-makers with land use options based on the biophysical potential of the resources as well as social and economic considerations.

**Spatial planning and zoning instruments** can be used to mitigate disaster risks and their distribution, and can be used to identify risk areas. These instruments can be used to develop and implement mitigation strategies and also climate change adaptation strategies.

**A participatory approach that is consultative and user driven**, with adequate time and information provided to enable stakeholders to review and respond to planning proposals, is a key mechanism to balance and weigh competing interests.

**Planning at various levels of government** (local, provincial or national) means that certain elements may have more importance at one level than at others. Central-level functions may involve overall planning, coordination and oversight, as well as capacity building, resource allocation and conflict resolution. At subnational level, specific groups of uses should be balanced according to local needs, while at the same time conforming to the overall master plan.

**Soil functions** depend on particular soil qualities, which in turn affect ecological and productive services. Legislation may offer various means to balance the competing demands placed upon soil, and to provide ways to protect or rehabilitate the resource. Legislation may establish schemes for monitoring and inspection, establishing soil standards and indicators of soil fertility, as well as data collection and reporting.

**Protection of the soil** from threats such as soil erosion, organic carbon loss, soil nutrient imbalance, soil salinization and other challenges require legislative provisions that are context specific. Various mechanisms are used in legislation to protect soil quality, such as soil pollution mapping, soil management plans, soil quality standards (such as contamination limits), and soil surveys. Risk assessments often precede remedial actions and assist in the identification of suitable measures.

# Appendix B. Key international instruments to guide national legislation

## I. Legally-binding instruments

*African Convention on the Conservation of Nature and Natural Resources (Revised), (Art. VI Land and Soil),* 2003, amended 2017. (also available at https://au.int/sites/default/files/treaties/7782-treaty-0029_-_revised_african_convention_on_the_conservation_of_nature_and_natural_resources_e.pdf).

*Convention on Biological Diversity* (CBD), adopted in Nairobi, 22 May 1992, and open for signature in Rio de Janeiro, 5 June 1992. (also available at https://www.cbd.int/doc/legal/cbd-en.pdf).

*European Landscape Convention,* European Treaty Series - No. 176, 2000. (also available at https://rm.coe.int/1680080621).

*Soil Conservation Protocol* (Protocol on the implementation of the Alpine Convention in the field of soil conservation), 1998. (also available at https://www.alpconv.org/fileadmin/user_upload/Convention/EN/Protocol_Soil_Conservation_EN.pdf; https://www.alpconv.org/fileadmin/user_upload/Convention/EN/Framework_Convention_EN.pdf).

*United Nations Convention to Combat Desertification (in those countries experiencing serious drought and/or desertification, particularly in Africa),* adopted in Paris, 17 June 1994, and open for signature 14 October 1994. (also available at https://www.unccd.int/sites/default/files/relevant-links/2017-01/UNCCD_Convention_ENG_0.pdf).

- Land Degradation Neutrality (LDN) target, 2015. (also available at https://www.unccd.int/actions/ldn-target-setting-programme).
- Zero Net Land Degradation, 2012.

## II. Non-legally-binding instruments

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*Principles for Responsible Investment in Agriculture and Food Systems*. Committee on World Food Security (CFS), 2014. (also available at http://www.fao.org/3/a-au866e.pdf).

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**Angola.** *Law approving the Conflict Mediation and Conciliation Norm (No. 12/2016).*

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**Australia.** (New South Wales) *Biodiversity Conservation Act (2016).*

**Australia.** (New South Wales) *Land Management (Native Vegetation) Code (2018-83).*

**Australia.** (New South Wales) *Local Land Services Act (No. 51 of 2013).*

**Australia.** (Queensland) *Planning Act 2016 (No. 25 of 2016).*

**Australia.** (Queensland) *Soil Conservation Act (No. 37 of 1986).*

**Australia.** (South Australia) *Aboriginal Lands Trust Act (2013).*

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**Azerbaijan.** *State Standard for Soil quality – Sampling – Part 5: Guidance on the procedure for the investigation of urban and industrial sites with regard to soil contamination (No. AZS 834-5-2015).*

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**China.** *Soil Pollution Prevention and Control Law (2018).*

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This Chapter should be read in conjunction with Chapter 2 on themes that are common to all the sectoral chapters in this book. The diverse illustrative snapshots of legislative elements on select subjects offer an aerial view to demonstrate how countries have captured the interplay between social, economic and environmental exigencies, while using the very narrow and specific lens of highlighted legislative provisions. The reader should not infer that the examples selected are necessarily successfully implemented, or result in the desired impact; the chapter does not examine country contexts, allocation of resources, political priority or any of the myriad factors that may affect successful implementation and enforcement. Assessing the effectiveness, regulatory performance and range of potential externalities is an undertaking that is highly context-specific. Accordingly, the examples here do not make recommendations that are applicable to all jurisdictions, but rather draw attention to the way in which different countries have approached sustainable governance of the resource.

While this Chapter explores sustainability dimensions from the narrow lens of sectoral legislation, i.e. water-specific laws, it should be emphasized that in practice, an approach that recognizes inter-sectoral linkages and policy coherence necessarily involves a contemporaneous examination of legislation on, among other areas, environment, land use and land tenure, agriculture and fisheries, forestry, wetlands, energy, sanitation and water services, natural disasters and emergencies, investment, infrastructure, transport, public-private partnerships and local government administration.

## 4.1. Importance of water resources to sustainable development

Critical for human health and life, crucial for aquatic life and the environment, water provides economic benefits as well. Aquatic ecosystems offer habitat for plants and animals (including fish), biodiversity conservation, food security, transportation, recreation, energy generation and the purification of human and industrial wastes (Flint, 2004).

These social and environmental values have placed global water resources under intensified pressure from population growth, and intensifying competition among users. As an example, large-scale water infrastructure projects generate hydropower and store water for irrigation, flood management and domestic use, but can be detrimental to the environment, downstream agro-ecological systems, and local communities (FAO, 2017d). Furthermore, the water resource base faces increased stress from climate change (resulting in floods and droughts) poor management and pollution (which reduces resilience of water bodies more so than in unpolluted ones) (IUCN, 2011). These considerations are in addition to intrinsic variability in water quality and availability in different areas. Pollution from industrial activity is further enhancing water scarcity by reducing water usability downstream. Certain biodiversity-rich ecosystems such as wetlands need particular attention. Water withdrawal rates almost double demographic growth rates (FAO, n.d.(d)), and about 30 percent of the planet's human population is located in areas of medium to high water stress. Whether or not in these areas, some persons and communities may need targeted interventions to prevent further marginalization or reduced access to water resources. Agriculture accounts for 70 percent of global water abstraction, although this figure varies considerably across countries, while industry and energy combined constitute about 20 percent (UNW-DPAC, 2014). Water is required for food, not only for production but all across the value chain, and the increasing global population means more water will be needed for food but also other sectors as well. Much of the need for water for food will be in developing countries (Alexandratos and Bruinsma, 2012). Sustainable water governance means making the most productive use and the fair and efficient allocation of available resources within the environmental limits so as to achieve water security. Water planning, water accounting and management systems must balance these competing interests.

The importance of water management to sustainable development is recognized in Goal 6 of the Sustainable Development Goals (SDGs): *Ensure availability and sustainable water management and sanitation for all*. This SDG seeks to increase water-use efficiency and improve

water quality. It also calls for action to protect water-related ecosystems, including mountains, forests, wetlands, rivers, aquifers and lakes. The SDG 6 underscores the importance of international cooperation and capacity-building support as well as improved local community participation in water management.

## 4.2. Constitutional references to water

**As the highest law of a country, Constitutions are an important tool to enshrine sustainable development imperatives in connection with the use and management of water, as this text defines the parameters within which water legislation is developed.** Constitutions (or national laws) may also establish subject matter boundaries of what regional or local governments may legislate on; for example, certain management of water resources is relegated to province or state level. This varies according to the country's legal system and legal traditions. Setting out the right to water and sanitation in Constitutions enables countries to establish a fundamental principle to be followed by policy-makers, public institutions, citizens and corporations.

**Increasingly, mention of water in Constitutions refers to the individual human right to water, while some jurisdictions refer to access to water as linked to other human rights.** In a review of some of the more recent Constitutions within the temporal scope of this Study, Egypt's *Constitution (2014)* incorporates clean water as composite in the right to food, and also that "every citizen has the right to enjoy the River Nile" while prohibiting harm to the riverine environment. Article 12 of Ecuador's *Constitution (No. 449 of 2008)* recognizes the right to water as essential for life and without derogation, unalienable, not subject to a statute of limitations and immune from seizure. Tunisia's *Constitution (2014)* establishes that the right to water is guaranteed (Article 44). Fiji's *Constitution (2013)* also includes a right to clean and safe water in adequate quantities. Where the state claims that it does not have the resources to implement any of its social and economic rights, the burden falls upon the state to demonstrate that the resources are not available. Article 48 of the Democratic Republic of Congo's *Constitution (2006)* framed the right of access to drinking water within the right to housing.

**Constitutions also refer to the state's role in protecting water as a public good.** Many jurisdictions refer to protecting natural resources in the country, often with generic references to the environment or with some expressly identifying water as one such resource. Tunisia's *Constitution (2014)* stipulates that the conservation and rational use of water is a duty both of the state and the general public (Article 44). The Dominican Republic's *Constitution (No. 10 805 of 2015)* renders water a strategic national asset of public use, and therefore inalienable, imprescriptible and essential for life. The human consumption of water has priority over other uses. Viet Nam's *Constitution (2013)* states that water resources are public property, owned by the country and managed by the state. Article 63 calls for efficient and sustainable natural resources management, including the prevention and control of natural disasters and climate change mitigation. Notably, Ecuador's *Constitution (No. 449 of 2008)* states in Article 71, that nature has the right to integral respect for its existence, and the environment should be allowed "regeneration of its life cycles, structure, functions and evolutionary processes". Furthermore, this Constitution declares that energy sovereignty shall not be achieved to the detriment of food sovereignty nor shall it affect the right to water (Article 15). Article 318 identifies water as part of the country's public heritage and a vital element for nature and human existence.

## 4.3. Policy and legislative coherence

Factors and actors outside the water sector may influence how water is allocated. Notably, as indicated in Section 4.1, water allocation is influenced by agriculture, trade, energy, environmental and industrialization policies, and to the extent that these policies are not within the remit of water management agencies, coherence is required. Only when the policy and evidence-base is clear can sound legislation be developed.

### 4.3.1. Water, energy and food nexus and integrated water resource management approaches

**The water, energy and food (WEF) nexus approach and Integrated Water Resource Management (IWRM) concept both promote efficient, equitable and sustainable management of water resources. These paradigms also provide a way to cope with conflicting demands, and embrace the notion that the water sector cannot be governed in isolation.** The WEF nexus highlights the inextricable relationship between water security, energy security and food security (FAO, 2014c). Actions in one area can have implications for one or both of the others. The IWRM is water-centric, focusing on water in relation to other uses, while the WEF nexus is concerned with balancing different uses and user goals of water, energy and land resources. Also, there is a distinct focus inherent in the WEF nexus approach in resource efficiency owing to its emphasis on use and input aspects relating to water, from the perspectives of the food and energy sectors.

**The IWRM is more established and features prominently in national legislation while to date, WEF nexus approaches have remained largely in conceptualization of approaches and in policy discussions.** There have been different iterations over the years as to what IWRM entails. The Global Water Partnership defines IWRM as:

> A process which promotes the coordinated development and management of water, land and related resources, in order to maximize the resultant economic and social welfare in an equitable manner without compromising the sustainability of vital ecosystems (GWP, n.d.).

As the older policy of the two approaches, IWRM was captured in Agenda 21 (1992) and in the Johannesburg Plan for Implementation (2002). The IWRM is captured as an explicit Target 6.5 of SDG 6 (implement integrated water resources management at all levels, including through transboundary cooperation). The IWRM involves a "coordinated development of (a) land and water; (b) surface water and groundwater; (c) river basins and their coastal and marine environment; and (d) upstream and downstream interests" (GWP, 2004).

**The WEF nexus approach employs a systems-thinking approach starting at basin or catchment level viewing water resources, energy and food as interrelated systems. Thus, some commentators see IWRM as a water-perspective of the nexus approach. The WEF nexus approach has a deeper reach into other sectors by directly addressing the needed trade-offs.** This expansion of stakeholders making the decisions and the necessary coordination required to bring greater policy integration could be a challenge in practice in many countries.

**As a fairly recent evolution, legislative references to the WEF nexus approach were difficult to find, but some very recent national water strategies recognize this concept.** The National Water Strategy of Jordan (2016–2025) identifies the competent water authority as responsible for creating a better understanding among stakeholders, of the interdependence of water, food, energy and climate resources. According to the Strategy, water security remains central to the concept of the nexus, because food and energy security cannot be achieved without it.

**Even without explicit inclusion of the term, legislation in some countries does espouse parts of the WEF nexus approach, for example in making strong connections with the agriculture and energy sector (the latter is less frequent).** The Republic of Korea's *Water Quality and Aquatic Ecosystem Conservation Act (No. 8 852 of 2008)* Article 10 establishes a Committee under the aegis of the Minister of Environment with representation by the ministers responsible for finance; land, infrastructure and transport; and agriculture. The role of the committee is to manage water resources through policies that protect sustainability of the resource, water quality.

**Notwithstanding, none of the water legislation reviewed provides the extensive reach into other sectors as called for by the WEF nexus approach, at least not at face value.** This concept may gain traction in coming years. Existing broad and overarching provisions that mandate policy coherence, coordination and bringing together different stakeholders offer sufficient enabling environments for the approach

to be implemented at country level. However, the inter-play of various ministries perspectives and the issuance of joint or integrated solutions may not sit comfortably in legal traditions in some countries that limit legislation to one ministry or one sector. Other legal instruments such as Memoranda of Understanding, or where there is a legal option, joint circulars or regulations may be used for such intensely collaborative approaches.

**The IWRM essentially provides a framework for water resources management at the watershed, basin or catchment scale, and positions the water sector as the lens through which other sectors are viewed.** Viet Nam's *Law on Water Resources (No. 17/2012/QH13)* Article 3 calls for water management at the basin level as well as administrative boundaries, and requires water to be governed in consideration of the management of other natural resources. Also to be considered are the various water sources, e.g. surface water and groundwater, river estuaries, internal waters and territorial seas, and consider downstream areas and upstream areas. São Tome and Principe's *Water Resources Framework Law (No. 07 of 2018)* Article 29 refers to the use of an IWRM approach to ensure the coordination of water uses and the integration of management of other natural resources, particularly those that are intrinsically connected. Coherence with the broader national legal framework is also explicitly noted. This text defines IWRM as a process that promotes the "development and the coordinated management of water, land and related resources to equitably maximize the economic and social benefits, without compromising the sustainability of vital ecosystems". Sierra Leone's *National Water Resources Management Agency Act (No. 5 of 2017)* offers a similar definition of IWRM. The Agency established by the Act is tasked with promoting and implementing IWRM, and accordingly, coordinating the management of: economic development, social welfare and environmental sustainability; land and water resources; the river basin and its adjacent marine and coastal environment; and upstream and downstream interests (Section 5).

**Basin-level management promoted by IWRM can offer equitable and rational water allocation. Basin boundaries may cut across**

**traditional jurisdictional and administrative boundaries** (AfDB, 2010). Namibia's *Water Resources Management Act (No. 11 of 2013)* firstly promotes basin-level integrated water resources management plans that comprise social, technical, economic, and environmental issues, and then elaborates further what such plans entail. Basin Committees are to develop such plans and feed into a national plan. The national plan is developed through the cooperation of regional councils, basin management committees and water services, and is subject to the input and comment of interested parties. Section 32 requires that the national plan includes: (a) water accounting, comparing forecasted demand with availability; (b) options for meeting the estimated demand; and (c) mechanisms to protect water availability and quality. The United Republic of Tanzania's *Water Resources Management Act (No. 11 of 2009)* presents similar requirements in its Section 31, which stipulates the need for a national integrated water resources management plan that are based on plans prepared by the Basin Water Boards and Catchment Water Committees. These plans have similar water balance, data and water availability content requirements.

**River basin organizations (RBOs) promoted by IWRM are important to ensure that water is managed as a holistic and integrated unit.** Water bodies may extend across multiple international boundaries or sub-national districts and provinces (Section 4.11.1 discusses multi-level governance structures required for water resources management). In legislation, these bodies have a wide range of functions, from supporting government decision-making in an advisory capacity to being direct decision-makers with regard to basin planning, management, development and protection. Legislation often prescribes the functions, structure and funding of basin organizations; setting clear mandates and jurisdictions is critical to avoid fragmentation and duplication of functions. Ethiopia's *River Basin Councils and Authorities Proclamation (No. 534 of 2007)* calls upon RBOs to promote and monitor the integrated water resources management process in their respective river basins to utilize the water resources "for the socio-economic welfare of the people in an equitable and participatory manner, and without compromising the sustainability of the aquatic ecosystems". A Basin High Council

shall, among other things: (a) provide policy guidance and planning oversight to ensure coordination among stakeholders; (b) oversee the preparation of the river basin plan for approval by the Government; (c) decide on water allocation rules and principles; and (d) manage water use disputes between Regional States in the basin. The Proclamation also defines powers and duties of Basin Authorities and Director Generals of Authorities, in particular in relation with issuing permits relating to water use and water works, river information and river basin management plans.

**Stakeholder participation is the foundation of IWRM. Diverse stakeholder interests on community development, environmental matters, property and access to resources should be reflected** (AfDB, 2010). A multi-stakeholder approach improves fairness and accountability in decision-making, and a consideration of the impacts on social, environmental as well as ecological ramifications of the proposals in their plans and decisions. Namibia's *Water Resources Management Act (2013)* identifies community participation in a water management area as a core function of the basin management committee (Section 23). Canada's *Great Lakes Protection Act (S.O. 2015, c. 24)* requires that the competent Council should extend invitations to the following to attend its meetings: (a) the Great Lakes ministers; (b) representatives of the interests of municipalities located in the river basin; (c) representatives of the interests of First Nations and Métis communities that have a historic relationship with the river basin; and (d) representatives of the interests of environmental organizations and conservation authorities, the scientific community and the industrial, agricultural, recreational and tourism sectors operating in the river basin. This Act expressly recognizes the Council as being a mechanism for information sharing and for the responsible minister to receive input from individuals participating in the meeting.

### 4.3.2. Water tenure

**Water tenure, a relatively nascent conceptualization, has been characterized as "the relationship, whether legally or customarily defined, between people, as individuals or groups, with respect to**

**water resources"** (FAO, 2016e). Tenure arrangements, whether formally enshrined in legislation or in customary rules (see Section 4.4.2), determine access to water resources and determine the relationship among water users (FAO, 2016e). Tenure arrangements in legislation typically include provisions on licensing, water supply contracts, rights to water resources for domestic and personal use, exempt commercial uses, and environmental reserves or minimum flow allocations.

**The water tenure paradigm embraces an examination of all water uses to develop a framework that is built on the understanding of multiple user perspectives.** Different types of water tenure may be associated with different categories of water use, or with broader goals, such as security, equity, and efficiency (FAO, 2016e). Box 4.1 outlines the utility of water tenure as a launching pad for systems thinking approaches to inform governance arrangements that balances a range of users, uses and goals.

**Box 4.1**
**Water tenure for holistic and integrated resources management**

Using the water tenure paradigm to conceptualize how to balance uses and competing interests, may:

- offer an opportunity to take a nuanced and holistic approach to understanding relationships with water resources;
- be coherent with the approach in other natural resources, such as land;
- enable the recognition that one type of tenure system may not be superior than another;
- strengthens multi-disciplinary approaches to addressing water resource problems; and
- allows for a focus on the most important actors: water users.

*Source:* FAO, 2016e.

### 4.3.3. Cross-sectoral coordination

**In any approach that espouses the need for multi-sectoral perspectives, coordination and cooperation are paramount.** Sustainable water management is dependent on the effective coordination of a range of institutions at various vertical (administrative) levels as well as horizontal (sectoral) actors and stakeholders. Malawi's *Water Resources Act (No. 2 of 2013)* identifies as an express objective, the promotion of rational management and use of water through the "coordination, allocation and delegation of responsibilities among ministers and public authorities".

**An identification of the relevant ministries, sub-national bodies and other stakeholders in water laws brings together relevant entities to enable cooperation, collaboration and coordination.** This avoids the management of other resources or sectors such as food and energy, in such manner as is contradictory or overlapping, and prevents gaps, inefficiencies and fragmentation. Lebanon's *Water Law (No. 77 of 2018)* establishes the statutory water body as comprising the Ministers of Energy and Water, Environment, Industry, Agriculture, Health, and Tourism, and this body is responsible for issuing advice on sustainable water management. Such arrangement enables formal linkages between various sectors and the consideration of diverse sectoral perspectives. Similarly, the United Republic of Tanzania's Water Board established under the *Water Resources Management (2009)* includes representatives of agriculture, industry, and energy, among other stakeholders. Section 21 cites its roles as including, among other things, integration of inter-sectoral water resources assessment and planning; advising on coordination of basin planning and management; and advising on inter-sectoral and inter-basin conflicts.

**Water legislation may call for coordination between legislation through explicit provisions or require the establishment of multi-sectoral plans.** Article 4 of Viet Nam's *Law on Water Resources (No. 17/2012/QH13)* directs the competent water authority to coordinate broadly with ministries, ministerial-level agencies and provincial-level People's Committees in elaborating water management.

Article 72 specifies the areas for cooperation and coordination as follows: the protection of water resources; preventing pollution; managing appropriate allocation; maintaining minimum river flow; establishing groundwater abstraction limits; and managing reservoirs and dams. Notably mineral mining and forest management in river basins are also included as areas for cooperation. As coordination is expressed in general terms, this particular instrument does not specify the respective roles nor detail how such coordination will be effected in practice. What is needed to support such arrangements would be implementing regulations or Memoranda of Understanding as the legal system allows. Master plans, as found in Article 21 of the Vietnamese Law, is also a means for multisector cooperation. Here the competent water authority is required to coordinate with the Ministry of Agriculture and Rural Development, the Ministry of Industry and Trade, the Ministry of Construction and related ministries and ministerial-level agencies in elaborating national water resource master plans for submission to the Prime Minister for approval. Similarly, Article 16 of São Tome and Principe's *Water Resources Framework Law (No. 07 of 2018)* calls for coordination between water management and land planning and use. The water plans established under the Act must be consistent with water and environmental policies and, notably, that such plans are underpinned by sound data provided by the National Water Information System.

## 4.4. Access to water resources

### 4.4.1. The right to water

**The UNGA Resolution 64/292 on the Right to Water (2010) acknowledged that clean drinking water and sanitation are human rights, and are also essential to the realization of other human rights.** This is most evident in the correlation between the right to water and sanitation and the rights to housing, health and food. See Chapter 2 for a discussion on human rights in relation to natural resources. In the decades prior to this Resolution, trends towards privatization of water put into sharp relief the need to ensure economic disparities do not render parts of the population without water for their basic needs.

**Legislation giving effect to the right to water and sanitation must consider a sufficient and continuous supply for personal and domestic uses, and may recognize the latter as the highest priority use.** Bangladesh's *Water Act (2013)* asserts that the right to potable water, and to water for hygiene and sanitation, shall be treated as the highest priority right. Article 4 of the Niger's *Ordinance No. 09-2009 on the Water Code (2009)* grants to each citizen, the fundamental right to access water according to personal and domestic use needs. Similarly Benin's *Law No. 44-2010 on Water Management (2010)* grants citizens the right to water for personal uses, for food, for life and for their basic dignity. Indonesia takes a prescriptive approach in *Regulation on technical guidance and procedures for regulating tariff of drinking water in regional administration-owned drinking companies (No. 23-2006)* and sets a specific figure for drinking water needs per person per day. New Zealand's *Environment Canterbury (Temporary Commissioners and Improved Water Management) Act (No. 12 of 2010)* in Schedule 1 prescribes that planning of natural water use is guided by a certain order. The first order priority uses are: for the environment, customary uses, community supplies and stock water. Second order priority considerations are: irrigation, renewable electricity generation, recreation, tourism and amenity.

**Some countries forbid cutting off water services in dwellings or premises used for certain public services on the grounds of non-payment.** Such approach can be found in the United Kingdom of Great Britain and Northern Ireland's *Water Industry Act (Cap. 9 of 1999)*. The Netherlands *Drinking Water Act (2009)* Article 9 employs language to prevent the disconnection of drinking water to small-scale users as much as possible. In order to mitigate scope for abuse, Finland requires a five to ten-week reprieve period after notification before terminating supply (Smets, 2006). Section 22 of the Finnish *Water Services Act (No. 119 of 2001)* states that the general supply conditions for water services must be fair and equitable and tasks the Consumer Ombudsman with ensuring compliance with the law of the general supply conditions.

**The scope of the right to water in national legislation may be contingent upon whether water is drawn directly from the source**

**or from a supply network.** Czechia's *Water Act (2001)* states that any person may withdraw surface water for his or her own needs without permission or approval of the water authority, provided such withdrawal or use does not require special technical facilities.

**The right to water comprises ensuring standards of water quality and safety to render the water drinkable.** The Republic of Korea's *Drinking Water Management Act (2007, amended in 2016)* directs the competent authority to formulate policies to control the quality of drinking water, spring water and saline groundwater. The Act sets out quality audits and tests, the designation of spring water conservation areas (and prohibited activities in the vicinity of such areas) and environmental impact surveys for those who intend to manufacture bottled water. Setting up protection zones around drinking areas is also seen in Czechia's *Water Act (2001)* to protect yield/volume, quality and wholesomeness of groundwater and surface water resources for drinking water supply. Section 31 of this Act also requires the establishment of indicators and values of admissible pollution for surface water resources used as a source of drinking water.

**Everyone has the right to a water and sanitation service that is physically accessible within, or in the immediate vicinity of the household, educational institution, workplace or health institution.** Finland's *Water Services Act (2001)* in Section 6 states that a municipality must make sure that appropriate measures are taken to establish a water supply plant to meet the need within its sphere and to expand the area of operation should the need arise, and to otherwise secure the availability of sufficient water services. Similarly, the Malaysian *Water Services Industry Act (No. 655 of 2006)* requires that the entity responsible for distributing water shall ensure that water is supplied to all premises within its distribution area (Section 36).

**The right to water means water, water facilities and services, must be affordable for all.** Water use charges may still be imposed as a means of encouraging effective and efficient water use. The trade-off may be achieved through prescribed pricing or tariffs, or possibly through subsidies for low-income households. The latter may be addressed

in legislation other than the water sector, including in Constitutions. Article 368 of Columbia's *Constitution (1991)* states subsidies are to be made available to persons with low income for public household services that address their basic needs. Alternatively, legislation offers parameters for pricing, for example, according to Article 8 of the Netherlands *Drinking Water Act (2009)*, the owner of a waterworks company must use tariffs and conditions that are reasonable, transparent and non-discriminatory. Bangladesh's *Water Act (2013)* allows for an exception to be made by the responsible minister, by notification in the official Gazette, any class of person or community, for a particular time or area, from paying the price of water used in households. The Australian *Water Management Act (2000)* exempts Aboriginal Land Council areas from water supply charges.

Argentina's (Misiones) *Regulatory Framework for the provision of potable water and sewage services (Law No. 19 of 2016)* is more prescriptive. Tariffs are to be based on objective, transparent and verifiable procedures, resulting in fair and reasonable rates. Any entity awarded through a bidding process to provide services is subject to a list of rules in Article 18 including, among other stipulations: respecting the authorized tariffs; and attending to the user's claims, in a manner that protects user rights. The South African *National Water Act (No. 36 of 1998)* in its Chapter V also offers more concrete pricing prescriptions. The preamble to the chapter indicates that the pricing strategy may differentiate among geographical areas, categories of water users or individual water users, one of the objectives of which is social equity. Prices may be differentiated according to user (for example, their economic circumstance) and according to geographic areas (socio-economic aspects within the area). Article 61 sets out the strictures within which financial assistance can be granted, considering: the need for equity, transparency, redressing the results of past racial and gender discrimination, the financial position of the recipient, and the need for water resource protection.

### 4.4.2. Reconciling access to water in statutory legislation and in informal or customary systems

**Access to water may be established by different systems of rules: formal statutory legislation, or in customary or religious rules. Customary practices with varying priorities must be included in water planning and accounting.** Water tenure paradigms may be useful in identifying such practices (see Section 4.3.2). Where customary uses and practices are prevalent, whether or not such rights are recognized by legislation, and whether mechanisms exist to reconcile these rights when they conflict with statutory rights, it is nonetheless important that water allocations and water accounting (see Section 4.10) have considered the full range of users.

**In some countries, treaty settlements provide the broader framework for the reconciliation of these diverse systems of rights.** This is evident in New Zealand (see Section 4.5.2 for more on customary rights of indigenous peoples) and also in Canada. In the latter case, the Indian Claims Commission is a federal body tasked with addressing disputes between First Nations and the Government relating to claims based on treaties, agreements or administrative actions. Negotiations and administrative appeals of licensing decisions are also used to determine rights within a given area. Legislation typically requires consultations expressly with First Nations communities to ensure their views are considered and their rights taken into account in decision-making. Finally, arrangements can be made for co-management regimes where indigenous peoples participate directly in decisions over water resources (FAO, 2008b).

**In some jurisdictions, customary rights are recognized in their Constitutions or in specific legislation addressing indigenous peoples or other non-water legislation.** Thus, water-specific texts may not necessarily mention customary uses, and such omission does not necessarily negate legality of such uses. However, recognition of these uses is critical for accounting, planning and management. For clarity and consistency, the legislation may make reference to how rights are balanced and conflicts addressed.

**Water laws may also make references to customary rights in the context of water planning provisions and licensing provisions.** Where customary water use rights are recognized by statute, it is important to consider that if registration or other formal requirements are mandatory for recognition, this may have unintended impacts on marginalized groups that may not be able to navigate complex administrative processes (FAO, 2008b). Simplified procedures enable rural, remote and other water users to effectively comply with requirements under formal legislation.

**While customary law is well adapted to local needs and realities, any entrenched social or gender discrimination may be perpetuated.** As a result, Constitutional or legislative provisions that recognize customary systems do so with the express caveat that the principles, rules and functioning of such systems do not run counter to non-discrimination or other fundamental tenets established in the Constitution.

## 4.5. Water allocation

**Legislation must establish how are decisions of water allocation made, and by whom. Efficient water allocation requires balancing competing values and demands; systems around the world vary from very detailed priority allocations to case-by-case negotiations** (FAO, 2009a). Water allocation requires looking at the availability of water (informed by water accounting – see Section 4.10) as well as economic and environmental considerations. The social dimensions to water allocation may be more visible through the tenure paradigm, and are seen with regard to access by various socio-economic groups, including local and indigenous communities, as well as rural or urban area dwellers. Water uses are diverse. Some of this diversity is captured by the Lesotho *Water Act (No. 15 of 2008),* which embraces a wide range of activities such as: water storage; minimum flows; discharging wastewater; water for irrigation, industrial and or mining purposes; water for recreational purposes; and bottling of water for commercial purposes.

**A number of water laws explicitly recognize the importance of balancing competing needs.** Lebanon's *Water Law (No. 77 of 2018)* Article 4 lists the diverse goals to be achieved through sustainable water management, such as providing safe drinking water; using water for drought and emergency use; meeting the needs of agriculture, livestock, fishing, inland fisheries, mineral water extraction, industry and power generation; and conserving and restoring the aquatic environment, including wetlands. São Tome and Principe's *Water Resources Framework Law (No. 07 of 2018)* contains extensive sustainability-oriented objectives for use, management and allocation. Water is to be managed based on long-term protection of available water resources for surface and groundwater that supports sustainable, balanced and equitable development and considering current and future generations. Water use is harmonized with the social goals of rural and regional development as well as with environmental sustainability. The United States of America's (California) *Water Code - Division 35: Sacramento-San Joaquin Delta Reform Act (2009)* mandates protection, enhancement and sustenance of the unique cultural, historical, recreational, agricultural, and economic values of a delta. The United States of America's (California) *Salton Sea Restoration Act (2015)* has as its specific objectives: the restoration of the lake, protecting water quality, and conservation of fish and wildlife that are dependent on the lake ecosystem. It also recognizes the lake as a vital transport route and the importance of preserving local tribal heritage and cultural values associated with the water body. "Enhancing the economic development opportunities that in turn offer sustainable financial benefits for and quality of life for local communities" is an express rationale for the mechanisms contained in the law for improving the degraded ecosystem.

### 4.5.1. Established priority uses

**The balance of environmental, social and economic needs results in different states of equilibrium in different countries; each country has its own priorities. In many countries, the social dimensions of basic needs for personal consumption dominate in legislation.** Paraguay's *Water Resources Law (No. 3 239 of 2007),* in line with its recognition of water as a human right, guarantees a minimum daily

quantity to satisfy basic personal needs (subject to technical evaluation and in accordance with the National Plan on Water Management). Chapter IV of this Law then prioritizes the water needs of aquatic ecosystems ahead of water for agriculture, power generation and industrial uses. Armenia's *Water Code (2002, as amended by Law Z206 of 2009)* stipulates that in evaluating an application for water use, priority and equitable allocation among competing stakeholders are established as follows:

> The maintenance and enhancement of human welfare and ecological health shall be given the first priority (as indicated by the national water reserve) thus providing first priority of drinking water supply and sanitation; Persons with a historic, non-extractive interest in the use of water resources within a natural stream-bed shall be given second priority; Applications for water use providing maximum benefits for the public interest shall be given third priority. Also, persons offering specific evidence of taking active measures related to the efficient use of water and protection of water quality shall be given higher priority (Article 31).

Under São Tome and Principe's *Water Resources Framework Law (No. 07 of 2018),* in the case of conflict between different uses of water, preference is to be given to water for human consumption, then livestock, then irrigation and other agricultural uses (Article 36). Lesotho's *Water Act (No. 15 of 2008)* stipulates that water for domestic use shall be given preference over other water uses. Those with excess domestic supplies may be required to make certain quantities available to other users (Section 6). Where there are serious shortages for domestic use as a result of drought, pollution or other emergencies, the minister may restrict use of water for any period necessary.

**Legislation may expressly highlight the domestic and non-commercial priority given to water users in a local or indigenous community area.** Article 61 of Zambia's *Water Resources Management Act (No. 21 of 2011)* addresses the allocation of water through allocation and catchment plans developed by national and local authorities, and conditions allocation in a customary area upon consultation with the traditional authority in that area first. The Act goes further in Article 63 to stipulate that a water permit applicant for any purpose other than for

domestic and non-commercial purposes in a customary area, which is likely to substantially affect the supply of water for domestic and non-commercial purposes for the occupants of that customary area, require the approval of the head of the traditional authority and are required to set out alternative means for securing water for domestic purpose for that community.

**The water allocation model, the level of government responsible for implementation, and a range of other factors may indirectly result in permits that yield inequities in water allocation and distribution, overexploitation and quality deterioration of the water resource.** As an example, in places that apply the 'prior appropriation' doctrine of water allocation such as western United States of America, the 'first in time, first in right' principle, awards allocation based on the permit issuance date. This means using a water right or risk losing it, which may create a tendency to over-use abstraction rights (FAO, 2007a). Where water use rights are determined by the principle of 'beneficial use', human consumption and economic uses are favoured.

### 4.5.2. Access and integration for special interest groups

**Economic and political power and gender dynamics may affect what types of users can access water resources.** Also, water scarcity and other crises may disproportionately impact groups that are already marginalized on socio-economic or cultural and racial parameters. The composition of groups that are marginalized in terms of water access is context-specific and country-specific. Such groups could comprise smallholder food producers, the rural poor, women, youth or older people, and traditional communities or indigenous peoples whose livelihoods depend on natural resources. Pastoralists with insecure land tenure rights, or those excluded from their traditional grazing areas, may also be part of this categorization.

**Legislation can respect the rights and address the needs of marginalized groups through targeted provisions or mechanisms that consider the specific roles, responsibilities, realities and contexts of such groups.**

**Gender-specific provisions may feature in legislation.** Paraguay's *Law on Water Resources (2007)* declares in Article 3, when placed in a sustainability framework, water management should consider a gender perspective. The Zambian *Water Act (2011)* declares that gender equity in accessing water resources (Article 6) is a guiding principle. One of the functions of the competent authority is to adopt approaches to water resources management that are dynamic and gender-sensitive. Notably one of the key functions of the competent authority is to advise the responsible minister on mainstreaming gender into water policies, programmes and activities (Section 27). This Act defines gender as "inclusive of female or male and the role individuals play in society as a result of their sex and status". Catchment and sub-catchment councils are required to promote gender mainstreaming in the decision-making processes relating to water use (Sections 18 and 20). Similar obligations are placed on water user associations (Section 25).

**Legislation may seek to correct the effects of past socio-economic or racial discrimination.** In consideration of an application for a licence to abstract and use water, regard is given in Namibia's *Water Resources Management Act (2013)* of the need to redress the existing effects of past racial and gender discrimination (Section 45). A similar provision is made in the South African *National Water Act (No. 36 of 1998)*; the latter goes further and states that a water allocation schedule must reflect the water to be allocated to each of the applicants to whom licences were issued on such grounds (Section 45). Catchment management agencies have a duty to be mindful in performing their functions of the need to redress past gender and racial discrimination and to achieve equitable access for all (Section 79). Also the consideration of corrective action to past racial and gender discrimination must be considered in the setting of financial targets (Section 24).

**Customary rights may also be recognized in this context.** Article 22 of Paraguay's *Law on Water Resources (2007)* prescribes that respect for and preservation of customary rights over water resources have priority

over any other use. The United Republic of Tanzania's *Water Resources Management (2009)* defines 'customary water rights' as:

> The rights and practices in relation to water resources that have been practiced by communities or individuals since time immemorial in the belief that they create binding rights and obligations.

The statute holds that customary rights held by any person or community in a watercourse:

> Shall be recognized and is in every respect of equal status and effect to a granted right and shall, subject to the provisions of this Act, be (a) capable of being recorded by a Basin Water Board in favour of an individual, a family, a group of two or more individuals whether or not are associated together under any law; (b) capable of being of indefinite duration, provided that the Basin Water Board may set a duration and the amount of water to be abstracted, upon the recording of such rights; (c) governed by customary law in respect of any dealings, between persons using the water source within the Basin Water Board having jurisdiction over the water resource or facility; and (d) may be subject to a premium or an annual payment, which may be varied from time to time (Section 52).

Accordingly, Section 53 states that anyone recognized under customary law or who have formed themselves together as an association, cooperative society or as any other body recognized by any law which permits that body to be formed, can apply, in the regular manner for a water use permit.

Most notably, the New Zealand *Waikato-Tainui Raupatu Claims (Waikato River) Settlement Act (No. 24 of 2010)* expressly acknowledged a list of historical grievances against the Waikato Tainui peoples by the government. This included, in connection with traditional land and water rights, the breach of the Treaty of Waitangi in relation to the customary, traditional, historical, spiritual and ecological connection of those peoples to the Waikato River. The Act recognized that their relationship with, and respect for, the Waikato River lies at the heart of their spiritual and physical well-being, and their tribal identity and culture.

The Act expressly recorded the Crown's failure to:

> Respect, provide for and protect the special relationship of Waikato-Tainui with the Waikato River; that the deterioration of the health of the Waikato River, while under the authority of the Crown, has been a source of distress for the people of Waikato-Tainui; and that the pollution, degradation and development of the Waikato River, its lakes, streams and wetlands have caused the decline of once rich fisheries that, for generations, had sustained the people's way of life (Section 17(j)–(l)).

The extensively detailed Act establishes a co-management River Authority tasked with restoring the health and well-being of the river system for future generations. Joint management agreements may be concluded between local authorities and the Trust established in the Act, to carry out monitoring and enforcement, preparation of management plans and permit authorizations for certain activities. The Canadian (British Columbia) *Water Sustainability Act (SBC 2014, CAP 15)* makes water reservations for treaty First Nations. According to Section 40, if the final agreement of a treaty describes a water reservation for water use purposes, the government is bound by such terms in favour of the treaty First Nation.

**Recognition of the knowledge and practices of indigenous peoples' in contributing to effective water resources conservation may feature in legislation.** Under Zambia's *Water Resources Management Act (No. 21 of 2011),* Article 5, requires the state water authority to ensure that traditional practices as recognized in customary areas and which are beneficial to water resource management are taken into account in the management of water resources. This shows that protecting access to water of certain groups of society can also yield environmental benefits. Under Canada's (Ontario) *Great Lakes Protection Act, 2015 (S.O. 2015, c. 24)*, traditional ecological knowledge is to be considered in the execution of activities under the Act. Section 28 stipulates that First Nations and Métis communities that have a historic relationship with the Great Lakes-St. Lawrence River Basin may offer their traditional ecological knowledge for the purpose of assisting in anything done under this Act, and the minister should take this information into consideration.

### 4.5.3. Environmental and social criteria for permits/concessions for abstraction

**One of the functions of legislation is to provide security of rights, which appears as a static concept when considering that flexibility may be required in response to fluctuating water availability.** Thus, the effectiveness of such frameworks is dependent on their ability to manage evolving needs and contexts. This can be achieved through institutions that represent varied stakeholders. Alternatively, framework-type provisions in primary legislation leave evolving policy or technical details to implementing regulations that keep pace with changing priorities and models.

**Typically, permit systems are the key mechanism for distributing water according to certain uses.** Authorizations for surface water are separate to, and considered on different parameters to, groundwater resources. In addition to abstraction permits, drilling licences may also be required to access groundwater. Decisions on abstraction permits will be made considering the source (surface or groundwater), time or seasonal restrictions, and the user (a utility company, or the end user). Some countries may not require permits for groundwater abstractions below a certain threshold. Under Malawi's *Water Resources Act (No. 2 of 2013)*, groundwater abstraction does not require a licence, for example, where necessary works are not more than 100 metres of any surface water body or within a groundwater conservation area, or where such water can be accessed by hand-dug boreholes or holes not exceeding 10 metres). Legislation should set out the duration of permits, and how often a permit can be renewed. The latter decisions would be based on water accounting and water monitoring. Adjustment should be made of available quantities, times of access and other conditions where required.

**Social and environmental impact assessments are often a requirement for the issuance of water permits.** Kenya's *Water Act (No. 43 of 2016)* Section 36 requires the issuance of a permit for any water use (except for domestic purposes or where springs are located on private land), or for the discharge of pollutants into water bodies and for the drainage of swamps as well as any other use which may be specified

in regulations. The process for approving such permit is contingent upon public consultation and, where applicable, an environmental impact assessment (EIA) in accordance with the country's environmental legislation – see Section 4.7.1 for more on EIAs. The Act requires the authority to consider the likely effect on the resource itself or on other users. Any person opposed to the grant of a permit may write to the Water Tribunal within a prescribed period of publication of the notice of application. Conditions of water permits (which may specify social and environmental aspects) are set out in Regulations, and the duration of permits are to be set out in the permit itself.

**Legislation may enumerate the environmental protection or social aspects in decision-making criteria regarding the issuance of water permits.** Armenia's *Water Code (2002, as amended by Law Z206 of 2009)* requires consideration of social, economic and environmental impacts and opinions resulting from a public notification process. The Kenyan *Water Act (No. 43 of 2016)* prescribes the decision-making criteria as including: efficient and beneficial use of water in the public interest; the strategic importance of the proposed water use; and the quality and quantity needed for the water reserve. Section 46 injects flexibility into the system by allowing permits to be varied where as a result of natural changes, increased demand or other cause, the use of water under a permit causes inequity, a deterioration in the quality of water, or a shortage of water for domestic purposes. Under Malawi's *Water Resources Act (No. 2 of 2013),* consideration should also be given to the duration of the proposed use; in the case of aquifers, the safe yield; the need to ensure the efficient and beneficial use of water resources; the country's international obligations with regard to shared watercourses; the impact on quality or aquatic ecosystems; and any existing or applicable customary rights. Samoa's *Water Resources Management Act (No. 31 of 2008)* Article 22 stipulates that water permits should not deprive a village or community relying on that source or, for sources that are in the vicinity of a village, an approval of the relevant village head is required.

**Permits may be issued subject to an environmental reserve or allocation, water quality standards or water management plans.**

Namibia's *Water Resources Management (2013)* states in Section 45 that in consideration of water abstraction and use licences, the issuing authority must consider minimum in-stream and environmental flow requirements (see Section 4.5.4), as well as water quality aspects. Samoa's *Water Resources Management Act (No. 31 of 2008)* applies environmental standards in Article 22 to the granting of licences and permits for any activity that may affect water quality or the integrity of any water source. Under Malawi's *Water Resources Act (No. 2 of 2013)*, the competent authority is to take into consideration whether the licence to be issued is consistent with the National Water Plan, the existence of a reserve (see Section 4.5.4), and sustainable management objectives (Section 41). Armenia's *Water Code (2002, as amended by Law Z206 of 2009)* offers biodiversity protection through permit conditions. Under Article 32, each water use permit shall identify any special measures to be taken to promote efficient water use, protect and improve water quality, and conserve wetlands, significant coastal habitats and associated biodiversity. The Code creates an obligation on landowners and land users in Article 98, to protect interconnected ecosystems and landscapes for the purposes of improvement of water quantity and quality, as well as for preservation of the relationship between soil, air, biological diversity and the waters. Landowners or users of territories adjacent to the water resources shall be required to take all necessary steps to prevent any hazard threatening the ecosystem related to the water resources. Under Lesotho's *Water Act (No. 15 of 2008)* the competent authority is to keep a register of the quantity and quality of water abstracted and make it available to the public and relevant authorities.

**Legislation also typically includes social or environmental conditions to holding a water permit.** The Democratic Republic of Congo's *Water Law (No. 15/026 of 2015)* calls upon the permit holder to use water rationally and economically, respect other water users, ensure the safety of facilities and monitor water quality. São Tome and Principe's *Water Resources Framework Law (No. 07 of 2018)* directs that water use rights may be partially or totally suspended, owing to: non-compliance with the terms and conditions of a permit; lack of use for one year; in emergencies; to prevent or reverse serious environmental

degradation; to address priority uses of collective interest for which alternative sources are not available; and to maintain the navigability of the water course. Malawi's *Water Resources Act (No. 2 of 2013)* sets out detailed conditions relating to licences (see Box 4.2).

**Box 4.2**
**Malawi's *Water Resources Act (No. 2 of 2013)***

**Section 43**
*Terms and conditions of a licence*
A licence to abstract and use water shall be issued subject to:

a. the achievement of the goals and objectives of the National licence;

b. the protection of the environment and water resource from which the abstraction is made, the stream flow regime, and other existing and potential use of the water resource, including uses by virtue of customary rights and practices, by:

   i. setting out the specific volume of water or percentage of flow which may be abstracted;
   ii. setting out the rate of abstraction;
   iii. specifying the place where water may be abstracted;
   iv. specifying the times when water may be abstracted and used, or not used;
   v. limiting the volume of water which may be impounded and stored;
   vi. specifying locations where a watercourse may be impounded and where water would be stored;
   vii. requiring the licensee to become a member of a local association of water users, where appropriate, before water may be abstracted; and
   viii. adding any such terms regarding protection of the water resource, and stream flow regime or existing or potential uses of water resource which the minister determines to be appropriate;

**Box 4.2** *(cont.)*

c. proper water management, by:

   i. specifying efficient water resources management practices and general requirements for any water use, including water conservation measures;
   ii. requiring monitoring, analysis and reporting by the licensee on every water use dependent upon the licence, including bulk uses or local authority uses, by specifying the aspects of water use to be monitored and reported, and the devices to be used for such monitoring;
   iii. requiring the preparation and approval of a water resources management plan;
   iv. requiring the licensee to make water available to any person specified in the licence; and
   v. adding any such terms regarding proper water resources management which the Authority determines to be appropriate;

d. the proper discharge or disposal of any return flow or effluent, by:

   i. specifying the water resource to which and the manner in which return flow or effluent shall be returned or disposed of;
   ii. specifying permissible levels for some or all of the chemical or physical components of the return flow or effluent;
   iii. specifying the treatment to which the return flow or effluent shall be subject, before its return or disposal;
   iv. specifying the volume and rate of discharge of return flow or effluent which may be returned or disposed of; and
   v. adding such terms regarding discharge or disposal of excess flow or effluent which the Authority determines to be appropriate; and

e. the accommodation of any reasonable requirements of a community.

**Groundwater may be subject to distinct sustainability criteria in regard to applications for permits, whether or not it is addressed in the same legislative provisions as surface water.** The Republic of

Korea's *Groundwater Act (No. 5 286 of 1997, as amended by Act No. 14 839 of 2017)* grants the competent authority the power to deny issuance of a groundwater permit where abstraction would: drain the supply; lead to land subsidence in neighbouring areas; harm the safety of peripheral facilities; result in contamination or destruction of natural ecosystems; or otherwise impede good water management, urban planning or other public infrastructure projects.

### 4.5.4. Minimum flow requirements and reserves

**Minimum water levels in lakes and minimum flow in rivers benefit off the watercourse itself, support biodiversity, and protect the ecological, chemical, and physical integrity of riverine ecosystems.** These are sometimes referred to as environmental allocations. Bhutan's *Water Act (2011)* defines 'minimum environmental flow' as the water regime provided within a river, wetland or other water bodies to maintain ecosystems and their benefits, where flows are regulated. The Act requires the competent authority to coordinate with other relevant authorities in establishing minimum environmental flows for watercourses in order to support and conserve the riverine habitats, flora and fauna (Article 25). Such amounts are to be reflected in the licensing process. Canada's (British Columbia) *Water Sustainability Act (SBC 2014, CAP 15)* defines 'critical environmental flow threshold' as: the volume of water flow below which significant or irreversible harm to the aquatic ecosystem of the stream is likely to occur while 'environmental flow needs', is defined as: the volume and timing of water flow required for the proper functioning of the aquatic ecosystem of the stream (Section 1).

Although comprising only 1 percent of global land area, freshwater ecosystems host a rich diversity of species; for example, approximately 40 percent of Natura 2000 sites contain freshwater habitats, and 70 percent of protected habitats and species are aquatic or water-dependent.[7] Legislative provisions on minimum flows must be predicated on water availability – where water flows and water quality are calculated over time and space through water assessments and accounting (see Section 4.10). Provisions for minimum flow spread the risk of water stress

[7] See: ICPDR, n.d.

among all basin areas (in both wet and dry conditions), but may still put downstream users at particular risk if upstream developmental changes occur. Flow requirements also require flexible infrastructure as well as regular communication and data sharing between various stakeholders, which may be a challenge in some contexts (Rieu-Clarke, Moynihan and Magsig, 2015). Legislation may ensure the protection of the water's natural functions, prescribe water protection targets and minimum flow figures for different average flow rates, which take into account the geographic and ecological function of the water bodies. Canada's (British Columbia) *Water Sustainability Act (SBC 2014, CAP 15)* requires a competent water licensing authority to consider environmental flow needs in relation to a watercourse or aquifer; for this purpose, the applicant should provide reports of assessments by persons with prescribed expertise (Section 15). The competent authority may establish advisory boards for advice in relation to methods for determining environmental flow needs or critical environmental flow thresholds (Section 115).

**Legislative provisions may also provide flexibility in allocating water according to percentage and time of flow, rather than a fixed or minimum amount.** This is particularly important given the evolving hydrological, social and climatic conditions on which the minimum flows are based. Some laws stipulate that minimum flows should be no greater than an established percentage of the average annual flow. Generally speaking, rigid minimum flows do not necessarily provide for a fully functioning ecosystem, thus, this mechanism must be seen as a "series of hydrological parameters that permit variability through the years (and across years) to better mimic the natural hydrograph" (FAO, 2009a).

**Reserves can be set up for ecological or social needs.** Zambia's *Water Resources Management Act (2011)* defines a reserve as the quantity and quality of water required to (a) satisfy basic human needs; and (b) protect aquatic ecosystems for ecologically sustainable development. Upon the competent authority's recommendation, the minister should specify the reserve for all or part of a water resource (Section 40). A determination of the reserve ensures adequate allowance is made for each component of the reserve. Lesotho's *Water Act (No. 15 of 2008)* also states that a reserve shall comprise the basic human needs reserve and

ecological reserve, representing respectively, the quantity and quality required for those dependent on the concerned water resource, and to protect aquatic ecosystems for ecologically sustainable development (Section 13). The competent authority is expected to periodically monitor reserves.

### 4.5.5. Dealing with climate change impacts on availability and allocation

**One of the key mechanisms to address water demand and availability changes caused by climate change impacts is to require the latter to be taken into account in basin plans.** The Australian *Commonwealth Water Act (No. 137 of 2007)* establishes that a basin plan must include an identification of the risks to the condition, or continued availability, of the basin water resources, including those that arise from climate change effects. Morocco's *Law on Water (No. 36-15 of 2016)* lists as a fundamental tenet, the integration of climate change adaptation into all levels of planning (Article 2). River basin authorities are to establish IWRM plans that include contingency measures for scarcity and drought (Article 124).

**Legislation may contain generic duties on competent authorities relating to climate change and water related emergencies.** The Afghanistan *Water Law (No. 980 of 2009)* establishes the duty of the competent authorities to forecast and develop warning systems for floods, droughts and other emergencies (Article 10), and also tasks river basin authorities with establishing measures to address natural disasters (Article 12). Morocco's *Law on Water (No. 36-15 of 2016)* directs river basin authorities to carry out research and monitoring activities in the context of droughts, floods and other extreme climatic conditions (Article 80).

**Legislation may empower relevant authorities to temporarily control, limit or prohibit use of water during periods of water shortage.** Bhutan's *Water Act (2011)* empowers the competent authority to revoke, suspend or amend the terms and conditions of water licences in times of scarcity or drought. Mongolia's *Law on Water (2012)* also

imposes temporary prohibitions and restrictions on water use during times of scarcity and drought. Generally, legislation should include provision for advanced notice to users should changes in use or allocation be required. Laws may establish priority allocation during these times, for example, the maintenance of a reserve or restricted access to water by intensive users to prioritize domestic uses. Legislation may leave the specifics of the needed decision-making to the authorities as the needs arise.

**Legislation may include very specific direction, such as limiting water use, requiring release of stored water and prohibiting water works.** Mongolia's *Law on Water (2012),* for example, requires the establishment of special protection zones in areas prone to flooding, and also requires the collaboration between central and local authorities to mount responses, including harvesting of rain or snow, building dams and locks and other drought or flood-related measures (Article 23).

**Other climate change mitigation measures could include legislative provisions that increase capture and storage of surface runoff.** Zambia's *Water Resources Management Act (No. 21 of 2011)* establishes schemes for the storage or impoundment of water (including the construction of reservoirs) and for regulating stream flows. The competent authority may require mandatory installations or constructions on any land for those purposes, and in such case pay compensation to the owner for necessary water works or installations.

**Water legislation may include drought risk assessments and adaptation mechanisms.** For example, Bulgaria's *Water Act (1999, amended through SG No. 61 of 2010)* requires a preliminary flood risk assessment for each basin management district according to a prescribed methodology. This includes an assessment of the potential adverse consequences of future floods for human health, the environment, cultural heritage, the physical infrastructure and economic activity. This example also demonstrates that water authorities may need to address the impact of water-related disasters on other sectors. Flood risk maps may be developed in conjunction with land planning authorities to

identify areas not available for residential or other types of buildings (Rieu-Clarke, Moynihan and Magsig, 2015).

## 4.6. Improving efficiency in use and management of the resource

### 4.6.1. Storage and retention mechanisms

**Water harvesting provisions seeking to prevent local and seasonal water scarcity is often seen in jurisdictions that experience water scarcity.** In the *Water Act (2011)* of Bhutan, for example, the competent authority is directed to facilitate the establishment of mechanisms for such harvesting, although the Act does not specify how this should take effect. India's (Andhra Pradesh) *Water, Land and Trees Act (No. 10 of 2002)* offers considerably more specifics in Section 17, by instructing the competent authority to issue guidelines for:

> Constructing appropriate rainwater-harvesting structures in all residential, commercial and other premises and open spaces having an area of not less than 200 $m^2$ in the manner prescribed within the stipulated period failing which the authority may get such rain water harvesting structure constructed and recover the cost incurred along with a penalty as may be prescribed.

This text also creates the linkage between the functions of municipalities and local authorities. As highlighted in Section 4.3 on legislative coherence, corresponding rules should be accommodated in planning and municipal legislation and regulations, particularly where incentives are created, to ensure consistency.

**Conversely, some countries may create restrictions on water storage for reasons of preventing shortages.** Bangladesh's *Water Act (No. 14 of 2013)* requires persons to receive authorization for storage of water in an artificial or natural reservoir (Section 24). The Canada's (British Columbia) *Water Sustainability Act (SBC 2014, CAP 15)* contains provisions on impounding and storage of water for prescribed water use purposes, with references to prescriptions on timing and quantity of storage.

### 4.6.2. Limits and optimum use prescriptions

**Many water laws around the world impose a duty on the competent authority to prescribe abstraction and use limits in connection with licences or other authorized uses, as well as penalty provisions such as revocations of authorization or charging of fines for those who do not comply.** Water accounting is required to determine such limits. India's (Andhra Pradesh) *Water, Land and Trees Act (No. 10 of 2002)* uses the concept of "optimum use" of surface and groundwater by water user associations in irrigation areas, and these users are required to follow the measures suggested by a competent officer in order to use the resources optimally (Section 22). Using an alternative mechanism, India's (Rajasthan) *River Basin and Water Resources Planning Act (Act 15 of 2015)* establishes as a function of the competent authority, recommendations regarding inter-basin water transfers from surplus to deficit basins "including interlinking of rivers to ensure optimal and efficient utilization of surface water" (Section 10). Under Bhutan's *Water Act (2011),* even where licences are not required for certain prescribed uses, the latter are still subject to public health and environmental limitations as well as "limitations imposed from time to time for purposes of good water management practices" (Article 33). Limitations on water use in a specific area may be established by the competent authority (Section 55), and licences may be amended accordingly. Zambia's *Water Resources Management Act (No. 21 of 2011)* defines management of water resources specifically as promoting the rational and optimal use, protection and conservation of water resources. In order to achieve optimum management and use of water resources, catchment plans are to be devised (Section 32).

**Groundwater control warrants particular attention owing to trends towards over-abstraction, sensitivity to pollution and importance of the resource to neighbouring wetlands and forests.** São Tome and Principe's *Water Resources Framework Law (No. 07 of 2018)* calls for the conservation of groundwater in recognition of these strategic values. Article 53 establishes mechanisms such as protection zones, and periodic qualitative evaluations. The responsible water authority in Section 23 of the Kenya *Water Act (2016)* is empowered to impose special measures

for the protection of aquifers on ecological or conservation grounds, or when used for agricultural, industrial or personal uses. Zambia's *Water Resources Management Act (2011)* in Section 93 empowers the authority to specify measures necessary to mitigate saline intrusion, prevent pollution and to declare water resource protection areas around groundwater, re-charge areas and abstraction sources, among other aspects.

### 4.6.3. Land-use and land planning stipulations

**Natural vegetation in water catchments supports the hydrological cycles – regulating aquifer levels, stabilizing water runoff and mitigating droughts.** In recognition of the importance of forest cover, some water laws (in addition to land-use laws, see Chapter 3 and forestry-specific legislation, see Chapter 8) encourage afforestation. India's (Andhra Pradesh) *Water, Land and Trees Act (No. 10 of 2002)* embraces this holistic approach in order to mitigate water shortages and droughts. Tree planting in urban areas in public and private spaces are required (Section 28), and restrictions are placed on tree-felling. The competent water authority may direct municipalities and local authorities to make such stipulations in their planning permissions. Mandatory tree planting may also be imposed along the shores of water bodies. The Act imposes an obligation on all agricultural landowners (except small and marginal farmers and wetland owners as determined by the Government) to plant trees that cover in certain circumstances, up to an area of up to 5 percent of their total land holding. China's *Water and Soil Conservation Law (2010)* encourages afforestation activities, and makes prescriptions for particular gradients of hillsides (Article 14). This Law encourages soil management practices to support water conservation. The Law requires water and soil conservation plans to be based on water and soil loss assessments. Control measures are to be taken whenever a production or construction project or any other activity causes water or soil loss. The Law defines 'water and soil conservation' to mean "preventive and rehabilitative measures taken against natural or human activity induced *soil erosion*". The State is also directly tasked with encouraging research and training on water and soil conservation.

**At the same time, water can be used to protect land resources as well.** This connection is recognized in Canada's (British Columbia) *Water Sustainability Act (SBC 2014, CAP 15)*, which describes water for a 'land improvement purpose' as the diversion or impounding of water to protect land, as well as to develop a park, facilitate reclamation drainage, or other improvement of land. Authorizations are required for water use in this manner.

**Water laws often require the consideration of land use plans in developing water plans and water management strategies.** Canada's (British Columbia) *Water Sustainability Act (SBC 2014, CAP 15)* directs a water sustainability plan to be developed alongside a land use plan (Section 69). Finland's *Water Act (No. 587 of 2011)* establishes in Section 5 that when deciding on a permit, the provisions laid down in the *Land Use and Building Act* shall be taken into account. Samoa's *Water Resources Management Act (2008)* states that prohibitions or restrictions apply to land use within the watershed. For example, plans may restrict agricultural, commercial or other activity likely to impact the water resources, or plans may prohibit the removal of trees and other vegetation (Section 24). The process of preparing the plan requires consultation with persons in the watershed that use land for cultivation or grazing animals (Section 25). The Act also empowers government agencies to carry out work on any land in a protected watershed for the purpose of soil conservation, or for protection of the water catchments area (Section 32). The competent authorities may consult with local and community authorities for the promulgation of by-laws concerning aspects such as restrictions relating to grazing and raising livestock and the use of lands near a water source for recreation purposes (Section 33).

### 4.6.4. Reuse and recycling of water

**The reuse and recycling of water through wastewater management contributes to rational and efficient water use; SDG 6 on Water specifically calls for a marked increase in recycling and safe reuse globally by 2030.** Reuse of treated wastewater eases pressure on the need for water withdrawal and constitutes a supply that is independent from extreme climatic conditions. This is particularly useful for

agriculture for continuity of production. A systems approach is needed to maximize the benefits of its use while mitigating human health and environmental risks.

**Standards for recycled water may mitigate risks to human health or the environment.** In some cases, these standards may be found under agriculture-sector legislation when governing wastewater relating to this sector, although it should be noted that wastewater from agriculture is often diffused and re-enters the hydrological cycle without treatment. Thus, controlling pollution from drainage and runoff of cultivated land is a priority. Jordan has issued standards for treated effluents that can be discharged in watercourses, or for reuse in agriculture (which require a secondary level of treatment) (UNEP, 2015). Water sector legislation may have water quality standards for various uses. In Jordan, *Instructions and Conditions for the use of wastewater, treated water, saltwater and brackish water for agricultural uses* (*No. G/7 of 2016)* issued under the *Agriculture Law (No. 13 of 2015)* establishes a list of agriculture and crops that can be irrigated by treated reclaimed wastewater and contains prohibitions on the irrigation use of untreated wastewater, aquaculture in reclaimed wastewater or the use of reclaimed wastewater for watering animals. Standards govern the discharge of treated wastewater into water bodies in seven categories; these include for irrigation of vegetables that are normally cooked, for tree crops, for forestry and industrial processes, for cut flowers and for animal fodder (UNEP, 2015). Generally speaking, it should be noted that excessively strict water quality standards for wastewater may be counterproductive where resources are inadequate for wastewater treatment or enforcement; farmers and producers may simply ignore standards with which they cannot financially or physically comply (FAO, 2009a). Thus, a balance between science-based environmental requirements and socio-economic conditions may be required, possibly through the use of risk management as well.

**Legislation governing wastewater typically involves licensing to authorize the discharge of wastewater or for the reuse of wastewater.** Lesotho's *Water Act (No. 15 of 2008)* identifies controlled activities as including irrigation of land with waste or water containing

waste (Section 25). Competent water management bodies are to develop plans to mitigate against adverse impacts, and once such plan is in place, authorizations may be issued for controlled activities. The public can inspect a periodically updated register that contains plans relating to controlled activities. Jordan's *Instructions and Conditions for the use of wastewater, treated water, saltwater and brackish water for agricultural uses (No. G/7 of 2016)* issued under the *Agriculture Law (No. 13 of 2015)* also requires a permit for using reclaimed wastewater for irrigation.

**Permits are required for the discharge of treated wastewater into groundwater.** This is true for extractive industries such as mining (see Chapter 7 of this Study), as well as manufacturing and other sectors. Sectoral legislation governing those other industries may also contain provisions that cross-reference water law requirements relating to wastewater discharge permits. Whether in water law or in other sectoral laws, such operators may also be held accountable for certain standards of conduct such as taking all such measures necessary for the protection of groundwater against pollution and must complying with any directions of the water authority regarding the protection of the groundwater.

Some jurisdictions opt for trading schemes for volumes on permits that are not used and can thus be exchanged (FAO, 2009a). Legislation on wastewater also includes rules on collection, treatment, treatment facilities, receiving bodies and disposal, and prohibitions and standards relating to quality of treated water. More specifically, legislation will detail the location, design, construction, operation and decommissioning of waste water systems; the monitoring, sampling and testing of waste water and the reporting of test results; also, the handling, use and disposal of products of waste water treatment (FAO, 2009a).

**A sliding scale of charges may be applicable for the discharge of effluent.** Germany's *Wastewater Charges Act (2005, as amended in 2016)* establishes that the charge to be paid for discharging wastewater into a water body is dependent upon the noxiousness of the wastewater. The latter, to be determined on the concentration or presence of certain substances in water bodies, are contained in a periodically updated annex.

### 4.6.5. Efficiency-focused fiscal and technology incentives

**Pricing can be used to conserve water resources or further social equity by enabling improved access.** A graduated system where higher use will result in increased costs may be used as a means to conserve water. Where water is free or subsidized, supply costs are supported by taxes, but more frequently, legislation establishes flat rate tariffs, social tariffs (which can vary according to income) or progressive (consumption-based) tariffs (FAO, 2009a). A slightly modified approach is setting a standard price for a minimum volume, and then increasing in proportion to use above that threshold; this enables low-costs to be maintained to meet basic needs (FAO, 2009a). Another modification still is to base price on water use, with progressive tariffs applied beyond base levels.

**Pricing typically varies among agricultural, mining, industrial, domestic and other uses.** Bulgaria's *Water Act (1999 amended by SG No. 61/2010)* sets out the framework for a pricing policy that encourages efficiency in water use. A decision on the most cost-effective combination of measures should consider: contributions to costs of services disaggregated by sector (industry, agriculture and households); cost recovery estimates, based on forecasted supply and demand; and forecasts of relevant investments.

**Other incentives to use water rationally include tax reductions, credits or cash rebates for individuals or enterprises that carry out prescribed measures to conserve water.** Water legislation may create incentives to use particular types of (sustainable) technologies over other types; or as in the case of Viet Nam's *Decree providing incentives for water conservation activities (No. 54/2015/ND-CP)* may disallow tax exemptions and reductions if obsolete water conservation or technologies are used. On the other end of the spectrum, Canada's (Ontario) *Water Opportunities Act (S.O. 2010, c. 19, Sch. 1)* seeks to encourage innovative water, wastewater and storm water technologies, services and practices and to create clean-technology jobs in the province for the broad purposes of conserving and sustaining water resources.

Approaches to reduce demand and consumption of water resources need not necessarily be technological; inducing behaviour change through awareness-raising and education may also increasingly feature in legislative provisions (Rieu-Clarke, Moynihan and Magsig, 2015).

## 4.7. Water quality management mechanisms

### 4.7.1. Environmental impact assessments

**Environmental Impact Assessments (EIAs) offer a safeguard against detrimental impacts associated with industrial, construction, agricultural and other types of development activities.** The EIAs are prerequisites in many jurisdictions with regard to granting concessions for water use (surface and groundwater abstractions and waste disposal), and in some cases EIAs may be conditions for licences. Under Malawi's *Water Resources Act (No. 2 of 2013),* licences for water abstraction as well as effluent discharge are to be issued in consideration of impact studies carried out in compliance with environmental legislation and EIA guidelines (Sections 44 and 95). Similarly, the United Republic of Tanzania's *Water Resources Management Act (2009)* Section 9 stipulates that any proposed development in a water resource area or watershed shall trigger the need for EIA in accordance with the provisions of the country's environmental legislation. The United Kingdom of Great Britain and Northern Ireland's *Water Resources (Environmental Impact Assessment) (England and Wales) Regulations (S.I. No. 164 of 2003)* contains detailed rules on when an EIA is required. Regulation 3 requires EIAs to be carried out for water management projects for agriculture (including irrigation projects), projects involving abstractions that exceed a certain volume, or those which would be likely to have significant effects on the environment by virtue of, among other aspects, their nature, size or location. Part II of the Regulations provides the procedure for an EIA. Regulations 4 and 5 provide the procedure for determining whether a water management project requires an EIA, and require an environmental statement to be provided where an EIA is required.

### 4.7.2. Pollution control

**One of the key mechanisms to curb the impact of industrial and agricultural activities on water resources is to ensure that by-products and run-off do not damage water bodies.** As discussed in Section 4.6.4, legislation may set out standards for improved wastewater treatment, regulation of wastewater discharge, and the creation of temporary wastewater storage facilities. Provisions on pollution control are prevalent in almost all jurisdictions, and are found in the legislation of different sectors such as agriculture or specific industries, as well as general environmental laws. Such provisions range from simple statements prohibiting pollution with corresponding penalties, to provisions that enshrine the polluter-pays principle, to detailed rules controlling effluent discharge from certain industries. Samoa's *Water Resources Management Act (2008)* Section 42 makes it an offence in to discharge pollutants into water bodies and defines a pollutant as any substance that contaminates the water so as to change the physical or chemical condition to be detrimental to the health, safety or welfare or persons using or in the vicinity of the water. Sri Lanka's *National Environmental (Protection and Quality) Regulations (No. 1 of 2008)*, as a subsidiary level instrument, sets out specific tolerance limits in water bodies for certain industrial activities that may be prevalent in that particular country, i.e. for rubber, textiles and tanning industries. In Germany, for example, there are standards in place for 57 different industries (Rieu-Clarke, Moynihan and Magsig, 2015). Under Denmark's *Order on monitoring of surface water, groundwater, protected areas and natural surveillance in international nature conservation areas (No. 1 399 of 2014)* the competent authority is to establish monitoring programmes for reserves and protected areas within each river basin district to track pollutant levels, pollutant types and indicators of pollution.

**Certain types of industries, such as mining, may receive specialized attention in water laws.** The United Republic of Tanzania's *Water Resources Management Act (2009)* sets out measures for dams that pose a safety risk (Section 88), including mining tailings dams that are used principally for storage of mine tailings (the latter comprises for example discharges from an ore concentrator or coal washing plant).

Storage of mine process water is also subject to strict controls including requirements relating to necessary infrastructure alterations and repairs. Article 64 of Namibia's *Water Management Act (2013)* requires a licence to dispose of groundwater abstracted from mines. The licence holder may not dispose of water except as expressly prescribed in the licence. For more on the sustainability focused provisions in mining sector legislation, see Chapter 7.

**Monitoring is an essential pre-requisite to enforcement of all water management rules, in particular pollution control.** Legislation should provide the competent authority with powers to take samples and establish monitoring programmes. As comprehensive monitoring schemes often require significant human and financial resources, legislation may instead impose the obligation on certain industries and users to self-monitor, with periodic reporting that is overseen by regulatory authorities. São Tome and Principe's *Water Resources Framework Law (No. 07 of 2018)* establishes a scope for monitoring and surveillance with regard to quality aspects, i.e. a focus on water intended for human consumption and domestic uses, irrigation water, and wastewater, including of agricultural origin (Article 50).

A staple of environmental law – **the precautionary principle** – applied in context of pollution means that the lack of incontrovertible scientific evidence of a causal link between a hazardous substance and the potential damage should not prevent the imposition of measures to prevent or mitigate the substance's risks or adverse effects. The Samoan *Water Resources Management Act (No. 31 of 2008)* clarifies the application of the principle in the following cases: in the event of a threat of damage to water resources or to the environment, or a risk to human health.

Finally, legislation may set out provisions for cap-and-trade schemes that set out aggregate pollution levels or emission permits with a corresponding number of credits allocated to users discharging wastewater. The trade of individual credits may be permitted where certain volumes are not reached by a user.

### 4.7.3. Ecological protection zones and protected areas

**Legislation may establish protected areas or zones.** Related to, but distinct from the 'reserves' for environmental or social purposes referenced in Section 4.3.2. (b) above, this mechanism is often used to ensure the quality of drinking water in an area or protection of the water resource. Under São Tome and Principe's *Water Resources Framework Law (No. 07 of 2018),* protected areas are defined as areas designated to preserve uses such as human consumption or the protection of aquatic species, but can include recreational waters, nutrient-sensitive areas and areas designated for biodiversity conservation. The Republic of Korea's *Water Quality and Aquatic Ecosystem Conservation Act (No. 8 852 of 2008)* creates riparian ecological zones, for the purposes of preserving water quality and aquatic ecosystems, through the purchase of parcels of riparian wetland or land that meets prescribed standards. Criteria for selecting land, calculation of the purchase price, consultation and procedures selection, procedures for purchase, and other details are all set out. In duplicating this option elsewhere, law-makers should be careful that the issues raised in the context of compulsory acquisition of land are taken into consideration in order not to create social upheaval in trying to make environmental gains.

## 4.8. Water trading and water trusts

**Legislation can serve as a legal basis for market-based conservation tools. Transfers and trades of permits allow flexibility when an allocated volume is unused (which encourages rational use and conservation).** Section 4.7.2 referenced the possibility of using cap-and-trade systems for discharge permits or pollution caps. Trading can also be used for water abstraction as well where a withdrawal limit is established for a defined group of users, with each user allocated a prescribed volume. The United Republic of Tanzania's *Water Resources Management Act (No. 11 of 2009)* contains a simple provision in Section 45 that a water use permit holder may, upon authorization of the competent authority, trade his or her right to use water within the terms and conditions of the permit. Australia's (New South Wales) *Water Management Act (2000, as*

*amended in 2015)* provides a robustly detailed framework for transfers in Sections 71L – 71Z of the Act. Except in certain cases, water access licences are fully transferable through a State-regulated water market, subject to various consents and authorizations. This arrangement seeks to balance free market mechanisms and also protect the environment and public interest.

**Traditionally used as a device by which to alleviate pressure on scarce freshwater sources, the trade of water rights usually involves transfers of water from lower priority to higher priority uses, for monetary or other type of compensation.** These arrangements may not necessarily be replicated in all jurisdictions with ease. Pre-requisites to such a framework necessitate legislation that recognizes the limits on the availability of the resource, defined water property rights and a demarcation of the parameters of the trading structure – notably conditions on transfers and use aimed at preventing adverse third party effects, such as on the environment (FAO, 2007a). The United States of America's (California) *Water Code* distinguishes between long-term and short-term water entitlement transfers in Section 1702, requiring that such transfer "will not operate to the injury of any legal user" of the relevant water body. Under Mexico's *Law on National Waters (1992)*, Article 22 authorizes the transfer of permits wholly or partially, permanently or temporarily during certain seasons; and temporary permits are subject to prior notification to the government (Article 23). Permanent concessions on the other hand require a prior review if such transfer would have third-party, environmental or hydrological effects (Article 33).

**The disadvantage to this mechanism is that marginalized groups may not be in a position to participate and as noted above, the environment may not be considered** (FAO, 2009a)**.** Notwithstanding, legislative mechanisms in the United States of America's states of Oregon, Alaska and Arizona allow the transfer of 'out-of-stream' rights (via purchase or lease) from uses such as industry or agriculture, towards

the purposes of 'in-stream' flows for environmental benefits.[8] In Oregon, water rights can be transferred to the state under Trust, where state funds acquire rights attached to smaller water sources; this offers a greater ecological advantage given the higher proportion water in smaller water bodies (Purkey and Landry, 2001). Alaska and Arizona statutes allow in-stream rights to be held privately (Purkey and Landry, 2001). As noted in Section 5.4.1, trust rights retain the date of the original right in states that recognize the 'prior appropriation' doctrine, thus maintaining priority in terms of use. In order not to create perverse incentives to overuse water through the transfers of rights, the United States of America's (Oregon) *Revised Statute 537.455 (2017)* directs the rights holder that has saved water use to return to the state 25 percent of the conserved water to maintain stream flow levels, in exchange for granting the water user the right to reallocate (sell or lease) the remaining portion of saved water.

## 4.9. Funding for conservation and for infrastructure

### 4.9.1. Payment for ecosystem services

**Market tools can also be employed for environmental purposes through payment schemes where downstream beneficiaries contract with upstream land users or owners for activities and particular uses that confer water-related ecological conservation benefits.** Recently the concept of Payment for Ecosystem Services (PES) has been expanded to embrace a more holistic definition of ecosystem to include social dimensions as well. Chapter 8 of this book on Forestry contains a discussion on social dimensions, and the remuneration for positive externalities (RPE) approach.

In addition to legislative provisions setting up a PES scheme, the broader legal framework relating to contracts, land tenure, contacts and payment mechanisms, as well as data collection and monitoring capacity by the competent authority are all pre-requisites for the effective working of such system. Indeed, PES can be a complex undertaking, requiring

[8] See: *Oregon Instream Water Rights Act*, Oregon Revised Statutes; Alaska Statutes. 46.15.145, 46.15.260 (1998); and Arizona Revised Statutes Annotated 45-141A (West 1998).

appropriate technical and scientific data that is periodically monitored and updated; without reliable baseline data and an accurate economic valuation of the particular use or management activity of the ecosystem services, the design of the PES model may result in errors that ultimately affect allocation of resources for optimum management of watersheds and catchment areas (Goldman-Benner *et al.,* 2012). The PES also involves an integration of supporting legal and institutional frameworks; for example, land and forestry legislation would ideally authorize the undertaking of inventories as well as valuation of resources and related environmental services (Goldman-Benner *et al.,* 2012). The practical implementation of such scheme would be challenging in many countries.

**Water-related PES schemes do not necessarily need PES-specific legislation. PES schemes can operate via enabling legal provisions that cut across different types of legislation.** General environmental, forest or water legislation may provide an appropriate legal foundation for PES schemes through clear property rights, consensus on the scope and definition of ecosystem services, and clear sources of revenue from which to derive payments. Private PES schemes based on individual contracts may not need specific legislation beyond generic contract legislation, but such arrangements would usually be limited to local or sub-national ventures (Greiber, ed., 2009). In some jurisdictions, only very simple provisions are set out at primary legislation level. Bhutan's *Water Act (2011)* offers a basic Article to be fleshed out in specific implementing regulations; Article 59 sets up a system for "payment for the environmental services provided by water resources, such that the cost of conserving water resources in the upper watershed areas are shared by downstream users." On the other hand, the Danish *Order on subsidy for the maintenance of wetlands and natural water level conditions (No. 370 of 2012)* gives an indication of the composite elements of a subsidy program for ecosystem services, setting out the conditions, changes that can be made to the contract, calculation and payment of the subsidy, and notification requirements. The Order aims to improve water quality and the environment generally by reducing the nitrogen and phosphorus loads, as required by national water plans, and also to restore the natural water level for the conservation of habitats and

species in especially designated Natura 2000 sites. One of the criteria for eligibility for a contract is that the area subject to the subsidy is not under another similar financing arrangement under agricultural or rural legislation. In Brazil's (Roraima) *Law providing for the Environmental Service Farmer using means for preserving and recovering water sources, springs and related resources (No. 733 of 2009),* some of the obligations of environmental service farmers is to maintain native forest cover and forest reserves within agricultural holdings, to protect all sources of water, and to utilize agroecological production processes – see Chapter 9 for more on agroecology. Brazil's *Decree No. 55 342 of 2010 regulating Law No. 13 579 on mangroves protected and rehabilitation areas within the Hydrographic Basin Billings – APRM-B (2010)* envisages payment programmes and other financial tax or credit incentive mechanisms for land uses that protect mangroves conservation areas within the Billings Reservoir.

**A holistic systems perspective requires making sure that related legislation does not create barriers to the objectives of PES.** For example, agricultural laws that seek to clarify land rights may inadvertently create disincentives for forest and watershed conservation, while fiscal legislation may offer subsidies for or exempt activities that detrimentally impact ecosystem services (Greiber, ed., 2009).

### 4.9.2. Financing water management and infrastructure

**Water, environmental or other legislation may establish sustainable financial mechanisms that can be used towards rewarding persons under PES schemes.** Water management and development requirements in each country vary, and are shaped by water protection priorities and infrastructure needs. The latter (which includes construction, operation, maintenance and replacement), may entail high capital costs. Sources of financing, as well as transparent and effective management of these funds may be a challenge in some countries, but the legislative provisions required to establish such funds are fairly straightforward. Observers have also noted that the varying institutional actors that cut across water management domain (irrigation, environment, power, transport, health, etc.) makes having a single ministry competent for certain projects (and

with financing in one area only) a challenge (EUWI-FWG, 2012). Some countries establish national funds with multi-ministerial management, which may address this to a certain extent.

**A range of financing vehicles are available that could be selected on a case-by-case basis.** These include taxes and charges (including penalties for non-compliance or pollution), public-private partnerships (see Section 4.11.2), state general budgetary allocation, revolving fund models, bonds, loans and grants from financing institutions and various combinations of the foregoing (EUWI-FWG, 2012). For example, tariffs and taxes may be used in combination with budgetary allocation as seed money to leverage commercial investments (EUWI-FWG, 2012). Development assistance and other donation sources may be seen as less sustainable than other more self-generating models. Increasing tariffs paid by water users may be economically, socially or politically unfeasible. Viet Nam's *Decision on a number of investment preference and promotion policies and the management and exploitation of rural clean water supply works (No. 131/2009/QD-TTg)* prescribes policies for financing for rural water supply, which include, among others, land incentives such as allocation of land by the State exempt from land use levies, tax incentives, state budget supports, referential loan rates, and rural clean water price subsidy supports.

**A general 'green' fund or water specific fund may be established, comprising taxes, fees, levies, tariffs or other charges.** Under Brazil's (Amazonas) *Complementary State Law (No. 53 of 2007),* funds are sourced from a special account (set up primarily for climate change related activities) comprising visitor fees, environmental fines, PES payments to the conservation unit and the State Water Resources Fund (which was established by *Law (No. 8 960 of 2008)* comprising petroleum royalties and water fees and fines) (Greiber, ed., 2009). Kenya's *Water Act (2016)* establishes in Part V a Water Sector Fund, with the following funding sources among others: Parliamentary allocation; donations; county governments on agreed programmes; and a levy charged on water consumers. Under this Law, a Board of Trustees manages the Fund. The objectives of this Fund are to enable water supply to underserved areas and community level initiatives for sustainable management of

water resources. In the Philippines, *DENR Administrative Order on the implementing Guidelines for the Operationalization of the National Water Quality Management Fund (No. 06 of 2012)* establishes a Fund is to be sourced with permit fees collected in all regions, in addition to fines imposed by the Pollution Adjudication Board (PAB) for the pollution of water bodies. São Tome and Principe's *Water Resources Framework Law (No. 07 of 2018)* creates a National Water Fund to support the water policy and the national water plan (Article 45). This equity Fund requires a multiannual investment plan by its management body (Article 47). The Fund is composed of Parliamentary allocations, water use fees, income from investments, contracts for projects, and donations among other sources. Article 49 requires the funds to be used for water sector development, including for technologies that encourage rational use of water, improving water quality and quantity, sustainable management, and communication for sustainable use campaigns. Sierra Leone's *National Water Resources Management Agency Act (No. 5 of 2017)* Section 20 sets up a similar fund, however its uses are more broad. The Fund is to be used for the sustainable and efficient management of the water resources; education campaigns for the public and research in support of the Agency's functions, and, significantly, to fund the activities of the Basin Boards and Water Catchment Area Management Committees.

**Legislation may establish preferential loans and interest rates for water-related infrastructure.** The United States of America's *Water Infrastructure Finance and Innovation Act (2014 Chapter 52)* establishes a federal credit programme administered by the competent authority for the environment, for eligible water and wastewater infrastructure projects. The Act identifies eligible borrowers as: local, state, tribal, and federal government entities; partnerships and joint ventures; corporations and trusts; and Clean Water and Drinking Water State Revolving Fund (SRF) programmes.[9] Box 4.3 extracts the program benefits in summary form.

[9] For more information see: US EPA, 2015.

**Box 4.3**
**Program Benefits of United States of America's *Water Infrastructure Finance and Innovation Act (2014, Chapter 52)***

*A single fixed interest rate is established at closing*.
A borrower may receive multiple disbursements over several years at the same fixed interest rate.

*Interest rate is equal to the US Treasury rate of a similar maturity*.
The WIFIA program sets its interest rate based on the US Treasury rate on the date of loan closing. The rate is calculated using the weighted average (WAL) life of the loan rather than the loan maturity date. The WAL is generally shorter than the loan's actual length resulting in a lower interest rate.

*Interest rate is not impacted by the borrower's credit or loan structure*.
All borrowers benefit from the AAA Treasury rate, regardless of whether they are rated AA or BBB. The WIFIA program does not charge a higher rate for flexible financial terms.

*Customized repayment schedules*.
Borrowers can customize their repayments to match their anticipated revenues and expenses for the life of the loan. This flexibility provides borrowers with the time they may need to phase in rate increases to generate revenue to repay the loan.

*Long repayment period*.
The WIFIA loans may have a length of up to 35 years after substantial completion, allowing payment amounts to be smaller throughout the life of the loan. Deferred payment. Payments may be deferred up to 5 years after the project's substantial completion.

*Subordination*.
Under certain circumstances, WIFIA may take a subordinate position in payment priority, increasing coverage ratios for senior bond holders.

*WIFIA loans can be combined with various funding sources*.
WIFIA loans can be combined with private equity, revenue bonds, corporate debt, grants, and State Revolving Fund (SRF) loans.

*Extracted from:* US EPA, 2015.

China's *Measures for the administration of the use of the central financial funds for water conservancy development (2016)* sets aside finances from the central budget to support the construction mechanisms needed for water conservation. The Measures establish the rules and requirements to be satisfied for the allocation, use, management and supervision of the funds. Azerbaijan's *Presidential Decree No. 237 on additional measures for improvement of water supply in cultivation sites and meeting the need of the population for drinking water (2014)* establishes financial support to supply irrigation water in arable lands and cultivable gardens in 32 cities and to sink 250 sub-artesian wells to meet the need of the population for drinking water. Kyrgyzstan's *Governmental Decree validating the criteria of selecting water supply and sewerage systems for public financing of construction and rehabilitation thereof (No. 398 of 2015)* establishes the following criteria for public financing: (a) availability of general land-use planning urban scheme; (b) geographic location; (c) number of the population; (d) correlation of infectious diseases transferred by water per year calculated per one thousand persons; (e) confirmation of local community for co-financing of works; (f) availability of design estimate documentation; and (g) technical state of water supply facilities.

It should be emphasized as a concluding note that the issue of financing is not a challenge merely in terms of amount or source, but managed in a financially sustainable manner that contributes to social equity as well as environmental conservation.

## 4.10. Data to support evidence-based decision-making

**The water accounting and auditing framework is a critical pre-requisite for evidence-based planning, particularly where resources are under increasing risks and pressure. Water accounting allows for strategic decisions to be made based on the available water balance (supply, demand and spatial and temporal dimensions).** The FAO promotes water accounting and auditing as mutually supportive processes: whereas water *accounting* comprises "the systematic study of the status of, and trends in, water supply, demand, accessibility and use in specified domains", water

*auditing* places trends in "water supply, demand, accessibility and use in the broader context of governance, institutions, public and private expenditure, laws, and the wider political economy of water in specified domains".[10] These processes should align with the needs and priorities of stakeholders and use standardized approaches that enable comparisons over time and space.

**The UN DESA System of Environmental-Economic Accounting (SEEA) approach** (see Chapter 2) is an integrated water monitoring system that encompasses various water related statistics across sectors and presents hydrological information alongside economic information in a consistent way (UN DESA, n.d.(b)). This system can use the watershed level as a principal accounting unit or can combine water areas and water volumes into one single account. Water is also an important component of ecosystem accounting.

[10] For more information see: FAO, n.d.(e).

**Box 4.4**
**System of Environmental-Economic Accounting (SEEA) for Water**

**SEEA-Water** has three main types of accounts to record the hydrological system and its links to the economy:

*Physical flow accounts*: These accounts record physical flows of water between the environment and the economy. They record the abstraction of water by the economy, how water flows within the economy and the return flows of water back to the environment. Water emission accounts can also be compiled in relation to these flows.

*Physical asset accounts*: These accounts describe the hydrological cycle over an accounting period. Water stocks and their depletion over the accounting period are presented, including links to the abstraction and consumption of water by the economy.
*Economic accounts*: This set of accounts presents, among others, flows related to water products, information on the costs associated with water use and supply, and information on water related financing.

*Extracted from:* UN DESA, n.d.(b).

**Sustainability approaches rely on accurate information systems that enable informed decision-making on stakeholders and the status of resources.** Accurate data collection (for example, monitoring water tables, identifying water users, and determining pollution levels) as well as the correct analysis of such data informs regulatory frameworks, and thereby enhances trust among stakeholders. Monitoring and evaluation frameworks are also important for enforcement and implementation but also generating an information feedback loop to guide policy regulatory review and reform. Sierra Leone's *National Water Resources Management Agency Act (No. 5 of 2017)* establishes a monitoring and information system in section 34 that captures national, basin and catchment water resources data needed for the assessment of, among other aspects: (i) water quantity and quality; (ii) the status of aquifers; and (iii) the use of

water (including a register of authorized users). The text expressly notes that the data captured is for the purposes of sustainable management and development for use by the competent authorities but also water users and the general public. Notably, the data should guide aspects such as planning, research and development, permit authorizations, safety and disaster management and international cooperation. The Zambian *Water Resources Management Act (2011)* under Section 8 requires gender disaggregated data collection and information systems, and also research on, the structural linkages between gender relations, poverty, disease, climate change, water use and development. Section 28 requires the establishment of a gender-sensitive national information and monitoring system. Namibia's *Water Resources Management Act (2013)* Section 28 empowers the establishment of a common database system to store and provide data for the protection, sustainable use and management of shared water resources, with the participation of neighbouring states.

**Legislation should allow for sharing the results of monitoring and evaluation with the public; information is shared to facilitate transparency and trust.** Bulgaria's *Water Act (1999, amended through SG No. 61 of 2010)* requires the publication of a periodic Bulletin on the Status of Water Resources containing data on the ecological and chemical status of waters as well as water quality. In amendments to the same law, through *SG (No. 47 of 2009),* water-supply and sewerage associations or municipal councils may access the information systems and documents of a range of institutions with data on water-supply and sewerage services for free.

Stakeholders can also be involved in the design and implementation of water information systems, and in such case, legislation may stipulate the type of information to be collected at the basin scale so that harmonized data can enable appropriate comparisons and analyses.

## 4.11. Institutional arrangements

**Water laws outline overarching responsibilities for competent authorities that capture the multiplicity of dimensions of sustainable water management.** For example, Sierra Leone's *National*

*Water Resources Management Agency Act (No. 5 of 2017)* establishes an Agency to manage the water resources of the country in a sustainable manner, considering natural river basin and aquifer boundaries as the basic units of management of water resources. The Agency is tasked with protecting water resources for sustainability of the resource and protection of aquatic systems, promoting the efficient and beneficial use of water resources, and recognizing its economic value. The Agency should promote community participation and gender equity during allocation. Box 4.5 provides another example of the competent authority functions as listed in Zambia's *Water Resources Management Act (2011).*

**Box 4.5**
**Zambia's *Water Resources Management Act (2011)***

**Section 8:**

- to promote and adopt a dynamic, gender-sensitive, integrated, interactive, participatory and multisectoral approach to water resources management and development that includes human, land, environmental and socio- economic considerations, especially poverty reduction and the elimination of water borne diseases, including malaria;
- plan for and ensure the sustainable and rational utilization, management and development of water resources based on community and public needs and priorities, within the framework of national economic developmental policies;
- ensure, in collaboration with the Ministries responsible for community development, finance, commerce, agriculture, fisheries and livestock, youth and child development and disaster management and mitigation, that the management and planning of water resources contributes to the eradication of hunger and poverty; and
- research on, and carry out analysis of, the structural linkages between gender relations, poverty, disease, climate change, water use and development.

Beyond these broad strokes outlining responsibilities and oriented towards sustainable management of water resources, this section looks at select aspects of the institutional framework that are pertinent for sustainability approaches.

### 4.11.1. Multi-level governance

**Effective water management depends on multi-level governance from catchment or basin level entities to transboundary or supra-national levels.** Hydrological and administrative boundaries may not necessarily be aligned. In highly federated arrangements, responsibilities over water management may be assigned to sub-national governments, resulting in interdependencies across various levels of government that require coordination (WGF, n.d.).

**The principle of subsidiarity requires that decisions be taken at the lowest appropriate level. However, there is no single locus of management decisions – some may be addressed at community level and other perhaps at basin, regional or national level.** Local authorities may apply policy in a manner more responsive to local and specific needs as a result of their proximity to the resource, users and context (CReW, 2010). Even for a single monitoring system, local, decentralized or other similar arrangements may be responsible for data collection, while data evaluation and management may be assigned to central authorities. Effective and efficient multi-level governance involves promoting cooperation and pooling resources and technical capacities. Thus, where legal authority for an activity has been devolved to local government, the latter should have the capacity (technical and financial) for implementation. Temporary alternatives to this common scenario would be that local governments delegate certain responsibility to the region or enter into contracts with them for technical assistance (AfDB, 2010). Legislation must set out responsibilities clearly and indicate how powers are shared between different tiers of government.

**At basin, watershed or catchment level, a key instrument of management is a plan (and such plans are often developed by multi-stakeholder bodies).** Namibia's *Water Resources Management*

*Act (No. 11 of 2013)* establishes the processes for setting up basin management committees. Ministerial recognition is granted to:

> A group of representatives of such institutions, stakeholders and persons who are organised or associated for the purpose of organizing, planning or dealing with matters relating to the development, management, protection and enhancement of water resources in the basin or part of the basin (Section 20).

Ministerial recognition is contingent on such stakeholders being truly and broadly representative of institutions and users. Such committee is required to coordinate with the regional planning authority to ensure that water resources and resource quality are managed in a consistent and integrated manner (Section 25). Under Zambia's *Water Resources Management Act (No. 21 of 2011),* the competent authority is to recommend to the minister, the creation of a catchment council (Section 17). Such council is to be composed of representatives of the provincial administration and water users (including water user associations [see Section 4.11.2] where such bodies exist). The persons on the council should represent all the sub-catchments in the catchment area. Among the councils' functions are: recommendations on permits to be issued within the area; investigating disputes; gathering data and carrying out monitoring of water quality and quantity; carry out public awareness campaigns; ensure gender mainstreaming in its programmes and approach; and harmonizing catchment plans and other planning instruments applicable in the catchment area (Section 18). Subsidiary legislation typically details the operational and procedural rules to be followed by such councils or committees.

**On the opposite end of the spectrum, water laws may set out arrangements for the management of transboundary surface or aquifer watercourses.** The United Republic of Tanzania's *Water Resources Management Act (2009)* Section 99 refers to engaging in joint management planning and development of joint projects with countries with whom the United Republic of Tanzania shares waters. Joint projects include inter-basin transfers for the purposes of equitable utilization, environmental integrity and common understanding. Importantly, even

for joint management between two countries, enabling the contribution of local stakeholders' towards country positions on transboundary waters is recognized by the Tanzanian law.

**River basin level administrations, including river basin organizations, watershed councils and groundwater authorities may cut across provincial or even national boundaries.** Water legislation may empower competent authorities to enter into agreements to allocate and apportion transboundary river flows, or conversely, to set up national institutions to implement transboundary agreements. The latter often relates to monitoring, data collection and exchange, and impact assessments. Transboundary agreements may also provide arrangements for the joint development of the watercourse, which would set out obligations of each party regarding management, including the sharing of expenses and any relevant infrastructure, and mechanisms to target pollution and water quality.

### 4.11.2. Alternatives for service delivery: water user associations and public-private partnerships

#### a. Water user associations

**Water user associations (WUAs) may be created to ensure the equitable distribution of water among users, and to ensure supply systems are maintained and reliable.** The establishment of WUAs is contingent on a legal framework of secure and long-term allocation of water rights. The success of WUAs is further dependent on their design, organization and structure, with greater success often attributed to 'bottom-up' arrangements that allow user communities greater say in the management and organization of the entity. Bhutan's *Water Act (2011)* provides basic provisions for establishment of WUAs, their registration and lists their core functions as fostering a sense of ownership as well as ensuring sustainability of the services provided. The WUAs may federate to coordinate activities. The Act requires WUAs to be represented in a river basin committee (Section 27), and are to be consulted where the competent authorities establish mechanisms to protect and conserve

watersheds located above drinking water intakes (Section 43). The Act stipulates that irrigation water is to be allocated:

> Either through mutual understanding or in accordance with existing practices, depending on the size of land holdings and the quantity of water in the channel, and subject to the constitution and by-laws of the relevant Water Users' Association (Section 44).

Some countries have specialized legislation dedicated to WUAs. For example, Hungary's *Act on water users' associations* (*No. CXLIV of 2009)* details the conditions for establishing WUAs, and WUA functions (including water planning, water damage management, flood prevention and mitigation, water supply for agricultural uses, water retention and conservation). The statute outlines the rights, obligations and liabilities of associations (with distinct legal personality) and that of a WUA member. Only one association is permitted to operate in a prescribed water management area at a time.

Bottom-up approaches should be balanced with some government oversight to serve as a vehicle for consultation, but more importantly, to avoid uneven confluences of power that may result in distribution inequities. Where responsibilities are transferred to local stakeholders, it is critical that this is accompanied by appropriate budgetary support. **While water legislation may state management of the WUA is transferred to the users, provisions should also be included to ensure WUAs have the capacity to take on the relevant functions.**

### b. Public-private partnerships

**Water laws may promote private sector innovation, opportunities and growth via enabling provisions for public-private partnerships (PPPs).** Ireland's *Water Services Act (No. 30 of 2007)* empowers the water services authority to enter into agreements with another person or entity as relates to matters within its competence, including the construction of waterworks or wastewater works. A similar provision exists in Kenya's (Machakos) *Water and Sanitation Act (No. 1 of 2014)* where the competent authority may use a PPP to (i) provide necessary sanitation facilities and services; and (ii) construct, operate and maintain

an extensive system of sewers and treatment facilities to meet applicable discharge requirements.

While every regulatory mechanism is specific to the country and framework within which it operates, most PPP models fall within one of the following types: (i) separate regulatory agency with a licensing regime (for example, The United Kingdom of Great Britain and Northern Ireland's England and Wales, some United States of America states, and Australia; (ii) regulation by contract (for example, France, Germany, and Uganda); (iii) hybrid model regulation by contract and a separate regulator (e.g. Colombia and Kenya); and (iv) self-regulation (e.g. Cambodia and some utilities in the United States of America) (WBG, n.d.).

### 4.11.3. Broad and equitable participation in governance

**Equitable participation of stakeholders generally, and specifically considering equity in terms of gender, racial, socio-economic, geographic or other representation is not an end in itself but is intended to be mechanisms for greater access to, and management of, water resources.** Water laws often require inclusion of a representative of historically neglected or marginalized groups in various management and decision-making bodies. Zambia's *Water Resources Management Act (No. 21 of 2011)* requires that a sub-catchment council and even Boards of the competent authority shall be composed of persons representing the traditional authorities. The Australian *Water Management Act (No. 92 of 2000)* requires the membership of committees to include at least two Aboriginal persons to represent the interests of aboriginal persons (Section 13). Under Canada's (Ontario) *Great Lakes Protection Act (S.O. 2015, c. 24),* before directing one or more public bodies to develop a proposal for a geographically-focused initiative under Section 11, the minister shall, identify any First Nations and Métis communities that have a historic relationship with the geographic area and thereafter consult with representatives of those communities. Any proposal relating to such areas must include a plan for engaging First Nations and Métis communities that may be affected by the initiative.

**Legislation may expressly recognize the contribution of women to water management, accommodate their specific needs and create entry points for their participation at all levels in decision-making and implementation.** Kenya's *Water Act (2016)* brushes broad strokes in requiring that any member appointed to a Board, Tribunal or Committee is to be made upon the basis of gender diversity, among other factors. The Zambian *Water Resources Management Act (2011)* declares in the guiding water management principles that there shall be equity between both genders; in particular, women shall be empowered and fully participate in issues and decisions relating to the sustainable development of water resources and, specifically, in the use of water. Under Section 31, the national water resources strategy and plan is required to provide mechanisms and facilities for enabling the public and communities, in particular women, to participate in managing the water resources within each catchment. The Tanzanian *Water Resources Management Act (2009)* ensures adequate female representation by prescribing specific figures: at least one-third of the representatives of the National Water Board, Basin Water Boards and Catchment Water Committees are required to be women.

## 4.12. Key chapter messages

**A national Constitution may, as the highest law of the country, enshrine sustainable development imperatives in connection with the use and management of water.** Constitutions may establish a right to water and a right to a clean environment. Constitutions may also house provisions on the separation of powers and responsibilities of different vertical tiers of government.

**Policy coherence is critical for the water domain,** a sector that requires consideration and integration of policies, laws and institutional actors in agriculture, trade, energy, environment and industry. The IWRM is water-centric, focusing on water in relation to other uses, while the WEF nexus is concerned with balancing different uses and user goals of water, energy and land resources. Community involvement and stakeholder participation are critical to these approaches, including through RBOs, watershed or catchment agencies. Policy coherence may be achieved in

legislation, for example, through provisions on IWRM plans and multi-stakeholder management bodies, among other means.

**Water tenure perspectives** may further the systems-thinking model that enables a balance among competing uses and interests. Different types of water tenure may be associated with different categories of water use, as well as associated with goals such as security, equity, and efficiency.

**Cross-sectoral coordination and cooperation** of a range of institutions at various vertical (administrative) levels as well as horizontal (sectoral) actors and stakeholders are important to enable IWRM, WEF and other approaches that recognize the multi-sectoral implications of water management. Legislation should recognize the role of the range of ministries, sub-national bodies and other stakeholders.

**The right to water** is a self-standing right as well as a right associated with the realization of other rights such as the right to food, the right to health or the right to a clean environment. The scope of the right to water can be set out in national legislation, and the scope of the right in some countries may depend on whether water is drawn directly from the source, or from a supply network.

**Customary rules and practices** may be in operation alongside formal statutory law. In some jurisdictions, customary rights are recognized in Constitutions, or in specific legislation addressing indigenous peoples. Thus, water-specific texts may not necessarily mention customary uses, and such omission does not necessarily infer illegality of such uses. However, recognition of these uses is critical for accounting, planning and management. Water laws may contain provisions that recognize and protect such rights and address how conflicts between customary rules and statutory laws are resolved.

**Water allocation** must be informed by water accounting. Legislation must set out how are decisions of water allocation made, and by whom.

**Basic priority uses** such as water for drinking or domestic consumption is frequently recognized and protected in legislation above other water

uses. Legislation often lists the hierarchy of water uses in legislation, in order of priority.

**Traditionally marginalized groups** (depending on the country context) may comprise smallholder food producers, the rural poor, women, youth and older people, and indigenous communities whose livelihoods depend on natural resources. These groups should be explicitly protected with targeted legislative provisions that take into account the specific roles, responsibilities, realities and contexts of such groups. A recognition of the knowledge and practices of indigenous peoples' in contributing to effective water resources conservation may also be recognized in legislation.

**Environmental and social requirements and conditions** associated with the issuance of water permits are important ways to enable rational and sustainable water use. Legislation may specify the negative impacts on water quantity, water quality or local users that would result in denial of authorizations to use water. Specific conditions, restrictions and prohibitions of licence-holders itemized in legislation also serve to ensure water resources are uniformly protected.

**Minimum flows or environmental allocations protect aquatic ecosystems and health of the watercourse.** Legislative provisions may prescribe water protection targets and minimum flow figures for different average flow rates, which consider the geographic and ecological function of the water bodies. Legislative provisions may also provide flexibility in allocating water according to percentage and time of flow, rather than a fixed or minimum amount.

**Reserves can be set up for ecological or social needs.** Legislation can ensure that reserves are defined and can be used where required to set aside water of a particular quantity and quality (according to the purpose).

**Climate change mitigation and adaptation strategies** are often required in legislation as part of basin or catchment level planning instruments. Legislation may also contain generic duties on competent

authorities relating to climate change and water related emergencies, or may contain specific powers to control, limit or prohibit use of water during periods of water shortage. Water legislation may also include drought risk assessments and adaptation mechanisms.

**Rainwater harvesting and other storage or retention mechanisms** may be unilaterally permitted by law, or require authorization by the competent authority, and may be subject to prescriptions on timing and quantity of storage.

**Abstraction limits and optimum use prescriptions** are frequent features of water laws. Many water laws around the world impose a duty on the competent authority to prescribe abstraction and use limits in connection with licences or other authorized uses, as well as penalty provisions such as revocations of authorization or charging of fines for those who do not comply.

**Wastewater legislation provisions may encourage reuse of treated water under certain conditions.** Legislative provisions may encompass: licensing for the discharge of wastewater (and applicable terms and conditions), trading schemes for volumes on permits that are not used, rules on collection and treatment, and standards relating to quality of treated water.

**Pricing systems** can have both social equity and environmental preservation objectives, as well as seek to recover costs for management and infrastructure.

**Fiscal and technology incentives feature in legislation to encourage rational water use.** Incentives include tax reductions, credits or cash rebates for individuals or enterprises that carry out prescribed measures to conserve water. Water legislation may create incentives to use particular types of (sustainable) technologies over other types.

**The EIAs** are often prerequisites in many jurisdictions with regard to granting concessions for water use.

**Provisions on pollution control are prevalent in almost all jurisdictions,** and are found in the legislation of different sectors (such as agriculture or specific industries as well as general environmental laws). Such provisions range from simple statements prohibiting pollution with corresponding penalties, to provisions that enshrine the polluter-pays principle, to detailed rules controlling effluent discharge from certain industries. Legislation should provide the competent authority with powers of monitoring, and the power to take samples.

**Ecological protection zones and protected areas** can be established in legislation to preserve certain uses such as human consumption, ensure health of the watercourse or the protection of aquatic species.

**Transfers and trades of permits** allow flexibility when an allocated volume is unused, facilitating rational use and conservation. The regulatory framework should set out defined water property rights and clear conditions on transfers and use that avoid adverse third-party effects, particularly on the environment.

**Payments for watershed, ecosystem or environmental services** allow downstream beneficiaries to contract with upstream landowners to carry out particular land management services. In addition to legislative provisions specific to establishment of the Payments for Ecosystem Services (PES) scheme, the broader legal framework relating to contracts, land tenure and the government's natural resource monitoring, inventorying and valuation capacity are also essential.

**A range of financing vehicles may support water management and related infrastructure:** taxes and charges (including penalties for non-compliance or pollution), public-private partnerships, general budgetary allocation, revolving fund models, bonds, loans and grants from financing institutions and various combinations of the foregoing.

**Data-driven decisions through, for example, water accounting and auditing,** are critical pre-requisites for sound water management planning. Information systems, data parameters and responsibilities in collection and management may be set out in legislation.

**Multi-level institutional arrangements** reflect the reality that hydrological and administrative boundaries may not necessarily coincide. Effective and efficient multi-level governance involves promoting cooperation and pooling resources and technical capacities. Thus, where legal authority for an activity has been devolved to local government, the latter should have the capacity (technical and financial) for implementation.

**The establishment of WUAs** is contingent on a legal framework of secure and long-term allocation of water rights. While water legislation may state management of the WUA is transferred to the users, provisions should also be included to ensure WUAs have the capacity to take on the relevant functions.

**Broad representation** taking into account gender, racial, socio-economic, geographic or other factors can be used to enable equitable public participation in water management, and enables greater inclusivity and integration of traditionally marginalized groups. Water laws often require a broad inclusion of users and stakeholders in decision-making or advisory bodies.

# Appendix C. Key international instruments to guide national legislation

## I. Legally-binding instruments

*Convention on the Law of the Non-navigational Uses of International Watercourses*, 21 May 1997. (also available at http://legal.un.org/ilc/texts/instruments/english/conventions/8_3_1997.pdf; https://treaties.un.org/Pages/ViewDetails.aspx?src=TREATY&mtdsg_no=XXVII-12&chapter=27&clang=_en).

*Convention on the Protection and Use of Transboundary Watercourses and International Lakes*, adopted in Helsinki, 1992. (also available at http://www.unece.org/env/water/text/text.html).

*Protocol on Water and Health to the 1992 Convention on the Protection and Use of Transboundary Watercourses and International Lakes,* 17 June 1999. (also available at http://www.unece.org/fileadmin/DAM/env/documents/2000/wat/mp.wat.2000.1.e.pdf; http://www.unece.org/env/water/pwh_text/text_protocol.html).

## II. Non-legally-binding instruments

*Draft articles on the law of transboundary aquifers*. United Nations General Assembly (UNGA), A/RES/68/118, adopted 16 December 2013. (also available at https://undocs.org/en/A/RES/68/118).

*Dublin Statement on Water and Sustainable Development.* International Conference on Water and the Environment, adopted in Dublin, 31 January 1992. (also available at http://www.un-documents.net/h2o-dub.htm).

*Helsinki Rules on the Uses of the Waters of International Rivers.* International Law Association (ILA), August 1966. (also available at https://www.internationalwaterlaw.org/documents/intldocs/ILA/ILA-HelsinkiRules1966-as_amended.pdf).

*Human Rights and Access to Safe Drinking Water and Sanitation.* Human Rights Council (HRC), Resolution A/HRC/RES/15/9, adopted 30 September 2010. (also available at https://undocs.org/A/HRC/RES/15/9).

*The human right to water and sanitation.* UNGA**,** A/RES/64/292, adopted 28 July 2010. (also available at http://www.un.org/waterforlifedecade/human_right_to_water.shtml; https://undocs.org/en/A/RES/64/292).

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This Chapter should be read in conjunction with Chapter 2 on themes that are common to all the sectoral chapters in this book. The diverse illustrative snapshots of legislative elements on select subjects offer an aerial view to demonstrate how countries have captured the interplay between social, economic and environmental exigencies, while using the very narrow and specific lens of highlighted legislative provisions. The reader should not infer that the examples selected are necessarily successfully implemented, or result in the desired impact; the chapter does not examine country contexts, allocation of resources, political priority or any of the myriad factors that may affect successful implementation and enforcement. Assessing the effectiveness, regulatory performance and range of potential externalities is an undertaking that is highly context-specific. Accordingly, the examples here do not make recommendations that are applicable to all jurisdictions, but rather draw attention to the way in which different countries have approached sustainable governance of the resource.

While this Chapter explores sustainability dimensions from the narrow lens of sectoral legislation, i.e. fisheries and aquaculture-specific laws, it should be emphasized that in practice, an approach that recognizes inter-sectoral linkages and policy coherence necessarily involves a contemporaneous examination of legislation on, among other areas, environment, land use and land tenure, water, protected areas, oceans and coastal areas, petroleum, natural disasters and emergencies, investment, infrastructure, transport and local government administration.

## 5.1. Importance of the fisheries and aquaculture sectors to sustainable development

Oceans and coastal areas contribute to livelihoods, food security and the economy (recently coined the 'blue economy'). Global fish production reached an all-time peak of approximately 171 million tonnes in 2016, of which aquaculture comprised 47 percent (FAO, 2018b). Fisheries and aquaculture provide income to small-scale producers and employment at larger-scale operations. The Convention on Biological Diversity (CBD) has highlighted that the market value of marine and coastal resources

and industries is estimated at USD 3 trillion per year which correlates to roughly 5 percent of global gross domestic product (CBD, 2015). Data in 2018 shows that the average annual increase in global food fish consumption was faster than population growth by 1.6 percent and exceeds that of meat from terrestrial animals by 2.8 percent (FAO, 2018b). The Food and Agriculture Organization of the United Nations (FAO) states that as one of the most-traded food commodities, 54 percent of fish exports by value originates in developing countries, and this sector is critical to feeding and employing a growing global population (FAO, 2016a).

Despite some progress, FAO estimates 33.1 percent of fish stocks were overfished (i.e. fish stocks fished beyond biological sustainability) (FAO, 2016a). Activities such as oil drilling (see Chapter 6), energy installations, coastal areas construction and infrastructure development, dams and water flow management (especially for inland fisheries) negatively affect aquatic productivity. Habitat degradation from these activities, worsened by pollution that has destroyed, and poses an ever-present threat to marine ecosystems and marine life, restricts (in part) the sector's contribution to incomes and food security (HLPE, 2014). Development activities may also restrict or deny local communities access to traditional fishing grounds or displace them from coastal areas. Climate change affects the geographic distribution of species (impacted by the temperature of the seas), competition for water for inland fisheries species, as well as through habitat changes that result from ocean acidification (HLPE, 2014). The occurrence and impact of extreme events are increasing, affecting coastal communities as well as national economies through infrastructure damage (HLPE, 2014).

Aquaculture is projected to surpass capture fisheries as a source of food fish, and has already exceeded capture fisheries in terms of employment figures; capture fisheries employment decreased from 83 percent in 1990 to 68 percent in 2016, while aquaculture employment rose correspondingly from 17 to 32 percent. However, expansion in aquaculture may be impeded by: limited availability and accessibility to water of good quality; competition from alternative uses of land and water areas; availability of fish seeds and feeds of the required

quality and quantity; insufficient investments in infrastructure; capital constraints; and challenges in governance and regulatory framework (FAO, 2016a). Sustainability of aquaculture development is contingent on social, environmental and economic dimensions, but also is dependent on technological advances (FAO, 2012a).

The governance imperatives relevant to fisheries are found in the Sustainable Development Goal (SDG) 14: Conserve and sustainably use the oceans, seas and marine resources for sustainable development. This goal has targets that are explicitly fisheries-related and those that have indirect impacts on the fisheries sector. Among the key fisheries-related targets are: prohibiting overfishing, Illegal, Unreported and Unregulated (IUU) fishing and destructive fishing practices; increasing the economic benefits from sustainable management of fisheries and aquaculture; and providing access for small-scale artisanal fishers to marine resources and markets (FAO, 2016a). Other targets address preventing marine pollution, managing marine and coastal ecosystems, and implementing the United Nations Convention on the Law of the Sea (UNCLOS) and other international standards and instruments (see Appendix A for some instruments that may guide national legislation). The protection, restoration and management of inland water resources and ecosystems are addressed under SDGs 2, 6 and 15 (see Chapter 1 for a closer look at the SDGs) (FAO, 2016a).

This Chapter focuses largely on capture fisheries but also highlights key issues unique to aquaculture. Many jurisdictions address both areas within the same instrument (and often opt to have implementing regulations dedicated solely to aquaculture). In other jurisdictions, aquaculture is addressed as a separate primary law. While the scope of this Study is to focus on sustainability provisions within fisheries and aquaculture sector legislation, it bears mentioning that references to fisheries or aquaculture activities in other sector legislation is important. Provisions may be found within other types of sector legislation (such as for mining, petroleum, agriculture, etc.), in general environmental legislation or in thematic area laws (such as for endangered species or protected areas).

## 5.2. Sustainability objectives and guiding principles

**Fisheries laws explicitly list sustainable development objectives that guide the implementation and interpretation.** For example, Madagascar's *Law No. 2015-053 on the Code for Fisheries and Aquaculture (2015)* aims for the sustainable governance of fisheries resources for the preservation of aquatic ecosystems and the protection of biological diversity. Its objectives also include increasing the contribution of fisheries and aquaculture to food and nutrition security, and to the country's economic and social development. The Solomon Islands *Fisheries Management Act (No. 2 of 2015)* requires any public function to be exercised in a manner that protects fisheries as a natural asset and heritage, managed and developed for present and future generations and used sustainably so as to achieve socio-economic benefits including economic growth, human resource development, employment creation and sound ecological balance. The Thailand *Royal Ordinance on Fisheries (B.E. 2 558, 2015)* seeks to preserve fish as a sustainable source of food, to protect the environment and to protect the welfare of fishers. Through a sound fisheries governance framework, the law seeks to protect local and artisanal fisheries, meet Thailand's international obligations, and address IUU fishing and overfishing. Notably, the *Royal Ordinance* calls for the use of scientific data to achieve long-term economic, social and environmental sustainability, through an ecosystem approach and adopting the precautionary principle for sustainable use at the maximum sustainable yield.

The sections below go into greater detail on the operation of other guiding principles that may be included in fisheries laws, for example, the requirement to use the best scientific information available (see Section 5.4.4 and 5.10), the duty to adopt a precautionary approach (see Section 5.5.2), the requirement to protect biodiversity, and the duty to ensure non-discrimination and take into account the interests of small-scale fishers (see Sections 5.4.1, 5.13.1).

## 5.3. Ecosystems and integrated approaches to fisheries management

### 5.3.1. Ecosystems approach and blue growth

**The FAO frames the ecosystem approach to fisheries (EAF)** as striving to:

> Balance diverse societal objectives, by taking into account the knowledge and uncertainties about biotic, abiotic and human components of ecosystems and their interactions and applying an integrated approach to fisheries within ecologically meaningful boundaries (FAO, 2003).

Such approach is aligned with a systems-thinking approach (see Chapters 1 and 2 of this Study) as well as with sustainable development generally, by seeking to balance competing needs, demands and impacts. FAO has advocated for fair and responsible tenure systems where users are leveraged as resource stewards in furtherance of this approach (FAO, 2012a) (see Chapter 3 on Land). The long title of the Seychelles *Fisheries Act (No. 20 of 2014)* refers to the sustainable development of fisheries in accordance with an ecosystems approach. The Law defines 'ecosystem approach' in a manner identical to the foregoing FAO definition. One of the functions of the relevant authority (Section 4) includes taking an ecosystem approach that addresses the multiple needs of society so as not to restrict the enjoyment of future generations of the full range of goods and services provided by marine ecosystems. A fishery management plan must mitigate ecosystem impacts including bycatch and habitat damage, through an ecosystem approach to fisheries. Kenya's *Fisheries Management and Development Act (No. 35 of 2016)* contains as one of its guiding principles, ensuring the effective application of the ecosystem approach to fisheries management (Section 5). This Law also calls for the development of fisheries management plans that include an identification of the fisheries resource and a description of its characteristics, including its economic and social value and interrelationship with other species in the ecosystem (Section 39).

**An ecosystem approach to aquaculture (EAA) is defined by FAO** as "a strategy for the integration of the activity within the wider ecosystem

such that it promotes sustainable development, equity and resilience of interlinked social-ecological systems" (FAO, 2012a) This approach is also aligned with systems thinking, can be buttressed by sound tenure arrangements, and contributes to the sustainable development agenda.

**For both EAA and EAF approaches one of the key challenges for governance frameworks is integrating the perspectives and management of various sectors that are active in the ecosystem and coordinating the various vertical levels of government involved.** Effective and efficient multi-level governance involves cooperation, and pooling resources and technical capacities. The EAF encourages management along ecosystem boundaries that are 'ecologically meaningful'. Management measures should be harmonized across boundaries and jurisdictions whether local, national or international along ecological, and not administrative, boundaries. A cogent example is the Republic of Korea's *Conservation and Management of Marine Ecosystems Act (No. 8 045 of 2006, as amended by Act No. 15 135 of 2017)* which establishes the concept of a 'marine ecosystem axis' as the network of habitats connecting the ecosystems of ecologically important areas (or sea areas maintaining ecological functions) in order to manage ecosystems and protect biodiversity in an integrated manner. The Act calls for the establishment of a marine ecology map, which classifies the marine ecosystems nationwide (and to use this map for planning and development) according to various zones; for example, marine ecosystems that are located in the distribution limits of organisms, major habitats, spawning areas and migratory routes, or that have excellent marine ecosystems or landscapes. The responsible minister is empowered to request the cooperation in the form of expertise or data, from other agencies. Indonesian *Law on the Management of Coastal Area and Isles (No. 1/2014 amending Law No. 27/2007)* refers to the use and management of small islands and surrounding waters as a comprehensive ecological and economic unit integrated with a nearby large island. The Canadian *Oceans Act (1996, amended in 2016)* enables the creation of large ocean management areas that adopt an integrated ocean approach that balances socio-economic needs with the health of the marine ecosystem. The Cook Islands *Marae Moana Act (No. 10 of*

*2017)* protects *marae moana* in accordance with ecologically sustainable use principles that include an integrated approach and an ecosystems approach. *Marae moana* is defined as internal and territorial waters as well as the exclusive economic zone, seabed or subsoil below those waters and the airspace above. The Samoan *Fisheries Management Act (No. 8 of 2016)* requires the ecosystem approach to be applied through integrated decision-making and a consideration of the wider ecosystems. This Act also importantly emphasizes the importance of complete and timely reporting and sharing of fisheries data, including information regarding the ecosystems and related social systems in which fisheries occur (Section 4).

**The EAF approaches also require recognition of regional and transboundary impacts and effects; ecosystem approaches that perceive habitats and ecosystems as functional units may cut across international boundaries as well**. In Kenya's *Fisheries Management and Development Act (No. 35 of 2016),* the Kenyan competent authority is authorized to consult other fisheries management authorities that share the same or interrelated stocks in order to harmonize fisheries management plans and approaches (Section 39). Ghana's *Fisheries Act (2002, as amended by Act No. 880 of 2014)* states that the competent authority may consult with foreign governments sharing the same or interrelated fish stocks. Consultation is for the purposes of aligning national and regional fisheries management plans, promoting joint fishing, and joint conservation measures.

**The 'blue growth' concept may be seen as an expansion of the ecosystem approach by incorporating aspects such as energy efficiency, climate change adaptation and innovations for improved environmental, social and economic solutions.** Blue growth also embraces the notion of managing externalities, creating alternative livelihood opportunities, and improving access to social services such as education and also financial services (FAO, 2012a). Legislation may refer to the consideration of the ecological, social, economic and governance dimensions, as well as external drivers such as other sectors (e.g. off shore oil and gas exploration on marine resources) or climate change.

**An EAF or EAA approach management of a resource along ecosystem lines may not be necessarily be found in fisheries-specific legislation.** The Cayman Islands *National Conservation Law (No. 24 of 2013)* calls for the identification and conservation of ecological ecosystems, which is defined as a "dynamic complex of species and their non-living environment interacting as a functional unit". New Zealand's *Hauraki Gulf Marine Park Act (No. 1 of 2000)* recognizes the:

> Interrelationship between the Hauraki Gulf, its islands, and catchments and the ability of that interrelationship to sustain the life-supporting capacity of the environment of the Hauraki Gulf and its islands [as a matter of] national significance (Section 7).

Section 8 calls for management of the Gulf in a manner that recognizes its 'life-supporting capacity', i.e. the historic, traditional, cultural, and spiritual relationship of the indigenous peoples of the Gulf, with the Gulf, and its islands. Life supporting capacity also refers to the use of the Gulf for the social, economic, recreational, and cultural well-being of people and communities, and to maintaining the soil, air, water, and ecosystems of the Gulf (Section 7).

**Inland fisheries is dependent on the availability of, and access to, freshwater bodies; fisheries is considered an 'in-stream' water use.** The positive and negative impacts on water resources using an integrated terrestrial–aquatic system can also be measured. In this regard, of interest is Ireland's *Inland Fisheries Act (No. 10 of 2010),* which in Section 9 requires working with river basin districts which are hydrological units for water management.

### 5.3.2. Integrated management

**The principles and concepts that give effect to EAF are featured in sound fisheries legislation in the form of meaningful consultation with a broader set of stakeholders, improved cooperation and joint decision-making.** These stakeholder bodies (see Section 6.11.2 for an additional discussion on participation) serve the goals of coordination, cooperation and integration; conflict is minimized and management of shared ecosystems are facilitated. In principle, these bodies should

collaborate to minimize duplication of functions, avoid contradictory initiatives and establish synergies. Such provisions advance the principle of integrated management. The Cook Islands *Marae Moana Act (2017)* defines 'integrated management' as the integration of decision-making across all relevant stakeholders (Government, non-government, and external partners). Kenya's *Fisheries Management and Development Act (No. 35 of 2016)* notes at a number of junctures, the duty to coordinate and consult with various agencies and persons, including stakeholders, industry, government agencies at various levels as well as with regional and international organizations and experts. The text is explicit in highlighting areas for multi-stakeholder collaboration, such as the introduction of appropriate technologies, stimulating investments in commercial fisheries, and the marketing and distribution of fish. Also, the statute creates a Fisheries Advisory Council for coordinated fisheries management, that comprises the Cabinet Secretaries for fisheries, transport and infrastructure among its representatives as well as trade, consumer and industry representatives (Section 6). Canada's *Oceans Act (S.C. 1996, c. 31, as amended in 2016)* requires the development of integrated management plans for estuaries, coastal waters and marine waters through collaboration among provincial and territorial governments, affected aboriginal organizations, coastal communities and other persons and bodies (Section 31). The minister is empowered to establish advisory or management bodies with these stakeholders, for example, to establish marine environmental quality guidelines. The law also empowers the minister to enter into agreements with other entities for the foregoing purposes (Section 31).

Legislation may promote participatory management and co-management (see Section 5.11.2), as well as the engagement of fishers in order to secure stakeholder buy-in and improve compliance and implementation of the management measures. These mechanisms are important in the context of an ecosystems approach, so as to minimize the potential for, and actual conflict between, fisheries users, as well as between fisheries users and other user groups (FAO EAF-Nansen Project, 2016).

### 5.3.3. Integrated coastal management

**Integrated coastal management planning should boost economic performance, improve social cohesion and protect the conservation of natural resources.** These plans typically support the conservation of coastal areas, and the allocation of such areas towards a range of different uses such aquaculture, fisheries, tourism, transport, industry, urban development and energy. The Republic of Korea's *Special Act on the Development of East, West, and South Coast Areas (2007, as amended by Act No. 11 690 of 2013)* calls for the establishment of comprehensive plans, jointly formulated for each coast area or inland area by various government agencies. These coastal plans may result in the designation of development zones (Article 7). Under this Act, strategic coastal or inland areas are established as new economic zones and international tourist attractions. These areas contribute to balanced national development, boost the regional economy, promote culture, tourism and other industries, and increase regional exchanges and international cooperation (Article 1). Indonesian *Law on the Management of Coastal Area and Isles (No. 1/2014 amending Law No. 27/2007)* calls for the coordination and planning of coastal areas conservation and use, and in particular, to bring together different government stakeholders to enable a science-based approach to management (Article 1). The United Kingdom of Great Britain and Northern Ireland's (Northern Ireland) *Marine Act (Cap. 10, 2013)* creates marine conservation zones (Article 116) to conserve marine flora and fauna (and protect biodiversity), and to conserve marine habitats or features of geological or geomorphological interest. In considering whether to designate such marine conservation zone, Section 118 requires regard to be given to any economic or social consequences (this would include, for example, sites that are of historic or archaeological interest).

**Integrated coastal management may balance aquaculture, marine conservation and other competing interests from multiple sectors.** Brazil's (São Paolo) *Decree providing for environmental licensing of aquaculture, creating Aquaculture State Centres, establishing the conditions for the sustainable development of aquaculture (No. 60 582 of 2014)* offers an example. Licensing of aquaculture in coastal zones

must comply with the Coastal Ecological-Economic Zoning limits and conditions as well as the National Coastal Management Plan, the State Coastal Management Plan and Local Development Plans of Mariculture. The European Union *Directive of the European Parliament and of the Council establishing a framework for maritime spatial planning (2014/89/EU)* in Article 5, declares that planning should contribute to the sustainable management of the fisheries and aquaculture sectors (as well as energy, tourism, and maritime sectors) and to the protection of the environment including resilience to climate change.

**Integrated coastal management may be effected through multi-stakeholder bodies.** South Africa's *National Environmental Management: Integrated Coastal Management Act (No. 24 of 2008)* establishes a structure for cooperation, coordination and integration. A National Coastal Committee comprises persons with expertise in coastal management and coastal ecosystems protection, and includes representatives from various coastal government bodies, such as province and municipality representatives. Provincial coastal committees are established with broad representation and participation, and are responsible for assisting in the development of their respective coastal management programmes. A national coastal management programme should be updated every four years. It should present a framework for sustainable use of coastal resources, the norms and standards for the management of the coastal zone, and the specific components of the coastal zone.

## 5.4. Controls on access to resources: capture fisheries

**The right to access fisheries resources may be allocated to an individual, a community, a company or a vessel and legislation should include a clear articulation of the scope of rights and protect these rights.** Legislation should provide access to resources in such manner as facilitates economic opportunities, protects dependent communities (see Section 5.13 of this Chapter) and protects the environment (see Section 5.5 of this Chapter).

**Licensing is one of the mechanisms by which access to fisheries resources are controlled by the state.** As a starting point, legislative

provisions should allow authorities to grant access only where such decision is supported by scientific data on fish stocks and other aspects. Gathering this data may be a challenge in some developing countries. Alternative information sources such as resource users, must be factored into assessment models and decision-making processes (Fischer, *et al*., 2015).

### 5.4.1. Preferential access: targeting small-scale, artisanal or subsistence fishers

**Access to fisheries resources entails a balance not only between harvesting rights and conserving aquatic resources, but also among different users.** Preferential or special treatment may be required to prioritize groups who require special protection or secure access to fishing grounds. Section 5.13.1 of this Chapter offers a broader discussion on traditionally-marginalized groups; this section on the other hand, provides illustrations relating specifically to preferential access to resources. Neglecting small-scale, artisanal, subsistence or indigenous fishers has detrimental impacts on employment, livelihoods and food security.

**Legislation may establish fishing zones that grant preferential access to small-scale fishers in marine waters closest to shore, for example, while allocating fishing waters further out at sea to larger operators.** Under Zambia's *Fisheries Act (No. 22 of 2011),* the minister is empowered to declare by statutory order a prescribed area for subsistence fishing (Section 34). Under the Philippines *Fisheries Code (1998, as amended by Act No. 10 654 of 2014)*, commercial fishing is not permitted in municipal waters with a depth of less than seven fathoms (Section 18), while small and medium-sized vessels can operate within the 10.1 and 15 km boundary for commercial fishing.

**Subsistence fishers may be exempt from licensing requirements.** Under the Samoan *Fisheries Management Act (2016),* fishing vessels used solely for subsistence fishing (or recreational fishing) do not require a licence (Section 23). On the other hand, in the Philippines *Fisheries Code (1998, as amended by Act No. 10 654 of 2014),* registered municipal

fisherfolk are granted use of municipal waters (Section 18) and registered fisher cooperatives have a preferential grant of fishery rights (Section 17).

### 5.4.2. Input controls

**Fisheries legislation may employ a range of input controls.** These provisions restrict the intensity of use of fishing gear and restrict the number and size of fishing vessels (fishing capacity controls), the period of time fishing vessels can fish (vessel usage controls) or the product of capacity and usage (fishing effort controls) (Cochrane and Garcia, eds., 2002). Fishing effort may be used to determine the ability of a fleet to catch a given proportion of the fish stock per year. Input controls may also refer to restrictions on the amount of fuel use allowed, fishing effort, the number of fishing gear deployed, or the maximum number of fishers permitted to fish (Cochrane and Garcia, eds., 2002).

Madagascar's *Law No. 2015-053 on the Code of Fisheries and Aquaculture (2015)* allows licences to be denied if effort controls require it (Article 40), and statistical data regarding effort controls and requirements must be included in the Fisheries Register (Section 57). Article 13 of Senegal's *Law on the Maritime Fisheries Code (No. 2015-18 of 2015)* requires fisheries management plans to define, for each fishery, the allowable catch or the optimum level of fishing effort. Article 26 states that the decision of the minister responsible for issuing approvals on commercial vessel construction, purchase or registration shall take into account approved management plans and fishing effort levels. The Mauritius *Fisheries and Marine Resources Act (No. 27 of 2007)* limits the number of gear licences that can be issued and such licences are not transferable. Imports or constructions of fishing vessels also require the approval of the competent authority.

### 5.4.3. Spatial and temporal controls

**Spatial controls regulate the area where fishing activities are allowed, and may be considered as part of input controls.** Certain areas may be closed to fishing for periods or during certain times (for example, in a spawning area, migration or nursery). Restrictions may

also apply in fragile habitats, such as reefs. **Temporal controls regulate the time in which fishing operations may or may not take place.** Moratoria may also be placed to allow depleted stocks to replenish.

The European Union's *Council Regulation fixing for 2017 the fishing opportunities for certain fish stocks and groups of fish stocks, applicable in Union waters and, for Union fishing vessels, in certain non-Union waters (2017/127)* prohibits fishing by purse-seine vessels for yellowfin tuna during certain times in certain areas (longitude and latitudes are provided together with precise dates in the legislation, Article 27). Vanuatu's *Fisheries Act (No. 10 of 2014)* classifies fishing against a moratorium imposed by the competent authority as a serious violation. The Mauritius *Fisheries and Marine Resources Act (2007)* prohibits fishing, or even the possession of fishnets at sea, between certain months and certain times. This Law does make concessions that when weather conditions prevent fishing in the open seasons, the competent authority may authorize fishing for a period of a maximum of ten days during the prescribed closed season.

### 5.4.4. Catch and output controls

**Catch ceilings, or other output controls limit the total number or quantities of fish that may be harvested. Legislation often empowers the competent authority to determine the total allowable catch (TAC) for a fishery.** While TACs are usually determined by the governmental authority responsible for fisheries management, Australia's (New South Wales) *Fisheries Management Amendment Act (2015)* establishes a committee for this purpose comprised of, among others, fishery management experts, a natural resources economist and a fishery scientist.

**The TAC is the total number or tonnage of fish permitted to be harvested within a fishery in a given period of time.** The TACs can be apportioned into individual quotas and granted to users. Where scientific data about fish stocks is scant or not available, TACs can be set too high and lead to overfishing. The TACs and other catch controls should be calculated on a periodic basis (reviewed frequently), be based

on scientific data and on the maximum sustainable yield or maximum economic yield, and take into account the precautionary principle (FAO EAF, 2016). The Thailand *Royal Ordinance on Fisheries (B.E. 2 558, 2015)*, in Sections 24 and 36, requires licences to be based on the maximum sustainable yield and 'points of reference'. The latter term refers to the:

> Relative quantity of the fishing capacity and the natural capacity of aquatic animal production determined by a scientific process that take into account the quantities, sizes, birth and mortality rates, as well as the different stages of aquatic animals for the purposes of determining the maximum sustainable yield (Section 5).

Under Fiji's *Offshore Fisheries Management Decree (No. 78 of 2012),* the competent minister is tasked with adopting measures that ensure long-term sustainability and that maintain or restore target stocks at levels capable of producing maximum sustainable yield qualified by relevant environmental and economic patterns. The European Union *Council Regulation fixing for 2015 and 2016 the fishing opportunities for Union fishing vessels for certain deep-sea fish stocks (EU No. 1 367/2014)* stipulates in Section 10 that precautionary TACs should apply for stocks for which there is no scientifically-based evaluation for the year in which the TACs are set, and analytical TACs should apply otherwise. Namibia's *Marine Resources Amendment Act (No. 9 of 2015)* requires TACs to be developed for commercial, non-commercial and reserve fishing.

**The 'bag limit' is another method of catch control, which restricts either a number or quantity of fish that can be landed in a day.** This is more frequently used in older legislation, and often for recreational fishing. However, a more recent example is the European Union's *Council Regulation fixing for 2017 the fishing opportunities for certain fish stocks and groups of fish stocks applicable in the Baltic Sea and amending Regulation (EU) 2016/72 (2016/1903)*. This instrument imposes a daily bag limit per fisher that is increasingly restrictive during spawning periods.

**Catch controls also restrict the amount of acceptable bycatch or discards from a fishery.** Fiji's *Offshore Fisheries Management Decree (2012)* and the Gambia's *Fisheries Act (No. 20 of 2007)* include restrictions

on bycatch as one of the conditions of a fishing licence (Sections 30 and 27 respectively). Limiting bycatch may also be considered an output control given that restrictions should be based on the catch rather than the amount landed, especially considering the latter may be a substantial portion of the former (Cochrane and Garcia, eds., 2002). Bycatch and discards are discussed in Section 6.5.7 of this Chapter.

### 5.4.5. Illegal, unreported and unregulated monitoring, control and surveillance

**Illegal, Unreported and Unregulated (IUU) fishing has received significant attention as it is a major impediment to the conservation and management of capture fisheries.** The IUU fishing can lead to the collapse of a fishery or seriously impair efforts to rebuild stocks that have already been depleted. Legislation may employ a range of tools to control IUU fishing such as port inspections schemes and sampling; discouraging or prohibiting the conferring of economic support, including subsidies, to companies, vessels or persons that are involved in IUU fishing; making public any incidences of IUU fishing; and implementing training and awareness in the industry. This section explores other key mechanisms to address IUU fishing.

**A range of sanctions may be applied to vessels listed in an IUU fishing vessel register, including denial of port entry, or cancellation of a fishing licence.** These measures may be applied not only by a flag state of a vessel, but other cooperating states as well. The United States of America's *Port State Measures Agreement Act (2015)* implements the *Agreement on Port State Measures to Prevent, Deter and Eliminate Illegal, Unreported and Unregulated Fishing (2005)*. This text prescribes that notifications are to be made regarding the denial of port entry or the use of port services for a vessel, the taking of enforcement action relating to a foreign vessel, and the results of any inspection of a foreign vessel. This information is to be given to the country of which the vessel master is national, relevant coastal nations, regional management organizations, FAO and other relevant international organizations. This text empowers the denial of listed IUU vessels of the use of the port for landing, transshipment, packaging and processing of fish, refuelling

and other port services. Under Thailand's *Royal Ordinance on Fisheries (2015)* for the purposes of preventing and combating IUU fishing, the competent authority can prohibit transshipments at sea for certain or all vessels in the specified areas and time periods (Section 87). A non-Thai fishing vessel that has undertaken IUU fishing is not permitted into the country (Section 94). Other repercussions are seen in the European Union's *Council Regulation establishing a Community system to prevent, deter and eliminate illegal, unreported and unregulated fishing, amending Regulations (EEC) No. 2 847/93, (EC) No. 1 936/2001 and (EC) No. 601/2004 and repealing Regulations (EC) No. 1 093/94 and (EC) No. 1 447/1999 (No. 1005/2008).* Where the fishing vessel has been included in the Community IUU vessel list, the European Union Commission shall notify the flag state and provide the reasons for the decisions, and request all necessary measures to be taken including withdrawal of the licence. The owners and operators of such vessels are provided adequate time and facilities to be heard and to defend their case. Some of the measures set out in Chapter VII in respect of IUU fishing vessels include prohibiting the issuance of fishing authorizations, prohibiting fishing in Community waters and prohibiting authorized vessels from assisting, engaging, processing fish, or transshipping from or with an IUU fishing vessel.

**Legislation may set out how fishing vessels are identified, how to communicate with the flag state of a vessel, and procedures for investigations.** The European Union *Council Regulation (No. 1005/2008)* Chapter V sets out how fishing vessels engaged in IUU fishing are to be identified using prescribed information (Article 26), which triggers an official notification with the flag state of the vessel. Such notification should include information gathered by the European Union state, and a request that all necessary measures are taken to investigate and share the results of the investigation. The European Union state finding the IUU activity may request the flag state to take immediate enforcement action should the case be proved. The Commission is also tasked with identifying third countries that are uncooperative in fighting IUU fishing (i.e. countries that fail to discharge the duties under international law to take action to prevent, deter and eliminate IUU fishing).

**Catch certificates may be a requirement of fish imports/exports or landing.** Vanuatu's *Fisheries Act (No. 10 of 2014)* sets out a certification scheme in Section 124, with certificates intended to accompany all exported wild caught seafood products by a Vanuatu fishing vessel. The certification should include: the identity of the fishing vessel, the information on the product, and a declaration on export and import of the fisheries product. The certificate is completed by a vessel master and validated by the competent authority. The European Union *Council Regulation (No. 1005/2008)* (above) also imposes catch certificates for fish imports (and exports) to prevent products from IUU fishing to be landed. This certificate should be validated by the flag state of the fishing vessel and certify that catches have been made according to applicable laws and agreements, and include all the information set out in the Annex to the text. Verifications are to be carried out where the authenticity of the catch certificate is under question. This includes examining products, verifying declaration data, examining documents and records, inspecting conveyances and storage places, and inspecting fishing vessels at port.

**Laws may also require, where appropriate, a Vessel Monitoring System (VMS) to be on board vessels within their jurisdiction, in accordance with the relevant national, regional or international standards.** Kenya's *Fisheries Management and Development Act (No. 35 of 2016)* empowers the competent authority to set up vessel monitoring systems (Section 157) for purposes of monitoring, control and surveillance, and managing the operations of fishing vessels. Vessel operators may be subject to licence conditions that require the instalment of a mobile transceiver unit or other device that is an integral component of a vessel monitoring system. If such device ceases to function, the operator is required to immediately notify the competent authority. Additional conditions may be imposed that specify: the type of vessel monitoring system equipment to be used, installation procedures, operational requirements and information, confidentiality and reporting requirements. The Cabo Verde *Decree-Law regulating the use of Satellite Vessel Monitoring System (VMS) (No. 32/2012)* aims at monitoring national and foreign fishing vessels in waters under national jurisdiction, and regulates the type of technology used on vessels and

information collected from those methods. Papua New Guinea's *Fisheries Management (Amendment) (No. 1 of 2015)* demonstrates how regulations are used to keep the Act and framework flexible and updated according to evolving trends and technology. Section 21 refers to regulations for the monitoring, control and surveillance of fishing, including the operation of VMS. This entails the management of collected, stored and transmitted data obtained by electronic means, including electronic log-books, sensors, cameras or other equipment. Under Palau's *National Marine Sanctuary Act (2015)*, Section 201 contains a statement of policy that it is in the best interests of the country, owing to limited personnel to effectively monitor IUU fishing, that all fishing vessels should have functioning automatic location communicators to assist in the effective surveillance of the exclusive economic zone.

**Citing relevant agreements provides an indication that the law is attempting to reconcile its content with any obligations or principles under the cited international instrument,** although this is not conclusive evidence that such obligations are indeed adequately captured in legislation or effectively implemented in practice. Fiji's *Offshore Fisheries Management Decree (2012)* includes a general statement that regulations will be issued for the purposes of giving effect to any international treaty or any measures under a regional fisheries body of which it is a member (Section 21). The Republic of the Gambia's *Fisheries Act (2007)* states that the competent authority will not issue a high seas fishing licence if the authority is not confident that the Gambia is able to ensure the effective implementation of the Compliance Agreement and the Fish Stocks Agreement and other international conservation and management measures with respect to the vessel (Section 43). Under Section 45, the competent authority will provide information in accordance with these two instruments.

## 5.5. Conservation, biodiversity and resource protection

There are numerous mechanisms employed in fisheries legislation for the goals of biodiversity conservation or restoration, many of these are already outlined above. The European Union's *Regulation of the European*

*Parliament and of the Council on certain measures for the purpose of the conservation of fish stocks in relation to countries allowing non-sustainable fishing (EU No. 1 026/2012)* provides a useful framing of the discussion, with its perambulatory text stating that:

> Fish stocks should be considered to be in an unsustainable state when they are not continuously maintained at or above the levels that can produce maximum sustainable yield or, if these levels cannot be estimated, when the stocks are not continuously maintained within safe biological limits.

Safe biological limits refers to the boundaries of the size of a stock within which the stock can replenish itself with high probability, while allowing high yield fisheries on it.

Mechanisms such as moratoria on fishing in certain areas or during certain times, TAC and other output and effort controls, etc., were highlighted in foregoing sections as a means to enable fish stocks to regenerate or replenish. Other key tools to ensure conservation of fish stocks and biodiversity, are the fisheries management plan (see Sections 5.5.2 and 5.11.1) and the designation of protected areas (see Section 5.5.1).

### 5.5.1. Conservation zones and marine protected areas

**Marine protected areas (MPAs) are a spatial management measure to protect biodiversity, support healthy ecosystems and promote sustainable fisheries.** Under the Solomon Islands *Fisheries Management Act (No. 2 of 2015)* MPAs, defined to include areas within a fishery for "protective, conservation, restorative or precautionary measures", are established to protect and conserve species, habitats, ecosystems or ecological processes of the marine environment. Brunei Darussalam's *Fisheries Order (No. S25 of 2009)* empowers the minister to designate a marine reserve for recreational or other activities to avoid irreversible damage. The minister can also designate a marine park in order to afford special protection to the flora and fauna of the area, protect breeding grounds, aquatic life and in particular rare or endangered flora and fauna (Section 26). These parks also allow for the regeneration of depleted stocks and to enhance the natural pristine states of the area. Fishing, the

removal of flora or fauna, or construction or other activities in marine reserves or marine parks is prohibited (Section 27). The United Kingdom of Great Britain and Northern Ireland's (Scotland) *Marine Act (2010 asp. 5)* designates nature conservation MPAs based upon scientific criteria, conservation objectives and its contribution towards the development of a network of conservation sites. Section 75 requires publication of the proposal and broad consultations with local authorities and other stakeholders before such designations are made. Under Section 77, urgent designations may be made to protect a marine historic asset.

**Certain activities may be restricted or prohibited in such designated area.** Palau's *National Marine Sanctuary Act (RPPL No. 9-49 of 2015)* seeks to preserve 80 percent of Palau's exclusive economic zone as the Palau National Marine Sanctuary by prohibiting and restricting certain activities. The Saint Kitts and Nevis *Fisheries Aquaculture and Marine Resources Act (No. 1 of 2016)* establishes conservation zones (designated to protect "nationally important marine wildlife, habitats, geology and geomorphology") and uses fisheries management plans and marine management areas to pursue conservation goals. Section 20 of the Act allows the minister to declare a 'marine management area' with priority zones which include, for example: (i) a no-take zone, where conservation and management measures may prohibit any activity involving fishing or removing living or non-living resources from the zone; (ii) a conservation zone, where conservation and management measures may apply in relation to living or non-living marine resources; (iii) a fisheries zone, where fishing and related activities may be regulated; and (iv) multiple use zones, regulated in cooperation with relevant Ministries. The Republic of Korea's *Conservation and Management of Marine Ecosystems Act (No. 8 045 of 2006, as amended by Act No. 15 135, 2017)* Article 30 empowers the competent authorities to order suspension of activities, or the restoration of protected marine areas through certain restorative measures (such as the application of technology to restore marine ecosystems or projects that restore such ecosystems). Restoration actions may be taken where major habitats or spawning areas of marine organisms under protection are destroyed or damaged, or when parts of

vulnerable marine ecosystems or high-level marine biological diversity are threatened or destroyed.

**Funds may be established to support MPA management.** The Mauritius *Fisheries and Marine Resources Act (2007)* sets up an MPA fund, the assets of which are to be applied towards the payment of expenses that may be incurred in the management of an MPA (Section 5). Among other sources, the Fund is to comprise moneys from fees and other charges arising from the authorized use of a fishing reserve, a marine park or a marine reserve.

**As well as protecting oceans and coastal environments, MPAs present an opportunity for poverty reduction and food security, where the access rights of local communities and indigenous groups are protected and where such groups are involved in the designation and management of MPAs.** Protected areas or zones that are located in the traditional fishing grounds of local and indigenous communities may conflict with the rights of these groups in relation to use and access of fisheries resources, and may be detrimental to livelihoods and food security. Most laws require consultations with a range of stakeholders before the declaration of such area. An alternative is to set up these areas that forbid large-scale uses but allow other uses or user-groups. This is the approach in the Cook Islands *Marae Moana Act (2017)* Section 24, which prohibits all seabed minerals activities and large-scale commercial fishing in protected areas, but allows other ecologically sustainable uses. In the Solomon Island *Fisheries Management Act (2015)* where any area proposed as an MPA is subject to customary rights, the agreement of the rights holders is required for third parties to fish in the area. See Section 5.12 on small-scale fishers' interests and indigenous groups' fishing rights.

### 5.5.2. Management plans: conservation aspects

Fisheries management plans (FMPs) and aquaculture management plans (AMPs) are fundamental tools to balance economic, social and environmental interests and a range of stakeholders. A management plan has been defined as a formal or informal arrangement between a

fisheries management authority and interested parties that sets out objectives, rights and responsibilities, and other management details (Cochrane and Garcia, eds., 2002) (see Section 5.12.1 for the process of developing fishery management plans).

**Legislation frequently mandates resource protection as a primary goal of fisheries management plans.** Mexico's (Sinaloa) *Decree Law on sustainable fisheries and aquaculture (No. 517 of 2012)* requires municipalities to observe various conservation-oriented principles in the formulation of fisheries (and aquaculture) policy, including that exploitation of fishery resources be consistent with their natural regeneration capacity. The state's policy must include the guidelines for conservation, restoration and protection of ecosystems for both capture fisheries and aquaculture. The FMPs are to be approved by the state council, which shall take into account the status and protection of the target species, as well as other species that may be affected (Article 47). An example of a more implicit reference to conservation can be seen in the Samoan *Fisheries Management Act (2016)* which requires fisheries development plans to include the status of the fishery, the management measures for that fishery, the process for the allocation of rights and any other matter necessary for the sustainable use of the fishery (Section 21).

**Legislation often sets out the basic elements of management plans.** Kenya's *Fisheries Management and Development Act (No. 35 of 2016)* calls for the formulation of a sustainable aquaculture development plan (Section 62). This plan is subject to several levels of official stakeholder body reviews. Such plan should include objectives and priorities, a strategy for implementation, performance indicators and a monitoring and evaluation framework. The plan should also identify areas suitable for different types of aquaculture, the requirements and standards for water quality and aquaculture waste, and examine any environmental impacts. The aquaculture development plan elements set out in the Saint Kitts and Nevis *Fisheries Aquaculture and Marine Resources Act (2016)* are also similar, but include in addition, stipulations relating to acceptable drugs and medications, seed and feed used, water quality standards, and notably, a conflict resolution mechanism. The Cook Islands *Marine*

*Resources Act (No. 7 of 2005)* requires plans for aquaculture management areas. The latter are areas that are established as being in the national interest upon consideration of scientific, social, economic, environmental and other relevant considerations and that require specific management measures. The management plan includes the status of resource and activities, the management measures to ensure sustainable production and the process for allocating authorizations.

**Fisheries legislation often requires FMPs and AMPs to be designed and implemented along the lines of several guiding principles.** One such principle is the need to manage resources with a view to optimum utilization and ecologically sustainable development as found in the Zambian *Fisheries Act (2011)*. According to the Cook Islands *Marine Resources Act (No. 7 of 2005)* an aquaculture management plan must be consistent with the principles and objectives of the Act (i.e. that aquaculture is ecologically sustainable, the impacts of aquaculture on aquatic ecosystems have been assessed, and pollution from aquaculture is minimized). The Bolivarian Republic of Venezuela's *Decree Law on Fisheries and Aquaculture (No. 1 408/14)* requires the state to broadly apply the precautionary approach to prevent or reduce threats to water resources (Article 40). When there is a risk of serious or irreversible damage, the lack of adequate scientific information cannot be used as grounds for postponing or abandoning measures aimed at protecting the water bodies, fish or persons dependent on fishing. Papua New Guinea's *Fisheries Management (Amendment) Act (2015)* echoes these elements, referring to its source in international law (the Fish Stocks Agreement) and the duty to take into account best practices in the application of the precautionary approach as well as the consideration of impacts on livelihoods and users of marine living resources.

### 5.5.3. Protection of certain species

**Legislation may protect certain endangered or protected species.** The Philippines *Fisheries Code (1998, as amended by Act No. 10 654 of 2014)* outlaws the taking (including fishing, possessing, exporting, etc.) of any rare, threatened or endangered aquatic species listed in the Convention on the International Trade in Endangered Species of Wild

Flora and Fauna (CITES), or those categorized by the International Union for Conservation of Nature and Natural Resources (IUCN) as threatened and determined by the competent authority as such. Montenegro's *Law on marine fisheries and mariculture (2009)* prohibits the fishing, collecting and marketing of protected species of fish and other marine organisms (Article 74). The competent authorities are responsible for developing a list of protected species that is published in the Official Gazette. Offences under the Law include catching, receiving, buying, selling, storing or transporting any of the protected species of fish and other marine organisms. Kenya's *Fisheries Management and Development Act (No. 35 of 2016)* prohibits the fishing of marine mammals to protect biodiversity; however, Section 46 allows a limited exception for research purposes. Some countries enacted specific legislation for this purpose decades ago, such as the United States of America's *Marine Mammal Protection Act (1972)* and the New Zealand *Marine Mammals Protection Act (No. 80 of 1978)* which both seek to place restrictions on the taking of marine mammals. On a different note, Mauritius' *Fisheries and Marine Resources Act (2007)* prohibits cutting and removal of mangrove plants. The Act also prohibits the landing and sale of marine turtles and eggs, marine mammals, undersized fish, and crabs and lobsters in the berried state. The competent authority may grant authorization on limited scientific research grounds or for conservation purposes.

### 5.5.4. Aquatic genetic resources

**Aquatic genetic resources are the building blocks of sustainable fisheries and aquaculture.** The surge in aquaculture production in recent years may be attributed in part to the use and exchange of aquatic genetic resources. Preventing the introduction of invasive species, and minimizing the spread of disease among fish stocks, including from aquaculture to wild stocks (Section 5.5.6), contribute to preservation of aquatic genetic resources.

**Legislative measures should seek to conserve genetic diversity and maintain the integrity of aquatic communities and ecosystems.** The Republic of Korea's *Act on the Preservation, Management and Use of Agro-Fishery Bioresources (No. 10 938 of 2011)* focuses on the genetic

resources aspect of biodiversity. This Act seeks to develop fisheries and the national economy by achieving diversity of fishery species (both wild caught and cultivated species) for conservation purposes as well as for enhanced competitiveness. Master plans are to be developed that contain an identification, evaluation, and registration of fishery (and other) resources, and also the measures to preserve and manage such resources (Article 5). The competent authority is tasked with collecting data on different species, and cataloguing current status and other factors (Articles 6 and 7). The statute also regulates access to these resources by foreign entities (Article 8). The Republic of Korea's *Conservation and Management of Marine Ecosystems Act (No. 8 045 of 2006, as amended by Act No. 15 135, 2017)* empowers the competent authority to research the structure, functions and restoration of marine ecosystems and the conservation of components of marine biological diversity (Article 39). Research should also comprise the distribution and trends of components of marine biological diversity, which have social, economic, cultural and scientific value.

**Bioprospecting and access to genetic resources is also addressed in fisheries legislation** (see Chapter 9 for a more detailed discussion). Norway's *Act relating to the management and conservation of living marine resources (2008)* regulates marine bioprospecting in its second chapter. Authorization is required for access to genetic material from marine areas (Section 9), and such authorization may set out what benefits from the use of such material may accrue to the state (Section 10).

***In situ* and *ex situ* conservation contributes to the preservation of genetic resources**. Kenya's *Fisheries Management and Development Act (No. 35 of 2016)* promotes *in-situ* and *ex-situ* fishing by the competent authority as a fish development measure (Section 30). The United Republic of Tanzania's *Fisheries Research Institute Act (No. 11 of 2016)* charges the Institute with setting up a gene bank; this is a physical repository in one or more locations where samples of fish genetic resource populations are preserved.

### 5.5.5. Protection from human-induced and natural environmental disasters

**Well-managed and biodiversity-rich fisheries and aquaculture systems could be less vulnerable to climate change and natural disasters.** Regardless, shifts in the distribution of species caused by climatic conditions still affect the biological interactions and functioning of such systems (FAO, 2018b). Also, the socio-economic impact of natural disasters is significant, with disproportionate effects in developing countries and on vulnerable groups (i.e. those that lack the institutional, financial and technological capacity to adapt to changing conditions). The Fifth Assessment Report from the Intergovernmental Panel on Climate Change offers evidence of the effects of global warming on oceans, coastal areas and inland water bodies including submergence, coastal flooding, coastal erosion, and saltwater intrusion (FAO, 2016a). On the other hand, fisheries may strengthen resilience of smallholders as it may be seen as an income and food security safety net during periods of natural disasters that affect other types of agricultural production (FAO, 2018b).

**Fisheries management plans may be required to address climate resilience.** Under Mexico's *General Law on Fisheries and Aquaculture (2007, as amended in 2018)*, each aquaculture management unit is required to develop a management plan that contains, among other aspects, the geographical characteristics of the region, the infrastructure works to be developed, and a program of prevention and control of contingencies. Also, expressly required are climate change mitigation and adaptation actions, in accordance with the National Risk Atlas. Under Guinea's *Law on the Maritime Fisheries Code (No. 2015/26/AN)*, research to assess the status of fisheries resources must be used to develop climate change resilience strategies for the sector (Article 26). Generally speaking, it is ideal to establish early warning systems as well, as part of monitoring and surveillance programmes. Also, it is important to integrate fisheries and aquaculture in national adaptation and disaster risk reduction plans as well.

**In addition to the potential loss of life, livelihood assets such as boats, gear, postharvest and processing facilities, and landing sites may be damaged** (FAO, 2012a). The Republic of Korea's *Framework Act on Agriculture, Fisheries, Farming and Fishing Villages and Food Industry (2009)* Article 41 requires the state and local government to prepare necessary measures (including emergency plans and disaster insurance) where natural disasters affect fisheries operations. Natural disasters are listed to include droughts, floods, wind, cold weather, climate change, tidal waves, and pollution. The Indonesian *Law on the Protection and Empowerment of Fishermen, Fish Raisers and Salt Farmers (No. 7 of 2016)* stipulates that businesses carrying out fishing operations are to include insurance that covers: natural disasters, fish disease outbreaks, climate change impacts and pollution.

**Pollution from accidents, or commercial activities such as industrial manufacturing, mining or petroleum extraction, is a human-induced risk.** Various laws provide examples of how countries address this concern. Mauritius' *Fisheries and Marine Resources Act (2007)* prohibits pollution of any water body with a poisonous substance (Section 69). Similarly, Brunei Darussalam's *Fisheries Order (2009)* prohibits using, or having in one's possession, pollutants used to kill, stun, disable or catch fish. Montenegro's *Law on marine fisheries and mariculture (2009)* prohibits the discharge of wastes from production or processing, or any other materials that have adverse effects on the quality of the marine environment (Article 7). Sri Lanka's *Fisheries and Aquatic Resources (Amendment) Act (No. 35 of 2013)* tasks the competent authority with educating fishers on preventing pollution. Under Vanuatu's *Fisheries Act (No. 10 of 2014),* the competent authority must not issue a transfer declaration for transshipment if the equipment used for the transfer does not minimize to the fullest possible extent, the release of pollution from the vessels. Chapters 6 and 7 of this book offer a detailed look at legislative mechanisms that address pollution risks from mining and petroleum extraction respectively.

**Livelihood diversification within or outside the sector is a key mechanism to reduce vulnerability.** Legislation may also promote alternative means for employment and livelihood creation (see

Section 5.10 on employment related issues) – although not exclusively in the context of natural disasters.

### 5.5.6. Invasive species, genetically modified species, escapement and fish diseases

**Damage to aquatic environments resulting from an escape or release of exotic, genetically modified (GM) or even indigenous species may arise in numerous ways.** Direct genetic harm may result from the interbreeding of aquaculture stock with reproductively compatible wild stock, including loss of adaptation in natural populations, introgression of new genetic material into species' gene pools and, in the extreme case, loss of locally adapted populations (Reantaso, Subasinghe and Van Anrooy, 2006). From a disease perspective, the entry of diseases into a country can wipe out local aquaculture production, resulting in severe economic losses and damage to the environment and biodiversity where locally susceptible species are infected. Risk assessment is the key mechanism used in developing biosecurity and biosafety measures that minimize risks from fish diseases and from invasive species.

**Import control systems that comprise permit issuance or other authorization, and inspections for fish imports reduce risks relating to the entry of fish diseases and invasive aquatic species.** Kenya's *Fisheries Management and Development Act (No. 35 of 2016)* sets up a framework for inspection of imported fish as well as for aquaculture exports, empowering the competent authority to seize, hold, quarantine, disinfect or destroy any live fish that have been imported, or that are destined for import or export for the purposes of aquaculture, where the items are diseased or highly invasive. The competent authority is also tasked with collecting data on wild and genetically modified species for the purpose of assessing their impact on aquaculture. Thailand's *Royal Ordinance on Fisheries (2015)* Section 65 states that for the purpose of protecting rare aquatic animal species or preventing danger caused by disease, the competent authority can prohibit import, transit or take possession of any kind of aquatic animal.

**Biosecurity measures may be imposed in order to halt the spread of disease within a country.** The Saint Kitts and Nevis *Fisheries Aquaculture and Marine Resources Act (2016)* requires the owner of an aquaculture facility to take reasonable measures to prevent the spread of disease. Such measures include investigating any disease that may be suspected, and reporting to the competent authority within 48 hours where fish disease has been identified. Section 56 requires the minister to initiate dialogue with other states to ensure the protection of transboundary aquatic ecosystems from diseases.

**Permits are used to control the introduction of alien species in jurisdictions where this is not prohibited outright.** The European Union's *Commission Regulation amending Annex IV to Council Regulation (EC) No. 708/2007 concerning use of alien and locally absent species in aquaculture (EC No. 506/2008)* requires aquaculture operators that wish to introduce alien species to apply for a permit. This framework sets out a number of safeguards, including the conditions for introduction after the issuance of a permit. An example of safeguards includes the two-year monitoring period requirement to determine whether impacts were accurately predicted and to determine the level of spread or containment of the species. Article 4 calls on member states to avoid adverse effects to biodiversity, and especially to species, habitats and ecosystem functions resulting from the introduction or translocation of aquatic organisms and non-target species in aquaculture and from the spreading of these species into the wild. Risk assessment is the key mechanism used to assess the likelihood of occurrence of genetic harm following exposure to a hazard. Annex II of this European Union Regulation contains the procedures and minimum elements to be addressed in an environmental risk assessment. To reduce the risk, various options are available such as placement into designated quarantine facilities, and requiring that only the progeny of the introduced aquatic organisms may be used in aquaculture facilities where no potentially harmful non-target species were discovered during quarantine. Article 11 stipulates that where a neighbouring member state may be affected, the competent authority should notify the country concerned with an explanatory memorandum and a summary of the risk assessment.

**Permits are also used to control introduction of GM species in jurisdictions where this is not prohibited outright.** In addition, countries may apply a precautionary approach toward the introduction and release to prevent environmental harm. Provisions may be made in fisheries and aquaculture laws or in biosafety laws that address genetically modified organisms (GMOs). The Vanuatu *Fisheries Act (No. 10 of 2014)* prohibits the import, possession, culture, sale or export of any aquatic GMO or the use of any aquatic GMO in aquaculture, without the prior written authorization of the competent authority. Clearly stipulated penalties are in place for contraventions of these provisions of the Act. Under Section 63 of the Saint Kitts and Nevis *Fisheries Aquaculture and Marine Resources Act (2016)*, licences are also required to introduce genetically modified fish into fisheries waters. Montenegro's *Law on marine fisheries and mariculture (2009)* prohibits releasing GM and non-indigenous species into the sea. Transfers or these kinds of fish from one farm to another require authorization from the competent authority.

**Many aquaculture laws include provisions to prevent escapement.** The Saint Kitts and Nevis *Fisheries Aquaculture and Marine Resources Act (2016)* requires any person engaged in commercial aquaculture to prevent or minimize the risk of escape of aquaculture stock into the wild (Section 52). Where there has been an escape of hatchery-reared stock or damage to physical infrastructure, the owner must immediately take measures to repair the damage. Within 12 hours of the escape, the owner must notify the competent authority specifying the species of fish affected, the date the incident took place, the number and biomass of fish that escaped, the age or developmental stage of the fish and the circumstances in which the escape or damage took place.

### 5.5.7. Bycatch, discards and waste, and the control of fishing gear

**Legislative provisions may present mechanisms to reduce or eliminate bycatch, catch by lost or abandoned gear and fish discards.** Legislation may prescribe the use of fishing gear and methods that are designed to selectively harvest the target species so that incidental captures, and hence discards, of juveniles and unwanted bycatch is kept to a minimum. These priorities are reflected in Part IV of the the

Republic of the Gambia's *Fisheries Act (2007)* which encapsulates the need to minimize waste, discard and bycatch by recognizing "impacts on associated or dependent species, through measures, including, to the extent practicable, the development and use of selective environmentally safe and cost-effective fishing gear and techniques". Saint Kitts and Nevis' *Fisheries Aquaculture and Marine Resources Act (2016)* contains a stronger formulation empowering the competent authority to issue an order prohibiting fishing in a manner that results in wastes, bycatch, discards, regulatory discards, or economic discards (Section 21). The European Union *Council Regulation fixing for 2007 the fishing opportunities and associated conditions for certain fish stocks and groups of fish stocks, applicable in Community waters and, for Community vessels, in waters where catch limitations are required (EC No. 41/2006, as amended in 2007 by Regulation No. 1 533/2007)* sets out mitigation measures in Article 77 to reduce incidental bycatch of seabirds. Under this article, fishing vessels have to adopt certain procedures that minimize the time during which the net is lying on the surface with meshes slack, and net maintenance shall not, insofar as is possible, be carried out in the water. Gear configurations are to be developed in such manner as to minimize the risk of birds encountering the part of the net to which they are most vulnerable. Norway's *Act relating to the management and conservation of living marine resources (No. 37 of 2008)* prohibits harvesting with trawls inside the territorial limit around the Norwegian mainland, except for certain species, and subject to other exceptions as may be prescribed by regulations (Section 20). The competent authority is also able to prohibit harvesting using other vessel or gear groups inside certain areas. All catches of fish shall be landed (subject to possible exemptions) and the discarding of biological waste is prohibited (Section 15).

The United States of America's *Magnuson-Stevens Fishery and Conservation Management Act (Public Law 94-265 of 1976, as amended by the Magnuson-Stevens Fishery Conservation and Management Reauthorization Act (P.L. 109-479) of 2007)* establishes a bycatch reduction program, that includes the provision of grants, to develop technological devices and other conservation engineering changes designed to minimize bycatch,

seabird interactions, bycatch mortality, and post-release mortality in federally managed fisheries. Subject to the availability of appropriations, the competent authority is also tasked with developing a program to develop technologies or methods designed to assist fishing industry participants in reducing interactions between fishing gear and deep-sea corals.

### 5.5.8. Fishing gear and methods

**Legislation often prohibits or restricts the *types* of fishing gear or methods that can be used (input controls), and the *areas* they can be used in (spatial controls).** Some countries may require licences to be issued for certain types of fishing in prescribed areas. For example, the Philippines *Fisheries Code (1998, amended by Republic Act No. 10 654 of 2014)* imposes a gear licence to operate specific types of gear for a prescribed duration in areas beyond municipal waters for demersal or pelagic fishery resources. The European Union's *Council Regulation (EC No. 41/2006)* offers prescriptive text on gear types. This Regulation requires, for example, trawl net mesh sizes to conform to prescribed dimensions (a mandatory minimum) for direct fishing of certain listed species (Article 29). The use of any means or device which obstructs the meshes of a net or which diminishes their size shall be prohibited (Article 30). Vessels fishing for shrimp are to use prescribed sorting grids or grates. Kenya's *Fisheries Management and Development Act (No. 35 of 2016)* forbids the use of fishing gear or fish aggregating device that has not been authorized by a licence (Section 42). A bottom trawl on an industrial fishing vessel is not to be used in coastal waters of less than fifteen meters depth. Also prohibited are: trawl nets meshes less than the prescribed length; monofilament nets; attachments to trawl nets except as prescribed; and the method of pair trawling for the purpose of fishing, among other fishing equipment and methods. Furthermore, any explosive, electric shock device, poison or other noxious substance that is found on any fishing vessel shall be presumed, unless the contrary is proved, to be for fishing and an offence under the Act. Norway's *Act relating to the management and conservation of living marine resources (2008)* sets up the prescription of more detailed prohibitions relating to

the types, design and use of gear used in order to minimize damage other than to target species (Section 16). The use of explosives and poison is forbidden, as are firearms (except for certain species of marine life). Restrictions are placed on fishing gear used for any fishing carried out from unregistered vessels (e.g. recreational fishing) in Section 22.

**Legislation may render abandoning fishing gear as an offence. Abandoned fishing gear pollutes waters, traps marine life, damages other harvesting gear and creates a hazard to other fishing vessels.** The Republic of Korea's *Fishing Ground Management Act (No. 8 378 of 2007)* requires that no person abandon or even neglect fishing gear (Article 13). Where a fisher intends to dispose of fishing gear, he or she shall do so in a place designated for that purpose. Where a buoy is used to install fishing gear, only products that meet prescribed standards can be used. Norway's *Act relating to the management and conservation of living marine resources (2008)* requires that any person who loses gear or cuts it adrift has a duty to search for it (Section 17). Rules are to prescribe the contents of reports detailing what type of gear is lost or found, and the location. Section 28 authorizes the competent authority to order the clearing up or removal of such gear, and failure to comply with such an order may result in the competent authority carrying out the necessary measures at the expense and risk of the responsible person (the costs of such measures are enforced through judicial proceedings). Any person that salvages gear that has drifted away shall report the finding to the owner as soon as possible (Section 29), and is entitled to a reward. The latter is fixed in accordance with custom or what is considered to be reasonable and should not exceed the value of the item salvaged. In addition, any salvaged catch would accrue to the salvager and if the value exceeds the reward, the latter may be partly or entirely remitted.

## 5.6. Siting of aquaculture facilities

**Aquaculture facilities may be established on land, in internal waters, and at sea and the impacts of an operation in each locality will be different.** In determining zones and siting for aquaculture facilities, responsible authorities should first establish objectives of

projects, and identify areas that correspond to those objectives, and thereafter determine the relevant stakeholders to engage in decision-making (Aguilar-Manjarrez, Soto and Brummett, 2017). The ecosystem approach to aquaculture can guide spatial planning to determine the zones that are appropriate for aquaculture development. An ecosystems or blue growth approach also offers links to broader considerations, such as access to finance or energy considerations, which in turn yield more sustainable outcomes in terms of social, economic and environmental impacts (Aguilar-Manjarrez, Soto and Brummett, 2017).

### 5.6.1. Tools to control impacts in a particular location

**Legislation may require an environmental impact assessment (EIA) as a condition of application for aquaculture licences.** This requirement can be found in general environmental laws, or stipulated in fisheries and aquaculture laws. The EIAs may be contingent on the size of the proposed aquaculture farm or the environmental sensitivity of the area. Permit applications to establish aquaculture facilities may require submitting the results of EIAs to show that environmental impacts will be minimal or can be reduced. Ireland's *(Environmental Impact Assessment) (Aquaculture) Regulations 2012 (S.I. No. 410 of 2012)* requires that aquaculture that is likely to have significant effects on the environment by virtue of its nature, size or location is subject to an EIA. This instrument adopts the European Union definition of an EIA as meaning an analysis or evaluation, that is carried out by the competent authority (not the applicant) that identifies and assesses the direct and indirect effects on "(a) human beings, flora and fauna, (b) soil, water, air, climate and the landscape, (c) material assets and the cultural heritage, and (d) the interaction between [the aforementioned] factors." The EIAs are required for all aquaculture developments of certain specifications. An environmental impact *statement* however, to be submitted by the *applicant*, is required for aquaculture applications of certain categories of developments, or where the competent authority believes the facility may have significant environmental impacts. In addition to other documents, maps and other charts and drawings must be submitted in order to determine the location as well as the siting and layout of the facilities.

**Environmental monitoring may also be imposed by legislation to track and control impacts at a particular site.** Under Canada's (Nova Scotia) *Aquaculture Management Regulations (N.S. Reg. 348/2015),* a licence holder must, prior to an initial stocking at a farm, demonstrate to the competent authority the results of a baseline assessment (i.e. to document the existing state of the environment of the surroundings without any production at the site). For restocking of an aquaculture site, the licence holder must present the environmental monitoring results. Where poor environmental performance is documented, the licensee is required to make necessary mitigation adjustments and share the updates with the competent authority. The Regulations set out different content requirements for different types of farms (for finfish; for shellfish and marine aquaculture; and for land-based aquaculture. Some examples of the required monitoring parameters include tracking oxic conditions (oxygen availability) within the boundaries of the site or at other locations.

**Land zoning is another tool to ensure appropriate siting of aquaculture developments.** Land allocations for the purposes of aquaculture can be prescribed in general land law, land use and planning law or environmental law. Fisheries or aquaculture laws also espouse this concept. Canada's (Quebec) *Act respecting commercial aquaculture (R.S.Q. c. A-20.2, 2003)* empowers the competent minister to establish regional or local aquaculture development frameworks (in consultation with stakeholders and local communities) to "facilitate the ordered growth of aquaculture". These frameworks shall indicate the most favourable geographic sites for aquaculture, having considered aquaculture zoning as set out in other environmental legislation. In addition, the species, practices and production techniques that are most suited to such sites should be set out. Brazil's (São Paolo) *Decree (No. 60 582 of 2014)* stipulates that environmental licensing of aquaculture enterprises in the coastal zone should comply with the stipulations of the Coastal Ecological and Economic Zoning, the National Coastal Management Plan, the State Coastal Management Plan and the Local Development Plans for Mariculture. This instrument establishes aquaculture parks with prescribed boundaries. Under Article 21, a

technical group is set up, comprising authorities from agriculture, water supply and water management, and the environment, to prepare the implementation plan for these areas.

**The siting of an aquaculture facility may require consideration of socio-economic impacts and impacts on local communities.** Aquaculture promotion should not come at the expense of existing land users or other resource users rights. Kenya's *Fisheries Management and Development Act (No. 35 of 2016)* Section 64 prohibits aquaculture activities to be carried out in a manner that deprives a local community of its traditional access to fishing grounds without first consulting the affected community. In addition, sustainable aquaculture means that benefits are shared equitably, and also that aquaculture farmers get fair returns for their activities.

### 5.6.2. Environmental impacts and externalities

**Aquaculture impacts, and is impacted by, the environment. Aquaculture activities may have impacts on the surrounding environment, particularly the quantity and quality of water bodies.** The overuse and misuse of chemicals pollutants creates risks in the safety of the product for human consumption, and controls in this regard often involves a direct prohibition or restriction of the specific chemicals or drugs that may be harmful. Aquaculture legislation may prohibit certain activities that result in the discharge or indirect leaching of certain chemicals that pollute water and soil in the vicinity. Agriculture or environmental laws may govern soil quality, monitoring residues in soil or soil contamination that would impact aquaculture sites. Fisheries and aquaculture legislation often include requirements, standards and permits relating to wastewater and waste disposal (from aquaculture facilities); in addition, conditions relating to aquaculture permits often require compliance with environmental protection rules. Thailand's *Royal Ordinance on Fisheries (2015)* establishes in Section 78 that activities in aquaculture zones must: follow the criteria and operational methods in the management of effluent water or solid waste from aquaculture farms, as well as have procedures for preventing leaks of water used in aquaculture to prevent impacts on the environment. Under Rwanda's

*Law determining the organization and management of aquaculture and fishing (No. 58/2008)*, a detrimental impact on the quality of water or a reduction in volume as a result of activities may be a public interest ground for refusal to grant a licence (Article 14). Similarly, Namibia's *Aquaculture (Licensing) Regulations: Aquaculture Act, 2002 (G.N. No. 245 of 2003)* states that the discharge of waste from an aquaculture facility that may harm human health or the environment is prohibited, and such waste must be treated or disposed of in accordance with licence terms and conditions.

**Concerns relating to anti-microbial resistance (AMR) currently run high on the global agenda.** The use of veterinary medicinal products to protect the health of aquatic animals may create a risk of accumulation of these drugs in water bodies and a dispersal into the general environment. Conversely, the discharge of such drugs into the water environment, for example, from nearby farms may end up in water sources used for aquaculture leading to AMR in the aquaculture species as well as in the humans that consume those products. Kenya's *Fisheries Management and Development Act (No. 35 of 2016)* restricts the use of drugs, pharmaceutical, antibiotic or other chemicals in aquaculture in addition to fish growth enhancers or promoters to only those specifically authorized by the competent authority. Thailand's *Royal Ordinance on Fisheries (2015)* in Section 78, establishes that activities in aquaculture zones must not use any drug, chemical or hazardous matter that is prohibited. Where such substance is discovered, the competent authority is empowered to seize and destroy the items, including any aquatic animals or aquatic animal products containing such products. Some countries may adopt lists of chemicals permitted for aquaculture purposes and include rules on their usage.

**Environmental factors may also negatively affect aquaculture. Natural disasters may have a detrimental impact on aquaculture production. Also, for example, low water quantity and poor water quality may affect production and the safety of products for human consumption.** Namibia's *Aquaculture Act (No. 18 of 2002)* Section 26 requires water quality monitoring by the competent authority to provide timely information to licensees of imminent pollution or

natural phenomenon that may harm the aquatic environment or any aquaculture product. Through this mechanism the minister can order the immediate testing of water to determine whether aquaculture activities can be undertaken and continued, and whether in consultation with the competent authority for health, a determination on whether the products are fit for human consumption is imminently needed. If the test results show possible pollution or a risk to human health, the minister would issue a public warning and may order the closure of a certain area.

## 5.7. Technology, programmes and equipment: resource efficiency

**Legislation may create incentives for low-impact and fuel-efficient fishing methods, reduced energy use, improved refrigeration and other transport and processing technology.** The blue growth paradigm referred to in Section 5.1 of this Chapter recognizes the importance of reducing overall energy consumption, and of exploring ways to improve resource efficiency. The Philippines *Republic Act No. 10 601 promoting Agricultural and Fisheries Mechanization Development in the Country (2012)* encourages the development and use of renewable and non-conventional energy resources such as wind, biomass, hydro, solar and biofuels for fisheries (and other agricultural) equipment (Section 7). This Act also calls for the development and promotion of efficient mechanization systems and the training of fisherfolk in such systems. Section 35 calls for the competent authorities and the private sector to carry out joint research to boost the use of these energy sources in fisheries operations. The Republic of Korea's *Framework Act on Marine Fishery Development (2002, as amended by Act No. 14 079 of 2016)* places an emphasis on the development of marine science and technology. The competent authority is charged with providing support for the development or commercialization of new technologies by small and medium businesses. If a business owner is able to generate profits resulting from technology developed with the support of the competent authorities, the latter may receive royalties on related products (Article 29). Regulations are to set out the criteria for payment and procedures relating to royalties. The Act establishes

the Korea Institute of Marine Science and Technology Promotion in Article 33 to among other aspects, provide planning, management and evaluation of research and development projects.

**Legislation may incentivize energy efficiency and reduced fuel consumption with a view to mitigating climate impacts.** The European Union *Regulation of the European Parliament and of the Council on the European Maritime and Fisheries Fund and repealing Council Regulations (EC) No. 2 328/2003, (EC) No. 861/2006, (EC) No. 1 198/2006 and (EC) No. 791/2007 and Regulation (EU) No. 1 255/2011 of the European Parliament and of the Council (No. 508/2014)* declares that the European Maritime and Fisheries Fund (EMFF) shall support priorities such as promoting environmentally sustainable, resource-efficient and innovative fisheries. According to Article 41, EMFF should support: (i) investments in equipment or fishing vessels with reduced pollutants or GHG emissions, and that increase energy efficiency; (ii) carrying out energy efficiency audits and schemes; and (iii) the undertaking of studies to assess alternative propulsion systems and hull designs for energy efficiency. Support for the replacement or modernization of main or ancillary engines may be granted for vessels that meet prescribed conditions. Applications made by small-scale operators shall be treated as a priority. The EMFF may also support investments improving the energy efficiency and other aspects of fishing ports, auctions halls, landing sites and shelters and other fisheries infrastructure, including facilities for waste and marine litter collection (Article 43). The consumption of fuel may be used as a proxy for greenhouse gases (GHG) emissions by fishing vessels (FAO, 2012a). An example is provided by the European Union's *Commission Implementing Regulation laying down rules pursuant to Regulation (EU) No. 508/2014 of the European Parliament and of the Council on the European Maritime and Fisheries Fund with regard to the information to be sent by Member States, as well as on data needs and synergies between potential data sources (EU No. 1 243/2014)*. Percentage fuel reduction is identified as an indicator of operation implementation data contributing to the goals of the European Union *Regulation (No. 508/2014)* (above), on energy efficiency and reduced climate impact.

## 5.8. Sustainable trade: a look at ecolabelling

**Ecological labelling is a mechanism for sustainability certification, to demonstrate that a commodity was produced in accordance with environmental and social standards and therefore eligible to bear certain marks, claims or logos on labels.** There are a variety of ecolabel schemes, ranging from self-declarations to third party certifications. Box 5.1 highlights some guidelines that should be considered in ecolabelling systems for fisheries products.

**Box 5.1**
**(Committee on Fisheries) Guidelines for the Ecolabelling of Fish and Fishery Products from Marine Capture Fisheries (2009)**

[These Voluntary Guidelines] are applicable to ecolabelling schemes that are designed to certify and promote labels for products from well-managed marine capture fisheries and focus on issues related to the sustainable use of fisheries resources. The guidelines offer principles and general considerations and call for:

1. With regard to the minimum substantive requirements and criteria of ecolabelling schemes, that:
    - The fishery is conducted under a management system that is based on good practice, including the collection of adequate data on the current state and trends of the stocks and based on the best scientific evidence.
    - The stock under consideration is not overfished.
    - The adverse impacts of the fishery on the ecosystem are properly assessed and effectively addressed.
2. With regard to the procedural and institutional aspects of ecolabelling schemes should encompass:
    - The setting of certification standards;
    - The accreditation of independent certifying bodies; and
    - The certification that a fishery and the chain of custody of its products are in conformity with the required standards and procedures.

*Source:* FAO, 2009b; FAO, 2012a.

Some ecolabelling and certification schemes have resulted in increased market share and price for some fisheries and suppliers, although this is not a guaranteed outcome. It can be costly for fishers (prohibitively so, in many developing countries) to implement private standards. Some countries have set up official programmes to develop ecolabelling schemes. While the use of these schemes in the fisheries sector is still nascent, some challenges have been observed, such as the multiplicity of obligations (and resultant confusion) regarding the integration of traceability and chain of custody aspects of private standards with the legislative requirements relating to food safety, catch certification, and IUU for example. The European Union in *Regulation of the European Parliament and of the Council on the common organisation of the markets in fishery and aquaculture products, amending Council Regulations (EC) No. 1 184/2006 and (EC) No. 1 224/2009 and repealing Council Regulation (EC) No. 104/2000 (EU No. 1 379/2013)* sought to develop minimum criteria for an European Union wide eco-label for fishery products, in light of the possibility such scheme offers of providing clear information on the ecological sustainability of the product. Article 36 thus requires the preparation of a feasibility report on options for an eco-label scheme.

## 5.9. Food safety

**While protecting the health of consumers is the primary objective of food hygiene and quality requirements, trade considerations are also imperative.** According to data from 2018, fish and fishery products in general were among the most-traded commodities in the global food sector (FAO, 2018b). This trend is projected to continue, spurred by increasing consumption of fishery commodities, trade liberalization policies, globalization of food systems, and technological innovations in processing, preservation, packaging and transportation (FAO, 2016a). Developing countries generate significant foreign exchange revenues from exports of fishery products. Small-scale fish producers, as well as some certifying institutions in developing countries, face challenges in meeting international standards, as they are resource and capital intensive (Skonhoft and Gobena, 2009). It can be said that the food safety

aspects of aquaculture frameworks in some developing countries are significantly influenced by the import requirements of their main trading partners.

**Food safety may be addressed through a food safety law, or there may be fish-specific food safety rules that fall under the general food safety framework.** It is critical that food aspects relating to fish products are subject to the sea-to-fork approach that places primacy on the coordination of stakeholders along the food chain. Even where a single competent authority is identified, cooperation and collaboration must take place between those competent to control human health and food safety and fisheries authorities, as well as trade, industry, environment, customs and other authorities. Kenya's *Fisheries Management and Development Act (No. 35 of 2016)* establishes a technical committee in Section 58 on fish quality and safety responsible for monitoring production, with a view to assessing risks, and regulating the handling, landing, transportation, processing and marketing of fish. This body should carry out inspections issue health certifications, and work collaboratively with other responsible authorities. Some countries that are heavily reliant on, or wish to boost, fish exports may set up a specialized agency for these purposes. Vanuatu's *Fisheries Act (No. 10 of 2014)* establishes a Seafood Verification Agency, with its own inspection corps, whose functions are listed in Section 27 as being, among others, to verify the operation of licensed fish processing establishments and any licensed fishing vessels where required by law; to control transshipments; and to control all exports and imports of fresh, frozen and processed fish verifying that they are fit for their intended purpose. In countries where such specialized agency exists, it is important to create strong linkages and coordinate with the authority that has overall responsibility for food safety in the country.

**Fish may require specific handling and hygiene conditions that apply from harvesting to consumption,** even though fish for human consumption falls under the definition of food, and thus is subject to food laws and standards applicable to other types of food. Iceland's *Act on the Handling, Processing and Distribution of Marine Products (No. 55 of 1998)* sets out requirements such as personnel hygiene and handling

practices; prescriptions relating to contact surfaces of all equipment, storage containers and packaging; temperature and other storage and transport conditions; and water standards to wash, clean or ice fish. The text also sets up a system of licensing of processors and fishing vessels, and an inspections and surveillance system (Chapter III).

**Some fisheries laws that address food safety also establish voluntary or mandatory Hazard Analysis and Critical Control Points (HACCP) systems.** The HACCP is a preventative system that identifies hazards, establishes controls, and monitors the controls in the case of harmful microorganisms or chemical or physical contaminants in food. Given the complexity of such systems and challenges in implementation, legislation may require HACCP programmes to be implemented only for exports, as seen in the Saint Kitts and Nevis *Fisheries Aquaculture and Marine Resources Act (2016)*. Alternatively, HACCP may not be a legislative requirement for all food producers within a jurisdiction, and may be implemented at the discretion of the food operator.

**Food safety concerns from aquaculture arise largely from water quality, feed and veterinary drugs, while for wild caught fish environmental concerns relating to heavy metals and other pollutants and contaminants are prominent; for both wild-caught and aquaculture products, microbiological and other contaminants are significant post-harvest risks.** Under the Mauritius *Fisheries and Marine Resources (Import of Fish and Fish Products) (Amendment) Regulations (2016),* several key requirements are listed in Regulation 21 for fish originating from aquaculture, including that feed ingredients shall not contain unsafe levels of pesticide, chemical contaminants, toxins or other substances harmful to health. Aquaculture facilities are to have in place a residue monitoring plan and the text refers to the applicable maximum residue limit for veterinary drugs as being the limits prescribed by the international standard-setting body, the Codex Alimentarius Commission. Codex standards are identified as the reference hygiene standards for the manner in which fish are to be handled, packaged stored and distributed. The Republic of Korea's *Quality Control of Fishery Products Act (2001, as amended by Act No. 1 093 of 2011)* provides for both safety and quality aspects of fish

products, covers processing operations and seeks to boost marketability of these products. The Act looks at addressing the presence of heavy metals, shellfish toxins, food poisoning fungi, antibiotics, and other hazardous substances (Article 42) in fish products and seeks to establish maximum residue levels (MRLs). Importantly, it makes the connection with the country's food safety law, the *Food Sanitation Act,* which is the overarching text on food safety, and empowers the competent authority for fisheries to set the MRL in consultation with the authority for food safety.

**The traceability of fish products, i.e. the ability to trace a food or raw material at each stage of the supply chain, is a requirement for food safety, but also a key component in the fight against IUU fishing.** Canada's (British Columbia) *Fish and Seafood Act ([SBC 2015] Chapter 14)* illustrates the obligations on operators that have a duty to participate in the traceability system. According to Section 19, an operator must obtain unique identifiers for traceable food, facilities and vehicles among other things, and attach identifiers to the corresponding item. Records must be kept detailing the required information in respect of those traceable items. The authority is responsible for setting out rules for the operation of the traceability system (Section 61), including conditions on the distribution or disposition of traceable food, auditing of traceability systems and access to records. However, traceability is a challenge to small-scale fishers in developing countries. Some jurisdictions require traceability documentation to allow exported fish to enter into their markets. 2014 studies show that full tracing of industrial catches from the fishing vessel to the export container is not possible in 24 percent of the countries trading with the European Union, and this proportion rises to 49 percent in the case of artisanal fisheries (FAO, 2014a).

## 5.10. Monitoring, control and surveillance

**Monitoring, control and surveillance (MCS) are tools designed to monitor compliance with measures, strategies and plans, and contribute to the control of IUU** (see Section 5.4.5 of this Chapter). The MCS activities comprise the collection, measurement and analysis of data

on fishing activities. The MCS is buttressed by enforcement actions taken to ensure compliance with the laws, such as inspections, investigations, and bringing civil, administrative or criminal actions against those who violate the law.

**Observer programmes may allow monitoring only, while some include enforcement roles as well.** The Solomon Islands *Fisheries Management Act (2015)* establishes observer and port sampling programmes for "collecting recording and reporting reliable information for scientific, conservation, management and compliance purposes" including information on: (i) the type of fish harvested, including the location and equipment used; (ii) the effects of fishing methods on fish and the environment; (iii) any operational aspect of the vessel or other management or conservation measure; (iv) processing, transportation, transshipment, storage, or disposal of any fish; and (v) monitoring the implementation of management and applicable international conservation measures (Section 74). Sampling may take place in areas beyond national jurisdiction and can be imposed as conditions for a licence. A similar approach is found in the Kenyan *Fisheries Management and Development Act (No. 35 of 2016)*. Section 136 sets up cooperative arrangements for Kenyan authority inspectors (or those of another state where the latter is party to an applicable international agreement), with the objective of carrying out fisheries monitoring, control and surveillance operations jointly or cooperatively. Samoa's *Fisheries Management Act (2016)* sets out a framework for the appointment of observers, and where required by a fisheries plan or any international agreement, such observers are empowered to carry out scientific, compliance, monitoring and other functions (Section 10). Observers have powers similar to inspectors such as the ability to take samples and take photographs (Section 11). Generally speaking, observer schemes in some countries source observers from coastal communities, tasking them with monitoring activities in artisanal fishing zones.

**The MCS systems should monitor performance and create feedback loops that result in the adjustment of measures and plans (and facilitate decision-making relating to fisheries permits and licences)**. This is captured in the Kenyan *Fisheries Management and*

*Development Act (No. 35 of 2016)* definition of MCS, which stipulates that the information collected should be used to determine the terms and conditions under which fisheries resources can be harvested, and to ensure all applicable laws and regulations are being observed. Surveillance is carried out on land and by air and sea. Under Palau's *National Marine Sanctuary Act (2015)*, technical data, including that collected from aerial surveillance, VMS, Automatic Identification System or satellite data, may be used as evidence of violations (Section 206).

**Legislation may contain general procedures for the collection and recording of catch and effort information, and require the keeping of logbooks.** Norway's *Act relating to the management and conservation of living marine resources (2008)* creates a duty on vessel operators to provide information in catch logbooks (Section 36). Implementing regulations are expected to detail how catch logbooks should be kept, the information required, and how such records are submitted. The competent authority may require the operator to give additional information on the harvesting and processing of catches. The Mauritius *Fisheries and Marine Resources Act (2007)* establishes the details that records are to contain, including: the name of the vessel; the port and country of registration; previous registration; international radio call sign; length and net registered tonnage; and fishing method and gears. The record also requires the name and nationality of any natural or legal person with beneficial ownership of the vessel and particulars of any previous offences committed by use of the fishing vessel.

## 5.11. Labour rights

**Fisheries is one the most hazardous occupations, with high relative rates of occupational diseases and injuries** (FAO, n.d.(f))**. The challenges in ensuring decent working conditions and labour rights for fishers are shaped by some key characteristics of the industry:** varying degrees of informality (and thus exclusion from social security), hazardous work, and value chain complexity (FAO, 2016f). Other aspects of the broader regulatory framework, such as weak labour rights, non-existent or weak unions and cooperatives, and poor

enforcement of rights can exacerbate the situation (FAO, 2016f). Certain activities, such as IUU fishing, are often associated with the disregard of safety standards and labour abuse, including exploitation of migrant workers. Many small-scale fishers in developing countries are poor, and often depend on unpaid family labour, including that of children. Studies have also documented unfair employment practices in aquaculture, particularly cases of large corporations exploiting local labour in low-paying positions (FAO, 2012a).

**Many of the recent fisheries laws reviewed contain only generic rules on labour matters, although some of the above challenges may already be addressed in labour or other types of laws.** Labour rights such as working hours, general safety prescriptions, minimum wages, etc., may feature in labour laws. Indonesia's *Law on the Protection and Empowerment of Fishermen, Fish Raisers and Salt Farmers (No. 7/2016)* requires in Article 30 that any person who has a fisheries business shall protect employees against the risks of fishing and shall have insurance for occupational accidents, and life insurance to protect against the loss of life. Article 31 requires the government to offer facilitated access to insurance for these purposes. Viet Nam's *Decree on ensuring safety for people and ships engaged in fisheries activities (No. 6612005lND-CP of 2005)* also requires licence holders to equip vessels with safety and rescue equipment and also requires them to have accident insurance for their crew. Licence holders are obliged to sign a labour contract with each crew-member (Article 5). New Zealand's *Fisheries Act (No. 88 of 1996, as amended in 2010)* mandates that vessels operated by an overseas person legally fishing in New Zealand waters comply with the minimum wage legislation in force. Thailand's *Royal Ordinance on Fisheries (2015)* declares as an objective of the statute, the prevention of all forms of forced labour and unlawful labour practices in the fisheries sector. A licensee must have in place an occupational safety and hygiene system, as well as ensure proper working conditions for crewmembers (Section 37).

**Legislation may offer training opportunities to fishers and aquaculture farmers to better leverage opportunities within the sector.** This is seen in Indonesia's *Law on the Protection and Empowerment*

*of Fishermen, Fish Raisers and Salt Farmers (No. 7/2016)*. Article 46 establishes the right to education and training to fishers and aquaculture producers covering apprenticeships and scholarships, improving skills, etc. for entrepreneurship in the sector. The Philippines *The Magna Carta of Women Act (No. 9 710 of 2008)* espouses interventions aimed at ensuring substantive equality between men and women. Although it has a broad scope, it expressly identifies female fisherfolk as among the targets of the legislation. Among many different interventions, the government is charged with creating opportunities for women fishers to be involved in management, and entrepreneurial value-add activities (not solely in catch and harvesting stages). It reiterates that women fishers are entitled to benefits and privileges accorded to other workers under the country's labour and social security laws. This Act is explored in more detail in Section 5.12.3.

**Legislation may also enable fishers to receive education and training to transition into other types of work, which reduces vulnerability to the shocks within the sector.** The Republic of Korea's *Framework Act on Agriculture and Fisheries, Rural Community and Food Industry (No. 9 717 of 2009, as amended by Act No. 11 561 of 2012)* calls on central and local governments to help those in the fishing industry increase their income through education and the provision of information (Article 39). For the stabilization of income, the government may offer assistance for damage (e.g. following a natural disaster). Elderly fishers and other categories of persons may apply for assistance for 're-employment', i.e. transitioning out of the sector, including through occupational training and job opportunities, as well as for assistance for unemployed fishers.

## 5.12. Selected institutional management mechanisms and principles

### 5.12.1. Process for developing fisheries management plans

**Management plans that truly engender a participatory approach contribute to effective management and sustainable utilization of the resource.** The FAO defines a plan as a roadmap for the achievement of

identified objectives and for the implementation of strategy instruments, that is time-bound, contains specific activities and details the resources required to achieve them (Brugère *et al.*, 2010). Management plans are a frequent feature in legislation, used as a tool to identify the objectives and goals for a fishery, to indicate the applicable management rules and measures, to identify the various stakeholders and to flesh out their respective roles.

**Legislation may identify the range of stakeholders that may participate in the development of a fisheries management plan.** Under the Solomon Islands *Fisheries Management Act (2015)*, FMPs are to be prepared at national, provincial and community levels, and for this purpose are required to carry out the consultations listed in the Act's Second Schedule. At the community level, FMPs are approved by the competent provincial authority and a management committee representing customary rights holders. Most noteworthy, these plans have the legal status of regulations made under the Act. Community FMPs can established within the geographical extent of the customary rights of the relevant community. These types of FMPs are to be consistent with applicable provincial legislation (Section 18), require approval of the province and central competent authority, and have the legal status of a by-law. Senegal's *Law on Coastal Fishing (No. 18 of 2015)* requires the establishment of FMPs on an annual or multiannual basis. The FMPs are subject to periodic review according to updated data (Article 13), and are subject to stakeholder consultation. For shared species in regional waters, the responsible minister is responsible for ensuring consultation with other countries to ensure harmonization of FMPs. The Law mandates compatibility between FMPs and other documents related to the marine ecosystem. The FMPs must be officially approved by decree. The United States of America's *Magnuson-Stevens Fishery Conservation and Management Act (Public Law 94-265 of 1976, as amended by the Magnuson-Stevens Fishery Conservation and Management Reauthorization Act (P.L. 109-479) of 2007)* permits interested persons to be heard in the development of FMPs, and requires public access to council, committee or advisory panel meetings. Australia's (South Australia) *Fisheries Management Act (2007)* sets out in extensive detail

the procedure for the formulation of FMPs, including the requirement of notice to be published in newspapers of broad circulation (Section 44). Following preparation of the draft, the competent minister is to provide a summary and explanation of the FMP and share the report with relevant stakeholders that include local advisory committees, public authorities and signatories of indigenous land use agreements.

**Legislation often sets out the required basic content of FMPs.** The Second Schedule of the Solomon Islands *Fisheries Management Act (2015)* requires FMPs to describe the location, status and other features of the fishery, including ecosystems and customary rights. The FMPs must take into account other relevant FMPs, and should stipulate appropriate management measures. An FMP is to describe indicators to assess effectiveness of the measures established therein, and should have mechanisms for monitoring reporting and review. Under Senegal's *Law on Coastal Fishing (No. 18 of 2015),* FMPs must determine the allowable catch or optimum level of fishing effort, define licensing or fishing programmes, and establish criteria or conditions for authorizations. The FMPs are also to contain the conservation and management measures for the fishery. Côte d'Ivoire's *Law relating to fisheries and aquaculture (No. 554 of 2016)* requires FMPs to be reviewed and updated on the basis of up-to-date data. Article 6 explicitly indicates that for sustainability of the resource, the competent authority may consult the ministry responsible for scientific research with regard to data on the status of stocks. Legislation can encourage the use of the "best available knowledge" in decision-making, including both scientific and traditional knowledge. Vanuatu's *Fisheries Act (No. 10 of 2014)* requires fisheries management plans to take into account any relevant traditional fishing methods and practices including traditional management systems and strategies.

### 5.12.2. Participation and community-based management

**Stakeholder participation mechanisms range from periodic consultation, to inclusion in decision-making bodies, or even direct co-management of resources.** Stakeholder participation brings together the needs and perspectives of a range of stakeholders, allows

them access to information, facilitates engagement in decision-making and generally fosters a sense of ownership over shared resources. A selection of the various mechanisms available to include and involve stakeholders in decision-making is dependent on the country context. The emphasis in this section is on community management although it is by no means an exclusive approach to stakeholder engagement and participation.

**Community-based fisheries management is a common property rights management system that vests fishing rights in communities, or involves sharing fisheries management with local communities.** (Kuemlangan and Teigenem, 2004) Zambia's *Fisheries Act (2011)* calls upon the competent authority to promote community-based natural resource management in respect of fisheries resources. Samoa's *Fisheries Management Act (2016)* empowers the competent authority to establish village fisheries management areas, taking into account the size of the district, customary ownership of land and traditional practices (Section 19). The Act also stipulates that a disadvantaged village community (or a member of such) can participate in the management of a village fisheries management area. The Act sets out conditions for this participation (e.g. that the person or community has traditional links and family or clan relationships or ownership of land, adjacent to the coastal waters). Arrangements for access between a disadvantaged village community or person, and the coastal village fisheries management area should consider traditional access rights, the needs of the disadvantaged communities and national FMPs. The Gambia's *Fisheries Act (2007)* allows the competent authority to, "in the interest of conservation, management and sustainable utilization of fisheries resources," set aside special management areas for the purposes of community-based management (Section 14). In accordance with the country's *Local Government Act (2002)* and in consultation with local government representatives, the Secretary of State is empowered to establish Community Fisheries Centres for the purposes of community-based fisheries management, and may determine the rights and responsibilities of the Centre in relation to these special management areas. The Secretary of State must consider the concerns of communities living in the area and the prevailing system

of grouping and organization (Section 15). Regulations may be developed in consultation with communities, regarding the organization, operation and administration of Community Fisheries Centres.

**Co-management provides a useful illustration of a bottom up approach to management.** Although a comparatively older example than others highlighted in this Study, the Japanese *Fisheries Basic Act (No. 89 of 2001)* decentralized decision-making, and created coordination mechanisms among various tiers of government, from local to national (Macfadyen, Cacaud and Kuemlangan, 2005). Fishery Cooperative Associations (FCAs) are legal entities endowed with territorial use rights or common fishing rights. Each FCA regulates its own membership, is responsible for the implementation of its own schemes, and provides authorization to its members as to when and how they may fish within the FCA boundaries. The *Marine Fisheries Resource Development Promotion Law of 1971 (as amended in 1990)* established an autonomous agreement system of resource management among fishers, that once a certain level of adhesion and compliance was reached, the government approved the agreement as law (Macfadyen, Cacaud and Kuemlangan, 2005). Under Japan's *Sustainable Aquaculture Production Assurance Act (No. 51 of 1999)* Article 4, an FCA may prepare 'Aquaculture Area Improvement Plan'. The FCAs also implement Aquaculture Ground Improvement Programmes.

**Co-management can also be characterized by the assumption by the community, of some aspects of the authority's functions, while public authorities retain oversight** (Kuemlangan and Teigenem, 2004). This is reflected in the Australian *Fisheries Legislation Amendment (No. 2) Act (No. 137 of 2010)*, which clarifies that the competent authority may enter into a co-management arrangement with stakeholders in a fishery for the latter to perform the authority's functions and powers for the sustainable management of the fishery. The Seychelles *Fisheries Act (No. 20 of 2014)* has a different approach altogether. It opens up its definition of co-management to include partnership arrangements not only with local resource users, but also NGOs and fisheries and marine resource stakeholders including tourism operators and other persons who share the responsibility and authority for decision-

making and management of a fishery. Most of the laws reviewed have general provisions, offering only a legal basis for such schemes and leaving prescriptions on arrangements to agreements or to lower level regulations.

### 5.12.3. Conflict resolution

**Conflict resolution is an important element of stakeholder management, particularly when seeking to balance a range of competing interests and rights.** Kenya's *Fisheries Management and Development Act (No. 35 of 2016)* calls the competent authority to set out, in collaboration with the multi-stakeholder Council and other bodies and stakeholders, the procedures for conflict resolution in relation to marine protected areas. Côte d'Ivoire's *Law relating to fisheries and aquaculture (2016)* sets out provisions for conflict resolution in Article 18. Under this Law, the minister, on the advice of the consultative committee, can take measures to prevent and resolve conflicts among resource users. This includes establishing arrangements between user groups, or setting-up inquiry or mediation bodies to enforce the implementation of decisions.

## 5.13. Recognizing and protecting traditionally marginalized groups

### 5.13.1. Small-scale and artisanal fishing

**Small-scale fishers (SSFs) face specific challenges that impact their socio-economic well-being.** Among such challenges are the difficult nature of harvesting, high perishability of fish, capital investments required and risks of loss (FAO, 2016a), as well as the occupational hazards listed in Section 5.10. Small-scale fishers (which may comprise subsistence, artisanal or commercial fishers of a small scale), may be disadvantaged in a number of ways, i.e. in terms of: income opportunities, market power, access to land-based resources, political access, and inclusion in public services (such as health and education) (FAO, 2012a). A rights-based approach involves a prioritization of disadvantaged groups and the design of measures to confer an explicit benefit to overcome economic, geographical or political disadvantages.

**Legislation can offer a range of mechanisms that expressly identify SSFs and target them through provisions that offer specialized assistance and opportunities.** This can include supporting the participation of SSFs in policy and management, or boosting SSF access to markets, finance and infrastructure. A number of countries have enacted legislation specifically targeting SSFs, or may have general legislation with scattered provisions that recognize the particular need of small-scale, subsistence or artisanal fishers. The Gambia's *Fisheries Act (2007)* lists as one of its guiding principles, the duty to take into account the needs of artisanal and subsistence fishing, and also calls for the inclusion of a representative of artisanal fishers on the main advisory body. The Act supports artisanal fishing through a Fisheries Development Fund (Section 20). A special management area may be designated for the purpose of subsistence or artisanal fishing (Section 14). Subsistence fishers, i.e. those who fish for food for personal consumption, are exempt from licence requirements (Section 23). Thailand's *Royal Ordinance on Fisheries (2015)* recognizes artisanal fisheries and local fishery communities as traditionally marginalized groups warranting protection under its guiding principles. The Act specifies the tonnage of vessels that can be considered as artisanal fishing vessels (Section 174) and instructs the competent authority to allow those vessels that are registered and that have approved fishing gear to carry out activities (Section 32). The statute calls for FMPs to address any conflicts between artisanal and commercial fishing operations (Section 24). Similarly, under Section 17 of Fiji's *Offshore Fisheries Management Decree (2012),* FMPs are to protect the interests of artisanal, subsistence and small-scale fishers. Section 6 requires authorities to consider the interests of these groups when making decisions and engage their participation. Indonesia's *Law on the Protection and Empowerment of Fishermen, Fish Raisers and Salt Farmers (2016)* has a chapter on guaranteeing business certainty for fishers and other marginalized groups, inviting central and regional governments to control the environmental quality of processing and to develop a fisheries commodity marketing system, including through auctions and warehouse receipts. The SSFs and their families are not liable for any fees, taxes or other charges. The competent authorities are to support the development of fisheries processing systems, including

cold chain storage (Article 25). Vessel licence holders that work with different types of SSFs are required to enter into work agreements or production sharing agreements in writing. The SSFs are supported in this regard by the government, presumably as a safeguard to prevent against exploitative contract terms. These agreements are to confer benefits to both sides, and are expected to consider local customs and knowledge, contain the rights and obligations of both parties, stipulate the period of duration and identify dispute resolution mechanisms.

**Granting facilitated access to fishery resources for SSFs dependent on the resources for food and livelihoods is important, but subsistence fishing is often still subject to restrictions on fishing methods and catch quantities.** Indeed, most laws are categorical in their requirements relating to fishing gear and methods, such as the prohibition on use of chemicals, explosives or electrical devices for fishing – for which there are no exceptions. Under Gabon's *Fisheries Code (No. 015/2005)* customary fishing rights are not subject to a licensing regime (Article 4), although this category of rights is still subject to prescriptions on catch size and fishing methods (Article 42). Under Cambodia's *Royal Kram on Promulgation of the Fisheries Law (NS/RKM/0506/011 of 2006)* inland fisheries can be divided into several groups, among them, family fishing for traditional communities (Article 10). Subsistence fishing can be operated at any time in the open access area, in family fishing areas, in freshwater lots during closed season, and in marine areas, by using small-scale fishing gear (Article 31). Subsistence fishing must comply with other general rules (Article 44). The Russian Federation's (Bryansk) *Regional Law on fisheries and fishery management (No. 12-Z of 2009)*, permits artisanal fishing to be carried out without the payment of any fee in waters of general access. Fishing quotas for artisanal fishing are to be allocated by the competent authority.

**In addition to fishery resources, fishing communities also rely on access to: land, housing, markets, financial resources, information, legal systems and social services (e.g. education, health care, sanitation)** (FAO, 2013b). To promote the sustainable development of fishing communities, the Republic of Korea's *Framework Act*

*on Agriculture and Fisheries, Rural Community and Food Industry (No. 9 717 of 2009, as amended by Act No. 11 561 of 2012)* calls for the government to develop each fishing village "into an industrial, living and recreational place connected to urban areas and to preserve and inherit the unique traditions and culture" of the areas. The text places primacy on the government's role in enabling residents in fishing villages to enjoy welfare benefits such as medical care, education, housing, water supply and sewerage, etc. Under Indonesia's *Law on the Protection and Empowerment of Fishermen, Fish Raisers and Salt Farmers (2016)*, the competent authorities should oversee the allocation of land through spatial layout plans for fish farming, processing and marketing, that will result in livelihood space and access to land and facilities for small fishers and traditional fishers. Tenure issues are discussed at greater length in Chapter 3, however, it is noteworthy that SSFs often live in locations where tenure over land and other resources is contested, leading to disputes and, in the face of natural disasters, more complex emergencies (FAO, 2012a). Consideration should be given to facilitating smallholder aquaculture farmers' access to water bodies and land for aquaculture production.

**Legislation may promote upgrades in post-harvest technology, or offer government assistance through technical and advisory services, and capacity building to assist small-scale fishers and producers to comply with the regulations** (Skonhoft and Gobena, 2009). The Philippines *Act establishing a Provincial Fisheries and Aquatic Resources Training, Development, and Product Centre in specific provinces (No. 10 861 of 2016)* provides marketing and product distribution assistance to fisherfolk, and environmentally-sound postharvest development services. The objective of the Philippines *Act promoting Agricultural and Fisheries Mechanization Development in the Country (No. 10 601 of 2012)* is to support the use of modern, appropriate, cost-effective and environmentally-safe fisheries machinery and equipment. The Act also seeks to promote support services such as credit provision, research, training and extension programmes, rural infrastructure, postharvest facilities and marketing services (Section 2).

### 5.13.2. Indigenous groups and customary rights

**Traditional and customary fishing practices, and access to traditional fishing areas by local communities and indigenous peoples, should be respected and protected.** Continued access to traditional fishing areas contributes to the food security of local communities and indigenous peoples, protects their livelihoods, contributes to local development and enables the conservation of fisheries resources. Many of the provisions in the foregoing sections would serve to support local communities and indigenous peoples, which often fall under the rubric of SSFs. The focus of this section, however, is the explicit recognition of indigenous and customary rights *per se*, in the context of fisheries.

**Fisheries legislation may recognize and protect customary rights in various ways.** The Solomon Islands *Fisheries Management Act (2015)* states that customary rights shall be fully recognized and respected (Section 21). No person can cause, directly or indirectly, damage or destruction to an area subject to customary fishing rights, nor can any person enter and fish in such area without permission from the customary rights holders. Where it is proved that customary rights were breached, the High Court may order compensation to be paid to the customary rights holder. The Act further stipulates that a community fisheries management plan may be drawn up by, or on behalf of, customary rights holders for a customary rights area, and for this purpose the competent authority may enter into agreements with the customary rights holders. Kiribati's *Fisheries Act (No. 6 of 2010)* also protects customary rights (Section 18) by requiring any person that is not a member of *kainga, utu* or other division of the people, to request a licence prior to fishing in areas that form part of the ancient traditional fishing grounds of those groups. Indonesia's *Law on the Management of Coastal Area and Isles (No. 1/2014 amending Law No. 27/2007)* defines a 'customary law community' as a group of people who have resided in a certain geographic area for generations, have strong ties with the land and other natural resources, and have customary rules in place. Article 21 places primacy on customary rules taking precedence as the authority of 'customary law communities.' Notwithstanding, the

use of the space and the resources is still subject to national interests. Customary law communities are exempted from permit requirements.

**Legislation may target indigenous communities for specific types of support.** The Russian Federation's (Krasnoyarsk) *Regional Law on state support of traditional economic activities of small indigenous populations of the North (No. 11-2212 of 2004)* sets out state support and allotments of preferential fisheries rights for subsistence purposes as well as preferential terms of tax payment, subsidies, specific programmes and institution of areas of traditional nature management. The Bolivarian Republic of Venezuela's *Decree (No. 2 424 of 2016)* establishes the Fisheries and Aquaculture Fund that is used to finance social programmes for councils of indigenous people among other community organizations. The Fund is also expected to finance studies aimed at identifying the investment needs of such communities.

Though an older law that is outside the temporal scope of this Study, the New Zealand *Fisheries Act (1996)* is highlighted here as an example of the recognition of customary rights to estuarine or coastal waters, and the mechanisms for protecting such rights. This Act recognizes the special fishing rights and customary practices of the Maori that have customarily been of special significance, as a source of food or of spiritual or cultural significance (Section 174). Although Article II of the 1840 *Treaty of Waitangi* guaranteed Maori "the full, exclusive and undisturbed possession of their ... fisheries and other possessions", these fishing rights were threatened by the expansion of commercial fishing activities and technology. Under the Fisheries Act, the competent authority may declare any area a *taiapure*-local fishery, i.e. a fishery that is important to Maori as a source of food or for customary or cultural reasons. Such declaration should take into consideration the size of the proposed area, the impact on the general welfare of the surrounding community, the effect on those that have a special interest in the area, and the implications for fisheries management (Sections 175 and 176). Any individual can make a proposal that an area be declared a *taiapure*-local fishery, but such proposal must detail why the proposed area has been of special customary significance as a source of food. A committee comprised of individuals nominated by the minister to be representative

of the Maori community is tasked with management of *taiapure*-local fishery areas and with formulating regulations for the management of the fishery area (Section 185). The statute prohibits the denial of access or use of any *taiapure*-local fishery area on the basis of a person's colour, race or ethnic or national origins (Section 185). In addition, this framework supports, and is consistent with, the *Maori Fisheries Act (No. 78 of 2004)* which seeks to "provide for the development of the collective and individual interests of *iwi* in fisheries, fishing and fisheries-related activities in a manner that is ultimately for the benefit of all Maori." The *Te Ohu Kai Moana* Trustee Limited is established to administer settlement assets, and to allocate and transfer settlement assets (Section 33). The *Te Putea Whakatupu* Trust is designed to fund educational and capacity building programmes, provide scholarships for tertiary education, and facilitate entry of Maori in fishery-related occupations (Section 83).

**Legislation can encourage the exchange of scientific and traditional knowledge.** The United States of America's *Magnuson-Stevens Fishery Conservation and Management (Public Law 94-265 of 1976, as amended by the Magnuson-Stevens Fishery Conservation and Management Reauthorization Act (P.L. 109-479) of 2007)* in Section 305 calls for the setting up of programmes that confer training and employment benefits to indigenous groups and Pacific fishing communities and also calls for developing means by which local and traditional knowledge (including Pacific islander, Native Hawaiian, and Alaskan Native knowledge) can enhance science-based management of fishery resources of the region.

### 5.13.3. Mechanisms that recognize and protect female fishers

**Statistics demonstrate that 15 percent of workers in primary production in fisheries and aquaculture are women, while 90 percent of that figure are engaged in processing activities** (FAO, 2016a). Women in inland fisheries comprise more than 50 percent of the workforce and in Asia and West Africa, women are responsible for 60 percent of the marketing of fish products (FAO, 2012a). Despite this significant contribution, artisanal fisherwomen suffer relatively insecure access to fish resources, and in many countries, face barriers to market opportunities where these may exist for men (FAO, 2012a).

The Philippines *Support of Female Farmers and Fishers Act (No. 6 574 of 2001, amended in 2015)* specifically targets women in the sector, and contains provisions to protect their rights and interests. This Act includes provisions to protect maternity benefits, improve childcare circumstances and enhance quality of life. This is to be achieved through the development of master plans (Article 5), research (Article 8), and improvement of managerial skills (Article 9), among other interventions. The European Union *Regulation (No. 508/2014)* states in Article 29 that the European Maritime and Fisheries Fund (EMFF) may support organizations that promote equal opportunities between men and women, and that enhance the role of women in fishing communities. Kenya's *Fisheries Management and Development Act (No. 35 of 2016)* declares that in regard to fisheries that have certain scientific, economic, cultural, environmental considerations in the national interest, or that require special conservation and management measures, a management plan must be set up that includes a social impact assessment with reference to disadvantaged groups including women, persons with disability and the youth.

Another Philippines statute, *The Magna Carta of Women Act (2008),* though of a general scope, is nonetheless included in this Chapter owing to its considerable focus on women fishers. This lengthy text declares unequivocally that the government shall give priority to women's rights to land, and access credit, infrastructure support, technical training, and technological and marketing assistance. Notably, equal status is granted to women and men in the titling of the land and for the issuance of stewardship contracts. Most importantly, the Act asserts equal rights to enjoy, use and manage fisheries, land and other natural resources. Women fishers are to be included in any opportunities for entrepreneurial activities that add value to production and marketing ventures, and the Act explicitly requires that women's opportunities are not restricted to catch and aquaculture activities. The central and provincial governments are granted different responsibilities to enable fulfilment of the rights. For example, local government units are to maintain an updated database of women fisherfolk for the purposes of program development. Various competent authorities are responsible for ensuring the full participation

of women in the planning, implementation and monitoring of programmes, technology transfer, credit management and skills training related to commercial fishing. Groups and cooperatives organized under these programmes shall have priority access to credit and other funds for women fisherfolk. Also, in addition to broad-based inclusion of women in decision-making bodies, government-owned or controlled bodies are to adopt gender mainstreaming as a strategy to promote women's rights and eliminate gender discrimination. Finally, the Act recognizes that women have the right to protection and security in times of natural disasters and all phases of recovery and reconstruction.

## 5.14. Key chapter messages

**Sustainable development objectives, principles and concepts** guide the implementation and interpretation of the legislation, and the decision-making with regard to permits, licences, fisheries management plans and other mechanisms to manage fisheries resources.

**The ecosystems approach and blue growth concept** essentially promote integrated and holistic perspectives to resource management. An ecosystems approach recognizes the major components in an ecosystem, and the social and economic benefits that can be derived from their utilization, and the blue growth concept expands on this by considering the sector's externalities, and leveraging innovations to find solutions for environmental social and economic challenges in the sector.

**Integrated management** prioritizes consultation, joint decision-making and multi-stakeholder cooperation between fisheries and aquaculture and other sectors.

**Integrated coastal management** seeks to address zoning or conflicts over resource use in coastal regions, in order to boost economic performance and improve the conservation of natural resources by balancing a range of different uses such as aquaculture, fisheries, tourism, transport, industry, urban development and energy.

**Access to fisheries resources** may be allocated to an individual, a community, a company or a vessel and legislation will set out the scope of these rights. Licensing is a key mechanism by which access to resources of any kind are controlled by the state. Granting access involves a balance between harvesting rights and conserving aquatic resources, but also among different fisheries users. Preferential or special treatment may be required to prioritize groups whose interests require special protection or who may be historically disadvantaged.

**Input controls** seek to limit fishing capacity, vessel usage and fishing effort, while spatial and temporal controls regulate the areas that can be fished and the periods of access.

**Catch ceilings, or other output controls** limit the total number or quantities of fish that may be harvested.

**Illegal, Unreported and Unregulated fishing** may be addressed through a range of mechanisms in legislation including vessel registration and listing, catch certificate requirements, vessel monitoring systems and port inspection schemes.

**Conservation zones and marine protected areas** are established in legislation to ensure that certain activities are prohibited or restricted within the geographic boundaries of such zones or areas. Conservation requirements are also included in fisheries management plans. Certain species may be expressly identified in legislation for protection.

**Aquatic genetic resources** are the building blocks of sustainable fisheries and aquaculture. Legislative measures should seek to conserve genetic diversity and maintain integrity of aquatic communities and ecosystems by preventing the introduction of invasive species, and to minimize the spread of disease among fish stocks, including from aquaculture to wild stocks.

**Environmental and socio-economic impacts of natural disasters** can be mitigated by legislative measures such as contingency plans, requirements for insurance, and other stipulations that seek to increase the resilience of fisheries during emergencies. Provisions to mitigate

accidents from human-made activities, such as pollution also receive frequent legislative attention.

**Technology and equipment requirements or incentives** may promote low-impact and fuel-efficient fishing methods and reduced energy use.

**Ecological labelling** is a mechanism for sustainability certification, to demonstrate that a commodity was produced in accordance with environmental and social standards, and is therefore eligible to bear certain marks, claims or logos on labels.

**Ensuring food safety** relating to fish products requires a sea-to-fork approach that involves the coordination of stakeholders along the food chain. The safety of fish products for human consumption may also be addressed under food and health legislation, and should include specific rules on handling and hygiene at all stages from harvesting to consumption.

**Monitoring, control and surveillance** are tools designed to monitor compliance with fisheries measures, strategies and plans, and contribute to the control of IUU. These processes involve the collection, measurement and analysis of data on fishing activities, and enforcement actions taken to ensure compliance with legislation.

**Labour rights** in the fisheries sector involve prescriptions relating to working hours, general safety prescriptions, minimum wages, insurance, training, etc.; these aspects may be addressed in fisheries laws or in labour laws.

**Fisheries or aquaculture management plans** should be prepared through a consultative, participatory and collaborative process that involves a range of stakeholders.

**Stakeholder participation** can range from periodic consultation, to inclusion in decision-making bodies, to direct co-management of resources.

**Conflict resolution** is an important element of stakeholder management, particularly when seeking to balance a range of competing interests and rights.

**Small-scale fishers (SSFs)** face specific challenges that impact their socio-economic well-being. Legislative provisions that offer specialized assistance and opportunities may include supporting SSF access to markets, finance, services, information and infrastructure.

**Customary rights of indigenous peoples and local communities** relating to fisheries resources should be recognized and protected in legislation.

**Female fishers** may receive special or preferential treatment in recognition of their contribution to the sector and to accommodate their particular challenges and needs.

# Appendix D. Key international instruments to guide national legislation

## I. Legally-binding instruments

*Agreement for the Implementation of the Provisions of the United Nations Convention on the Law of the Sea relating to the Conservation and Management of Straddling Fish Stocks and Highly Migratory Fish Stocks* (UN Fish Stocks Agreement). UN Conference on Straddling Fish Stocks and Highly Migratory Fish Stocks, A/CONF.164/37, adopted 4 August 1995, opened for signature 4 December 1995. (also available at http://www.un.org/depts/los/convention_agreements/convention_overview_fish_stocks.htm).

*Agreement on Port State Measures to Prevent, Deter and Eliminate Illegal Unreported and Unregulated Fishing (PSMA)*, FAO Conference, approved 22 November 2009. (also available at http://www.fao.org/3/a-i1644t.pdf).

*Agreement on the Application of Sanitary and Phytosanitary Measures* (SPS Agreement). World Trade Organization (WTO), 1995. (also available at https://www.wto.org/english/tratop_e/sps_e/spsagr_e.htm).

*Agreement to Promote Compliance with International Conservation and Management Measures by Fishing Vessels on the High Seas* (Compliance Agreement). FAO Conference, adopted in Rome, 29 November 1993. (also available at http://www.fao.org/fileadmin/user_upload/legal/docs/012t-e.pdf).

*Convention on the Law of the Sea* (UNCLOS), 10 December 1982. (also available at https://www.un.org/Depts/los/convention_agreements/texts/unclos/UNCLOS-TOC.htm).

*Convention on Wetlands of International Importance especially as Waterfowl Habitat* (Ramsar), adopted in Ramsar, 2 February 1971. (also available at http://www.ramsar.org/sites/default/files/documents/library/current_convention_text_e.pdf; https://www.ramsar.org/about/the-convention-on-wetlands-and-its-mission).

*Work in Fishing Convention 2007 (No. 188).* ILO, adopted 14 June 2007. (also available at http://www.ilo.org/global/tandards/subjects-covered-by-international-labour-standards/fishers/lang--en/index.htm).

## II. Non-legally-binding instruments

*Code of Conduct for Responsible Fisheries*. FAO Conference, adopted 31 October 1995. (also available at http://www.fao.org/3/i1900e/i1900e00.htm).

*Code of Practice for Fish and Fishery Products.* Codex Alimentarius Commission, CAC/RCP 52-2003. (also available at www.fao.org/input/download/standards/10273/CXP_052e.pdf).

*Guidelines for port State control officers carrying out inspections under the Work in Fishing Convention*, *2007 (No. 188).* ILO, adopted 14 June 2007. (also available at http://www.ilo.org/sector/Resources/codes-of-practice-and-guidelines/WCMS_177245/lang--en/index.htm; http://www.ilo.org/wcmsp5/groups/public/---ed_dialogue/---sector/documents/normativeinstrument/wcms_428592.pdf).

*Guidelines on flag State inspection of working and living conditions on board fishing vessels,* 2017. (also available at http://www.ilo.org/sector/Resources/codes-of-practice-and-guidelines/WCMS_428592/lang--en/index.htm; http://www.ilo.org/wcmsp5/groups/public/---ed_dialogue/---sector/documents/normativeinstrument/wcms_177245.pdf).

*International Guidelines for the Management of Deep-sea Fisheries in the High Seas*. FAO Committee on Fisheries (COFI), adopted 29 August 2008. (also available at http://www.fao.org/3/a-i0816t.pdf).

*International Guidelines on Bycatch Management and Reduction of Discards*. COFI, 2011. (also available at http://www.fao.org/3/a-ba0022t.pdf).

*International Plan of Action for Conservation and Management of Sharks* (IPOA-sharks), 1999. (also available at http://www.fao.org/ipoa-sharks/en/).

*International Plan of Action for Reducing Incidental Catch of Seabirds in Longline Fisheries* (IPOA-Seabirds), 1999. (also available at http://www.fao.org/fishery/ipoa-seabirds/about/en).

*International Plan of Action for the Management of Fishing Capacity* (IPOA-capacity) 1999. (also available at http://www.fao.org/fishery/ipoa-capacity/about/en).

*International Plan of Action to Prevent, Deter, and Eliminate Illegal, Unreported and Unregulated Fishing* (IPOA-IUU), 2001. (also available at http://www.fao.org/3/a-y1224e.pdf).

*Kyoto Declaration on Aquaculture*, 1995. (also available at http://www.fao.org/docrep/006/ac442e/AC442e3.htm).

*Reykjavik Declaration on Responsible Fisheries in the Marine Ecosystem*, 2001. (also available at http://www.fao.org/docrep/meeting/004/Y2211e.htm).

*Technical Guidelines on Aquaculture Certification*. COFI, approved 2011. (also available at http://www.fao.org/3/a-i2296t.pdf).

*Voluntary Guidelines for flag state performance*. COFI, endorsed 9–13 June 2014. (also available at http://www.fao.org/3/a-i4577t.pdf).

*Voluntary Guidelines for Securing Sustainable Small-Scale Fisheries in the Context of Food Security and Poverty Eradication*. COFI, endorsed 2014. (also available at http://www.fao.org/3/a-i4356en.pdf).

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This Chapter should be read in conjunction with Chapter 2 on themes that are common to all the sectoral chapters in this book, as well as Chapter 7 on Mining. The diverse illustrative snapshots of legislative elements on select subjects offer an aerial view to demonstrate how countries have captured the interplay between social, economic and environmental exigencies, while using the very narrow and specific lens of highlighted legislative provisions. The reader should not infer that the examples selected are necessarily successfully implemented, or result in the desired impact; the chapter does not examine country contexts, allocation of resources, political priority or any of the myriad factors that may affect successful implementation and enforcement. Assessing the effectiveness, regulatory performance and range of potential externalities is an undertaking that is highly context-specific. Accordingly, the examples here do not make recommendations that are applicable to all jurisdictions, but rather draw attention to the way in which different countries have approached sustainable governance of the resource. Lastly, the legislative examples in this Chapter are at times of select subsidiary legislation or pre-2007 legislation, even though the primary scope of the Study is post-2007 primary laws. This is because some pertinent provisions for the point to be made are found in those texts.

Legislative approaches in both extractives industries examined in this book are similar and many provisions are common to both sectors. In order to enable breadth and richness of discussion, the discussions in the two chapters demonstrate varied challenges and solutions. Nonetheless, for a broad perspective on environmental and social-focused provisions, it is useful to read both. Two key distinctions, however, can be highlighted at the outset. First, the revenue generated from royalties and other taxes are typically much higher for petroleum than mining projects. Second, oil sector projects engage fewer and higher skilled employees than in the mining sector (IPIECA, 2012).

While this Chapter explores sustainability dimensions from the narrow lens of sectoral legislation, i.e. petroleum-specific laws, it should be emphasized that in practice, an approach that recognizes inter-sectoral linkages and policy coherence necessarily involves a contemporaneous

examination of legislation on, among other areas, environment, land use and land tenure, water, protected areas, oceans and coastal areas, natural disasters and emergencies, investment, infrastructure, transport, public-private partnerships and local government administration.

## 6.1. Introduction to petroleum governance

### 6.1.1. Importance of petroleum to sustainable development

Petroleum (used as fuel for transport and energy needs) and petroleum products (chemicals, plastics and synthetics) contribute to energy security and economic growth. A growing global population means higher demands for energy and petroleum products. To meet this demand, exploration and production activities will have to enter remote, more fragile and technically challenging environments, including offshore deep-water areas, which may be sensitive ecological systems (UNEP Finance Inititaive, 2014). Even where transitions can be made towards low carbon economies, it is recognized that fossil fuels will continue to play a role in the global energy mix (UNEP, n.d.(b)).

The importance of petroleum products to society as a whole, and the dependence of many value chains and industries on petroleum, makes sustainable governance of the sector paramount. Sustainability perspectives are important to enable long-term use and management of the resource, and to prevent the negative impacts at all stages from exploitation to overdependence in use. Negative impacts are well known and sometimes highly publicized: oil extraction that is not well managed can harm other industries (such as fisheries or tourism), the environment (in marine or other biodiversity-rich areas), and the livelihoods and living spaces of local communities. From a broader perspective, society as a whole (even communities that are far-removed physically from extraction sites) is negatively impacted by the emission of greenhouse gases (GHG). However, the pervasiveness and sheer scale of integration of petroleum products in many facets of the economy and consumer preferences makes reducing reliance on these products difficult. In accommodating this complex network of visible and indirect impacts,

causes and interconnections, governance frameworks must embrace sustainability perspectives to enable better management and use of this finite resource and for the benefit of current and future generations.

### 6.1.2. Scope of chapter and linkages with other chapters

Currently, almost a third of the oil consumed in the world comes from underwater areas and recent research shows a steady growth in offshore production regions (Rochette and Wright, 2015). This Chapter looks at both on-shore and off-shore oil extraction, including installations and associated pipelines for transport; typically, different sets of regulations apply. Following the scope of most petroleum production legislation, this Chapter does not address trade or processing aspects, nor does it look at aspects relating to transitions to low carbon and renewable energy or other holistic policy approaches that are nonetheless critical in attempting to set out sustainable regulatory frameworks for petroleum use and management.

It may be useful to mention that there is considerable variety in the way the sector is regulated in countries. Some laws address every stage from the exploration to the dismantling of installations, while others are limited to exploration and production aspects (Rochette and Wright, 2015). Similarly there is variance in legislation that has environmental protection focus, and those that regulate financial flows and related investments from projects. Many countries tend to have more than one applicable instrument, dealing with the sector through a variety of texts each with a different focus. Generally speaking, a majority of petroleum laws are older than the intended target of this particular Study i.e. prior to 2007. Nonetheless, of those, many have updated regulations that fall within the selected time-frame for review.

## 6.2. Balancing benefits and environmental conservation: constitutional provisions

**In most countries, the national constitution provides for state ownership of oil rights or subsurface mineral rights.** The Kenyan *Constitution (2010)* declares all mineral oils as public land

(Section 62). This type of public land is vested in and "held by the national government in trust for the people" and administered by the National Land Commission. Section 66 requires Parliament to develop legislation ensuring that investments benefit local communities and their economies. In the case of Equatorial Guinea's *Fundamental Law (2012)* only the state can exclusively explore and exploit petroleum resources (Article 3), and related services are reserved exclusively to the state (Article 29).

**As the highest law of a country, enshrining sustainable development imperatives in connection with oil extraction concretizes the parameters within which legislation must be developed.** Ecuador's *Constitution (No. 449 of 2008)* preserves the exclusive competence of the state as relates to petroleum resources, and elucidates a strong articulation of controls relating to management of the resource. Article 313 refers to the state's duty to manage this sector in accordance with the principles of environmental sustainability and efficiency. The sector is recognized as being 'strategic' and under the exclusive control of the state owing to its significant economic, social, political or environmental impact. Management is to be geared towards the full development of rights and the social interest. This is reiterated again in Article 408, which allows exploitation of oil resources only in strict compliance with the environmental principles of the *Constitution*. Further, the *Constitution* guarantees that state benefits from oil exploitation will not be in an amount inferior to the company that exploits such resources. The state is required to ensure production, consumption and use of natural resources and energy enables the preservation and restoration of natural cycles and enables conditions that secure living with dignity. Petroleum exploration and exploitation is classified as 'high' in terms of the public interest. The benefits received by the state are to be used for the development of the country and the provinces in which they are found (in the proportions and according to the procedures established by law). The Niger's *Constitution (2010)* stipulates in Article 149 that any exploitation must be carried out in a transparent manner, protecting the environment and cultural heritage and preserving the interests of future and present generations.

The *Transitional Constitution* of South Sudan (2011), see Box 6.1, has extensive provisions relating to petroleum. This text recalls in its preamble, the need to sustainably and efficiently manage resources for the benefit of present and future generations, and to attain the Millennium Development Goals. In elaborating detail not commonly found in Constitutions, given its nature in establishing the legal regime for the newly established country, the 2011 fundamental text establishes a National Petroleum and Gas Council (Section 173), which reports to the Council of Ministers. This body is tasked with formulating policies and guidelines in relation to petroleum development and management, and for monitoring the implementation of these policies. The Council is also responsible for approving all oil contracts, and reviewing the environmental and social impact of existing and future oil developments. The responsible ministry is in charge of implementing the policy, including negotiating contracts, developing legislation and ensuring projects are subjected to environmental and social impact assessment.

**Box 6.1**
**South Sudan's *Transitional Constitution (2011)***

**Section 172** contains guiding principles for petroleum development and management including:

a. safeguarding national interests;

b. creating lasting benefits for society;

c. promoting efficient and sustainable resource management;

d. using oil revenues to develop other sectors of the economy, especially agriculture;

e. ensuring transparency and accountability;

f. promoting fair competition to increase productivity and efficiency in the petroleum and gas sectors;

g. promoting balanced and equitable development;

h. creating a secure and healthy investment environment;

i. protecting the environment and biodiversity;

j. building the capacity of South Sudanese within the petroleum and gas sector;

k. establishing oil infrastructure within South Sudan, such as pipelines, refineries, storage, processing and transport facilities;

l. safeguarding interests of future generations;

m. ensuring accountability for violations of human rights and degradation to the environment caused by petroleum and gas-related operations; and

n. ensuring restoration of land and resources affected by development and management.

## 6.3. Granting oil exploration and production rights

Legislation typically reiterates state ownership over petroleum resources and allows reconnaissance, exploration and production (extraction) rights via a number of mechanisms set out in legislation.

Generally, petroleum *in situ* is owned by the state in trust for the public, but licences grant rights over the resource. Legislation varies on the exclusivity of rights granted. Exploration or reconnaissance permits may not necessarily be exclusive while production rights usually are. The award of rights to a particular company must be transparent in terms of the benefits, conditions and work programmes. Authorizations are required to control petroleum activities, and encompass a consideration of economic, social and environmental criteria. Licenses, permits, approvals or other contractual arrangements (collectively referred to as authorization) are used to regulate access to, and use of, petroleum resources. The two key vehicles for enabling sustainable use and development of the resource with regard to licensing are: (i) a fair and merit-based transparent process; and (ii) decision-making criteria designed towards sustainability outcomes.

### 6.3.1. Transparent licensing and bidding procedures

**Tender procedures should be designed to get the most competitive proposal for the country, and accordingly, it is important for competitiveness and accountability that the procedures and selection criteria are as transparent as possible.** Sierra Leone's *Petroleum (Exploration and Production) Act (No. 7 of 2011)* sets up procedures for calls for tender (Section 30), and states that the results of tenders, including winning and losing bids are required to be published in the Official Gazette. Lebanon's *Offshore Petroleum Resources Law (No. 132 of 2010)* requires the call for tenders to be published in the Official Gazette, as well as in local and international publications and websites (Article 13), and made public at least six months prior to the application closing date.

**Licenses may be allocated through bids or auctions, where the highest fiscal bidder is awarded the right, or alternatively the work-program submitted by tender most closely aligns with the governments prescribed criteria.** Under Pakistan's *Onshore Petroleum (Exploration and Production) Rules (2009),*[11] the federal government

[11] Pakistan. *S. R. O. 46S(I)/Z00*, issued under the *Regulation of Mines and Oil fields and Mineral Development (Government Control) Act, 1948 (XXIV of 1948)*.

grants development and production leases (and exclusive rights to perform activities in an area covered by the lease) on the basis of work-program bids. Bid evaluation is primarily based on the technical and financial capability of the bidding company and on its work programme commitment. Each participant is to provide a bid bond of 10 percent of the proposed signature bonus, together with a development plan (Rule 35). Where there is an existing leaseholder, the legislation allows the latter, on a case-by-case basis, to match the highest signature bonus bid by increasing 25 percent value thereon. The development plan is to include, among other information: proposals for the development and production of each discovery area; safety measures, including measures to deal with emergencies and protection of environment; and contingency and abandonment plans (Rule 36).

**Having the final decision subject to multi-disciplinary approval improves the transparency process** – more so if their competing applications were made public. Lebanon's *Offshore Petroleum Resources Law (No. 132 of 2010)* allows short-listed applicants to enter into negotiations with the competent authority, and the final selection of candidates with recommendations are proposed to the Council of Ministers (Article 18). The award of licences is tasked to a Technical Committee under Zambia's *Petroleum (Exploration and Production) Act (No. 10 of 2008)*.

**Work program bids can be used as an opportunity to secure sustainability objectives as part of the conditions of the work-program. Cash bids on the other hand, though less discretionary, require significant fiscal responsibility (in the same way that funds from royalties or taxes must be managed effectively and for the public good).** Introducing mandatory sustainability criteria and making approvals contingent on such plans would further lock in sustainability goals in the process. Zambia's *Petroleum (Exploration and Production) Act (No. 10 of 2008)* requires certain minimum information to be provided in the bid (Article 9), and the requirements that lean towards sustainability objectives include information on: the bidder's financial status, technical competence and experience (to ensure the most competent companies are awarded the bid); the proposed employment and training of

Zambian citizens (to ensure nationals participate in the benefits and have lasting impacts on the local economy); proposals for the promotion of local business development; and, an environmental commitment plan. In Mozambique's *Decree establishing the legal regime for production, import/export, storage, transport and trade of petroleum products (No. 45/2012)*, a licence may be denied, if to issue it would affect a fair and competitive market, or reinforce a dominant position of the applicant on the market to the detriment of the public interest. The decision-making criteria in the award of licences or bids are further examined below.

### 6.3.2. Allocation of rights: decision-making criteria

**The process of licensing, tendering or assigning rights is the principal mechanism through which sustainability criteria can be used as key determinants of who shall receive rights over petroleum resources.** The Zambian *Petroleum (Exploration and Production) Act (No. 10 of 2008)* makes this clear: Section 34 states that development and production licences shall not be granted unless the applicant can ensure the most "efficient, beneficial and timely use" of the relevant petroleum resources. In addition, the applicant (for a production and development licence) must show that he or she has adequate financial resources and technical competence, as well as demonstrate the benefits for employment and training of Zambian citizens. The Act stipulates that in deciding to issue an exploration or development and production licence, the minister is required to consider the need to conserve and protect the air, water, soil, flora, fauna, fish, fisheries and scenic attractions as well as the features of cultural, architectural, archaeological, historical or geological interest (Section 66). Applicants should submit the results of environmental impact studies. Canada's (Nova Scotia) *Offshore Petroleum Drilling and Production Regulations (SOR/2009-317)* which implements *Offshore Petroleum Resources Act (S.C. 1988),* calls for a description of the proposed scope of activities set out in Box 6.2.

**Box 6.2**
**Canada's (Nova Scotia) *Offshore Petroleum Drilling and Production Regulations (SOR/2009-317)***

**Regulation 6** contains the following information requirements to accompany applications:

- Execution plan and schedule;
- Safety plan and environmental protection plan that meet prescribed requirements;
- Information on any proposed flaring or venting of gas;
- Information on any proposed burning of oil;
- Description of the drilling and well control equipment, where applicable;
- Description of the processing facilities and control system for production installations;
- For production projects, a field data acquisition program that allows sufficient pool pressure measurements, fluid samples, cased hole logs and formation flow tests for a comprehensive assessment of the performance of development wells, pool depletion schemes and the field;
- Contingency plans, including emergency response procedures that provide for coordination measures with any relevant municipal, provincial, territorial or federal emergency response plan, among other features; and
- Description of the decommissioning and abandonment of the site, including methods for restoration of the site after its abandonment.

Canada's (New Brunswick) *Pipeline Filing Regulation (N.B. Reg 2006-3)* issued under the *Pipeline Act (S.N.B. 2005, c. P-8.5)* contains data requirements that recognize the linkages and connections between consecutive or contemporaneous projects. These include: adverse effects and mitigation measures; knowledge gaps; cumulative environmental effects. The latter should also be "based on a description of the interactions

between the proposed project and other projects and activities, and a description of the interactions among project components."

**Legislation may also impose environmental, social or fiscal conditions to any rights that are granted either as a licence condition or general legislative requirement.** Zambia's *Petroleum (Exploration and Production) Act (No. 10 of 2008)* prescribes conditions that can be adjoined to a licence such as rehabilitation, levelling, re-grassing, re-foresting or contouring of land in the exploration or production area. Where these remedial actions are necessary, the actions should conform to specifications and practices established by national environmental management standards. The Government may require financial deposits or bonds to further guarantee these actions will be carried out (see Section 6.5.9). The Bahamas *Petroleum (Offshore Environmental Protection and Pollution Control) Regulations (S.I. No. 39 of 2016)* issued under the *Petroleum Act (No. 2 of 2016)* requires the holder of various petroleum permits to 'aim' to achieve a zero environmental footprint and minimize disturbance of, and impacts, to the environment, particularly to critical habitats of vulnerable, endangered or legally protected species (regulation 37). Furthermore, installations and facilities should be designed in such a manner as to minimize wildlife attraction.

### 6.3.3. Environmental impact assessments

**Many jurisdictions require data from environmental impact assessments (EIAs) to be submitted in the application documents for a licence.** The EIAs should cover all phases of operations, and refer to both beneficial and negative impacts of petroleum activities, identify risks and propose options, evaluate cumulative effects, and address broader impacts (sometimes referred to as a 'cumulative impact assessment', which includes uncertain or irreversible consequences). The latter is aligned with the premise of "cascading effects" referred to in Chapter 1. The EIAs should start with the baseline environmental and social data of the proposed production area. Though EIAs have only the word 'environmental' in their title, these studies often include social impact parameters a well. The Bahamas *Petroleum (Offshore Environmental Protection and Pollution Control) Regulations (S.I. No. 39*

*of 2016)* makes prescriptions regarding the contents of an EIA in its First Schedule. This includes information on the nature of operations, their impacts on the environment and other existing interests, and the significance of those impacts. The submission of such EIA also means that modifications cannot be made to operations without the minister's authorization. Ireland's Regulations implementing the European Union *(Environmental Impact Assessment) (Petroleum Exploration) Regulations (S.I. No. 134/2013)* distinguish between an environmental impact statement (EIS) and an EIA and recognize the need for holistic examinations of the impact of activities. An EIS is required where the subject of the application relating to petroleum exploration is of such nature, size and location as would likely have significant impacts on the environment. This statement is required to contain the information contained in *European Communities (Environmental Impact Assessment) Regulations (No. 349/1989)*, on the impacts on the environment, on material assets and cultural heritage. Notably, the EIS should track impacts on human beings, flora, fauna, soil, water, air, climate, the landscape as well as the inter-actions between any of the foregoing. Where significant adverse effects may arise, mitigation, remedial or preventive measures should also be included. The EIS may also include the main characteristics of the production processes proposed, including the nature and quantity of the materials to be used; and the type and quantity of expected residues and emissions (which comprise a range of pollutants). Importantly, applicants should also include any difficulties, for example, technical deficiencies or lack of knowledge, in compiling the EIS.

**An EIA should be subject to public consultation and broad stakeholder review.** Ireland's *Regulation (No. 134 of 2013)* requires the applicant to publish in one daily newspaper at minimum, a notice that the applicant has submitted an application, details the location and nature of such activities, and provides the place at which a the EIS can be inspected free of charge. Responses to such public notices must be made within 30 days. Under the Barbados *Offshore Petroleum Act (No. 30 of 2007)*, the EIA is not submitted to the competent authority for petroleum offshore drilling, but instead to the ministry responsible for the environment for

approval (Article 15) within 90 days of being given notice to do so. Papua New Guinea's *Oil and Gas Act (1998)* requires a socio-economic impact study to be submitted to the minister responsible for environmental matters, as part of the environmental plan required under the country's environmental planning legislation (Section 49). Under this Act, such information is to be presented at a development forum convened prior to a first grant of a licence (Section 48).

**Some jurisdictions require the competent administrative authority itself to carry out strategic environmental scoping studies and evaluations prior to making calls for the licensing of exclusive petroleum rights.** This is the case in Article 7 of Lebanon's *Offshore Petroleum Resources Law (No. 132 of 2010)*, which requires the Council of Ministers to set out the precise parameters of such study. Similarly, Norway's *Act 29 relating to petroleum activities (No. 72 of 1996)* declares that prior to opening new areas, an evaluation of petroleum activities of such area on trade, industry and the environment as well the potential economic and social ramifications is required (Section 3). The discussion and findings should be made open to local public authorities, central trade and industry associations, and other stakeholder bodies. Such public announcements ensure that the public is aware of the location, nature and scope of petroleum activities furthering transparency and related benefits. Under Regulation 5 of the United Kingdom of Great Britain and Northern Ireland's *Offshore Petroleum Activities (Conservation of Habitats) Regulations 2001 (as amended in 2007),* the responsible minister is required to make an appropriate assessment of the implications for a special conservation, habitat or wild birds protection site in view of the site's conservation objectives and to reject any proposals that have adverse effects on the integrity of the site. To this end, the minister is required to consult the Joint Nature Conservation Committee. Article 6(4) of *Directive on the conservation of natural habitats and of wild fauna and flora (92/43/EEC of 1992)* and *Council Directive on the conservation of wild birds (79/409/EEC of 1979)* permits European Union members to grant consent in certain cases, despite a negative assessment of the implications for the relevant site, for imperative reasons of overriding public interest.

### 6.3.4. Recognition of other rights in the allocated area

**Petroleum resources may be found on land or in marine areas that are subject to fishing rights, community or individual land rights, or areas that are protected reserves.** More often than not, petroleum laws appear to lean considerably in favour of production licences, and phrase restriction of other rights as being necessary for the public interest. Nonetheless laws do recognize the duty to protect existing rights. Under Papua New Guinea's *Oil and Gas Act (No. 49 of 1998, as amended by No. 7 of 2015)*, the very first article recognizes the balancing and restriction of certain rights with the petroleum rights granted in the Act. It references the country's:

> National Goals and Directive Principles and the Basic Social Obligations (in particular the National Goals and Directive Principles entitled national sovereignty and self-reliance, and natural resources and environment) for the purpose of giving effect to the public interest in public order and public welfare (Article 1).

Notwithstanding, the Act requires that activities under a petroleum licence should not interfere with fishing, navigation or other minerals extraction, except where prior written notice is provided to the competent authority (Section 114). The Act sets out the grounds for which possession of any property can be compulsorily taken, and considered as a public interest. Utilizing a different approach, the *Petroleum Regulations (Chapter 62:01 of 2009)* of Trinidad and Tobago, issued under the *Petroleum Act (No. 46 of 1969),* forbids exploration in areas prohibited by the government for reasons of public interest or security, and such areas are to be publicized in the Official Gazette (regulation 30). A licence holder's right to use water within the area covered by the licence is subject to third party rights. Also included in the general obligations of a petroleum licence holder is the duty not to "unreasonably interfere" with other rights in the area, including agriculture, fishing, navigation and conservation of marine areas.

While petroleum legislation should be developed in a manner that is cognizant of community rights and livelihoods, and should be in line with relevant international standards, **it should be recognized**

**that consistency with the national land law would be of primary consideration**. Angola's *Decree regulating access to land and acquisition of land rights to perform petroleum operations (No. 120/08 of 2008)* Article 10, calls upon the land cadastre agencies to provide the Ministry of Petroleum information relating to land areas that are subject to any type of licence, territorial plans, or land rights awarded under the *Land Act (No. 9/2004).* Information must also be provided relating to land that is part of a reserve or other restriction, cultural heritage landscape or protected area under the *Cultural Heritage Law (No. 14/05 of 2005)*. The licensee and competent ministry must carry out an assessment relating the social and population structure of the area, including an identification of the range of land rights in the area.

**Customary tenure arrangements mean that a community may not necessarily have registered legal title over a land, although they have customary ownership of it.** This may include traditional pastoral, fishing or hunting grounds. Papua New Guinea's *Oil and Gas Act (No. 49 of 1998, as amended by No. 7 of 2015)* has provisions and procedures for determining the rightful occupiers of land that is subject to customary rights. Disputes can be submitted to the Provincial Land Disputes Committee or Land Court in accordance with the *Land Disputes Settlement Act (1975)*.

**Legislation may require the consent of the existing rights holder for access to his or her land in various cases.** The Zambian *Petroleum (Exploration and Production) Act (No. 10 of 2008)* requires a licence-holder to receive the consent of the written authority with regard to land used for burial, land containing any ancient monument, village land, forest areas or plantation, national parks, or in proximity of a dam (Section 40). Written consent of the owner is required in relation to land where crops are grown, or in proximity of cattle dips and watering sources. Conversely, owners or occupiers retain the right to access and use water, graze livestock upon or cultivate land in a manner that does not interfere with exploration or development. Similarly, petroleum rights are not to be exercised in a manner that prejudices the enjoyment of other rights in the area (Section 41). Angola's *Decree regulating access to land and acquisition of land rights to perform petroleum operations*

*(No. 120/08 of 2008)* Article 15 states that licensees must notify third parties of the use they intend for the land and the timelines for the operations. Notably, where such third parties fail to appear at a meeting convened for this purpose, the Ministry of Petroleum must appoint a *negotiorum gestor* to act on behalf of such parties. The latter is tasked with negotiating and signing lease agreements, and shall receive the agreed compensation on behalf these parties. As a safeguard that the *negotiorum gestor* acts in the best interests of such parties, he or she is liable pursuant to the country's Civil Code. For rights under customary usufruct, as established in the country's land legislation, the licensee can only access land if there is mutual agreement with the competent traditional institutions (Article 18). If no such agreement is reached, the licensee cannot submit the dispute to mediation, request an administrative servitude or request expropriation procedure. Only where the petroleum development plan is approved by statue the licensee may negotiate the release of lands, voluntary vacation, or indemnification by adequate compensation proportional to the damages assessed by a committee of local traditional authorities. As an exception, the licensee may apply to the government where agreement is not reached, for the granting of a civil usufruct over the land and release of such lands in the public interest and offering the holders of the customary usufruct other lands in exchange.

**Petroleum legislation may include basic stipulations regarding negotiations with private or community landowners.** The Australian (Queensland) *Mineral and Energy Resources (Common Provisions) Act (2014)* calls for land access codes best practice guidelines, for improved communication among the rights holders, the competent authority for petroleum, owners and occupiers of land, public land authorities and public road authorities. This Act imposes on resource authorities, mandatory conditions concerning the conduct of authorized activities on land (Section 36).

**Compensation provisions may be in place with regard to private or community landowners, and expropriation should be a last-resort.** Angola's *Decree regulating access to land and acquisition of land rights to perform petroleum operations (No. 120/08 of 2008)* confirms that the

public and national interests prevail in any situation; and that national interest includes defence, security, cultural heritage, environment, navigation, research and conservation of natural resources. There must be a balancing of conflicting interests, and negotiation and consultations must take place prior to the allocation of rights. Expropriation can occur only for the public interest and should be based on the grounds of necessity, proportionality, fairness and non-discrimination. Also, the proponents must have exhausted all other avenues before expropriation can take place. Under the Zambian *Petroleum (Exploration and Production) Act (No. 10 of 2008)*, a petroleum rights holder shall pay fair and reasonable compensation (i.e. market value) for any disturbance of rights of the owner or occupier, or damage to the land (Section 45). Compulsory acquisition is circumscribed precisely, requiring to be carried out upon a decision of the President (the highest-level executive), and in accordance with the *Land Acquisition Act (Cap. 189, 1970)*. Under Sierra Leone's *Petroleum (Exploration and Production) Act (2011),* any person who suffers loss, disturbance or damage to surface rights, livestock, crops or trees, as a result of the operations can be compensated by application to the minister (Article 74). The minister reviews the application and makes a determination within 60 days.

**Petroleum resources may also be found in areas where other types of minerals or extractives are located.** Norway's *Petroleum Activities Act (1996)* declares that if additional resources other than petroleum are found in an area covered by a licence, and the activities of such other resources cause unreasonable inconvenience, the Crown shall decide which of the activities shall be postponed and to what extent (Section 3). Such decision shall be based on the amount of mineral deposits, investments undertaken, how advanced operations are, and the economic and social impact of the activity. The Crown may refund or cover some of the losses of the party that has to suspend or halt activity.

### 6.3.5. Environmental plans

**Petroleum operators may be required to develop and submit a plan for environmental protection as part of applications for the approval for activities.** The *Petroleum (Submerged Lands)*

*(Environment) Regulations (2012)*, issued under Australia's (Western Australia) *Petroleum (Submerged Lands) Act (No. 33 of 1982),* require petroleum activities to comply with the environment plan (developed by the operator and approved by the competent authority), that demonstrates that the environmental impacts and environmental risks of the petroleum activity will be reduced to as low as is reasonably practicable. The plan, subject to revision every five years, should include: environmental performance objectives, environmental performance standards and measurement criteria; an implementation strategy as well as monitoring, recording and reporting arrangements. Stakeholders should have been consulted on the plan. In considering whether or not to approve the plan, the competent authority should evaluate its appropriateness for the nature and scale of the activity and also that it evidences continuous efforts to keep impacts and risks as low as possible. The Bahamas *Petroleum (Offshore Environmental Protection and Pollution Control) Regulations (S.I. No. 39 of 2016)* also requires the establishment of monitoring, recording and reporting arrangements, meeting consultation requirements and any modifications to be made as a result of the consultations (regulation 10).

### 6.3.6. State participation in petroleum ventures and enterprises

Oil companies put significant investments in exploration and exploitation at risk in petroleum ventures. These risks may not be conducive or feasible for a single company to take on, nor for a government to take on unilaterally.

**In some jurisdictions, governments can participate directly in petroleum ventures.**Article 6 of Lebanon's *Offshore Petroleum Resources Law (2010)* reserves the right of the state to carry out or participate in petroleum activities, and its share shall be specified in the licence or agreement. Article 19 requires the latter agreement to define the rights and obligations of the right holder towards the state (as a non-participant) and between the right holders (including where the state is a participant). The Zambian *Petroleum (Exploration and Production) Act (No. 10 of 2008)* similarly stipulates that the state may carry out operations either on its own or in a joint venture. Also, the responsible minister

may reserve blocks to be exploited by the government. Most critically, Sierra Leone's *Petroleum (Exploration and Production) Act (2011)* states that the state participating as a licensee shall be subject to all the duties and responsibilities of a rights holder. The state company is required to maintain separate accounts in respect of revenues and expenses with regard to the participating interests of the state (Section 84). Where the state participates as a licensee, it shall have an initial interest of at least 10 percent, and may acquire an additional paying interest up to a prescribed maximum within a certain time after a commercial discovery is declared (Section 85). A company shall also give the right of first refusal to the state where it wishes to sell or transfer rights (Section 86).

**Petroleum legislation also allows more than one company to join with others in a single application.** Lebanon's *Offshore Petroleum Resources Law (2010)* allows group applications through an exploration and production cooperation agreement; these companies form an unincorporated joint venture in which each right holder has a joint and undivided percentage participation interest (Article 19). Pakistan's *Onshore Petroleum Exploration and Production Rules (2009)* stipulate that two or more companies shall be held jointly and severally liable for any obligations and liabilities.

**Legislation may require successful bids to be based on a joint venture between foreign and domestic companies which broadens the benefits of exploitation to local actors as well.** Pakistan's *Onshore Petroleum Exploration and Production Rules (2009)* facilitates exploration or development of petroleum by its Federal Government with 'strategic partners', i.e. a foreign government owned and controlled company. This partnership is the result of direct negotiations between the Government of Pakistan and the government of the strategic partner *without* a competitive bidding process.

**Some commentators have pointed to the benefits of state-owned enterprises in the extractives sector** (for oil and mining) including (NRGI, 2015): building local capacity for commercial petroleum management, as well as for international expansion; increasing the

national share of the revenues directly as a corporate beneficiary and not exclusively through royalties; and improving the government's ability to monitor the activities of the state-owned enterprise, and thereby mitigate any potential social and environmental impacts.

**The risks of state joint ventures or state enterprises relating to sustainability and governance are also prevalent.** There may be reduced transparency, increased opportunities for corruption, limited local community or society benefits and a lower likelihood of imposing enforcement measures relating to environmental or social impacts (NRGI, 2015). Legislation can mitigate these risks to some extent by having extensive provisions for transparency and reporting as well as clear and circumscribed roles for state shareholders in state enterprises (i.e. with clearly listed functions versus the functions of the state as an enforcer of petroleum-related rules and obligations). In Norway, for example, the state enterprise is monitored and evaluated by the Petroleum Directorate, and the Ministry of Finance and other line ministries are responsible for generating development from the income.

The effectiveness of a petroleum regulatory framework may be undermined by a poorly organized and under-resourced administrative structure (Eleodoro, 2010). This situation is particularly complex when one considers the degree of state involvement in exploitation of the resource, ranging from direct participant (through state enterprises) to the more hands-off monitoring and enforcement roles. There are also variations within the latter end of the spectrum, ranging from strict scrutiny and oversight by the state to a more laissez-faire auditing role of oil companies (Hunter, 2010).

Heller, Mahdavi and Schreuder (2014) note that alternatives to the state bearing the costs of infrastructure, technical and other associated project costs are: to limit participation to activities that entail lower expenditures and risks, or less complex inputs; or, to facilitate external financing where appropriate by a listing of shares on public stock exchanges.

## 6.4. General environmental protection mechanisms

### 6.4.1. Coverage of full spectrum of petroleum operations

**Regulatory control for environmental protection and conservation of petroleum resources should cover all stages:** from seismic exploration and appraisal drilling through to construction, field development and production to decommissioning, transport, processing and distribution. Although the risks, methods for, and operating contexts of, on-shore and off-shore operations are different, references to environmental protection are similar, as are requirements for authorization from a range of competent authorities responsible for marine, forestry, land or other natural resources. Relevant provisions may be found in sector or non-sector legislation, but this network of provisions must be consistent and recognize the necessary linkages. Petroleum primary legislation often has scattered references to broader environmental legislation that confers greater specifics. However, in some petroleum subsidiary legislation, environmental impact assessments (EIAs), are addressed specific to petroleum activities.

**Legislation that addresses all stages of operations requires linkages between petroleum authorities and other competent authorities.** Under the Bahamas *Petroleum (Offshore Environmental Protection And Pollution Control) Regulations (S.I. No. 39 of 2016),* authorization for appraisal, exploration, field development and production, well abandonment and facility decommissioning is required, and the minister responsible for petroleum should, prior to granting such authorizations, verify that the applicant satisfies the requirements of the competent authorities for: the environment; marine resources; ports; defence forces; the oil spill committee; and the national trust. Peru's *Supreme Decree – Regulation for environmental protection in hydrocarbon activities (No. 039/14/EM of 2014)* references a number of stages of petroleum production and in this regard, seeks to promote sustainable development and minimize or remedy, as the case requires, the negative environmental impacts. This text recalls the relevant provisions of the Constitution and environmental legislation. It sets out the responsibilities of licence holders for compliance with the environmental legal framework,

environmental studies and other environmental management instruments or requirements. Sri Lanka's *Offshore Exploration for and Exploitation of Natural Resources including Petroleum (Marine Environment Protection) Regulation (No. 1 of 2011)*, which is issued under the *Marine Pollution Prevention Act (No. 35 of 2008)* and is in the purview of the minister responsible for the environment, has mechanisms for multi-disciplinary involvement, such as through the Risk Assessment Committee. The latter is tasked with assessing and making recommendations relating to any application for approval of substances used, for example, in dispersants (regulation 33).

### 6.4.2. Protecting biodiversity

Petroleum deposits may be found in marine or land locations that are biodiversity-rich or that have fragile ecosystems. Alterations in light, noise, vibrations, emissions and other pollution or activities may affect habitats, food and nutrient supplies, changes in feeding patterns of animals, breeding areas, migration routes, all of which have knock-on effects on other species and ecosystems (Ministry of Petroleum and Natural Gas, 2016). Furthermore, a penetration of petroleum activities into areas that are rich in biodiversity may result in detrimental land-use changes and a foray into non-petroleum-related activity (such as agriculture or logging) as a result of facilitated access to remote regions.

**While the terminology designating environmentally sensitive areas varies, the importance of these areas is recognized in a few petroleum laws, although most refer to biodiversity in general terms.** The Canadian (New Brunswick) *Petroleum Act (S.N.B. 2007, c. P-8.03)* defines an "environmentally significant area" as one that is identified as such in a database administered by the ministry responsible for the environment and local government, and defines "sensitive feature" as an environmentally significant area, wetland, erodible soil or aquatic habitat and any other area deemed by the competent authority to be a sensitive feature. Article 132 of the Bolivian *Law on hydrocarbons (No. 3 058 of 2005)* protects areas of natural value by prohibiting petroleum projects in protected areas, Ramsar Sites, or other areas recognized for their biodiversity. Petroleum activities may be allowed

in protected areas where strategic EIA studies render such activities viable in the framework of integrated national sustainable development. Article 48 outlines that deforestation activities must minimize impacts that may affect wildlife and ecosystems and should comply with restrictions and specific procedures identified in the environmental study. Particular attention is to be given to protecting nesting areas, seed trees and threatened species, as well as other areas and species that have important ecological processes as determined by the competent authority. Article 54 requires authorization from the relevant environmental authorities if petroleum activities are carried out in national protected areas or in buffer zones or conservation areas, and must always comply with regulations.

With increasing recognition of the environment as a 'user' or stakeholder, and given the considerations set out in the first paragraph of this section, it becomes imperative that petroleum legislation give greater recognition and legislative space to the protection of biodiversity and the integrity of ecological systems. This requires a greater integration of the views of the authority responsible for environmental protection but also the local communities in the area.

### 6.4.3. Production ceiling and conservation of petroleum

**References to conservation of resources in petroleum legislation often refer to the petroleum itself.** This is captured best in the Timor-Leste *Petroleum Act (2005)*, which, under the rubric of work practices, calls for operations to be conducted in accordance with good oil field practices aimed at conserving petroleum. The law calls for using methods and processes that maximize the recovery of petroleum in a "technically and economically sustainable manner, with a corresponding control of decline of reserves, and to minimize losses at the surface" (Article 23).

**Prescriptions on the optimal rates of depletion, controlling the numbers of licences issued and limiting the number of production sites that are approved are all mechanisms by which to enhance sustainable production** (Hunter, 2010). Establishing production limits may also buffer the economy from the sudden injection of petroleum-

sourced cash. Algeria's *Law (No. 05-07 of 2005)* on hydrocarbons calls for resources to be exploited in a manner that ensures optimal conservation, while respecting the rules of environmental protection (Article 3). In this case, 'conservation' is defined to mean the highest possible level of production compatible with the highest possible recovery rate of reserves. Under Article 49, the licensee is required to apply the necessary methods for optimum conservation of deposits, and for this purpose each development plan of a deposit must contain work and expenditure commitments aimed at optimizing production throughout the life of the deposit. Though an older text with respect to the scope of this Study, Papua New Guinea's *Oil and Gas Regulations (No. 10 of 2002)* set a production rate restriction (regulation 191) by limiting the daily quantity of oil from a pool, with consideration given to the use of gas for production of the oil, the demand for oil from the pool and the ultimate recovery of the oil. Notably, the competent authority is also empowered to vary the rate of petroleum recovery from a pool where a licensee is not complying with imposed conditions. Companies are expected to set up gauging and metering facilities to continuously measure the quantities of oil, condensate, water, and gas from each producing field (regulation 184). A monitor and control mechanism is to be used to control the rate of recovery of petroleum from wells (regulation 187). The Regulations also set out measures to enhance reserves recovery (regulation 192). The Canadian (New Brunswick) *Oil and Natural Gas Act (S.N.B. 1976, c. O-2.1, as amended in 2015)* allows the minister to restrict the rate of production (Section 37). 'Waste' is defined in this text as underground or surface loss of potentially recoverable oil; and 'wasteful operation' is defined through a listing of the various practices, procedures and methods that result in reducing the quantity of oil that is ultimately recoverable. The responsible minister can authorize certain procedures such as re-pressuring, recycling, or pressure maintenance to prevent waste.

### 6.4.4. Environmental management systems

**Some legislation makes environmental management systems (EMSs) compulsory.** The Bahamas *Petroleum (Offshore Environmental Protection and Pollution Control) Regulations (S.I. No. 39 of 2016)* stipulate that where an environmental authorization is issued, an EMS, consistent with the International Organization for Standardization (ISO) 14001 standard, should be implemented. The text states that a key component of an EMS is the development and implementation of an environmental management plan. Canada's (New Brunswick) *Pipeline Filing Regulation 2005 (N.B. Reg 2006-3)*, issued under the *Pipeline Act (S.N.B. 2005, c. P-8.5)* requires evidence that indicates that an applicant for a licence has developed, or is in the process of developing, an environmental management system in line with ISO 14000 or similar standard (see Box 6.3).

**Box 6.3**
**ISO 14001**

According to the International Organization for Standardization (ISO), the federation of national standards bodies (ISO member bodies), standards falling under the ISO 14000 family of umbrella provide practical tools to manage environmental responsibilities. The most recent version, ISO 14001: 2015, offers a framework to protect the environment and respond to changing environmental conditions in balance with socio-economic needs. It facilitates the enhancement of environmental performance; the fulfilment of compliance obligations; and the achievement of environmental objectives.

*Extracted from:* ISO, n.d.

Brazil's Resolution *ANP establishing the requirements to be met by the rights' holders of exploitation and production of oil and natural Gas (No. 21 of 2014)* issued under *Law on the exploitation and production of oil, natural gas and other liquid hydrocarbons (No. 12.351 of 2012)* mandates an EMS that is in line with oil industry best practices.

*Regulation ANP on Pipelines for the transport of petroleum, its by-products and natural gas (No. 2/2011)* sets out the minimum operational security standards for pipelines, including off-shore facilities, and requires the operator to have a management system in place. The Canadian (Nova Scotia) *Offshore Petroleum Drilling and Production Regulations (SOR/2009-317)* require an effective overall management system that integrates operations and technical systems with the management of financial and human resources. The system should include the processes for: (i) setting goals for the improvement of safety, environmental protection and waste prevention; (ii) for identifying hazards, and for evaluating and managing the associated risks; and (iii) for ensuring and maintaining the integrity of all facilities, and equipment necessary to ensure safety, environmental protection and waste prevention. This system integrates aspects such as addressing the internal reporting and analysis of hazards and injuries, and incidents for taking corrective actions to prevent their recurrence. The system is underpinned by documentary requirements for all processes, and the requirement of periodic review, audits and taking corrective actions.

### 6.4.5. Climate change provisions

Greenhouse gases (GHG) may result directly at the petroleum production stage from installations (for example, through venting and flaring, see Section 6.5.2), and also through the use of fuel along the processing chain and fuel for energy or transport. **Many countries have enacted separate legislation, for example, to limit pollution from vehicles.** An example of the latter is the European Union *Directive (2009/30/EC)*. This Directive addresses the quality of fuels, establishing the technical specifications on health and environmental grounds of fuels for certain engine types, and setting a target for the reduction of lifecycle GHG emissions.

**However, atmospheric emissions that occur during production that are related to extraction, for example, combustion in engines and turbines, gases from loading, etc.,** (Anis and Siddiqui, 2015) **could be addressed in petroleum legislation directly**. From a climate change perspective, a majority of petroleum legislation under review did not

seek to incentivize or mandate the restriction of GHG, or prescribe keeping these emissions below certain levels. These prescriptions may, however, be found in other climate change-specific (or environmental legislation) that prescribes emission limits for different types of industries. Petroleum legislation could make reference to such limits or include wording that recognizes the objectives of reducing emissions. The Costa Rican *Decree No. 36 693/MINAET on a national moratorium for oil production activities (2011)* placed a three-year moratorium on petroleum activities (although it preserves existing rights) and cites Costa Rican legislation that approved the Paris Agreement of the United Nations Framework Convention on Climate Change. Clause (viii) of the preamble of the Decree reaffirms the target of orienting the country's economy towards carbon neutrality by 2021, and a commitment of reductions at 44 percent. The perambulatory text also references the Sustainable Development Goals and the urgent efforts of the country to enable modalities of sustainable consumption and production.

In a novel approach, given the similar operating space of GHG capture offshore and petroleum extraction, the Australian (Victoria) *Offshore Petroleum and Greenhouse Gas Storage Act (No. 10 of 2010, as amended in 2015)* is aimed at both petroleum production and regulating the storage of geological carbon dioxide. The very lengthy piece of legislation addresses petroleum exploration and recovery; exploration for geological GHG storage formations; and construction relating to infrastructure and pipelines for both industries.

## 6.5. A focus on mechanisms to prevent and remedy pollution

### 6.5.1. General provisions

Major oil spills garner global attention. Even comparatively smaller spills that appear lower than others in total volume may have a disproportionately significant impact on local communities or the environment. Both the production and transport phases pose significant risks of pollution.

**Petroleum laws typically require noise, air and water pollution to be minimized and prevented.** Often this means that a licensee must have a plan to prevent pollution and take steps to minimize pollution; such is the case with the Sierra Leone *Petroleum (Exploration and Production) Act (2011)*. Some petroleum laws contain few specifics and instead make references to general environmental legislation, for example, Angola's *Law approving the legislation on crude oil refining and transport, storage, trade and supply of petroleum products (No. 28/11 of 2011).* Clear mandates for environmental monitoring by the authorities should be put in place, and a framework for cooperation should be set up. The Timor-Leste's *Decree-Law on the National Authority on Petroleum (ANP) (No. 20/2008)* empowers the ANP to take coordinated action, including involving neighbouring Australian authorities, to prevent and mitigate pollution.

**Protection of water resources from risks at different stages of petroleum operations involves the taking of measures to prevent pollution as well as depletion related to water abstraction.** Zambia's *Petroleum (Exploration and Production) Act (No. 10 of 2008)* in Section 54 requires a licence holder to adopt certain practices that prevent petroleum spills or chemical mixtures from entering water bodies. Peru's *Supreme Decree – Regulation for environmental protection in hydrocarbon activities (No. 039/14/EM of 2014)* Article 57 requires permits for the disposal of wastes in water bodies or on land. Industrial wastewater is to be segregated and treated separately to comply with the respective maximum permissible limits in force. The licence holder must demonstrate through dispersion models or other studies that the wastewater disposal does not compromise the current or future intended uses of the receiving body.

**Some jurisdictions have been seen to take strong conservationist approaches when required.** For example, the Costa Rican *Decree on a national moratorium for oil production activities (No. 36 693/MINAET of 2011)* placed a three-year ban on petroleum production activities (though rights acquired before the date of promulgation were not affected). The perambulatory provisions indicate that the rationale for the moratorium was other legislation that moved the country away from reliance on

extractive industries, and climate change strategies that usher in carbon neutral practices.

### 6.5.2. Gas flaring restrictions

**Legislation and other initiatives (see Box 6.4) seek to prevent routine gas flaring.** The latter practice of the burning of gas during production is one source of greenhouse gas emissions. Pollution from the petroleum sector ranges from vehicle emissions at the final stage back through the processing stage to spills or gas flaring. Zambia's *Petroleum (Exploration and Production) Act (No. 10 of 2008)* requires the authorization of the minister to carry out flaring (except in an emergency). The Bahamas *Petroleum (Offshore Environmental Protection and Pollution Control) Regulations (S.I. No. 39 of 2016)* forbids continuous venting flaring unless permitted in the environmental management plan, and unless released in accordance with such plan. In these cases, Section 18 requires the operator to maintain a record of flares (volume, flared, burn, duration, reasons, etc.). Outside of these authorizations, the operator must notify the minister each time an unauthorized flare is released.

**Box 6.4**
**Global Gas Flaring Reduction Partnership (GGFR)**

Under the aegis of the World Bank Group, the GGFR is public-private initiative of 62 petroleum companies, governments and international organizations, which commits these bodies to end routine flaring at existing oil production sites as soon as possible, and no later than 2030 under the "Zero Routine Flaring by 2030" Initiative. The GGFR seeks to leverage the natural gas associated with oil production through research and disseminating best practices, by removing technical and regulatory barriers, and by establishing country-specific gas flaring reduction programmes.

*Extracted from:* World Bank, n.d.

**Gas flaring wastes a resource that may be productively used or conserved.** Waste can be a result of technological and infrastructural barriers to capturing the gas, as well as a limitation in gas markets. Canada's (New Brunswick) *Petroleum Act (S.N.B. 2007, c. P-8.03)* defines as a "wasteful operation" (which may be prohibited by Ministerial Order) as any flaring or escape of gas that, following good practices, and risk and economic assessments, could have been gathered, processed, stored or beneficially injected into an underground reservoir. This Act limits the total amount of natural gas that may be produced from any pool:

> Having regard to the market demand for natural gas, as determined by [the Minister] to an amount required for the efficient use of natural gas for the production of oil and for the efficient utilization of the natural gas reserve of the Province (Section 37).

### 6.5.3. Air and soil quality standards

**Petroleum legislation (or general environmental legislation) may establish the legal basis for instruments that detail emissions limits, air quality standards, as well as effluent discharge standards.** Peru's *Supreme Decree – Regulation for environmental protection in hydrocarbon activities (No. 039/14/EM of 2014)* establishes maximum permissible limits for atmospheric emissions, as well as environmental air quality standards (Article 59). The licence holder must demonstrate, through the use of dispersion models, the effect of such emissions on air quality. The environmental authority may set out limitations on the flows of atmospheric emissions streams when these may compromise compliance with the environmental air quality standards. The Mexican *Official Standard (NOM-138-SEMARNAT/SSA1-2012)* aims to support the remediation of soils in contaminated sites and reduce the environmental impact of waste. It establishes the maximum permissible limits of petroleum in soils, sets out guidelines for sampling, and establishes specifications for remediation. South Africa's *National Environmental Management: Waste Act (No. 59 of 2008)* empowers the minister to set out quality standards for the remediation of sites that are contaminated.

**The discharge of hazardous substances may be prohibited, unless that hazardous substance is specified in the approved environmental management plan and discharged accordingly.** Contamination of land, soils and water sources are often addressed as these not only impact the site's soil and vegetation, but that of adjacent sites, including groundwater and neighbouring water bodies. The Bahamas *Petroleum (Offshore Environmental Protection and Pollution Control) Regulations (S.I. No. 39 of 2016)*, issued under the *Petroleum Act (2016),* prohibits operators from using drilling fluid other than those that are water-based or synthetic-based. Oil residues should not be discharged into the sea, but either retained on board, off-loaded or discharged into a reception facility.

### 6.5.4. Liability provisions, and other mechanisms to prevent and address spills and accidents

**Liability may attach to the licensee for pollution, irrespective of fault.** Pollution has a broad spectrum of significant impacts on fishing, water resources, biodiversity and land, in addition to secondary effects on tourism, land value, and other economic impacts. Under the Bahamas *Petroleum Act (2016)*, a licence holder shall be strictly liable for environmental damage without regard to fault, except where demonstrated and proven to the minister, that the damage was caused by a *force majeure*, an act of terrorism or an act of war, and also that the licence holder has taken all reasonable preventative measures to reduce and mitigate the environmental damage. *Directive 2013/30/EU on safety of offshore oil and gas operations and amending Directive 2004/35/EC* stipulates that member states shall ensure that the licensee is financially liable for the prevention and remediation of environmental damage. The Directive requires competent authorities in member states to establish policies, processes and procedures for the thorough assessment of reports on major hazards and notifications. Competent authorities are also to use inspections, investigations and enforcement actions to enable compliance by operators. Under Sierra Leone's *Petroleum (Exploration and Production) Act (2011)*, operators shall be liable for pollution damage related to their operations without regard to fault, and where licence holders are more than one, they shall all be liable in proportion to their

participating interest. This liability may be reduced in the case of *force majeure*. Both the Sierra Leone Act and the European Union Directive hold the licence holder responsible for pollution caused by a contractor.

**Taking insurance against pollution risks, as well as paying damages and compensation may be mandatory in legislation.** Under Zambia's *Petroleum (Exploration and Production) Act (No. 10 of 2008),* the licensee is held strictly liable for any environmental damage, damage to human or animal health or to socio-economic conditions caused by operations, including damage to agricultural production or any reduction in yields of the local community. The licensee is also required to pay compensation. In the case of biodiversity or environmental damage, compensation shall include the cost of rehabilitation or clean-up. Where any harm is caused to human and animal health, compensation shall include the cost of medical expenses, compensation for disability and compensation for loss of life. Furthermore, a claim may be brought by any person, group of persons, or private or government organization. Importantly, the legislation makes it clear that no costs are to be awarded against persons who bring forward unsuccessful claims, where the claims were made reasonably out of concern for the public interest. The Bahamas *Petroleum (Offshore Environmental Protection and Pollution Control) Regulations (S.I. No. 39 of 2016)* stipulate that the licence holder is otherwise required to pay for the remediation of damage caused, and to compensate persons who have incurred expenses or property damage as a result.

**The operator has a duty to immediately report spills and accidents to the competent authority.** The Sri Lankan *Offshore Exploration for and Exploitation of Natural Resources including Petroleum (Marine Environment Protection) Regulation (2011)* mandates the reporting of spills of oil or any harmful substances by the fastest means possible and with the highest priority. In particular, where the emergency response procedure requires resources that are not available to the person responsible for clean-up or containment, that fact shall also be communicated as swiftly as possible. The Sri Lankan text also requires accident reporting where the installation or equipment may be defective or where there has been an accident (Section 24). The lodging of such report may trigger inspections by the competent authority.

**Emergency plans may set out procedures for addressing pollution emergencies.** Australia's (Western Australia) *Petroleum (Submerged Lands) (Environment) Regulations (2012)* establishes that an oil spill contingency plan should set out particulars such as preparatory and emergency response arrangements; recovery procedures; and oil spill trajectory modelling. The Bahamas *Petroleum (Offshore Environmental Protection and Pollution Control) Regulations (S.I. No. 39 of 2016)* requires the submission to the competent authority of a pollution emergency response procedures plan that entails the aspects to be prescribed in a Schedule. License holders must periodically test these procedures, maintain records of such tests and make such records available for inspection. Peru's *Supreme Decree – Regulation for environmental protection in hydrocarbon activities (No. 039/14/EM of 2014)* makes reference to emergency legislation and requires licence holders to assume the obligations contained therein, and to execute the actions spelled out in authorized plans (Article 67). Once an incident is reported, the competent authorities shall investigate the cause and verify proposed mitigation measures.

### 6.5.5. Remediation and rehabilitation

**Authorities may approve the scope of required rehabilitation, the time frame for the activities identified, the cost and the monitoring mechanism.** Peru's *Supreme Decree (No. 039/14/EM)* requires a rehabilitation plan to be submitted after an emergency, and to be carried out within 20 business days. The Supreme Decree also establishes financing provisions for the environmental remediation of sites that have abandoned wells, contaminated soil, spills and leaks, emissions, residues and other pollution and waste. Responsibility for environmental remediation is borne by the operator. Under the Bahamas *Petroleum (Offshore Environmental Protection and Pollution Control) Regulations (S.I. No. 39 of 2016),* regulation 42 stipulates that the minister responsible for the environment shall calculate the approximate costs to restore the affected natural resources. Proposals to repair environmental damage by the licensee shall include: (i) the measures necessary for remediation, with justifications; (ii) the period within such measures should be

carried out; (iii) monitoring schemes; and (iv) costs for all the actions described. In the Bahamas *Petroleum Act (2016),* the language used is 'restoration', and the power of the minister includes verifying whether a titleholder has sufficiently restored the premises such as not to pose a threat to the environment or health. Trinidad and Tobago's *Petroleum Act (Chapter 62:01, as amended in 2010)* requires the licensee to restore the licensed area to its natural and original condition in so far as is possible (Section 16). The minister can issue a remediation order to be implemented at the cost of the person to whom such order is directed. Section 42 requires the keeping of a register of contaminated land areas.

**Legislation may set out the specific measures for rehabilitation or remediation.** The Argentinian (Santa Cruz) *Law on the Environmental Sanitation Program (No. 3 122 of 2010)* establishes a program that offers (i) general cleaning of the (land) surface of the deposits; (ii) sanitation of the subsoil by oil spills; (iii) afforestation and planting of native species; (iv) construction of enclosures to deposit waste from the activity; (v) sanitation and preservation of natural sources of drinking water; and (vi) limitation of access to wells, batteries and petroleum facilities and infrastructure. Under the Australian (Victoria) *Offshore Petroleum and Greenhouse Gas Storage Act (No. 10 of 2010)* the minister may give remedial directions to petroleum titleholders (including past titleholders) to remove property, plug or close off wells, conserve and protect natural resources, and make good any damage to the seabed or subsoil (Section 634). This piece of legislation details all the particulars of such remedial directions including the form. Malta's *Act amending the Petroleum (Production) Act (No. XIV of 2015)* stipulates that the minister may establish different regulations for different kinds of licences and set out conditions for financial liability for any prevention and remediation of any damage, including to the environment.

### 6.5.6. Permits and plans for waste management

Waste from petroleum operations is generated directly by petroleum production or processing operations, as well as from the waste from personnel managing the operations. Waste can be disposed of, incinerated or in some cases recycled.

**Legislation may call for the development of a waste management plan.** The Bahamas *Petroleum (Offshore Environmental Protection and Pollution Control) Regulations (S.I. No. 39 of 2016)* forbids the discharge of waste into the sea except in prescribed cases (Section 22). The text requires the development of a waste management plan which must contain procedures for minimizing, collecting, storing, processing, and disposing of waste, including the use of related equipment on the vessel.

**Specific waste management measures may be set out in the legislation directly.** Legislation may declare the type, concentration, and quantity of the discharge of waste, the duty to obtain discharge permits, and to pay charges for discharge of waste or pollutants. Angola's *Executive Decree approving the Regulation on operational waste discharge management (No. 97/14 of 2014)* outlines in detail the requirements to be satisfied in all waste discharge operations whether on land or off-shore. It includes various discharge prohibitions, the regulation of chemical dispersants and the obligations of operators with respect to waste management plans. Peru's *Supreme Decree – Regulation for environmental protection in hydrocarbon activities (No. 039/14/EM of 2014)* makes reference to separate pieces of legislation each for solid and inorganic and organic waste, including addressing temporary storage and disposal (Article 55). Organic solid waste is to be disposed of using incinerators, biodegradation or other environmentally accepted methods. Non-solid waste management should be addressed in plans that must be approved by the environmental authority. License holders are expected to monitor the respective control points of the effluents and emissions, carry out physical and chemical analyses, and compile periodic monitoring reports.

### 6.5.7. Record-keeping

**Detailed reports may be required to be kept by operators regarding measures taken to prevent or address pollution and waste.** Sri Lanka's *Offshore Exploration for and Exploitation of Natural Resources including Petroleum (Marine Environment Protection) Regulation (2011)* contains detailed requirements on record-keeping: specifically, an anti-pollution record book, an oil record book and a garbage record

book. A designated person who is responsible for the anti-pollution record book is required to keep track of matters such as: maintenance of equipment that records oil discharge; treatments and the methods for discharging water polluted with oil; any accidents, oil leakages or blowouts; and, tracking the use of chemical dispersants (regulation 21). Oil record books are required to contain a longer list of technical data such as loading details, and cleaning or ballasting of oil storage tanks. Statements recorded in this book are required to be signed by the person in charge. The Bahamas *Petroleum (Offshore Environmental Protection and Pollution Control) Regulations (S.I. No. 39 of 2016)* contains similar requirements relating to waste management record books.

### 6.5.8. Certification

**Compliance with prescribed national or international standards may be required, including a certification of such compliance.** Both the Bahamas *Petroleum (Offshore Environmental Protection and Pollution Control) Regulations (S.I. No. 39 of 2016)* and the Sri Lankan *Offshore Exploration for and Exploitation of Natural Resources including Petroleum (Marine Environment Protection) Regulation (2011)* require an operator to obtain a valid International Oil Pollution Prevention (IOPP) certificate. The IOPP certificate is issued against the standards of the MARPOL Convention *(International Convention for the Prevention of Pollution from Ships, 1973, as modified by the Protocol of 1978)* that targets the prevention of pollution of the sea by ships. An IOPP certificate can be issued by a competent authority within the country, or by or on behalf of another state that is party to the MARPOL Convention. According to regulation 25 of Sri Lanka's instrument, initial and renewal inspections are to verify if the structure, equipment, systems, arrangements, record books and emergency response procedures comply with the Regulations.

### 6.5.9. Financial guarantees

**Deposits, bonds or other types of financial guarantees may secure fulfilment of environmental, rehabilitation and other commitments by the operator, and mitigates the risks associated with an operator reneging on commitments to remedy pollution or other negative**

**environmental impacts.** The Canadian (Northwest Territories) *Oil and Gas Operations Act (S.N.W.T. 2014, c. 14)* states that an applicant should provide "proof of financial responsibility in the form of a letter of credit, guarantee or indemnity bond" in the form or amount approved by the competent authority (Section 62). Such applicant should ensure that the guarantee remains in force for the duration of the activity. These funds can also be used in respect of claims that are made against the applicant (operator) through legal proceedings. Similarly, Peru's *Supreme Decree– Regulation for environmental protection in hydrocarbon activities (No. 039/14/EM of 2014)* sets out a performance guarantee system in Article 100, where in connection with abandonment of facilities, a letter of guarantee must certify the commitments in the abandonment plan, supported by an amount equal to 75 percent of the total required amount. The funds will not be reimbursed unless the abandonment plan has been executed to the satisfaction of the environmental authority.

### 6.5.10. Decommissioning and abandonment measures

**Legislation may set out general decommissioning obligations and any liabilities, and these may be adjusted by the terms of a licence.** Most importantly, legislation often explicitly notes that the end of a term of a licence, and abandonment of facilities does not extinguish any outstanding obligations, liabilities or breaches of terms that are verified at a later stage. Legislation may also stipulate very specific standards relating to residues and contamination in soil.

**Most countries require submission and approval of abandonment and rehabilitation plans.** Peru's *Supreme Decree – Regulation for environmental protection in hydrocarbon activities (No. 039/14/EM of 2014)* characterizes the abandonment plan as the set of actions that are required to terminate petroleum activities and to abandon facilities or areas, and to correct any adverse environmental conditions, by implementing any reconditioning needed to return the area to its natural state, or to leave it in a condition appropriate to its new use. The rehabilitation plan is a complementary environmental management instrument seeking to recover altered functions of the ecosystem detrimentally impacted by the activities and that could not have been

prevented or mitigated. Most plans are required prior to the issuance of a licence, although Sierra Leone's *Petroleum (Exploration and Production) Act (2011),* for example, requires the plan to be submitted three months prior to the termination of the licence, the Peruvian text allows for these plans to be submitted when the activity is winding down (Article 98). The abandonment plan, to be prepared by three professionals in prescribed disciplines, is required to consider the foreseeable future use that will be given to the area, the current geographical conditions and the original conditions of the ecosystem (Article 99). The plan must include decontamination, restoration, reforestation, removal of facilities and such other measures as necessary and must set out a timetable for execution. The abandonment plan must be informed by the environmental assessment. A review of the plan is to be carried out by the environmental authority within 30 days and authorization is required before the plan can be executed (Article 101).

**Abandonment and decommissioning stages are also often subject to separate financial stipulations.** Under the South African *Regulations pertaining to the financial provision for the rehabilitation, closure and post-closure of prospecting, exploration, mining or production operations (No. 940 of 2014),* issued under *National Environmental Management Act (No. 7 of 1998)*, the licence-holder must make financial provision for rehabilitation, decommissioning and remediation. A licence holder is deemed to be going through closure if the average production decreases by 60 percent from the previous year, or if the workforce is reduced by 90 percent, or if facilities or equipment are removed, or if a care and maintenance plan has been in place for five years. The text sets out the procedure for determining the cost, calculated on the basis of actual costs. This must be through a contribution to a trust fund, or in the form of a guarantee by a bank registered under prescribed legislation. The figure must be subjected to annual review by three professionals of prescribed competencies. Under Sierra Leone's *Petroleum (Exploration and Production) Act (2011),* where decommissioning is not carried out in accordance with requirements in a timely manner, the minister may take the required action at the licensee's risk and cost. A penalty is in place for a licensee that does not comply with the terms of legislation

or the plan with regard to decommissioning. A decommissioning fund is established under the Act, to be used exclusively for that purpose, and upon agreement with the minister as to the amount and payment schedule, the licensee shall make payments into the fund. Where the amount in the fund is insufficient to cover a decommissioning plan, the licensee shall be liable for the shortfall. Where the state takes over petroleum facilities (for example, at the end of a licence), the competent minister assumes responsibility for decommissioning at such costs and such terms as to be agreed with the licensee.

## 6.6. Collection and management of petroleum revenue

Sound management of revenue is dependent on a country context that is characterized by the rule of law and good governance – these concepts are canvassed in Chapter 2 of this book.

### 6.6.1. Collection of revenue

**Many countries seek to maximize the benefits accruing to the state and public while at the same time, attempting to maintain a favourable fiscal and regulatory environment for investors.** Ecuador's *Law for Equity Tax Reforms (2007)* established an amended framework for taxation of corporate income of companies that have signed contracts with the state for exploration and exploitation of non-renewable resources, and that have generated sales at prices higher than those agreed or foreseen in the respective contracts (Article 165); the rate for this special tax is established at 70 percent. The basis of this tax is, as stated in the preamble, to reduce inequalities and seek greater social justice, achieve an equitable distribution of wealth. The preamble goes further to highlight that more than providing public resources to the state, a tax system, based on a true capacity to contribute, allows the stimulation of investment, savings and a better distribution of wealth. Brazil also establishes a scheme of special financial compensation (at rates from 10 to 40 percent of the net revenue) to be paid to the municipality, state and federal government when a particular area under a concession yields a higher than expected production volume (Pires, 2013). On the

other hand, states may offer attractive regulatory incentives to enable the operation of petroleum activities in their countries. Argentina's *Law (No. 26 154 of 2006)* creates promotional regimes for the exploration and exploitation of onshore and offshore hydrocarbons, setting out a time period and other conditions through which fiscal tax allowance benefits can be accessed.

**The most common mechanisms for generating revenue from petroleum activities are royalties and taxes for production.** In the Trinidad and Tobago *Petroleum Regulations (Chapter 62:01 of 2009),* a licensee must pay an annual surface rent and any other related payments prescribed in the licence, such as rate per acre (Section 60). Exploration and production licensees are required to pay royalties at the rate stipulated in the licence, and Sections 66 to 69 of the regulations contain details as to how the value of petroleum is calculated for the purposes of calculating royalty cash payments. Exploration and production licensees are required to pay royalties at the rate stipulated in the licence, and Sections 66 to 69 of the regulations contain details as to how the value of petroleum is calculated for the purposes of calculating royalty cash payments. The Bolivarian Republic of Venezuela's *Organic Law on Hydrocarbons (2006)* on the other hand, imposes a standard 30 percent royalty rate to be awarded to the state, which can be reduced to 20 percent for a certain period if the higher rate would render the operation commercially unfeasible (Article 44). Royalty agreements where the details are set on a case by case basis increases the likelihood for corrupt practices, and arbitrary conditions to be imposed unless such agreements are subsequently made public. Both the Trinidad and Tobago Regulations and the Venezuelan Law allow for the state to receive petroleum as payment in lieu of an agreed royalty or to receive payments in kind. While the Venezuelan legislation charges a 10 percent tax for oil used within the operations, the Trinidad and Tobago legislation does not impose charges on this use. The Venezuelan statute sets out a number of different types of taxes: surface tax, own consumption tax, general consumption tax and extraction/production tax and export registration tax.

**As an alternative or supplement to imposing royalties on production,** Australia taxes profits from the sale of prescribed marketable petroleum commodities (such as crude oil, liquefied petroleum gas, etc.) as a "fiscal regime that encourages the exploration and production of petroleum while ensuring an adequate return to the community" (Australian Taxation Office, 2002). This regime is set out in the Australian *Petroleum Resource Rent Tax Assessment Act (No. 142 of 1987, amended in 2016*).

**Rent payments for land on which reserves are located or installations are set up, also generate income.** In the Trinidad and Tobago *Petroleum Regulations (Chapter 62:01 of 2009)* a licensee must pay an annual surface rent and any other related payments prescribed in the licence, such as rate per acre (Section 60).

**Signing and production bonuses are also used by the state to generate revenue from the oil company.** Signing bonuses are paid by the company that has won a tender; and in some countries such as Brazil, petroleum legislation requires that the tender document indicate the fee payable when the concession agreement is executed. Guinea's *Petroleum Code (No. 034 of 2014)* establishes both signing bonus at the start of a contract and a production bonus when production hits a threshold established in the contract.

### 6.6.2. Funds for investment and other purposes

**Funds are a frequent feature of petroleum laws.** It should be noted that different pieces of legislation may be required to give effect to macro policies that consider future petroleum production and prices, save parts of oil revenues, acquire external financial assets, and diversify the economy against dependence on the petroleum sector.

**The most common type of fund captures revenues from petroleum activities and allocates the funds towards various investments and targets.** Mauritania's *Ordinance creating a National Fund for Hydrocarbon Revenues (No. 008 of 2006)* stipulates that the fund comprises 'upstream' revenues from production, exploration and development of hydrocarbons. These revenue sources include: shared profits of the government in joint

ventures; royalties, taxes and fees; dividends from companies benefiting from state participation; bonuses; and fines. The Minister of Finance may delegate management to the Governor of the Central Bank of Mauritania through a delegation agreement. Such agreement sets out the terms and conditions for the delegated management of the fund, including an optimal management profile. The agreement is subject to the approval of the Council of Ministers.

**Investments should yield long-term future returns and reduce reliance on petroleum revenues over time. Economic diversification is critical for sustainable development of the sector and of the country. Expenditure from a petroleum fund should be capped at an annual rate and disbursed in accordance with specific fiscal conditions that are flexible enough to evolve with best practice strategies.** Timor-Leste's *Law establishing the First Amendments to the Fund for Petroleum (No. 12 of 2011)* sets out prescriptive investment rules in Article 15; for example, that the investment should be in a foreign jurisdiction, and not less than 50 percent of eligible investments shall be in the form of bank deposits or interest-bearing debt instruments such as fixed rate bonds and debt securities or other fixed income assets. The Law seeks to ensure a diverse investment portfolio that increases returns and limits exposure to risks. The Timor-Leste statute recalls in its preamble the Santiago Principles proposed by the International Working Group on Sovereign Wealth Funds. These Principles represent best practices in governance and investment policy for sovereign wealth funds and are designed to enhance transparency, good governance, accountability and prudent investment of countries at all stages of development (IWG, 2008). The legal framework references in the Santiago Principles are extracted in Box 6.5.

**Box 6.5**
**Sovereign Wealth Funds (SWF) Generally Accepted Principles and Practices (Santiago Principles): a focus on select legislative requirements**

**GAPP 1.** Principle — *The legal framework for the SWF should be sound and support its effective operation and the achievement of its stated objective(s).* A sound legal framework underpins a robust institutional and governance structure of the SWF and a clear delineation of responsibilities between the SWF and other governmental entities. This framework facilitates the formulation and implementation of appropriate objectives and investment policies, and is necessary for an SWF to operate effectively to achieve its stated purpose.

**GAPP 1.1.** Subprinciple — *The legal framework for the SWF should ensure legal soundness of the SWF and its transactions.* First, the establishment of the SWF should be clearly authorized under domestic law. Second, the legal structure should include a clear mandate for the manager to invest the SWF's assets and conduct all related transactions. Third, irrespective of the particular legal structure of an SWF, the beneficial and legal owners of the SWF's assets should be legally clear. Such clarity contributes to accountability in the home country, and is often required under the recipient countries' regulations.

**GAPP 1.2.** Subprinciple — *The key features of the SWF's legal basis and structure, as well as the legal relationship between the SWF and other state bodies, should be publicly disclosed*. Disclosure of the legal basis and structure of the SWF enhances the public understanding and confidence in the mandate to manage public monies. Clarity and disclosure of the legal relationship between the SWF and other state bodies (such as the central bank, development banks, other state-owned corporations and enterprises) contributes to a better understanding of the mandated responsibilities of the SWF vis-a-vis other government bodies, and of the SWF's institutional set-up and organization structures to ensure that it is managed professionally.

*Extracted from:* IWG, 2008.

The Norwegian Government Pension Fund Global, owned by the Ministry of Finance and managed by the Norges Bank, is currently the most successful sovereign wealth fund, set up by the *Government Petroleum Fund Act (No. 36 of 1990)* with a change to its present name through the *Pension Fund Act (No. 123 of 2005).* It is the largest of its kind, established on the basis of petroleum revenues that were invested in financial assets abroad. In 2017, the Fund surpassed USD 1 trillion in assets. The Fund is invested outside of Norway in such manner as to "shield the non-oil economy, and to make sure that private sector investment decisions could be made independently of the public sector's saving of petroleum wealth," which enhances return and reduces the risk (Norges Bank, 2008). Common characteristics of sovereign wealth funds are long investment timelines, no leverage and no claims for short-term withdrawal of funds, thus accommodating short-term risk and volatility (Norges Bank, 2008). The Norges Bank considers that isolating petroleum revenues allows a higher rate of petroleum extraction, and therefore petroleum funds are deployed in international financial markets, which indirectly stabilizes the oil market (Norges Bank, 2008). Norway's 'fiscal rule' whereby the petroleum revenues transferred to the national budget are capped at 4 percent annually, enables the finite resource to be converted into long-term and sustainable wealth, enjoyed by the country's future generations. It should be emphasized that the management of the fund itself is based on sustainable development principles. Ethical guidelines for the management of the Fund were established in 2004, conditioning "sound financial return over time to be conditional upon sustainable economic, environmental and social development, as well as well-functioning, legitimate and efficient markets" (Ministry of Finance, 2017). The government's considerations as a responsible investor include consideration of environmental social and governance criteria, in particular climate change, children's rights and water management.

**Capital is often disbursed for investment into socio-economic projects.** The Australian (New South Wales) *Petroleum (Onshore) Regulations (2016)* allow for the responsible minister to declare a fund administered by a government entity in order to provide benefits to a community (Section 45). Angola's *Presidential Decree creating the Fund*

*for Petroleum, as amended by Presidential Decree No. 24/12 (No. 48/11 of 2011)* establishes a Fund to support investment in foreign and domestic energy and water projects, and in other strategic infrastructural projects.

**Prudent use of petroleum revenues must consider not only environmental and social goals but also the impacts of sudden, short-term injections of cash in national economy.** While it is useful for states to invest revenue on infrastructure that will transform natural resources into development for the community, it is not a sustainable approach to invest in one-off projects that temporarily plug existing gaps in the infrastructure or services. Many commentators have noted the temptation to invest heavily in social dimensions of development such as hospitals, infrastructure, schools, etc., but without a sustainable economic underpinning to keep these structures and institutions running in the long-term. Many of these important considerations in regulating the sector are not immediately evident in petroleum-specific legislation.

**Funds can also be set up in benefit of the petroleum sector,** for example, Viet Nam's *Decision promulgating the Regulation on setting up, management and use of the oil and gas prospecting and exploration fund (No. 143/2008/QD-TTg)* is established to provide financial support and offset part of oil and gas prospecting and exploration risks, both for domestic activities and for activities abroad. The Canadian (Northwest Territories) *Petroleum Resources Act (S.N.W.T. 2014, c. 15)* establishes an Environmental Studies Research Fund, which is a special purpose fund to finance environmental and social studies that guide the conduct, requirements and conditions relating to petroleum activities (Section 68). The law stipulates a maximum of the fund (CAD 15 million), and allows for the following to be paid out of the Consolidated Revenue Fund: the costs for preparing and publishing environmental and social studies, expenses of Board members and related costs of administering the Fund.

Petroleum legislation may set up funds for other types of purposes than investment, for example, see Section 6.5.10 for Sierra Leone's fund for decommissioning and Section 6.7.3 for examples of funds with social objectives.

## 6.7. Leveraging benefits and protecting against negative social impacts

**Many petroleum laws contain perambulatory or preliminary articles (such as objectives) that point to socio-economic development gains as a result of petroleum exploitation.** Mozambique's *Decree establishing the legal regime for production, import/export, storage, transport and trade of petroleum products (No. 45/2012)* states the following as objectives: the creation of better standards of living; more employment; and increased sources of income particularly in rural areas.

Petroleum activities and revenue generation may create pronounced or subtle socio-economic transformations relating to income differences, cultural heritage, access to services and goods, social structure and changes in power dynamics and uneven distribution of benefits impact local communities and the country as a whole. The degree to which benefits for the local community and broader society can be leveraged from the petroleum industry (separate to revenue from recovery of the resource) may vary. Benefits to the community include employment, vocational training, social infrastructure and services investments, increased local commerce and industry, improved transport routes, and a cash injection into the local economy. The sections below address various mechanisms to shield local communities from the harmful social effects of exposure to petroleum activities or to boost positive impacts from sector operations.

### 6.7.1. Social impact assessments

**Social impact assessment (SIA) may be required by law, either in a self-standing assessment or as part of an EIA, and such assessment involves consultations with stakeholders.** Sierra Leone's *Petroleum (Exploration and Production) Act (2011)* states in Section 57 that a plan for development and operations shall be approved contingent on the approval of a social impact assessment. In preparing such assessment, the proponent shall hold consultations with representatives of local communities or citizens at risk of suffering social, environmental or economic disruption. Australia's (South Australia) *Petroleum and*

*Geothermal Energy Regulations (2013)* similarly require such impact report for any application associated with petroleum rights. Notably the text highlights the position of indigenous people's groups (see Section 6.7.5) requiring the report to include an assessment of the cultural values of Aboriginal and other Australians, as well as the public health and safety risks. The report is also required to include information on consultation with landowners, Aboriginal groups or representatives, and any other interested parties, with details provided on the issues discussed. Papua New Guinea's *Oil and Gas Act (1998)* requires social mapping and landowner identification studies to be conducted by prospecting and production licensees (Section 47) prior to first entry in an area. The studies are to be a full-scale social mapping exercise of customary landowners in the licence area, including any pipeline and other areas within 5 km of any project facility. Regulations under the Act prescribe the scope and method of a social mapping study and to set out requirements as to reports of such studies. Zambia's *Petroleum (Exploration and Production) Act (No. 10 of 2008)* makes provisions for studies that include plans for the development of a suitable town to host the project including the design of housing and associated cultural, civic and social facilities (Section 29).

### 6.7.2. Liability for any social impacts

**Liability provisions in petroleum legislation extend to adverse social impacts as well as environmental ones** (see Section 6.5.9). Many ecological impacts have social (and economic ramifications). Zambia's *Petroleum (Exploration and Production) Act (No. 10 of 2008)* includes within the scope of such adverse impacts, damage to the economy, or social or cultural conditions, or to the economy of the area or to the community (Section 71). Trinidad and Tobago's *Petroleum Act (Chapter 62:01, as amended in 2010)* covers damage or injury to any person or their rights, or any interference with other activities in the area including where relevant navigation, agriculture, fishing, research, and conservation. Angola's *Presidential Decree establishing the legal framework applicable for any activity related to petroleum products (No. 132/13 of 2013)* requires licensees to get civil liability insurance in

order to ensure that any material and bodily damages suffered by third parties will be compensated (Article 5).

### 6.7.3. Funds and bodies with social objectives

**Legislation may require the use of a prescribed portion of revenue from specific funds for social gains.** Section 6.6.2 examined the creation of funds, and explored these instruments as tools to capture and invest wealth and to shield the national economy from short-term cash flooding. Similar to the Norwegian '4 percent rule', only a low fixed annual amount of revenue should be used for immediate public expenditures.

Angola's *Presidential Decree creating the Fund for Petroleum (No. 48/11 of 2011)* indicates that the Fund may freely determine the means by which it shall pursue its objectives, including the development of major structural projects and the allocation of credit and financing facilities through the granting of loans to Angolan or foreign entities. Article 25 sets out the investment policy, which includes developing a flexible annual strategy, targeting markets abroad and also, investment in energy and water sectors in Angola and abroad. Brazil's *Law on the exploitation and production of oil, natural gas and other liquid hydrocarbons, and amending the National Energy Policy (No. 12 351 of 2010, as amended by Law No. 12 734 of 2012)* establishes the Social Fund to enable long-term savings based on petroleum revenues, and to offer resources for social and regional development. Development initiatives are focused on: education; culture; sports; public health; science and technology; the environment; and mitigation and adaptation to climate change. The legislation states that investments will be targeted primarily at assets abroad, in order to mitigate the volatility of income and prices on the national economy. The Financial Management Committee determines the investment policy, and establishes the percentage, minimum and maximum funds to be invested abroad and in the country. Ecuador's *Decree on Regulation for the execution of free and informed prior consultation in bidding processes and allocation of hydrocarbon areas and blocks (No. 1 247 of 2012)* is noteworthy for its inclusion of specific and targeted social interventions for indigenous communities by the competent authority, in collaboration with the Ministry of Social Development. These include for example,

integral child development such as nutrition in indigenous communities, improvement of the care and quality of life of the older adult population and those with disabilities, schemes for pregnant women and newborn children, comprehensive and free healthcare for persons with serious illnesses, and the construction of educational units, and water, housing and sanitation infrastructure (Article 16). The finances to cover the costs of the process are to be allocated by the Ministry of Finance (Article 25).

**Specific institutions may be established with functions geared towards socio-economic development.** The *Niger-Delta Development Commission (Establishment, etc.) Act (2000)* establishes a body that manages funds to address ecological problems arising from petroleum activities in the Niger Delta area and for connected purposes. The Commission is responsible for developing policies for the sustainable development of the area including transport infrastructure, health, education, employment, industrialization, agriculture and fisheries, housing and urban development, water supply, electricity and telecommunications. This body is also responsible for identifying factors that impede development.

### 6.7.4. Community engagement: information, consultation and participation

Mechanisms for community engagement are extensively discussed in the mining and forestry chapters, and the following examples highlight the different contexts and mechanisms for consultation processes and participation mechanisms in petroleum legislation. However, to put the below in context, a short survey conducted by the Wold Bank found that although public authorities consult stakeholders on petroleum activities, often little meaningful information is actually disclosed to the public and stakeholders, and their involvement in actual decisions relating to petroleum development is very limited (Eleodoro, 2010). In addition, where the local community is unaware of their rights, and the ways petroleum operations impact them, they will not be in a position to access redress mechanisms or monitor the project (Mutua, 2014).

**Various types of communication and notices regarding petroleum activities should be given to affected communities.** Angola's *Decree regulating access to land and acquisition of land rights to perform petroleum operations (No. 120/08 of 2008)* Article 15 states that licensees must notify third parties of the use they intend for the land and the timelines for the operations. The Australian (New South Wales) *Mining and Petroleum Legislation Amendment (Harmonisation) Act (No. 40 of 2015)* states in Section 129A, that an operator's work program should include community consultation in connection with operations. The responsible Board is tasked with making regulations with respect to the extent, nature and manner of the consultations or notifications (Section 107), and the publication of relevant reports. Sierra Leone's *Petroleum (Exploration and Production) Act (2011)* calls for consultations to be held during the preparation of an EIA, in particular where local communities are at risk of suffering social, environmental or economic disruption as a result of petroleum operations (Section 91). The Australian (Victoria) *Petroleum Regulations (S.R. No. 30/2011)* mandate that the implementation strategy for the environment management plan must include appropriate consultation over the entire life of the operations, carried out with relevant public agencies as well as other relevant interested people and organizations (Section 11).

**Petroleum legislation may provide for a multi-stakeholder consultation body.** Under the *Nigerian Oil and Gas Industry Content Development Act (2010),* the Nigerian Content Consultative Forum is established as a formal consultative body, to provide a platform for information sharing and collaboration concerning upcoming projects, and to offer information on local capabilities and other aspects relevant to Nigerian content development. This Forum is to be comprised of representatives of the following sectors: manufacturing, engineering, finance and legal services, logistics, information and communication technology, the petroleum technology association and other members. Petroleum legislation may establish other types of bodies to represent local communities in negotiations, advocacy and conflict resolution.

**The language of Free, Prior, Informed Consent (FPIC) elaborated in Chapter 2 is found in some Central and South American statutes,**

**particularly in regard to indigenous communities.** The Bolivian *Supreme Decree (No. 29 574 of 2008) amending the Consultation and Participation Regulations for hydrocarbon activities*, requires consultation and participation processes to be mandatorily applied, in advance in a timely manner, and in good faith where petroleum activities are carried out on community lands and lands used by indigenous peoples (Article 3). The procedures employed must respect the rights and customs of indigenous peoples. The state is tasked with protecting their fundamental rights, specifically relating to consultation and participation, as well as more broadly their social, economic, spiritual, cultural, environmental rights as guaranteed by the Constitution and international human rights instruments. These communities must receive (in a timely manner), sufficient and necessary information that is in an appropriate language. The text recalls the provisions of International Labour Organization (ILO) Convention No. 169, that consultations must be conducted in good faith; that all the information provided must be complete and accurate; and that access to information must be free and transparent. Article 9 of the Supreme Decree details the different phases of consultation and participation and stipulates that the results of the process will be concluded through agreements that are signed between the competent authorities and representatives of the indigenous communities. This agreement should include the views and recommendations of the consulted parties. Ecuador's *Decree on Regulation for the execution of free and informed prior consultation in bidding processes and allocation of hydrocarbon areas and blocks (No. 1 247 of 2012)* establishes participation mechanisms, sets out administrative procedures and elaborates on the social benefits received by indigenous peoples. The FPIC consultation is noted as having the objective of considering the views of local communities and indigenous peoples, and encouraging their participation in decision-making regarding the assignment of licences. The FPIC should precede planning for the allocation of blocks allocated for petroleum activities. This Decree allocates a Process Supervisor from the competent authority to oversee and record the FPIC process (Article 8), as well as Socio-environmental Facilitators from the environmental authority to offer information about the social benefits of the project, as well as the available mitigation and

social compensation measures (Article 10). The process has a time limit of 30 days; see Box 6.6 for the procedures relating to the call for consultation. The participation mechanisms explicitly recognized in Article 13 include: hearings, public presentations, briefings, extended tables and public forums for dialogue; information and socialization workshops; dissemination campaigns through the media; distribution of informative documentation, including information on the web pages of competent authorities; public consultation offices and other mechanisms that allow community access to available information.

**Box 6.6**
**Ecuador's *Decree on Regulation for the execution of free and informed prior consultation in bidding processes and allocation of hydrocarbon areas and blocks (No. 1 247 of 2012)***

**Article 11: Calls for consultation**
The Call for Consultation shall include a summary of the activity, as well as the place, date, time and methodology of the participation mechanism. At least the following information must be included as technical information: (i) identification of the location, block or area; (ii) objective of the call; (iii) the types of petroleum activities that will be carried out; (iv) the regulatory framework that governs the prior consultation process; (v) the applicable timeline and location of the consultation process, as well as instruments to be applied; (vi) the location of the consultation office; (vii) the period and schedule; and (viii) information on the social benefits of the project.

The Call for Consultation must be held simultaneously through at least three of the following means: (i) two publications on consecutive days in one of the newspapers with the largest local circulation; (ii) publication through the official website of the Ministry of Hydrocarbons and Ministry of Non-Renewable Natural Resources; (iii) radio dissemination; (iv) publication of the extract on the billboards of various competent authorities; (v) sending written communications to competent authorities, organizations and community leaders; and (vi) sending messages by loudspeakers.

As a general observation, it should be noted that, as pointed out in other chapters, local power dynamics have a role to play in how truly inclusive and representative consultations and local participation are. Youth may be excluded and women's voices may be marginalized. Gender dimensions may arise in the context of unequal distribution of benefits within a local community if women's status in that community does not allow for equitable access to benefits or recognition of land rights.

Finally, the practical aspects of consultation are not always addressed in statutes, such as the costs for participation and consultation (Eleodoro, 2010).

### 6.7.5. Recognizing and protecting indigenous peoples

**Petroleum legislation may confer specific benefits to certain groups that warrant specific recognition in legislation.** The Bolivian *Supreme Decree – Regulation of socio-environmental monitoring in hydrocarbon activities within the territory of indigenous peoples and peasant communities (No. 29 103 of 2007)* establishes the procedures and mechanisms for socio-environmental monitoring of petroleum activities on the territories of indigenous peoples and peasant communities. The monitoring process is to be financed through 0.5 percent of the total investment capital from the company. Locality Social Committees and a national Socio-Environmental Committee are mandated with the examination of impact and evaluation studies. Recommendations can be sent via these mechanisms from indigenous groups, to the licensee. Committees that take into account the customs of indigenous groups will be set up at the request of such groups in order to prepare and implement plans for socio-environmental monitoring, to develop periodic reports and to serve as a complaint mechanism.

The Canadian (British Columbia) *Oil and Gas Activities Act ([S.B.C. 2008] Chapter 36)* addresses the connection with aboriginal and treaty rights by stating that if there is a conflict or inconsistency between its provisions and the (British Colombia) *Muskwa-Kechika Management*

*Area Act ([SBC 1998] Chapter 38)*, the latter prevails (Article 83). The Muskwa-Kechika Management Area is recognized as a:

> Globally significant area of wilderness, wildlife and cultures, to be maintained in perpetuity, where world class integrated resource management decision-making is practiced ensuring that resource development and other human activities take place in harmony with wilderness quality, wildlife and dynamic ecosystems on which they depend.[12]

The Canadian (British Columbia) *Oil and Gas Activities Act (2008)* reiterates in Section 84 that its provisions respect aboriginal and treaty rights in a manner consistent with Section 35 of the *Constitution Act (1982)*. The commission should also ensure that applications process give due consideration to environmental, economic and social impacts and among its other responsibilities are encouraging the participation of First Nations and aboriginal peoples in processes affecting them (Section 4). The Canadian (Northwest Territories) *Petroleum Resources Act (S.N.W.T. 2014, c. 15)* stipulates that strict liability attaches to a person that discharges oil or gas in such manner as to result in actual loss or damage; and such loss is defined to include loss of income and specifically with regard to aboriginal peoples, the loss of hunting, fishing and gathering opportunities. The Bolivian *Supreme Decree (No. 2 195 of 2008)* instructs the owners of petroleum activities to compensate indigenous peoples and local communities for negative socio-environmental impacts. The amounts of compensation to be paid are the percentages provided for in the impact assessment (that has been previously subject to consultation and participation processes). A compensation agreement must stipulate the projects to be financed, any conditions, and disbursement intervals among other matters. If no consensus is reached after six months, the competent authority will determine the distribution of compensation through an administrative resolution.

**Some laws provide for the direct management of petroleum resources by indigenous groups.** Under the Canadian *First Nations Oil and Gas and Moneys Management Act (S.C. 2005, c. 48)*, First Nations are

[12] For more details see: M-KMA, 2013.

afforded mechanisms to obtain the requisite capacity to control, manage and capitalize petroleum resources development on their reserve lands. It is envisaged that direct control will result in improved and timelier access to economic development opportunities. In these reserve areas, First Nations may, in accordance with their legislation, manage activities, issue contracts and collect and spend associated revenue (Section 34). Any legislation issued by a First Nation regarding petroleum activities within its area of jurisdiction should not address matters under the exclusive jurisdiction of provinces, nor can such laws address criminal law and procedure, labour relations and occupational health and safety, fish and fish habitat conservation or international or provincial trade. However, First Nation legislation can prescribe rules relating to terms and conditions of contracts (including fees and royalties) for example.

**Legislation may give separate and specific protection for cultural heritage, historical or religious monuments and objects of national importance.** Article 132 of the Bolivian *Law on Hydrocarbons (No. 3 058 of 2005)* protects areas of natural, cultural and spiritual value by prohibiting petroleum projects in protected areas, Ramsar wetland sites, archaeological and paleontological sites, as well as in sacred places for local communities and indigenous peoples, and areas of spiritual historical value, or other areas recognized for their biodiversity. As an exception, petroleum may be permitted in protected areas when the Strategic Environmental Impact Assessment Study establishes the viability of the activity within the framework of a National Sustainable Integral Development. Under Peru's *Supreme Decree – Regulation for environmental protection in hydrocarbon activities (No. 039/14/EM of 2014)*, Article 47 forbids licence holders from hunting and fishing, collecting species of wild and wildlife, as well as the introduction of exotic species, except those species used for bioremediation, provided they are authorized by the competent authority. Under the Canadian (British Columbia) *Oil and Gas Activities Act ([S.B.C. 2008] Chapter 36)*, Section 23 prohibits rights of entry for surveys or pipelines in the cases of land occupied by a building, the curtilage of a dwelling house or any protected heritage property, unless the person is authorized by the local government or the minister responsible for protected heritage property.

The latter refers to land so designated under the *Heritage Conservation Act (S.N.B. 2009, c. H-4.05 of 2010)*, or the (British Colombia) *Local Government Act (RSBC 2015)*.

### 6.7.6. Local infrastructure benefits and local sourcing requirements

**Applicants for petroleum rights are often required to commit to:** (i) providing certain infrastructure benefits for the local community; (ii) sourcing certain types of labour locally; or (iii) sourcing materials, services or partnerships for procurement locally. Often there is a requirement to train local employees as well.

The Nigerian *Oil and Gas Industry Content Development Act (No. 2 of 2010)* is centred around the notion of the "composite value created in the economy by a systematic development of capacity and capabilities through the deliberate utilization of Nigerian human, material resources and services." Thus, any regulatory authority, operator, contractor or other entity involved in an oil project should consider the foregoing in their project implementation. This fundamental policy is stated as a "major criterion" for award of licences. Plans submitted by operators should show how they intend to give first consideration to Nigerian goods and services, including specific examples and methodology to achieve this. Nigerian independent operators are to be given first consideration in the award of licences. Exclusive consideration is to be given to Nigerian service companies that have the equipment, staff and capacity for services prescribed in a Schedule to the Act. Furthermore, Nigerians shall be given first consideration for employment and training in any oil project. Employment and training plans to be submitted by an operator should include the anticipated skill shortages in the Nigerian labour force, anticipated expenditures for training and a time frame for implementation, among other aspects. Reports must be submitted regarding the number of new employees hired annually and their role. The competent authority is specifically tasked with ensuring "measurable and continuous growth". Furthermore, all projects valuing greater than USD 100 million are required to use a minimum percentage of Nigerian labour in specific areas as may be stipulated by the competent authority.

Trinidad and Tobago's *Petroleum Act (Chapter 62:01, as amended in 2010)* sets out in Section 42, that the hiring of foreign employees is permitted only where the operator cannot, after reasonable advertisement in at least one daily newspaper circulating in the country, find appropriately qualified and experienced local candidates. Furthermore, employees in the same category must receive equal remuneration and conditions irrespective of nationality. Operators shall carry out industrial and technical education and training, including the grant of scholarships in order to train nationals to replace foreign personnel as soon as feasible, and to enable locals to occupy senior project positions. Licensees also have a duty to refine locally (Article 53). Where a licensee's production does not exceed a prescribed threshold, such person may be required to deliver petroleum to local refineries and where the latter cannot agree on the terms and conditions of supply and processing, the matter shall be referred to arbitration.

**Legislative mandates that require the use of local products and services will have limited effect unless local businesses are able to operate at the scale required, and to the specifications and quality required.** Pakistan's *Onshore Petroleum (Exploration and Production) Rules (2009)* require the use of Pakistani goods and services "to the extent that such goods and services are competitive with regard to price, quality, quantity and delivery schedule". Also, local qualifying producers that supply certain goods and services are to be included in invitations to tender. Preference is to be given to employment of Pakistanis at all levels of the project including technical, financial, commercial, legal and administrative units. The number of locals to be trained is arranged in consultation with the authority, but otherwise within parameters set by the competent authority and published. Unskilled workers should be at least 50 percent originating from the production or exploration area.

On a different note, Sierra Leone's *Petroleum (Exploration and Production) Act (2011)* employs generic non-discrimination language in Section 87, and prohibits licensees or subcontractors from engaging in discriminatory practices on grounds of race, nationality or gender.

While on-shore operations may entail benefits in terms of new transport routes, power generation and transmission lines, and telecommunication improvements for the locality, offshore facilities would not typically confer such benefits. The more important point is that all these advantages should be viewed equally through the lens of possible negative impacts, such as disruption to local ecosystems, livelihoods and local communities.

## 6.8. Occupational safety and work-related protection mechanisms

Occupational safety provisions in petroleum legislation offer various mechanisms to protect the health and safety of workers involved in exploration, production, drilling, decommissioning, transport and refineries. Such provisions are designed to address a range of hazards such as fires, explosions, accidents, exposure to hazardous materials and general security concerns. Some countries have a national level body to oversee the safety of workers in the industry. Where complex arrangements with subcontractors are in place, the responsibility to ensure health and safety becomes more difficult but the **onus is always placed upon the licensee to meet requirements and standards** (UNEP Finance Initiative, 2014a).

**Licensees are required to take a range of precautions and measures relating to occupational safety.** Sierra Leone's *Petroleum (Exploration and Production) Act (2011)* Sections 37 and 56 require applicants for petroleum licences to have adequate insurance coverage, including accidental death and health insurance cover for their employees. Section 57 requires the development plan to consider the best practices for safety, and Section 97 requires an operator, contractor or sub-contractor to take all precautions necessary to ensure the safety of persons at a facility. A commission of inquiry may be established where a serious accident results in the loss of life (Article 102). Mozambique's *Decree establishing the legal regime for production, import/export, storage, transport and trade of petroleum products (No. 45/2012)* requires the construction of the facility and equipment to comply with

the applicable technical standards. The safety of persons on the premises must be ensured, including when a facility ceases operations or where a facility is no longer registered. Article 80 places liability on any employer or contractor to take the necessary measure to ensure that their workers comply with the Decree in all matters. Article 81 mandates the periodic inspection of installations and equipment every five years, or at the other intervals established in the relevant technical standard or recommended by the manufacturer. Certificates of inspection are to be issued by a licensed petroleum technician and submitted to the licensing authority, the failure of which may result in temporary closure of the installation. The European Union *Directive on safety of offshore oil and gas operations and amending Directive 2004/35/EC (2013/30)* establishes general principles of risk management in Article 3. Member states are required to ensure that operators carry out their activities on the basis of systematic risk management so that residual risks to persons and the environment are reduced to acceptable levels.

Licensees should provide appropriate equipment, and have in place documentation and risk management procedures, such as an occupational safety and emergency plan. Safety provisions may refer to air quality and noise reduction at the site; and also, the secure storage, handling and transport of chemicals and other hazardous materials, such as explosives. Laws may require the establishment of specific health surveillance initiatives as well as training, information and educational programmes. Petroleum legislation may also reference trade unions or other associations that advance workers' rights and benefits.

**In conflict zones or in countries where there may be political unrest, security concerns at petroleum production sites are heightened.** These sites may be vulnerable to attacks, theft and generally create an unsafe environment for workers. Under Sierra Leone's *Petroleum (Exploration and Production) Act (2011),* Section 99 compels a licence holder to maintain security measures to prevent or minimize attacks against facilities and requires the establishment of contingency plans to deal with such attacks. The licensee should have facilities for public authorities to carry out emergency and security drills. Each facility is required to have a safety zone surrounding it that may be extended in

the case of accidents or emergencies. A safety zone may also be required at abandoned facilities. The Canadian (Alberta) *Security Management for Critical Upstream Petroleum and Coal Infrastructure Regulation (Alta Reg. 218/2012)* sets out security measures to be established for listed critical facilities, requiring that licensees adhere to recommended practices in order to respond to various levels of threat of terrorist activity. Where the Department of Justice or Solicitor General inform the licensee that the facility has been threatened, the licensee must implement the measures stipulated in the emergency preparedness and response plan.

Finally, petroleum legislation may refer to security measures to protect workers beyond the boundaries of the project, including when travelling to and from work or in housing facilities (UNEP Finance Initiative, 2014a).

## 6.9. Corporate social responsibility

Brief mention may be made of the few corporate social responsibility (CSR) references that have been made in petroleum legislation. Timor-Leste's *Decree-Law regulating the Offshore Oil Operations (No. 32/2016)* defines CSR as the:

> Activity carried out by any authorized entity, for the purpose of promoting its profile in Timor-Leste, including in supporting social and cultural activities, sport and other types of contributions geared towards development and increasing the well-being of the local community.

In addition to the local content plan, the licensee is also required to submit a CSR plan to the responsible ministry. The Canadian (Manitoba) *Oil and Gas Act (C.C.S.M. c. O34 of 1994)* reiterates that sustainable development includes the government and industry acknowledging their stewardship of resources to develop the economy and preserve the environment, for the benefit of the present and future generations. It reaffirms that government and industry share responsibility for sustaining a sound environment and a vibrant sector, and that industry participants are encouraged to recycle, re-use and reduce oil field waste.

## 6.10. Key chapter messages

**National Constitutions** typically provide for state ownership of oil rights or subsurface mineral rights, although some texts also expressly recognize environmental, social and economic sustainability imperatives in connection with extraction and use of the resource, and also with regard to fiscal management of revenues.

**Production rights allocated through the process of licensing or authorization** provides a mechanism by which sustainability principles and conditions are imposed on the licence holder. Licenses secured through work-program bids can be an opportunity to secure sustainability objectives as part of the specific conditions of the work-program. Cash bids require significant commitment on the part of the government to ensure fiscal responsibility.

**Decision-making criteria for licence approval** often contain environmental requirements, including the obligation to have environmental impact assessments **(EIAs), environmental plans** and environment monitoring systems **(EMSs)** as well as programmes for **social benefits such as local procurement and employment**. The EIAs cover all phases, and refer to both beneficial and negative impacts of petroleum activities, identify risks and propose options, evaluate cumulative effects and broader impacts. The EMSs offer a framework to protect the environment and respond to changing environmental conditions in balance with socio-economic needs.

**Other types of rights to resources, such as land and related agricultural, forestry or fishing rights, in the allocated area** should be recognized and protected. Petroleum resources may be found on land or marine areas that are subject to community or individual land rights.

**Governments can participate directly** in petroleum ventures. This allows the investment risk to be spread in the case of partnerships, and in the case of state-owned enterprises, the government can increase its share of the revenues. However, the risks of reduced transparency,

increased opportunities for corruption (and thus limited local community or society benefits) should be considered and mitigated in the design of the regulatory framework.

**Environmental protection and conservation of petroleum resources** should cover all stages of operations from exploration and appraisal drilling through to construction, field development and production to decommissioning, transport, processing and distribution. Operators are often subject to requirements that require the protection of the environment within the area subject to the licence whether that includes land, water or forest resources, or marine resources.

**Production ceilings and mechanisms** to establish optimal rates of resource extraction (and depletion), as well as restrictions on the numbers of licences and the number of production sites aim towards sustainable management of the resource itself.

**Noise, air or water pollution** are typically restricted or prohibited in legislation. Licensees are often required to take steps to minimize and prevent pollution. Liability attaches without regard to fault, and the licensee is held liable for remedial costs and measures. Legislation may restrict routine gas flaring (a practice that contributes to climate change). Some jurisdictions require international certifications relating to pollution prevention. Emissions or quality standards, as well as effluent discharge standards may be prescribed. Legislation may also stipulate very specific standards relating to residues and contamination in soil.

**The scope of rehabilitation during, or at the completion of, petroleum activities** are prescribed together with the time frame for the required activities, the cost and the monitoring mechanism. Legislation may set out general decommissioning obligations and any liabilities, and these may be adjusted by the terms of a licence. The end of a term of a licence, or abandonment of facilities does not extinguish any outstanding obligations, liabilities or breaches of terms that are verified at a later stage.

**Deposits, bonds or other types of financial guarantees** are often employed to secure operator fulfilment of environmental, rehabilitation and other commitments, and allow the government to withhold all or part of the guarantee until such obligations are met.

**Marine protected areas and other biodiversity or special sites may be recognized directly** in petroleum legislation owing to the sensitivity or importance of such areas. Activities within, or in the vicinity of, such areas are subject to significantly more stringent requirements and screening.

**Conservation of resources should extend to the petroleum resource itself;** legislation may require the use of certain equipment or methodologies to extract resources in the most sustainable manner.

**Greenhouse gases (GHG) may result directly at the petroleum production stage** from installations (for example, through venting and flaring), combustion in engines and turbines, gases from loading as well as through the use of fuel along the processing chain and fuel for energy or transport.

**Revenue generated from a range of mechanisms** such as royalties, sales tax, land rent, signing and production bonuses and other mechanisms should be transparently collected, reported and managed.

**Funds may be established to capture and invest petroleum revenues.** Investment criteria and parameters are typically sustainable development-focused. Investments should yield long-term future returns and reduce reliance on petroleum revenues over time. Economic diversification is critical, as is the avoidance of shocks to the economy from the sudden influx of petroleum-related income.

**Funds with specific investment requirements** will enable the capture of petroleum revenues for the benefit of the local community and the country. Development initiatives can extend to education, public health, science and technology, and the improvement of other sectors and services. Only a small percentage of revenue should be allocated annually for these purposes.

**Requirements for local sourcing and the construction of infrastructure in the community** enable greater participation of the host country in the benefits associated with petroleum activities. Licensees are often required to establish certain infrastructure benefits for the local community, to source certain types of labour locally, or to source materials, services or partnerships locally.

**Social impact assessments** may anticipate and therefore mitigate uneven distribution of benefits, as well as changes to the environment that may impact local communities and the country as a whole.

**Liability provisions extend to adverse social impacts** in addition to environmental ones. Environmental damage can also cause negative social impacts.

**Specific benefits may be conferred to certain groups that warrant specific recognition** in legislation. These special interest groups can include indigenous peoples, women, youth, the elderly or the disabled as these groups often face entrenched discrimination or are historically excluded from decision-making or access to resources and benefits.

**Expropriation of land should be carefully circumscribed** in legislation. For example, expropriations should meet the principles of necessity, proportionality, fairness, non-discrimination, and be made in the public interest.

**Provisions for participatory decision-making** should consider local power dynamics, and should also consider the modalities of the consultation process. Agreements with a local community should be based on free, prior and informed consent principles and processes.

**Occupational safety provisions and worker protection provisions** should apply to the full spectrum of petroleum activities.

**Corporate social responsibility** may increasingly feature as a legislative requirement for companies operating in the petroleum sector.

# Appendix E. Key international instruments to guide national legislation

## I. Legally-binding instruments

*Convention on Civil Liability for Oil Pollution Damage Resulting from Exploration and Exploitation of Sea Bed Mineral Resources* (CLEE), adopted 1 May 1977. (also available at http://www2.ecolex.org/server2neu.php/libcat/docs/TRE/Full/En/TRE-000434.txt).

*Convention on the Continental Shelf*, 29 April 1958. (also available at https://treaties.un.org/pages/ViewDetails.aspx?src=TREATY&mtdsg_no=XXI-4&chapter=21&clang=_en; https://treaties.un.org/doc/Publication/MTDSG/Volume%20II/Chapter%20XXI/XXI-4.en.pdf).

*Convention on the Law of the Sea* (UNCLOS), 10 December 1982. (also available at https://www.un.org/Depts/los/convention_agreements/texts/unclos/UNCLOS-TOC.htm).

*Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter* (LC), adopted 13 November 1972. (also available at http://www.imo.org/en/About/Conventions/ListOfConventions/Pages/Default.aspx).

*Convention on Wetlands of International Importance especially as Waterfowl Habitat* (Ramsar), adopted in Ramsar, 2 February 1971. (also available at http://www.ramsar.org/sites/default/files/documents/library/current_convention_text_e.pdf; https://www.ramsar.org/about/the-convention-on-wetlands-and-its-mission).

*Energy Charter Treaty*, December 1994. (also available at http://www.energycharter.org/fileadmin/DocumentsMedia/Legal/1994_ECT.pdf; http://www.energycharter.org/fileadmin/DocumentsMedia/Legal/ECTC-en.pdf).

*International Convention for the Prevention of Pollution from Ships* (MARPOL Convention 73/78), 1978. (also available at http://www.imo.org/en/About/Conventions/ListOfConventions/Pages/International-Convention-for-the-Prevention-of-Pollution-from-Ships-%28MARPOL%29.aspx; https://treaties.un.org/doc/Publication/UNTS/Volume%201340/volume-1340-I-22484-English.pdf).

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This Chapter should be read in conjunction with Chapter 2 on themes that are common to all the sectoral chapters in this book, as well as Chapter 6 on petroleum. The diverse illustrative snapshots of legislative elements on select subjects offer an aerial view to demonstrate how countries have captured the interplay between social, economic and environmental exigencies, while using the very narrow and specific lens of highlighted legislative provisions. The reader should not infer that the examples selected are necessarily successfully implemented, or result in the desired impact; the chapter does not examine country contexts, allocation of resources, political priority or any of the myriad factors that may affect successful implementation and enforcement. Assessing the effectiveness, regulatory performance and range of potential externalities is an undertaking that is highly context-specific. Accordingly, the examples here do not make recommendations that are applicable to all jurisdictions, but rather draw attention to the way in which different countries have approached sustainable governance of the resource.

As extractives sectors, legislative approaches for this Chapter and Chapter 6 are similar and many provisions are common to both. In order to enable breadth and richness of discussion, the discussions in the two chapters demonstrate varied challenges and solutions. Nonetheless, for a broad perspective on environmental and social-focused provisions, it is useful to read both. Two key distinctions, however, can be highlighted at the outset. First, the revenue generated from royalties and other taxes are typically much higher for petroleum than mining projects. Second, oil sector projects engage fewer and higher skilled employees than in the mining sector (IPIECA, 2012).

While this Chapter explores sustainability dimensions from the narrow lens of sectoral legislation, i.e. mining-specific laws, it should be emphasized that in practice, an approach that recognizes inter-sectoral linkages and policy coherence necessarily involves a contemporaneous examination of legislation on, among other areas, environment, land use and land tenure, water, protected areas, natural disasters and emergencies, investment, infrastructure, transport, public-private partnerships and local government administration.

## 7.1. Introduction to mining governance

Mineral products include metals and minerals, coal, and precious and semi-precious gemstones that are used for manufacturing materials, high-tech industries, building and road materials, and industrial products (UNEP Finance Initiative, 2014a). The mining sector has the potential to bring economic opportunities to areas with mineral deposits, including jobs and other business contracts with mining companies. Large-scale mining operations may entail infrastructure benefits such as new transportation routes, services such as hospitals and schools, and other amenities that may not have previously existed. Mining is also a foreign exchange earner, and can generate significant revenues through taxes, royalties and dividends for governments to invest in the local community and in the country generally. However, minerals are finite resources. Future use of minerals is contingent on sustainable management at the present time. Any significant economic benefits associated with mineral extraction must be juxtaposed against considerable social and environmental risks and costs, that can result (and already have resulted) in large-scale environmental and human disasters in different regions.

As a finite resource, the control and management of mining, and the equitable distribution of economic and other benefits arising from mining activities, become doubly important. This is predicated on long-term productive investments for sustained growth, rather than short-term injections of cash that are disruptive on the national economy. Opportunities exist for the mining sector to have positive impacts on local communities, rigorously safeguard against detrimental environmental impacts and ensure greater efficiency in operations (and thus reduce energy consumption and emissions) (CCSI *et al.,* 2016). Calls for greater sustainability of the mining sector as a result of egregious social and environmental impacts must be put in the context of increasing global demands for the mineral products stimulated by demographic growth and increased consumption. Indeed, the expansion of mining operations into remote, environmentally sensitive and fragile areas, as well as the use of chemicals, energy and water, is magnified by the unprecedented level of growth resulting from economic liberalization, privatization of

resource extraction, and a general improvement of the business climate for investing in developing countries (UNEP, 2010).

Therefore, it should be emphasized that a careful balancing of considerations within the mining sector is not a binary exercise of environmental protection versus economic gains, for example, but rather a holistic perspective of the system as a whole to account for knock on effects and externalities. A holistic approach requires the demand side of the equation to be addressed in any sustainable solution, although those important considerations fall outside the scope of this Chapter. This Chapter looks narrowly at the key environmental and social risks and opportunities at different stages of the mining process, beginning with exploration and discovery of minerals, through ore extraction and processing to the closure and rehabilitation of sites.

## 7.2. Balancing development and conservation: constitutional provisions

Many constitutions around the world provide for state ownership of sub-surface minerals (in the land), or state that mineral resources are held in trust by the state for its citizens. Many of these do not explicitly refer to the need to consider sustainability dimensions and are largely ownership focused, even if these texts may have other sections that refer to sustainable development or environmental protection. The *Fundamental Law of Equatorial Guinea (2012)* stipulates that, the state can exclusively explore and exploit all resources, including mineral wealth (Article 3). Article 29 reaffirms that mineral resources and services are reserved to the state. Belarus' *Constitution (1994)* reflects the position that the mineral wealth is the sole and exclusive property of the state (Article 13) and Brazil's *Constitution (1998)* makes similar provisions in Article 20. These examples show that while environmental or social issues are not explicitly highlighted in connection with mineral rights, and that the central issue is ownership, this vesting of (often exclusive) rights in the state conveys custodianship by the state for its people, and by implication, requiring exploitation to be in the public interest. Chile's *Constitution (Decree 100 of 1980)* reflects this extrapolation somewhat in

Article 19, which gives the state exclusive rights over minerals, and notes that the owner of the concession must develop the activity in the public interest in a manner that justifies its granting. Most notably however, Ecuador's *Constitution (No. 449 of 2008)* makes social and environmental references in the context of mineral rights. While Article 261 gives the state exclusive powers over minerals, Article 57 affirms indigenous peoples' rights to recover, promote and protect minerals found on their land. Article 408 of this text emphasizes that mineral assets can only be exploited in strict compliance with the environmental principles established in the Constitution.

## 7.3. Mining rights and title

**Through legislation, and supplemented by the specific terms of concessions, permits or contracts, a country may grant third-parties rights based on different stages of development of a mine.** In most places, the government retains the authority to negotiate, grant, revoke, suspend or renew mineral rights in accordance with legislation. To emphasize the general concept of state ownership of subsurface minerals, an example is Ghana's *Minerals and Mining Act (Act 703 of 2006)*, which in Section 9 states that even persons with land rights do not have a right to search, reconnaissance, prospecting, exploration or mining for a mineral on those lands, unless the person has been granted a mineral right in accordance with the law. The state's role in regulating the various stages of mine administration and development encompass other aspects such as collecting associated taxes and royalties, and enforcing compliance of rights holders with environmental protection and social requirements (Stanley and Mikhaylova, 2011).

**Mining rights may be granted from the regulatory authority either as a result of a tender process, or on an application first-come first-served basis.** The bidding process is used generally when there is a greater certainty of mineral endowments and competitive demands require the tender process (Stanley and Mikhaylova, 2011). Regardless of the process or the eligibility criteria, the terms and the conditions must be equally applicable (however, see Section 7.3.1 on differentiated

requirements for small-scale and artisanal and small-scale mining (ASM) operations). Indeed, one of the critical elements of efficient and effective mineral rights allocation schemes is that the latter should be determined by simple, uniform, transparent and non-discretionary decision-making. This often involves an evaluation of environmental and social criteria (see Section 7.5), in addition to other considerations, that enable the regulator to approve or deny the application. Other evaluation criteria include the ability to operate on a commercial basis. Both financial and technical specifications must be met for an application or bid to be successful. Also, mining sites must have sufficient quantities to be considered commercially viable. For example, Vanuatu's *Mines and Minerals Act (Cap. 190 of 1986)* prohibits application for licences unless the mineral exists in commercial quantities in that land.

### 7.3.1. Recognizing different scales of operations: embracing artisanal and small-scale mining operations

**While most mining laws are geared towards large-scale operators, some countries have made provisions for artisanal and small-scale mining (ASM) operators.** United Nations research estimates that globally, between 80 and 100 million people are directly or indirectly dependent upon non-industrial forms of mining for their livelihoods (CCSI *et al.,* 2016), yet it has been found that ASM is a marginalized and underfunded activity in the minerals industry (Buxton, 2012). In many countries ASM may even fall outside the law, and the degree of informality means that many aspects, notably social and environmental protections, are not effectively regulated or realized. For example, ASMs often employ low-skilled manual labour, and in many countries these operators do not meet health and safety standards. Countries have passed laws not only to recognize these types of operators, but also importantly, to bring them within the controls of the legislative framework. This reduces the vulnerability of employees, and places a greater responsibility and accountability on the operator for its activities. Thus, by being brought within the remit of regulatory control, and with the incentive of having state support during operations provided certain restrictions are complied with, ASM operations can be guided by ASM-specific rules that mitigate against key social and environmental challenges.

**Legislation may distinguish ASM based on size of operations, manual labour or other characteristics.** Peru's *Law (No. 1 040 of 2008)* characterizes artisanal mining as a subsistence activity, based on the intensive use of manual labour, that makes it a source of employment generation in areas in which it is carried out (these areas are identified in the Law as being generally the poorest and most remote parts of the country). Small-scale mining is defined as mining that does not exceed a prescribed threshold. Under Nigeria's *Minerals and Mining Act (2007)*, Section 90 stipulates that in order to qualify as an ASM operation, the size of operators must not exceed a certain threshold. Peru's *Decree Law on establishing rules to formalize small-scale and artisanal miners (No. 1 105 as amended in 2012)* also defines illegal mining as well as informal mining, characterizing both as using tools and methods which do not comply with administrative or technical requirements but distinguishing the latter as one where the process for registration and formalization has begun and is in progress. Peru's *Supreme Decree on supplementary provisions for the simplification of requirements and the obtaining of economic incentives within the framework of the Integrated Mining Formalization Process (No. 018-2017-EM)* builds on provisions to simplify requirements and the procedures to obtain fiscal incentives for formalization of mining activities.

**Legislation often contains certain restrictions relating to the areas in which ASM can take place, who may establish an ASM enterprise, or what activities may be undertaken.** Article 64 of Côte d'Ivoire's *Mining Code (Law No. 138 of 2014)* assigns zones for artisanal mining activities and Article 69 limits the surface area granted under an artisanal mining licence. Typical to other laws, this Code requires artisanal miners to communicate to the relevant authorities if they discover during their activities, any mineral deposits that require industrial-scale excavations. Kenya's *Mining Act (No. 12 of 2016)* declares that while large-scale operations can have rights for reconnaissance, prospecting, retention, and mining, small-scale operations can only be granted prospecting or mining rights. Mozambique *Mining Act (No. 20 of 2014)* establishes that small-scale mining operations that are issued mining passes will be allotted designated areas for a period of five years, renewable for another five (Article 49).

**State support may enable these smaller operators access to mineral resources contingent upon compliance with certain restrictions.** Nigeria's *Minerals and Mining Act (2007)*, calls for the following extension services to be provided to ASMs: prospecting and exploration services; mineral testing standards and mineral grades; feasibility reports; design and planning; access to new technology; leasing equipment; technical assistance with environmental impact assessment reports; guidance on waste and tailings disposal; guidance with health and safety procedures; and legal and marketing skills (Section 91).

**The ASM operators are subject to various types of restrictions - spatial restrictions, technology or methods restrictions, and prohibitions of types of chemicals to be used.** Article 68 of Côte d'Ivoire's *Mining Code (2014)* for example, prohibits the use of explosives and chemicals for artisanal mining. The ASM operators are also prohibited from affecting environmental damage and are required to mitigate social and other impacts. Peru's *Decree Law on establishing rules to formalize small-scale and artisanal miners (No. 1 105 as amended in 2012)* requires ASM operators to adhere to a Declaration of Commitments that it agrees to undertake. This Declaration is to be registered with the relevant provincial government, accompanied by a registration of the rights and concessions granted for exploitation, any authorizations granted for land use and water use, and an approval of the environmental management plan, among other documentation. There is also a simplified procedure for ASMs for receiving certification that there are no archaeological remains in the proposed mining area.

### 7.3.2. Transparency

**The more opaque the process for granting mineral rights, the increased likelihood of corruption and the risk of other types of existing rights being overlooked or breached.** In Ghana, the *Mining Act (2006)* stipulates in Section 5 that rights for mineral exploitation are subject to ratification by Parliament. Although the procedure for this would need to be as efficient as possible in order not to constitute a deterrent to *bona fide* investors, such mechanism provides a high degree of scrutiny and transparency for the award of concessions. The Law

allows for exemptions to the ratification process, but such exemption nevertheless requires a Parliamentary vote of at least two-thirds of its members. Transparency and scrutiny of applications and registration of rights is not only applicable to large-scale investments. Often legislation details the application process and requirements for ASM operations as well. Part X of Sierra Leone's *Mines and Minerals Act (No. 12 of 2009)* details the procedure for applications for artisanal mining licences, including the documentary information to be supplied by applicants. Other provisions that boost accountability and limit corruption are illustrated by Tuvalu's *Mineral Development Licensing Act (CAP 46.15 of 1977 as amended in 2008)* which prohibits public officers from having any right or interest in any mineral right; and any document or transaction that attempts to confer any right or interest on a public officer is not valid (Section 7). Public officers employed in the ministry are generally forbidden from having any share in a private company carrying out prospecting or mining operations in the country.

**Transparency is also enhanced through the use of registers and cadastres.** Afghanistan's *Minerals Law (No. 1 143 of 2014)* requires the responsible ministry to record the lands affected by mineral activities in the Mining Cadastre, which should be made available for public inspection. Laws that cater to ASM operations require registration of titles by ASM operators as well. Peru's *Supreme Decree on supplementary provisions for the simplification of requirements and the obtaining of economic incentives within the framework of the Integrated Mining Formalization Process (No. 018-2017-EM)* establishes the conditions of entry and grounds for cancellation from the Integrated Registry for Mining Formalization.

### 7.3.3. Protection of existing rights

**Legislation often protects existing property rights when granting titles relating to mineral prospecting and exploitation.** Usually mining rights titleholders have ancillary rights, such as public road access, access to water resources and the right to set up physical structures on the land surface. Where this takes place on private land, legislation typically requires the consent of the landowner and a contractual agreement to

effect a purchase, lease or easement. Sierra Leone's *Mines and Minerals Act (2009)* requires rights over any land for the public purpose to be subject to the consent of the minister responsible for control over such land. As regards private land, this Act requires the express consent of land owners in respect of any land: (a) dedicated as a place of burial or which is a place of religious or other cultural significance; (b) within 250 metres of any inhabited, occupied or temporarily unoccupied house or building; (c) within 50 metres of cultivated agricultural land; and (d) within 100 metres of a water source. Tuvalu's *Mineral Development Licensing Act (1977, amended 2008)* allows for the licence-holder to enter into a lease upon such rent terms, conditions and duration as may be agreed with the owner or lawful occupier of the land. Thus, the latter may stipulate such terms and conditions as he or she thinks fit. This requirement limits the mandatory displacement of persons that meet the conditions of owner or lawful occupier. Where such agreement cannot be reached regarding the terms, under the Act the parties may enter into arbitration to assess the value of rent payable (this does not include an enhanced value from the minerals). Under other laws, a failure to come to an agreement at all (not just the terms) shall be ultimately referred to the responsible minister. Sierra Leone's *Mines and Minerals Act (2009)* states in Section 32 that if "consent is unreasonably withheld in the opinion of the Minister", the latter may dispense with the need for consent. Arguably this reduces the value of requiring consent and placing the decision on a broader body or multiple bodies that is representative of a range of issues, not just mining, and may be more equitable. Nonetheless, requiring a final decision of the minister where consent is not received, is a prevalent feature in many mining laws. Generally speaking, the duty to consider existing rights should apply to mining of different sizes. Section 84(c) of Sierra Leone's *Mines and Minerals Act (2009)* requires that an application for an artisanal licence be accompanied by documentary evidence that consent to use the land for mining has been given by the Chiefdom Mining Allocation Committee or rightful occupiers or owners of the land for mining purposes.

**Legislation may require multiple agency approvals that protect rights relating to environmental protection (protection of water**

**resources, or forest areas, etc.) and social safeguards (prevention of dislocation, nuisances, etc.).** Among the activities that require permission from relevant authorities under Article 43 of the Republic of Korea's *Mining Industry Act (Act No. 11434 of 2012, as amended by Act No. 13730 of 2016).)* are: occupying and using public waters; land planning and development; permission for farmland conversion; opening private roads; timber felling; and activities in forests and parks. The Australian (New South Wales) *Mining Act (1992)* requires relevant environment, planning and other state agencies to communicate any objections to the minister regarding the granting of a mining lease, or may make any proposals for conditions to a mining lease. The Act further requires the notification of the public (by notice in the Gazette, and through newspapers with broad local circulation in the affected state, and the affected locality) and invites objections to be made to the granting of such mining lease. Under Kenya's *Mining Act (2016),* prior to applying for a mineral right, the applicant is required to seek the approval of the National Land Commission or a range of relevant competent authorities, in relation to public land that is, for example, a forest or wildlife area, or a protected coastal zone. The approval of the governor of the respective county where the land is situated is also required. Section 44 stipulates that a titleholder shall exercise rights granted under the Act:

> Reasonably, responsibly and in a manner that does not adversely affect the interests of any other holder of a mineral right, or the owner or occupier of the land over which the mineral right extends.

It is noteworthy that in much of the legislation reviewed from different regions of the world, the 'prohibition' of mining in environmentally sensitive areas or areas where local communities reside is not absolute; a final decision may often be required to be made by the responsible minister. While the rationale is to escalate the decision to the highest possible level, and thus raise the level of importance and scrutiny, this common feature of legislation nonetheless opens the door for considerable discretion to be placed on a single person, which may reduce transparency afforded by other parts of the legislation. In such cases, provisions that circumscribe the minister's decision-making to

consider a sustainable approach, and to publicly present the grounds for his or her decision, may mitigate this weakness.

**Compensation is often required where existing rights are curtailed, disturbed or expropriated.** New Zealand's *Crown Minerals Act (No. 70 of 1991),* though outside the temporal scope of the Study, is illustrated here for its strong stipulations for compensation including: (a) reimbursement of all reasonable costs and expenses incurred by the owner or occupier in respect of negotiations and all reasonable legal and valuation fees in respect of the determination of an access arrangement; (b) reimbursement for loss of income; (c) a sum by way of solatium for loss of privacy and amenities; and (d) reimbursement of all reasonable costs incurred in ensuring compliance with, and monitoring of, the access arrangement. The Tuvalu *Act (1977, amended 2008)* also requires the mineral right holder to pay the owner or lawful occupier "fair and reasonable compensation" for any disturbance of the rights of such owner or occupier, as well as for any damage done to the surface of the land, or to any crops, trees, buildings or works damaged during the course of operations. The Canadian (British Columbia) *Mining Right of Way Act (CAP 294, 1996)* specifies that where a mining rights holder needs a right of way, and takes private land without the consent of the owner of the land, the Expropriation Act applies.

**Some mining legislation prohibits granting mining rights in certain areas.** Ghana's *Minerals and Mining Act (Act 703 of 2006)* precludes land already under existing mining rights, or any land that is expressly reserved in the Act or any other legislation, from becoming the subject of a mineral right. The Afghanistan *Minerals Law (No. 1 143 of 2014)* provides several classes or designations where mining can or cannot take place, and sets out a procedure for declaring some areas prohibited in the national interest. 'Prohibited' areas are classified using very broad criteria, including being so designated for reasons of: public health and safety; national security; public order; an incompatibility of mining with other land uses; negative impacts on the environment; archaeological or cultural relics or other natural values; or, negative impacts on social welfare. Such position must be supported by findings made by the responsible competent authority (Article 12). This Law stipulates that

areas that are designated for mining purposes are to be so declared upon consultation with the local community and in consideration of the public interest (Article 13).

### 7.3.4. Competitive and stable legal environment and fiscal terms

Legislation may lean in favour of the security of the titleholder to promote investment and confidence in the regulatory environment, and thereby to promote productive use of mineral resources and economic development. The impact of broader governance structures and rule of law on the security of rights granted in legislation is addressed in Chapter 2 of this book.

**Many laws provide for exclusivity of exploration and exploitation titles in a given location.** Australia's (Northern Territory) *Mineral Titles Act (2010)* specifies that a mineral exploration licence gives the rights holder exclusive prospecting rights, and a mineral lease similarly gives exclusive rights to conduct mining for minerals and ancillary activities. Also, the duration of licences should be sufficient to explore and exploit the mineral resources, but periodic renewals enable the government to carry out monitoring. Where mining rights must be revoked in the public interest, legislation may offer compensation to the mineral rights holder. The Republic of Korea's *Mining Industry Act (Act No. 11434 of 2012, as amended by Act No. 13730 of 2016)* reflects this approach in Article 34; the responsible minister may revoke or restrict the rights or limit the applicable area, and the state shall provide compensation for any loss.

**As a mining prospector or operator assumes significant financial risks, legislation may offer fiscal terms that are stable in the long-term and that favour returns on investment.** Mongolia's *Minerals Law (2006)* stipulates in Article 29, that where the titleholder invests more than USD 50 million during the first five years, an investment agreement may be concluded which provides the following: stable tax environment; the right to sell its products at international market prices; and guaranteed rights to manage the income derived from sales at their own discretion.

**Mining legislation may offer specific tax or other incentives, including export assistance and other subsidies.** Nigeria's *Minerals and Mining Act (2007)* offers fiscal incentives for mining operations that include among others, exemptions from customs duty, prescribed percentage capital allowances and prescribed tax relief periods (Section 25). The Act establishes a Solid Minerals Development Fund in Section 34, to develop capacity, to generate geoscientific data to meet the needs of the private sector, to equip institutions to perform their statutory functions and for extension services for ASM operators. The Canadian (Québec) *Act representing the Minister of Natural Resources and Wildlife (R.S.Q. c. M-25.2, amended in 2014)* establishes a Natural Resources Fund to finance a "mining heritage component" that can be used to support the "development of mineral potential". This includes such activities as: geoscience knowledge acquisition; research and development in mining exploration and development; mining site rehabilitation and restoration techniques; and support for the development of Québec entrepreneurship. Non-fiscal provisions for government assistance can take many forms. In Australia's (Western Australia), the Institute of Minerals, Energy and Construction under the *Minerals Research Institute of Western Australia Act (2013)*, is required to develop a research priority plan that identifies and prioritizes the medium to long-term knowledge and technology needs of the state's minerals industry.

## 7.4. Fiscal and economic obligations attached to mining rights

### 7.4.1. Royalties

**Legislation should set up transparent collection and investment mechanisms for the taxes, charges, royalties and other required payments that apply to miners of all size ranges.** The rates can be established within broader mining laws, in self-standing legislation, or in Schedules to primary legislation. Australia's (Northern Territory) *Mineral Royalty Act (amended in 2014)* contains very specific details on royalty arrangements and rates. South Africa's *Mineral and Petroleum Resources Royalty (Administration) Act (No. 29 of 2008)* provides for

the administration of matters connected with the imposition of royalty on transfer of mineral resources. Private royalties may also be subject to taxes. In the Canadian (Newfoundland) *Revenue Administration Act (S.N.L. 2009, c. M-15.01 of 2009)*, persons who receive royalties or payments from mines in exchange for the grant of a right (e.g. to land) are subject to an annual tax by the Crown where such payment is above a certain threshold (Article 85). See Section 7.10 for a further discussion on the ways in which countries are encouraging greater transparency and reporting of incomes and taxes relating to extractives.

**Royalties allow for the government and other stakeholders to stake claim in economic benefits, with the potential to enable equitable sharing for the local community.** Royalties may be used for public expenditures, sometimes with a fixed percentage allocated for the local community of the mining area. Afghanistan's *Minerals Law (2014)* establishes that 5 percent of the overall revenue from a mine is to be allocated for the economic, social and environmental development of the province where the mine is located. The Solomon Islands *Mines and Minerals Amendment Act (No. 6 of 2014)* establishes the Mining Royalty Special Fund for certain royalties other than certain prescribed metals, which allows the minister to pay the owner of the land under which the minerals are obtained. For royalties from certain metals precluded from the foregoing arrangement, 10 percent of the royalties from those metals are to be included in the Consolidated Revenue for the benefit of the province government where the lease is located, and a further 40 percent for landowners therein. Côte d'Ivoire's *Mining Code (2014)* Article 124, requires that annual fund contributions must go specifically for the socio-economic development of local communities set out in the community development plan. For a further discussion of safeguards for local communities, see Section 7.7.

### 7.4.2. Infrastructure, domestic procurement and employment benefits to community and country

Aside from fiscal returns, governments seek to achieve broader gains from mining operations that include infrastructure development, domestic procurement and local employment benefits.

**Infrastructure development may include transport systems as well as services such as water supply, hospitals, etc.** The Solomon Islands *Mines and Minerals Amendment Act (2014)* requires a titleholder to construct "approved infrastructure", that will benefit the community, and that can be constructed by a mining company more efficiently than by the government. In remote regions of developing countries either through public-private projects or shared-use infrastructure, or other arrangements, infrastructure may have welcome ancillary impacts on economic growth (Stanley and Mikhaylova, 2011). However, in some cases despite infrastructure development, the new services brought in as a result of the operations may become over-stretched and result in price hikes or increased competition for limited resources.

**Public-private partnerships (PPPs) can be used to facilitate infrastructure development.** Sierra Leone's *Public Private Partnership Act (No. 11 of 2014)* contains specific provisions for mining projects which apply only to areas which are explored and controlled by the state. Under Section 4 of the Act, a PPP Agreement shall provide for (in the case of a PPP Agreement for infrastructure), procedures for the review and approval of engineering designs, construction plans and specifications by the contracting authority, and procedures for testing and final inspection, approval and acceptance of the works performed under the PPP Agreement.

The PPPs are particularly useful where infrastructure development (regional transport systems, water supply, etc.) is a significant preproduction expense; however evidence demonstrates that state-supported mineral exploration has sometimes proven to be ineffective, expensive and a waste of productive areas that could be better exploited by private investors (Stanley and Mikhaylova, 2011). Thus, the relationship between government and the private sector is critical to the success of PPP arrangements, and in particular, a clear separation of functions is fundamental. Many laws do not adequately cater for this. Another consideration is that as a direct market player, the state must adhere to regulatory standards and requirements and ensure that in driving revenue for its exploration or extraction activities, it does not overlook environmental and social safeguards. In this regard, Ecuador's

*Law on Mining (2009)* requires the Public Mining Company, to act with high standards regarding business, economic, social and environmental matters.

**Legislation may require a mining rights holder to give preference to local goods and services, and stipulate that locals must be part of the mining operations workforce.** Tuvalu's *Mineral Development Licensing Act (amended in 2008*) requires a titleholder to give preference "to the maximum extent possible consistent with safety, efficiency and economy to" (a) materials and products made in Tuvalu; as well as to service agencies located in Tuvalu and owned by Tuvaluans, in the purchase, construction and installation of facilities (Section 9). This Act also requires preference in employment to Tuvaluans and the execution of training programmes in the widest possible range of skills for the benefit of employees so that such employee may qualify for advancement. The Lao People's Democratic Republic *Law on Minerals (No. 02 of 2011)*, requires the operator to use local or domestic goods as much as possible, to use domestic transportation enterprises or companies, as well as use Lao nationals in all areas of the operations based on their capacity. This Law requires capacity-building of the Lao workforce through a transfer of skills and technology, and requires the progressive replacement of foreign personnel. Ghana's *Minerals and Mining Act (Act 703 of 2006)* makes an application for a mineral right contingent upon the receipt of proposals with respect to the employment and training of Ghanaians in the industry. Kenya's *Mining Act (2016)* requires large-scale operators to conduct training programmes for the benefit of employees, and to only engage non-citizen technical experts in accordance with local labour laws (Section 47). Large-scale operators must submit a detailed programme for the recruitment and training of Kenyans to the Cabinet Secretary, as a condition for the grant of a mineral right (Section 46). Section 50 requires preference to be given:

> To the maximum extent possible …to materials and products made in Kenya; to services offered by members of the community and Kenyan citizens; and to companies or businesses owned by Kenyan citizens.

## 7.5. Environmental and social requirements for grant of permits, licences and other authorizations

### 7.5.1. Documentary requirements: environmental and social impact management plans

**Applications for mineral rights typically require the submission of plans for the management of environmental and social impacts.** Sierra Leone's *Mines and Minerals Act (2009)* together with the *Environmental Regulations for the Minerals Sector (2012)* prescribe details on the environmental and social safeguards plans that must be submitted to the competent authority for consideration of a mineral licence: an Environmental Management Plan with recommendations for avoiding, mitigating or offsetting adverse environmental impacts identified in the EIA; a Social Management Plan to avoid, mitigate or offset adverse social impacts identified in the SIA; a Consultation Plan that entails community consultation, participation and grievance management mechanisms; a Community Development Agreement; a Mine Closure Plan containing recommendations for the progressive restoration of worked-out mine areas and the ultimate closure and restoration or rehabilitation of the mine site; and where relevant, a Resettlement Management Plan. In addition, the titleholder must have internal sampling and inspection programmes covering all areas of environmental and social monitoring, the details of which are to be included in the Environmental Management Plan and the Social Management Plan. The Zambia *Mines and Minerals Development Act (No. 7 of 2008)* declares that the responsible authority shall consider the submitted environmental management plan by potential mining operators in addition to the investment and financial plan in making its decision on the issuance of a licence (Section 12). In the same vein, a renewal for a large-scale mining licence can be denied where the programme of operations will not ensure the proper conservation and use of the mineral resources. Peru's *Decree Law on establishing rules to formalize small-scale and artisanal miners (No. 1 105, as amended in 2012)* requires ASM operators to also commit to environmental management instruments for the prevention, control and mitigation of environmental damage, including environmental recovery

and remediation measures (Article 9). Such environmental management instrument is a pre-condition for authorization of exploitation activities. Under Kenya's *Mining Act (2016),* even a prospecting licence application is required to include an approved environmental impact assessment report, a social heritage impact assessment and environmental management plan, where required (Section 72).

### 7.5.2. Environmental impact assessments and social impact assessments

**Legislation may require an applicant to submit an EIA or an SIA or both, as part of the application or bidding process for the grant of mineral rights.** The European Union's *Environmental Impact Assessment Directive (2011/92/EU)* applies to mines larger than 25 hectares or mines that impact a Natura 2000 site (i.e. designated areas to protect threatened habitats and species) and sets out a list of aspects to be considered in the assessment. Sierra Leone's *Mines and Minerals Act (2009)* requires EIAs that meet the requirements of Schedule 5 of the 2012 Regulations as well as SIA reports that meet the requirements of Schedule 6 of the Regulations. The use of a Schedule enables periodic technical amendments without having to amend the Act itself. Afghanistan's *Minerals Law (2014)* also requires a titleholder to conduct an assessment of environmental and social impacts and similarly prescribes the contents of the assessments. These include among other aspects, detailed environmental baseline studies; and an Environmental and Social Management Plan for reclamation and mine closure stages. Including prescriptive details on the baseline and possible impact information is a useful mechanism by which regulators can avoid these requirements as being merely perfunctory exercises.

**Environmental and social impact assessments should be an iterative process** (WWF-SA, 2014). The licence holder under Afghanistan's *Minerals Law (2014)* is required to alert the competent authority for any material amendments to submitted EIAs and provide justifications for the same. The Lao People's Democratic Republic *Law on Minerals (2011)* also requires licence holders to periodically report on social and environment impacts to the competent authorities.

**In some countries, ASM operators may receive assistance in the preparation of EIAs and SIAs, or on a different note, competent authorities may carry out EIAs and SIAs for areas that are allotted for mining.** Sierra Leone's *Mines and Minerals Act (2009)* requires the mining authority to prepare strategic environmental and social assessments for artisanal mining areas. The elements of such assessments are fleshed out in the *Environmental Regulations for the Minerals Sector (2012)* and must be widely disseminated and used by relevant local authorities in considering community development agreements (see Section 7.7.4). These assessments comprise: (i) baseline summaries of the environmental, social and local economic conditions in the district; (ii) existing artisanal mining practices within the area, and its contribution to the local economy; (iii) impacts of mining activities on other land uses; (iv) nature and extent of adverse and beneficial environmental and social impacts; (v) any restoration and rehabilitation work to be undertaken within the district; (vi) the opinions and attitudes of all stakeholders, including local communities; and (vii) artisanal mining area recommendations.

### 7.5.3. Licence conditions

**Rights-holders are required to comply with specific conditions to a licence, which may be enumerated in the licence or authorization itself, or expressly stated in legislation.** Kenya's *Mining Act (2016)* stipulates that a mineral right may be subject to conditions such as: the protection of the environment; community development; safety of prospecting and mining operations; health and safety of persons undertaking those operations; and the protection of the lawful interests of the holders of any other mineral right (Section 42). The Act declares that the competent authority may enforce the conditions, as if the conditions were contained in a contract between the authority and the holder of the mineral right "and valuable consideration had been given to the holder" for the holder's compliance with the condition. Ecuador's *Law on Mining (2009)* requires titleholders to enter into contracts which contain among other stipulations, environmental management obligations, fiscal guarantees and payment of royalties, and relationship

arrangements with local communities. A model of such contract is to be approved by the responsible ministry. Mongolia's *Minerals Law (2006)* lists the environmental protection obligations of an exploration licence holder, include adhering to discharge and pollution limits as well as rehabilitation measures. Furthermore, under Article 38, the licence holder shall record all instances of adverse environmental impacts and deliver an annual report, which includes the measures taken to protect the environment, and proposed amendments to the environmental protection plan directed at preventing similar reoccurrences.

### 7.5.4. Funds or bonds to guarantee obligations

**An applicant that has been granted mineral rights may be required to establish funds or pay bonds in advance of operations that effectively serve as guarantees for environmental or social obligations.** The Nigerian *Minerals and Mining Act (2007)* establishes the Environmental Protection and Rehabilitation Fund (for the purpose of guaranteeing the environmental obligations of the titleholders) in Section 121. Each titleholder must contribute funds in accordance with their approved programmes. This guarantee is refunded when all obligations have been met at the end of the mining operations. Similarly, Kenya's *Mining Act (2016)* requires any applicant for a prospecting licence, a retention licence or a mining licence, to provide an environmental protection bond as financial security sufficient to cover the costs associated with the implementation of the environmental and rehabilitation obligations of the holder under this Act. Mongolia's *Minerals Law (2006)* includes the remission of funds equal to 50 percent of the company's environmental protection budget for that particular year to be placed in a special bank account established by the province governor (Article 38). Where the licence holder fails to fully implement the measures provided in the environmental protection plan, the governor shall use the deposit to implement required measures; however, where the licence holder has complied with all environmental obligations, the deposit shall be returned. For ASM operators that may not be able to provide such financial guarantees, Peru's *Decree Law on establishing rules to formalize small-scale and artisanal miners (No. 1 105 as amended in 2012)* establishes

a fund to be used for reforestation of the mining area (Article 17). The sources of the fund comprise penalties from illegal mining, international cooperation, and donations and other sources from the relevant ministry in accordance with legislation.

## 7.6. Environmental protection

### 7.6.1. General stipulations

**Environmental (or other natural resource) legislation may contain provisions seeking to limit the impact of exploration, extraction or processing activities on the environment.** These are not extensively explored here, although as an example, South Africa's *National Environmental Management Protected Areas Act (No. 57 of 2003),* stipulates that no person can conduct prospecting or extraction activities in a special nature reserve, national park or nature reserve, or in an otherwise protected environment without the written permission of the authority responsible for the environment. The minister may prescribe conditions to the authorization of such activities that seek to reduce or eliminate detrimental impacts, and in so doing the minister is also required to take into account the interests of local communities and the environmental principles contained in environmental legislation. Water and forestry laws may contain similar stipulations and it is important that regulators ensure consistency in rules and controls relating to mining, which may feature in different types of legislation or policy documents.

**Mining laws may contain generic provisions calling for environmental protection.** Ecuador's *Law on Mining (2009)* places exploitation of mining rights within the sustainable development framework of the National Development Plan. The Law recalls the need for conservation of the environment, social participation, and a respect for natural and cultural heritage (Article 16). The Law emphasizes environmental sustainability by preventing pollution, requiring environmental remediation at all stages of operations, as well as requiring oversight relating to these matters. It forbids the concessionaire from carrying out activities without the corresponding

environmental licence. The Australian (Northern Territory) *Mining Management Act (2015)* contains a general stipulation that *every person* at a mining site has the obligation to take care of the environment (Section 13), and lists obligations in Section 14 that all persons shall not "wilfully or recklessly" cause environmental harm at a site or "interfere with or misuse anything provided on a mining site for environmental protection". The Act also enumerates the specific obligations of various levels of employees in a company. The text states that the mine operator should ensure that the environmental impact of mining activities is limited to what is necessary for the operation and closure of the mine. This includes establishing, implementing and maintaining an appropriate environment protection management system for the site. The Act calls for consultation and cooperation in environmental matters (which could be effected through environmental committees), as well as requiring the design of specific policies and procedures, disseminating information on risks, and formulating plans to deal with incidents. Under the Finnish *Mining Act (No. 621 of 2011),* a general framework of principles is set out for mining activities. These include: conditioning mining activities on the necessary expertise and sufficient resources; sufficient information and clarity on impacts and prevention of damage; measures are taken to ensure safety; contingency plans are in place for emergencies; and any disturbance or damage is compensated.

**While mitigation involves actions to reduce environmental damage, offsets are those that refer to measures to make up for unavoidable damage** (Australian Government, 2011), such as rehabilitation, explored in Section 7.6.5. Some countries focus heavily on prevention. The Republic of Korea has extensive provisions to prevent environmental damage from mining activities through the *Mining Damage Prevention and Restoration Act (2005, as amended in 2011)*. This text identifies a list of types of environmental damage that is caused by mining activities, creates a system for the registration of specialized mining damage prevention companies (Article 12), and tasks the government with investigating environmental pollution in the mining areas that have been subject to prevention or offset measures under the Act.

**Mining laws also seeks to prevent pollution from a range of sources** (including dust, emissions, vibration, noise, vehicle movement, use of hazardous substances, water and soil contamination)**.** The Australian (Western Australia) *Mines Safety and Inspection Regulations (1995)* set out a sampling and opacity measurement requirement for exhaust emissions, and prescribe in detail the limits from different engine types. Under Peruvian *Decree-Law (No. 1042 of 2008),* where the responsible party cannot be found or identified, the state is required to assume the remedial activities using the National Environmental Fund. Sierra Leone's *Mines and Minerals Act (2009)* reiterates the polluter pays principle. For more on water-specific anti-pollution provisions see Section 7.6.3.

**Legislation may recognize the potentially large-scale detrimental impacts of small-scale and artisanal mining.** To this end, Peru enacted *Legislative Decree (No. 1 101 of 2002)* to establish measures aimed at strengthening the environmental control of small-scale mining and artisanal mining. It firmly prescribes ASM operators as being responsible for the environmental impacts of their activities (in Article 4), otherwise such operators are liable to face sanctions. Article 70 of Côte d'Ivoire's *Mining Code (2014)* requires artisanal miners to adopt a rational use of mining resources and to protect the environment. The ASM operators cannot, except by agreement, disrupt agriculture or irrigation in the area, and in such case, nonetheless have an obligation to revert the land to its original state at the end of operations.

### 7.6.2. Biodiversity and protected areas

**The United Nations Environment Programme (UNEP) has noted that progressive technologies and high demand has galvanized a push into remote areas that are often biodiversity-rich ecosystems** (UNEP, 2010). While some recent laws specifically mention biodiversity in non-operative (preambular) clauses, most references in legislation refer to generic environmental protection only. However, some laws may make provisions for biodiversity without express use of the term. As illustrated by the South African example in the previous Section 7.6.1, some laws require that exploration licences within or adjacent to a specially protected area requires the approval of the minister responsible

for the environment or that protected area. Tuvalu's *Seabed Minerals Act (No. 14 of 2014)* contains a blanket prohibition on the competent authority from designating areas of Tuvalu's continental shelf or any area that is a marine reserve or protected area, as a minerals area. The Mongolian *Law to prohibit mineral exploration and mining operations at headwaters of rivers, protected zones of water reservoirs and forested areas (2009)* also issues, as the title suggests, a blanket prohibition on mining in those areas. However, this strong provision is weakened by the caveat in Article 4.2 that a prohibition would not apply to areas where there are "deposits of strategic importance".

However, commentators point out that threats to biodiversity can also result from indirect impacts caused by facilitated access to mining areas that then enable an expansion of agriculture, artisanal mining or logging that are beyond the control of mining operators (UNEP, 2010). In adopting a systems approach, these considerations will also be important.

### 7.6.3. Impacts on water resources and water supply

**While impacts on water resources relate primarily to environmental factors such as over-abstraction, degradation and water quality issues, water availability and supply considerations have social impacts on local communities.** The impacts may be positive (such as improved access to water and updated water infrastructure) or can be detrimental if water quality or available supply to local communities is reduced. Conversely, local communities that require water for domestic uses or for agriculture, for example, can also impact water supplies available for mining activities. As water is used extensively in mining operations, provisions specifically catering to water resources and bodies often feature in legislation.

**Legislation usually requires the mining operator to get authorization from the competent authority for water use and to observe discharge and other restrictions and requirements.** Ecuador's *Law on Mining (2009)* requires an operator to obtain a water licence or approval, to observe discharge limits and to comply with water quality restrictions and requirements (Article 61). The Nigerian

*Minerals and Mining Act (2007)* states that any mining applicant seeking a water licence needs to reach an agreement with affected persons prior to the grant of such a right (Section 130). This ensures that communities are involved in decisions regarding the allocation of water resources. The mining applicant must also notify the Mining Cadastre Office of any conditions relating to the water licence. The Act forbids the pollution of water bodies, and stipulates that water used for mining activities (such as for the generation of power or the extraction of mineral substances) and discharged from the area shall "not contain injurious substances in quantities detrimental" to animal life or vegetation (Section 123). A limit on the quantity of tailings that may be deposited in any watercourse is also to be specified in regulations (Section 126). Persons cannot make alterations to the water supply so as to prejudicially affect another's use (Section 126).

**Provisions to prevent acid rock drainage feature in mining laws.** In Ghana's *Minerals and Mining (Health, Safety and Technical) Regulations (L.I. 2182 of 2012),* prescriptive requirements relating to environmental obligations at the stage of closure of mines are elaborated. Among the various stipulations are that titleholders are required to implement various acid rock drainage prevention measures. Kyrgyzstan's *Ministerial Decree on tailings management (No. 406 of 2012)* tasks a regulatory authority with monitoring, research, registration and management of tailing facilities and mining refuse dumps.

**Legislation usually creates linkages between waste disposal provisions from mining activities (including from waste rock and tailings) and overarching water resources management legislation.** Viet Nam's *Order on the promulgation of the Mineral Law (No. 17/2010/L-CTN)* refers to the use of water in mineral activities as being governed by the *Law on Water Resources (Law No. 7/2012/QH of 2012).* The European Union *Mining Waste Directive (2006/21/EC)* requires all waste facilities to have a permit, and the application for this includes a waste management plan for minimizing environmental impacts. Mine water is additionally controlled through the *Water Framework (2000/60/EC)* and *Groundwater (2006/118/EC) Directives*. Namibia's *Water Resources Management Act (No. 11 of 2013)* requires

the permission of the responsible minister prior to the drilling of any excavations, boreholes or wells that may affect water tables. This Act also sets out the criteria for granting a licence to discharge effluent, or to operate a wastewater treatment facility or disposal site. These considerations include whether the activities are consistent with the Integrated Water Resources Management Plan; the concentration of waterborne contaminants; the impact of the discharge or waste disposal site on existing water uses and on groundwater; and the impact of the proposed effluent discharge on the environment, including owners and occupiers of land and water resources, and water resource quality, in the vicinity.

### 7.6.4. Recycling of waste and waste disposal

**Waste disposal may involve recycling, reusing or reclaiming such waste where environmentally feasible.** The European Union's *Directive on the management of waste from extractive industries (2006/21/EC)* requires member states to prepare a waste management plan for the minimization, treatment, recovery and disposal of extractive waste, "taking account of the principle of sustainable development". The goals of such plans are to prevent or reduce waste production and its harmfulness, and to ensure short and long-term safe disposal of extractive waste. The plan is subject to review every five years. Poland's *Act amending the Mines and Wastes Act (2013)* requires the mine operator to reduce the negative impact of mining waste, even after the mining waste disposal facility has been closed, considering the best available techniques. The original Act contains detailed provisions on neutralizing harmful effects of wastes, measures to be taken to prevent serious incidents of waste leakages, and procedures to apply for authorizations of waste management facilities. In Finland's *Mining Act (No. 621 of 2011),* the permit holder is required to develop a waste management plan which includes information about the soil and rock material waste, environmental impact on the surrounding areas and measures taken to prevent contamination and monitoring schemes, among others.

### 7.6.5. Rehabilitation

**Rehabilitation does not only apply to exploitation rights, but to prospecting as well.** Vast wastelands created from the removal of soil, trees and rocks, and large expanses of open pit mines can destroy rural areas for years; more so if water resources are polluted, topsoil is contaminated or if acid leaches into neighbouring areas (UNDP, 2012). As noted in Section 7.5.4, legislation may require rights holders to submit a financial bond that covers an estimate of the cost required to complete rehabilitation and restoration. This may include aspects such as geotechnical soil stabilization, securing of openings, water treatment, etc. Sampling programmes carried out by agronomists and geologists may be mandated by legislation to test excavated sites. Different strategies can be employed at various stages of the operation of mines; and legislative provisions often provide corresponding rehabilitation and reclamation measures at those stages. Canada's (Ontario) *Mining Act (R.S.O. 1990, c. M.14 as amended in 2007)* stipulates that reasonable steps are to be taken progressively to rehabilitate a site, whether or not closure has commenced or a closure plan has been filed (Section 139). Finland's *Mining Act (No. 621 of 2011)* stipulates certain after-care measures at the end of the exploration period, including rehabilitation and tidying of the area and restoring the location to its natural status as far as possible. The rights holder is required to complete a report within six months on the latter. The article of this Act also requires notification to be given to indigenous peoples where relevant, and to:

> The Sami Parliament in the Sami Homeland, to the appropriate local reindeer owners' associations in a special reindeer herding area, and to a village meeting of the Skolt people in the Skolt area (Section 15).

The specific types of actions and measures to be taken are often detailed in implementing regulations. Often this includes details on measures to be taken where there is metal leaching or acid rock drainage. For example, Ghana's *Minerals and Mining (Health, Safety and Technical) Regulations (L.I. 2182 of 2012)* contains extensive details on closure of mines, provisions for rehabilitation, closure of waste and disposal systems and related matters. Sierra Leone's *Environmental Regulations*

*for the Minerals Sector (2012)* requires a rights holder to ensure that the mine area is "free of any adverse physical, chemical and biological effects", with no long term adverse environmental risks and left in a condition that facilitates future sustainable land use. Schedule 16 of the Regulations states that the parameters for the level of financial guarantee to ensure rehabilitation standards are met, are to be established by the competent authority. Critically, these Regulations emphasize that the rights holder's obligations shall not be limited by the expiration, suspension or cancellation of the mineral right. Australia's *Mining and Petroleum Legislation Amendment (Harmonisation) (Act No. 40 of 2015)* declares that any costs associated with implementing rehabilitation orders or directions that are not complied with constitute a debt due to the Crown and are recoverable in a court of competent jurisdiction (Section 78D).

### 7.6.6. Climate change

Climate change can worsen the detrimental environmental risks associated with mining, such as flooding of process water, landslides and soil instability and in times of water scarcity, putting pressure on available resources; notably, also risks to the (sustainability of) a mining operation itself (UNSD, 2010). An acknowledgement of these mining-related risks is visible in a number of climate-change related laws, references are not frequent in mining legislation. As an example of the latter, the Republic of Korea's *Mining Damage Prevention and Restoration Act (as amended in 2011)* authorizes 'emergency' mining damage prevention and implementation when an unpredictable mining damage occurs as a result of an accident or a natural disaster.

**Frequently, disaster management legislation requires the development of contingency plans for the mining sector.** Zambia's *Disaster Management Act (No. 13 of 2010)* requires those in the mining sector to prepare a regularly updated disaster management plan that should be consistent with the overarching national disaster plan (Section 40). These plans should accommodate slow and rapid onset disasters, allocate resources for the implementation of the plan, and set out measures for mitigation, preparedness, response and

recovery. Viet Nam's *Law on Natural Disaster Prevention and Control (No. 33/2013/QH13)* tasks a competent authority with establishing plans on natural disaster prevention and control, to ensure the safety of mining zones (Article 42).

The increasing risks associated with climate change warrant greater attention to be paid in sectoral legislation, identifying what actions operators may take to mitigate damage to their infrastructure and to prevent adverse impacts on neighbouring communities (for example, environmental or social impact management plans and strategies could expressly require addressing this issue). Recognizing that such strategies would for the most part inherently include how to deal with such risks, a key element would be to require the identification of any roles and responsibilities specific to the mining sector for various climate-change related scenarios. Strong connections should be made with other climate-change and disaster management legislation.

Mitigating climate change *impacts* of the sector are addressed in the next section on energy use reduction.

### 7.6.7. Efficiency: recycling and energy use reductions

**According to UNEP, approximately 7 percent of the world's energy use goes towards the metals sector, and as a result of declining ore grades, is likely to rise higher** (UNEP, 2010). Recycling used metal components would reduce the need for further mineral extraction (UNEP, 2010).

**Regulatory provisions that encourage technical innovations or the use of 'green', efficient or 'clean' technologies can enable greater efficiency in operations generally, and in energy use specifically.** Viet Nam's *Decision (No. 159/2008/QD-TTg)* stipulates that technology updates must consider:

> The practical conditions of each mine, make full use of existing capacity to meet the requirements of raising production efficiency, and pay due attention to the integrated and thorough use of mineral resources (Article 1(1)(1)(a)).

According to this instrument, priority must be given to selecting new equipment and technologies that enable high productivity, that are environmentally friendly and that conserve raw materials, fuel and energy. Uzbekistan's *Presidential Decree No. PP-1396 on the efficiency of mining (No. PP-1396 of 2010)* tasks the State Committee on Geology and Mineral Resources with exploring efficiency in exploration and mining.

**Legislative provisions may encourage research and development (R&D) in general, or R&D that is specifically to enable environmental protection as well as protecting human health and safety.** Viet Nam's *Decision (No. 159/2008/QD-TTg)* promotes in general terms, research and new technologies, and increasing the links between research institutes, universities and mining enterprises. The text also encourages increasing research equipment and laboratories for mining science. The Republic of Korea's *Mining Damage Prevention and Restoration Act (2005, as amended in 2011)* requires the development of a master plan for damage prevention which includes research and development of mining damage prevention technologies (Article 7).

## 7.7. Protecting and empowering local communities

The sudden influx of people, machinery and activities on the local community and environment can result in tensions that lead to conflict or even armed rebellion in the worst-cases (World Bank, 2011). Local communities may be subjected to a reduced standard of living from the various sources of pollution as well as other social impacts from the influx of workers into the area (UNEP Finance Initiative, 2014a).

**Legislation must first establish who comprises the local community.** Sierra Leone's *Mines and Minerals Act (No. 12 of 2009)* refers to a "primary host community" to mean:

> The single community of persons mutually agreed by the holder of the … licence and the local council, but if there is no community of persons residing within 30 km of any boundary defining the large-scale mining licence area, the primary host community shall be the local council (Section 139(2)).

If there is no consensus as to who comprises the primary host community, the matter is presented to the minister for resolution.

### 7.7.1. Human rights-based approach

**The fundamental rights of local communities must be respected and protected.** Legislative provisions that further social goals and protect local communities may employ various human rights-based principles. Some mining laws are explicit in invoking human rights language. Côte d'Ivoire's *Mining Code (2014)* Article 121, reiterates the state's tripartite obligations to "respect, protect and fulfil" the human rights of affected communities. Burkina Faso's *Law on the Mining Code (No. 036-2015/CNT)* defines community development as sustainable development based on, among other things, a respect for human rights (Article 2). The government is identified as being the guarantor of human rights, and as being responsible for a legal framework that enshrines human rights and equality (Article 7). The government is also required to establish a framework for the protection of rights including redress mechanisms, for local communities. Titleholders are to facilitate a progressive improvement in the living conditions of local communities and to observe the human rights of local communities, in particular. Sierra Leone's *Mines and Minerals Act (2009)* requires small and large-scale mining licence holders to promote sustainable development, enhance the general welfare and the quality of life of the inhabitants, and respect the rights, customs, traditions and religion of local communities (Section 138).

### 7.7.2. Social Impact Assessments

While negative impacts can be mitigated or eliminated, **positive contributions of mining operations to a local community can be enhanced**. As a starting point, these impacts should be identified through an SIA. As noted in Section 7.5.2, mining laws should require an SIA during the application process as the first stage where potential positive and negative social, environmental, demographic and economic impacts of all phases of the mining operations on the community, are formally presented for consideration. An SIA seeks to determine possible

risks and opportunities to the community or region. However, beyond this, the report should assess mitigation, prevention or avoidance measures against risks and formulate projects, processes and initiatives to capitalize on the opportunities.

Sierra Leone's *Environmental Regulations for the Minerals Sector (2012)* Sixth Schedule sets out in extensive detail the requirements of SIA reports. It mandates the incorporation of general principles, such as compliance with human rights standards, protection of local cultures and traditions, and engagement of local knowledge and experience. This Schedule further lists the requisite elements of an SIA report: a methodology, the processes for consultation and participation, a socio-economic and cultural baseline description, social impacts on land, labour requirements, and a social impact management plan (including measures designed to prevent, mitigate or compensate for social impacts; monitoring activities, timeframes and estimated costs). A community liaison committee is mandatory for any negotiations with the local community whether for small or large-scale activities. Once approved, the mining operator is required to make the findings of an SIA public through a range of media and mechanisms.

### 7.7.3. Consultation and participation

**Community benefits from mining activities can be realized through a number of mechanisms; principal among these are consultations and participation in decisions that affect them. This engagement should be continuous,** i.e. prior to and throughout the life of the operations. Legislation should require the local community to be consulted at all stages: during the preparation of SIAs or EIAs, for community development agreements, in the grant of mineral rights and the preparations of other plans, as well as in monitoring mechanisms. An important issue raised by some commentators is that community engagement is not an exercise to garner consent on foregone conclusions, but rather involves getting inputs on a decision yet to be made, and that can be influenced by the community (Department of Jobs, Precincts and Regions, 2019). Such approach would enhance the relationship between the parties and provides a basis for trust and respect. Legislation allows

for this flexibility by encouraging regular and open communications, as well as periodic review. Sierra Leone's *Environmental Regulations for the Minerals Sector (2012)* Sixth Schedule, stipulates that, in any analysis of social and local economic issues, the applicant shall "actively engage local stakeholders including: village communities; individuals and local enterprises such as agricultural cooperatives, education, gender and youth empowerment groups; market traders; and educational, health and social workers." The Schedule also requires a stakeholder list to be included in an SIA report. These Regulations require the local community to be given an opportunity to participate in consultations relating to environmental and social matters. Titleholders are required to apply the following principles: non-discrimination; respect for cultural diversity, including values, customs and traditions; the provision of accurate information, in simple language and one used by the community; and that problems are solved through dialogue and local traditions.

### 7.7.4. Community development agreements

**Legislation may set out the core content of agreements between local communities and mining companies.** For companies, this is a means of enabling long-term access to resources, and reducing risks related to uncertainty and disputes (ICCM, 2015), while for local communities, agreements are a means to ensure their rights are protected and their specific needs accommodated over the long-term, even after closure of the mine. The Nigerian *Minerals and Mining Act (2007)* requires an agreement with the host community by all types of operators (except artisanal miners), and the objective of the agreement is the transfer of social and economic benefits. Such agreement should include: technical training and employment opportunities; financial and other support for infrastructural development (education, health, roads, water power); support for the development of small-scale and micro enterprises and agricultural product marketing (Section 116). The agreement should also set out the methods and procedures for environmental and socio-economic management and local governance enhancement. If a consensus is not reached, the matter must be presented to the minister for a resolution. The Sierra Leone's *Mines and Minerals Act (2009)* calls

upon licence holders to implement a community development agreement with the local community if their activities exceed prescribed thresholds. The agreement is to be based on a community development plan (in turn developed from the recommendations in the EIA and SIA). The text spells out the requisite elements of a community development agreement: (i) undertakings to enable social and economic development; (ii) support in the creation of sustainable enterprises for the local community; (iii) consultations on mine closure measures; and (iv) mechanisms for periodic review and monitoring of the agreement. The 2012 Regulations require the contents of the plan to be, among other aspects: a framework for participation; policies and processes for enabling sustainable development; local employment and procurement mechanisms; and a gender strategy outlining actions for improving the condition of women and children.

### 7.7.5. Financial payments for sustainable development of the community

**Legislation typically includes specific financial payments to be made to local communities, although the prescribed amounts vary from jurisdiction to jurisdiction.** Ecuador's *Law on Mining (2009)* stipulates that the government is to allocate 3 percent of the annual sales of the minerals exploited, to sustainable local development projects through municipal governments and parish boards and, if applicable, through governments of indigenous communities. Sierra Leone's *Mines and Minerals Act (2009)* requires the licence holder to spend no less than "one percent of one percent" of the gross annual revenue toward the community development agreement and the expenditures shall be listed in an annual report (Article 138).

These contributions are not limited to large-scale operators. Togo's *Law on the contribution of mining companies to the development of local and regional communities (No. 8 of 2008)* makes it mandatory for large-scale, small-scale or artisanal miners to make annual financial contributions to local and regional development. The management of financial contributions is to be carried out by a tripartite body representing the government administration, operators and the local community. Under

Côte d'Ivoire's *Mining Code (2014)*, ASM operators are also required to contribute financially to socio-economic development in their regions in accordance with prescribed procedures.

### 7.7.6. Relocation and resettlement

**Legislation often requires the use of resettlement as a last resort option.** The issue of relocation and resettlement is a contentious issue; relocation and resettlement mean uprooting communities away from their traditionally occupied lands, their livelihoods, cultural associations and way of life. Afghanistan's *Mineral Law (2014)* declares that only following an EIA and SIA, and where the competent authority and local government agencies determine that "resettlement is a necessary action of last resort", the titleholder must develop a resettlement action plan together with affected communities, and provide enough financing to accomplish the resettlement process and the compensation of displaced individuals (Article 40). In some countries, strong legislative provisions on preventing negative impacts on local and indigenous communities (see Section 7.7.7) may preclude the option of relocation and resettlement.

**Mining laws may reference land legislation with regard to appropriation and compensation.** For example, India's *Coal Mines (Special Provisions) Act (No. 11 of 2015)* refers to the procedures under the *Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement Act (No. 30 of 2013)*.

### 7.7.7. Indigenous peoples

**The considerations discussed in the foregoing subsections apply equally to indigenous peoples.** In Australia, it has been estimated by the Minerals Council of Australia that 60 percent of mining operations neighbour Aboriginal communities (Minerals Council of Australia, 2016). Accordingly, these communities sometimes attract specific reference or consideration in a number of Australian mining laws. Legislation in central and South American countries also accord indigenous peoples with special treatment and protection. Article 90 of Ecuador's *Mineral Law (2009)* recalls Section 398 of the country's Constitution, reaffirming

as obligatory, the process of participation and consultation for the local and indigenous communities affected by mining activities in order to ensure legitimacy and representation of their interests. One of the core principles stated in the Plurinational State of Bolivia's *Law on Metallurgical Mining (No. 535 of 2014)* is that mining operators must consider the protection of indigenous nations and indigenous peoples particularly "in situations of high vulnerability". Indigenous peoples enjoy the right to participate in the benefits of the exploitation of mineral resources in their territories (Article 19). Article 207 recalls the country's Constitutional provisions on the right to prior, free and informed consent of indigenous peoples, and outlines where this procedure is required. Article 229 governs the distribution of royalties and guarantees priority participation and benefit of indigenous peoples in the mining regions. The Bolivarian Republic of Venezuela's *Decree (No. 2 265 of 2016)* sets up a committee to safeguard the rights of indigenous peoples in relation to mining activities. This Committee is tasked with making strategic decisions related to the preservation of ecologically important areas and protecting biological diversity in the context of mining, and also ensuring that mining is cognizant of ancestral culture, traditions and customs, with special attention to indigenous peoples and communities. This body is also mandated to ensure that the rights of such communities are taken into account in the development of mining plans and projects; and is further required to promote and coordinate mechanisms for the participation of indigenous peoples in the formulation and execution of mining activities in their areas.

In another region, Finland's *Mining Act (2011)* contains provisions for the rights of the Sami indigenous peoples in particular, in relation to the granting of rights, stating that:

> The activities referred to in this Act shall be adapted in the Sami Homeland, referred to in the *Act on the Sami Parliament (974/1995)*, so as to secure the rights of the Sami as an indigenous people (Section 1).

Importantly, under Section 50 of the Act, permits will not be granted if to do so would undermine the preconditions for engaging in traditional Sami sources of livelihood or otherwise to maintain and develop the Sami

culture. Zambia's *Mines and Minerals Development Act (2008)* renders a titleholder strictly liable for any negative impact on the livelihood or indigenous knowledge systems or technologies of any community.

### 7.7.8. Cultural preservation

Legislation may also include general stipulations protecting cultural heritage, including archaeological sites, although while not always explicitly referencing indigenous peoples, these provisions could be used to protect their cultural rights. More broadly, Nigeria's *Minerals and Mining Act (2007)* protects burial sites, ancestral sacred sites or archaeological sites. Viet Nam's *Order (No. 17/2010/L-CTN)* declares areas banned from mineral activities to include land with historical or cultural relics or areas delimited for protection under the country's cultural heritage legislation. Sudan's *Mineral Resources and Mining Development Act (2007)* requires a licensee to report to the competent authority any artistic or other antiquities and archaeological findings (Section 17); operations are required to cease until approval is granted to continue.

## 7.8. Dispute settlement

**Disputes relating to mining operations may be between the titleholder and the government, or the former and the local community, individual landowners or indigenous people.** There is a risk that disputes may escalate to physical conflicts that disrupt operations and result in social unrest that is extremely harmful for the local community and the country as a whole. Under a community development agreement, the Sierra Leone *Mines and Minerals Act (2009)* requires the inclusion of a clause that any dispute regarding the agreement shall, in the first instance, be resolved by consultation between the licence-holder and the primary host community representative(s), and if this is not successful, then the matter is to be forwarded for final resolution to the minister to decide in consultation with the local council.

**A specific body for hearing grievances may be established.** Under India's *Coal Mines (Special Provisions) Act (2015)*, where the government

considers that any dispute arising from any issue under the Act exists, a Tribunal constituted under the *Coal Bearing Areas (Acquisition and Development) Act (1957)*, should hear the parties and make an award in writing within three months (Section 27); this does not preclude the jurisdiction of the Supreme Court or High Court to hear the matter. Côte d'Ivoire's *Mining Code (2014)* empowers independent experts to hear disputes between the state/mining authority and the titleholder or beneficiary. The latter parties may mutually agree to have a decision made by an independent expert, or by a judicial court or arbitration body (Article 90). The rights at issue are suspended until final arbitration, but the mining authority is required to take all necessary measures to protect persons, property and the environment in the interim. Afghanistan's *Mineral Law (2014)* acknowledges that disputes can be between a licence holder and the state, or between a licence-holder and "non-state parties". The Law declares that the terms of a written agreement covering the issue will be applied and where such does not exist, resolution may be achieved through: (i) arbitration by an expert nominated by the parties; or (ii) by a dispute resolution panel of independent experts selected by the competent authority with a mandatory composition of independent experts or mining experts (Article 93). This Law requires however, that the parties pay the associated fees, which would likely be prohibitive for certain individual landowners or a local community. Laws in other jurisdictions often stipulate that the cost of a dispute settlement will be borne by the mining company. This is the case in Sierra Leone's *Environmental Regulations for the Minerals Sector (2012),* which declares that the costs of any arbitration shall be borne by the holder of a mineral right. These Regulations further allow for accessible, effective and culturally appropriate grievance mechanisms. Titleholders, as part of the obligation to consult with local communities under the Act, are required to establish a formal grievance mechanism that meets the following criteria: (i) it is considered legitimate, accessible, equitable and transparent by the community; (ii) it ensures that communities' rights are respected; (iii) it enables dialogue and engagement; and (iv) it facilitates an environment of continuous improvement in processes and dialogue. A grievance officer is to be nominated to raise awareness in the local community of this mechanism, and is also tasked with managing

grievances and documenting processes. If this mechanism is insufficient to resolve disputes, the competent authority is to designate an arbiter jointly with a representative of the local community.

## 7.9. Labour matters

### 7.9.1. Occupational health and safety

**Mining is characterized as a potentially toxic and hazardous work environment and requires stringent safety measures and implementation.** In addition to health risks for residents around the mines, largely stemming from different types of pollution, a number of health and safety risks to employees may arise. The UNEP highlights that incidents stemming from mine collapse, equipment failure, explosions from volatile materials, respiratory diseases, and poor living conditions are among the frequent health and safety risks at mine sites (UNEP Finance Initiative, 2014a).

The Australian (Queensland) *Coal Mining Safety and Health Act (1999),* though older with respect to other legislative examples, contains extensive occupational safety provisions. It lays out detailed obligations for different levels of employees within the operation/company including senior level executives, health and safety officers, mine owners, designers, manufacturers, and installers of infrastructure and equipment, etc. The Act includes general obligations such as ensuring dissemination of information regarding a risk to human health or safety and the taking of reasonable actions to ensure persons are not exposed to an unacceptable risk. Risk management is a core obligation of mine operators generally, and the statute provides guidance as to what is an acceptable level of risk and what should happen if such threshold is exceeded. The Act calls for a risk-based safety and health management system that can be audited, and which includes a health and safety policy that outlines the relevant organizational structure, responsibilities, practices, processes and resources.

Australia's (Western Australia) *Mines Safety and Inspection Regulations (1995)* requires mining operators to ensure that each employee engaged

in exploration operations is provided with: (i) training to enable the employee to manage risks associated with the hazards of operations; and (ii) suitable equipment. This text prescribes a number of detailed rules relating to aspects such as safety signs, induction and training, first aid vehicles, material safety data sheets, conveyor haulage safety, noise control, fall arrest equipment, radiation safety, hygiene and sanitation, and a number of other mandatory safety procedures and equipment. The Law also requires a monthly status report to be submitted to the district inspector by the mine manager. This report should include information on any injuries that have occurred, the total number of hours worked by employees and the number of employees active at the site. Section 77 requires an accident logbook to be kept by the mining company to record any incidents.

Depending on the country context, trade unions or collective bargaining association structures may be illegal. Where such structures are not permitted, and where labour supply is larger than demand, this may weaken the position of workers seeking to enforce their rights in general (UNEP Finance Initiative, 2014a). Where such organization is allowed however, legislation may refer to membership of such bodies. Under the Australian (Western Australia) Act above, any accidents that result in a disabling injury must be notified to the local district authority as well as to the local trade union where the injured employee is a member (if requested by the latter (Section 76)). A trade union representative may then inspect the place of the accident. Nigeria's *Minerals and Mining Act (2007)* contains a duty of the operator to report an accident to the responsible authority and states that an inquiry must be set up (Article 85), without prejudice to eventual criminal or civil investigations and court hearings.

### 7.9.2. Child labour

**The UNEP highlights that there is a high incidence of child labour in this sector.** Children may be required to work long hours, are at high risk of injuries and chronic health problems and are vulnerable to trafficking or sexual abuse (UNEP Finance Initiative, 2014a). Côte d'Ivoire's *Mining Code (2014)* prohibits child labour in any mining

activities under Article 120. Under Peru's *Decree Law on establishing rules to formalize small-scale and artisanal miners (No. 1 105, as amended in 2012)*, the committee established under the Decree Law is tasked with developing social programmes for the eradication of child labour and prostitution of minors in areas where mining activities are carried out.

### 7.9.3. Migrant workers

**The unique issues faced by migrant workers at mining sites are largely absent from recent mining legislation.** Migrant workers often comprise a significant share of the workforce in extractive sectors (UNDP, 2012); they may be hired at mines owing to a lack of local labour at or around the mine, and also for their willingness to work for less than local labourers. Migrant workers may be outside the operation of trade unions where these exist, migrants may not be considered 'employees' therefore falling outside the protection of labour laws, and they may not even speak the local language. Migrants may be subject to discriminatory practices that also result in their exclusion from training, adequate housing and access to health care or education. Migrant workers also face a higher risk of sexually transmitted diseases owing to the transient nature of their work (UNDP, 2012). While no recent legislation was found that adequately addresses migrant workers in the mining sector, Sierra Leone's *Mines and Minerals Act (2009)* does contain a clear prohibition of discrimination against any employees for exercising any right under which they are entitled under the Act; 'employee' has a loose definition as "any applicant for employment who has previously been employed at a mine".

### 7.9.4. Female workers

**The particular challenges faced by female mine workers are similarly unaddressed in recent mining legislation.** Of the approximately 90 million people directly or indirectly involved in non-industrial mining, about 30 percent are women; and studies suggest that women bear the negative impacts of mining activities disproportionately to men (CCSI *et al.,* 2016). There are disparities between men and women in types of jobs and access to jobs (Eftimi, Heller, and Strongman, 2009);

and women may be employed in the more hazardous and polluting (but less physically demanding) activities such as processing plants and milling units (UNEP Finance Initiative, 2014a).

**Furthermore, the impacts on female-oriented livelihoods and roles (in agriculture for example),**[13] **is also largely unaddressed in legislation.** Gender (and other types of) discrimination may exist in the local community, and engagement with the community may not always ensure that marginalized groups within that community are heard. This is in spite of evidence that suggests more sustainable outcomes are found where women have more say in setting priorities for community investments (Eftimi, Heller, and Strongman, 2009). Sierra Leone's *Environmental Regulations for the Minerals Sector (2012)* do somewhat accommodate for this by requiring the community liaison committee to comprise at least two female members.

### 7.9.5. Security of a mine

**A mining company should take steps to protect its assets and ensure the security of employees;** a lack of effective security can lead to attacks, theft of dangerous equipment and an unsafe environment for workers (UNEP Finance Initiative, 2014a). Furthermore, in conflict zones or failing states, security contractors may be complicit in fuelling conflict by aiding illegal armed groups (including payment of protection money), they may be connected to paramilitary groups, or they may over-react to protests at a site and escalate conflict (UNEP Finance Initiative, 2014a). Legislation that requires operators to have clear security policies and procedures, including training on security issues and dealing with protests, may offer a basic framework for enabling greater security around mining sites.

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[13] For example, the conversion of land away from agriculture, as well as the time it takes to collect water, firewood, and food, in addition to creating health challenges that mean the burden of care is often on women. For more information, see: Eftimi, Heller, and Strongman, 2009.

### 7.9.6. Post-closure training and opportunities

**Many laws require mine closure plans as part of an application to commence mining activities. Such plans may involve redundancy payments and retraining schemes** (World Bank, 2002). The Sierra Leone *Environmental Regulations for the Minerals Sector (2012)* states that the required level of financial surety will be established to ensure that the titleholder has sufficient funds to ensure redundancy payments, retraining schemes, support for dependent (spin-off) businesses, utilities (electricity, water, communications, etc.), social facilities (health, education, justice, etc.), infrastructure (roads, airstrips, ports, wharves, etc.) and food security. The financial guarantee is calculated on the basis of all components of the closure or rehabilitation plan.

## 7.10. Transparency: data and information sharing for improved governance

**Most laws create provisions that allow mining cadastres and registers to be open for consultation.** Tuvalu's *Seabed Minerals Act (No. 14 of 2014)* for example, allows the cadastral survey map and register of titles to be open for public inspection. The register contains applications and titles, any incident reports and annual reports (but importantly, protects proprietary and confidential information).

**However, key challenges in mining governance relate to data and reporting weaknesses,** i.e., scarcity of information, inadequate information sharing, and a lack of information about how environmental and social impacts are identified and addressed (World Bank, 2014). The UNEP has identified a number of knock on-effects of fiscal mismanagement (perceived or actual). These include a failure to provide basic services promised to local communities, an increased cost of essential items in the area, and a perception that companies are not paying tax if revenue does not filter down to the local community (UNEP Finance Initiative, 2014a). Transparency requirements are particularly critical in post-conflict situations, more so where the conflict was a result of disputes over natural resources.

Mining legislation has increasingly cited the application of Extractive Industries Transparency Initiative (EITI) principles. Madagascar's *Ministerial Order (No. 15 911/2013)* sets out rules and procedures for the compulsory participation of all mining companies in the EITI tax reporting obligations (see Box 7.1 on EITI). In accordance with Article 3, companies must declare payment of taxes to the EITI according to a model established by the EITI National Committee. Similarly, Afghanistan's *Minerals Law (2014)* requires state authorities and the licence holder to comply with the requirements and standards of EITI. Liberia's *Extractive Industries Transparency Initiative (LEITI) Act (2009)* contains extensive details incorporating EITI principles. Its goals are to ensure that resources from mining and other extractive sectors resources are verifiably paid or provided; duly accounted for; and "prudently utilized for the benefits of all Liberians and on the basis of equity and sustainability".

**Box 7.1**
**Extractives Industries Transparency Initiative (EITI)**

The Extractive Industries Transparency Initiative (EITI) is a global standard to promote the open and accountable management of oil, gas and mineral resources. The principles below are the cornerstone of the EITI Standard, which calls for the publication of accurate information in a timely manner on a range of data requirements including on the allocation of licences and permits, the quantity of tax contributions and social benefits, and how and where funds are collected and used by the government.

**EITI Principles**

1. We share a belief that the prudent use of natural resource wealth should be an important engine for sustainable economic growth that contributes to sustainable development and poverty reduction, but if not managed properly, can create negative economic and social impacts.
2. We affirm that management of natural resource wealth for the benefit of a country's citizens is in the domain of sovereign governments to be exercised in the interests of their national development.

**Box 7.1** *(cont.)*

3. We recognize that the benefits of resource extraction occur as revenue streams over many years and can be highly price dependent.
4. We recognize that a public understanding of government revenues and expenditure over time could help public debate and inform choice of appropriate and realistic options for sustainable development.
5. We underline the importance of transparency by governments and companies in the extractive industries and the need to enhance public financial management and accountability.
6. We recognize that achievement of greater transparency must be set in the context of respect for contracts and laws.
7. We recognize the enhanced environment for domestic and foreign direct investment that financial transparency may bring.
8. We believe in the principle and practice of accountability by government to all citizens for the stewardship of revenue streams and public expenditure.
9. We are committed to encouraging high standards of transparency and accountability in public life, government operations and in business.
10. We believe that a broadly consistent and workable approach to the disclosure of payments and revenues is required, which is simple to undertake and to use.
11. We believe that payments' disclosure in a given country should involve all extractive industry companies operating in that country.
12. In seeking solutions, we believe that all stakeholders have important and relevant contributions to make – including governments and their agencies, extractive industry companies, service companies, multilateral organizations, financial organizations, investors and non-governmental organizations.

*Extracted from:* EITI, n.d.

## 7.11. Business sustainability

Mining legislation encourages titleholders to be responsible for a number of external impacts relating to their activities. At the same time, businesses involved in extracting non-renewable resources are under increasing pressure from shareholders and consumers to embed sustainability into their strategies, processes and operations, and thus, move beyond mere regulatory compliance. Mining companies committed to sustainable development and the SDGs will benefit from improved relationships with governments and communities; while those that do not, face increased risks in the short and long-term (UN, n.d.).

While voluntary business sustainability initiatives are not under review in this book, **recent legislation includes references to corporate social responsibility in the context of mining.** Côte d'Ivoire's *Mining Code (2014)* invokes the Equator Principles (see Box 7.2) in Article 117, as well as the Extractive Industries Transparency Initiative. Article 121 of the Code further emphasizes the implementation of corporate social responsibility.

**Box 7.2**
**Equator Principles**

The Equator Principles (EPs) are a global risk management framework, adopted by financial institutions for due diligence in support of responsible decision-making on environmental and social risks in financing projects. At present, 91 finance institutions in 37 countries have adopted the EPs, which account for 70 percent of international Project Finance debt in emerging markets.

**Principles**

| | |
|---|---|
| **Principle 1:** | Review and Categorization |
| **Principle 2:** | Environmental and Social Assessment |
| **Principle 3:** | Applicable Environmental and Social Standards |
| **Principle 4:** | Environmental and Social Management System and Equator Principles Action Plan |
| **Principle 5:** | Stakeholder Engagement |
| **Principle 6:** | Grievance Mechanism |
| **Principle 7:** | Independent Review |
| **Principle 8:** | Covenants |
| **Principle 9:** | Independent Monitoring and Reporting |
| **Principle 10:** | Reporting and Transparency |

*Extracted from:* Equator Principles, 2013.

Ghana's *Minerals and Mining Act (Act 703 of 2006)* regulates the sale of minerals in Section 97 and subjects the shipment of rough diamonds to and from the country to comply with the Kimberly Process Certificate Scheme. The objective of the Kimberly Process is to stem the flow of conflict diamonds, i.e. diamonds that are used to fund wars against governments; this is an example of a (private) voluntary certification programme that has become mandatory by law. The United Republic

of Tanzania's *Extractive Industries (Transparency and Accountability) Act (No. 23 of 2015)* requires annual reports containing information on local content and corporate social responsibility. The European Union *Regulation of the European Parliament and of the Council laying down supply chain due diligence obligations for Union importers of tin, tantalum and tungsten, their ores, and gold originating from conflict-affected and high-risk areas (2017/821)* establishes a European Union system for supply chain due diligence for importers above a certain threshold, which reduces opportunities for armed groups and security forces to trade in certain metals.

## 7.12. Key chapter messages

**National Constitutions** often stipulate that the state owns sub-surface minerals (in the land), or that mineral rights are held in trust by the state for its citizens. As the highest law of a country, enshrining sustainable development imperatives in connection with extraction of minerals defines the parameters within which mining legislation is developed.

**Mining rights** may be granted by the regulatory authority, either as a result of a competitive bidding process, or on the basis of an application. In both cases, primacy is given to technical and financial capacity of the operators, as well as proposed plans for protection against social and environmental risks. Differentiated requirements may be established for ASM operations although these operators are also required to observe environmental and social safeguards.

**Transparency in the process of allocating mineral rights** ensures decisions are made in accordance with parameters stipulated in legislation. Certain tools can be used to enhance transparency such as public scrutiny through multi-stakeholder approval bodies or the use of registers and cadastres.

**The ASM activities may be allocated certain areas and supported by the state through various mechanisms.** Legislation may also circumscribe who can operate an ASM enterprise. This enables small-scale

operators to participate in income-generating activities in such manner as protects the environment and local community.

**Protection of existing rights** requires recognition of persons who own and use land nearby or on which the minerals are found. This may also include land affected by ancillary rights to mineral rights (such as public road access, access to water resources, and physical infrastructure permissions). The duty to consider existing rights should apply to mining operations of any size. Some mining legislation prohibits rights over certain areas of cultural, historical, environmental or other significance.

**Secure and stable mining rights as well as a competitive and stable legal environment and fiscal terms** promote confidence in investment, productive use of mineral resources and economic development. Mining legislation may offer specific tax or other incentives, including export assistance and other subsidies.

**Royalties,** when managed effectively and transparently, allow the government to receive payments that can then be distributed equitably for the public benefit generally and for the local community specifically. Legislation should set up transparent collection and investment mechanisms for the taxes, charges, royalties and other required payments.

**Infrastructure development, domestic procurement and employment benefits** can be leveraged by states from mining companies for the benefit of the country and in particular the local community, particularly where these are indicated as criteria or preferences for the award of mineral rights.

**Environment and social impact management plans, as well as environmental impact assessments (EIAs) and social impact assessments (SIAs)** are often required to be submitted by applicants seeking to hold mining rights.

**Rights-holders are required to comply with specific conditions to a licence,** which may be enumerated in the licence or authorization itself, or in legislation, that are of a social, environmental or economic nature.

**Bonds or other types of financial guarantees** are established for the purpose of ensuring the performance of environmental and other obligations of the titleholders. These guarantees are refunded when all obligations have been met at the end of the mining operations.

**Specific protections for biodiversity-rich areas** should feature in legislation, particularly considering progressive technologies and high demand for minerals means that in the future, these fragile ecosystems may be at heightened risk.

**Water impacts** include over-abstraction, degradation and water quality issues, all of which have negative social impacts on local communities, in addition to obvious environmental damage to water bodies. These challenges mitigate any improvements to local water infrastructure that may have been created by legislation. Legislation should craft provisions that leverage benefits and protect against negative consequences of use of water in mining operations.

**Waste facilities typically require regulatory approval, and waste management plans** are required to prevent or reduce waste production and to ensure safe disposal of extractive waste. The duty to explore recycle waste options is also increasingly seen in legislation.

**Rehabilitation of land and the environment** is required in connection with mineral exploitation rights as well as prospecting. Different strategies and mechanisms can be required at various stages of the operation of mines to ensure that the area is rehabilitated.

**Climate change** can worsen the detrimental environmental risks associated with mining. The mining operation may be required to establish a regularly updated disaster management plan that is consistent with the other local and national disaster plans.

**Recycling and energy use reductions** can be improved through legislative provisions that encourage, stimulate and incentivize technical innovations or the use of 'green', efficient or 'clean' technologies.

**A human-rights based approach** is a starting point to ensure the rights of local communities are respected and protected. Legislative provisions that further social goals and protect local communities may employ various human rights-based principles and categorically protect rights.

**Consultation and participation** enhance community benefits by ensuring they are engaged in decisions that affect them, and by facilitating continuous engagement at all stages of mining activities. Consultations may take place: during the preparation of SIAs or EIAs, for community development agreements, in the grant of mineral rights and the preparations of other plans, as well as during monitoring.

**Community development agreements** offer for companies, long-term access to resources, and reduced risks related to disputes. For local communities, these instruments are a means to ensure their rights are protected and their specific needs accommodated.

**Financial payments made to local communities** are also a frequent feature of mining legislation; such stipulations are not limited to large-scale operations, often smaller mining activities may be required to devote a certain annual percentage of revenue for such purposes.

**Relocation and resettlement** should only be used as a last resort option, following SIAs and other mechanisms to mitigate the negative impacts on local communities.

**Disputes** relating to mining operations may be between the titleholder and the government, or the former and the local community, individual landowners or indigenous people. Disputes may be resolved through consultation, resolution by the competent minister or a specific body for settling disputes.

**Health and safety risks** may arise at the mining site for employees, and mechanisms to reduce such risks include safety training, risk management, and the provision of suitable equipment. Injuries should be reported to the competent authority. Child labour should be prohibited.

**Migrant workers and female miners may** face unique challenges in the sector, including some form of discrimination. This should be mitigated through legislation that prohibits discrimination and that allows equal benefits, pay, types of jobs and equal access to services.

**Greater security around mining sites** can be achieved by requiring operators to have in place prescribed security policies and procedures, including training on security issues, dealing with protests.

**Post-closure training and opportunities** are important to provide mining workers with viable options for transitions into other types of work following closure of a mine.

**Data sharing for transparency** enables better governance of the sector. Legislation may require mandatory public reporting of revenues and expenditure, among other types of data.

**Mitigating externalities** can also be achieved through corporate social responsibility or business sustainability initiatives spearheaded by the mining enterprise itself.

# Appendix F. Key international instruments to guide national legislation

## I. Legally-binding instruments

*Antarctic Treaty*, 1 December 1959. (also available at https://www.ats.aq/e/antarctictreaty.html).

*Convention on Biological Diversity* (CBD), adopted in Nairobi, 22 May 1992, and open for signature in Rio de Janeiro, 5 June 1992. (also available at https://www.cbd.int/doc/legal/cbd-en.pdf).

*Protocol on Environmental Protection to the Antarctic Treaty*, 1991. (also available at http://www.ats.aq/documents/recatt/Att006_e.pdf).

*Safety and Health in Mines Convention, 1995 (No. 176)*. International Labour Organization (ILO), 22 June 1995. (also available at http://www.ilo.org/global/industries-and-sectors/mining/lang--en/index.htm; http://www.ilo.org/dyn/normlex/en/f?p=NORMLEXPUB:12100:0::NO::P12100_ILO_CODE:C176).

*United Nations Convention on the Law of the Sea* (UNCLOS), 10 December 1982. (also available at https://www.un.org/Depts/los/convention_agreements/texts/unclos/UNCLOS-TOC.htm).

## II. Non-legally-binding instruments

*Akwé: Kon Voluntary Guidelines for the Conduct of Cultural, Environmental and Social Impact Assessment Regarding Developments Proposed to Take Place on, or Which are Likely to Impact on, Sacred Sites and on Lands and Waters Traditionally Occupied or Used by Indigenous and Local Communities.* Conference of the Parties of the Convention on Biological

Diversity, endorsed 2004. (also available at https://www.cbd.int/doc/publications/akwe-brochure-en.pdf).

*Code for Environmental Management of Marine Mining.* International Marine Minerals Society (IMMS), adopted 16 September 2011. (also available at http://www.immsoc.org/IMMS_downloads/2011_SEPT_16_IMMS_Code.pdf; http://www.immsoc.org/IMMS_downloads/ISBA-16LTC-2-EN.pdf).

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*Mining Code.* International Seabed Authority (ISA). (also available at https://www.isa.org.jm/mining-code).

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**Viet Nam.** *Order on the promulgation of the Mineral Law (No. 17/2010/L-CTN).*

**Zambia.** *Disaster Management Act (No. 13 of 2010).*

**Zambia.** *Mines and Minerals Development Act (No. 7 of 2008).*

# Chapter 8. Forestry legislation

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This Chapter should be read in conjunction with Chapter 2 on themes that are common to all the sectoral chapters in this book. The diverse illustrative snapshots of legislative elements on select subjects offer an aerial view to demonstrate how countries have captured the interplay between social, economic and environmental exigencies, while using the very narrow and specific lens of highlighted legislative provisions. The reader should not infer that the examples selected are necessarily successfully implemented, or result in the desired impact; the chapter does not examine country contexts, allocation of resources, political priority or any of the myriad factors that may affect successful implementation and enforcement. Assessing the effectiveness, regulatory performance and range of potential externalities is an undertaking that is highly context-specific. Accordingly, the examples here do not make recommendations that are applicable to all jurisdictions, but rather draw attention to the way in which different countries have approached sustainable governance of the resource.

While this Chapter explores sustainability dimensions from the narrow lens of sectoral legislation, i.e. forest-specific laws, it should be emphasized that in practice, an approach that recognizes inter-sectoral linkages and policy coherence necessarily involves a contemporaneous examination of legislation on, among other areas, environment, agriculture, land use and land tenure, water, protected areas, energy, phytosanitary regulation, natural disasters and emergencies, investment, contracts and agreements, infrastructure, transport, public-private partnerships and local government administration.

## 8.1. Importance of forest resources for sustainable development

Covering approximately 30 percent of global land area, forests support a large portion of terrestrial biodiversity, hold more carbon than the atmosphere (upwards of a trillion tonnes annually) and support the livelihoods of upwards of 1.6 billion people (FAO, n.d.(h)). Forests are a source of medicinal products, food and energy, protect watersheds and provide other environmental functions,

such as water and soil protection (FAO, n.d.(h)). Forests support crop and animal production in their regulation of microclimates (as well as regional and global climates) (FAO, n.d.(h)). This array of economic, social and environmental uses and functions underscores the need for sustainable management.

Forest resources are subject to the conflicting demands of various users and stakeholders, which must be effectively balanced and reconciled. Management of forest resources must consider the range of products derived from forests, i.e. timber, wood for fuel, food, medicine, fodder, and construction materials. Governance arrangements must consider whether users are large-scale or small-scale operators, users who access forest resources for subsistence, or forest dwelling communities. Regulators must balance the importance of income generation and support of livelihoods with protection of the resource and its range of environmental functions and biodiversity values, including for future uses. It is also essential to take into account the cultural, social or spiritual significance of forest areas to local and indigenous communities, which may or may not align with economic or environmental objectives. Governance solutions must respond to evolving demands, in a manner that allows for multiple benefits and employ cross-cutting approaches such as rural development or poverty reduction for planning and resource allocation (FAO, 2007b). The Food and Agricultural Organization (FAO) emphasizes that while the science of sustainable forest management has a strong foundational importance for the concept, it is also:

> The perception of forests' role – immediate or potential – that is the critical element […] and only able to work where there is strong societal recognition of, and demand for, the multiple functions of forests and a willingness among policymakers to prioritize long-term benefits (FAO, 2012b).

An internationally agreed definition of sustainable forest management by the United Nations General Assembly confirms the concept as dynamic and evolving, and characterized by the following seven elements: (i) forest resources coverage; (ii) forest biological diversity; (iii) forest health and vitality; (iv) productive functions of forest resources; (v) protective functions of forest resources; (vi) socio-economic functions

of forests; and (vii) legal, policy and institutional framework. The approach taken in this Chapter is that the latter element, the regulatory framework, underpins and is a vehicle for, the former six elements (UN Forest Instrument, 2007). Elements (i) to (vi) are raised in the sections that follow.

## 8.2. Constitutional recognition of sustainability in the context of forest areas

**Constitutional recognition is the strongest protection of any right, and countries may reference forest protection to varying degrees.** As the highest law of a country, Constitutions are an important tool to enshrine sustainable development imperatives in connection with the use and management of forests, as this text defines the parameters for forestry governance. Constitutions (or national laws) may also establish subject matter boundaries of what regional or local governments may legislate on; for example, some aspects of resource management may be relegated to province or state level. This varies according to the country's legal system and legal traditions.

**The Plurinational State of Bolivia's *Constitution (2009)* contains extensive references to forest resources.** Natural forests and forest soils are recognized as important for the development of Bolivians (Article 386). The language used in this Article seeks to strike a balance between conservation and productive uses, and also among different users. Forest use rights of both local communities and private operators are recognized. The Constitution further protects the exclusive right of use and management (in accordance with law) of indigenous forest communities. Under Article 387, the state is to guarantee the conservation of natural forests and their sustainable use, and prescribes that legislation should protect the socio-economic, cultural and ecological value of forests. The state should also promote value addition of forest products and rehabilitation of degraded forest areas. The conversion of forests to agricultural or other land uses may only be carried out in accordance with legislation and planning instruments. Chapter 8 of the Constitution gives special attention to the Amazon Basin as a "strategic space of

special protection for the development of the Plurinational State of Bolivia owing to its environmental sensitivity, existing biodiversity, water resources and varied ecological regions." Sustainable development of this region is to be achieved through a participatory, shared and equitable administration. Institutions are to focus on generating employment and income for forest communities within the broader framework of conservation and sustainability (a special decentralized agency will be created for this purpose). The state is to promote financing for tourism, ecotourism and other regional entrepreneurship initiatives. Finally, the Bolivian *Constitution (2009)* makes reference to the protection of two specific tree species: the historical cultural and economic value of the *syringa* and the chestnut tree are recognized, as symbols of the Bolivian Amazon, and the felling of such trees are prohibited.

**Other Constitutions also seek to protect forest resources and recognize the importance of sustainable management.** Bhutan's *Constitution (2008)* prescribes a minimum percentage of the country's total land to be maintained under forest cover. As well as enumerating other sustainable development principles, Article 5 of the Constitution also requires Parliament to legislate on protected forests, national parks and nature reserves. Hungary's *Constitution (2011)* declares that natural resources such as forests form the common heritage of the nation, and therefore, the state and all persons are to protect and maintain them for future generations. The Constitution points to primary legislation to stipulate the terms and conditions for acquiring forestlands for the purposes of sustainable development. Nepal's *Constitution (2015)* declares in Article 51 that the state shall pursue policies for the conservation and sustainable use of forests, and to ensure the ecological balance of forest areas. Article 12 of Kyrgyzstan's *Constitution (2010)* refers to the land and forests as resources to be used as a unified environmental system that is the basis of life and development, and as such enjoys special protection by the state.

## 8.3. Forest categories and related management obligations

### 8.3.1. Categorization of forests

**Forest types may be distinguished and managed according to their inherent characteristics, which in turn shape their management objective** (i.e. primarily clustered as production, conservation or social service forests). Conservation forests are primarily so designated to protect forest resources and conserve biological diversity. This may include protected areas, wildlife reserves and key areas designated for habitat protection, such as watershed protection or soil protection. The management objectives of production forests are to produce timber, and a range of non-wood forest products. The social services of forests, such as recreation or tourism forest areas, and the cultural or spiritual significance of forests also factor into how a forest is managed. Finally, many forest areas may not squarely fall into any of these categories and no single objective is prioritized as more important than another; indeed, there are multiple use forests, where the management objective is a combination of several purposes. Liberia's *National Forestry Reform Law (2006)* requires the competent authority to classify all forest lands under a designated legal status and potential use allocation (Section 4.4). The competent authority should further identify areas for protection, for community forests, for commercial use, or for any other use classification. The authority should subsequently validate the suitability of an area for a use or purpose by following a standard process that includes the collection and analysis of local, ecological, and socio-economic data, followed by the preparation of a written report (Section 4.5).

**Forest legislation may set out forest categories according to their use and characteristics, which gives these areas a particular status, with corresponding rights, obligations, and management objectives.** Côte d'Ivoire' s *Law on the revised Forest Code (No. 2014- 427 of 2014)* confirms the classification of forest types, determines its geographical limits, ownership regime, restrictions and rights of use. Viet Nam's *Decree on the organization and management of*

*the special-use forest system (No. 117/2010/ND-CP of 2010)* establishes a framework to conserve forest ecosystems and biodiversity, natural landscapes, and the cultural and historical values of special forests. It sets out procedures and requirements for special-use designations and categorizes special-use forests into national parks, nature conservation zones, landscape protection zones and scientific and experimentation forest zones. Rwanda's *Law governing the management and use of forests (2013)* sets out three categories of forest in Article 5 (protected, production and research forests). Protected state forests (and protected isolated trees) comprise further sub-categories: parks, natural forests, and forests along waterbodies. Production (state) forests are plantation forests. This includes buffer forests outside parks and around those that are along water bodies. Research forests can comprise both natural and plantation forests. Further categories include district production and protected forests, and private planted production forests (Article 10). The latter consists of those smaller or greater than 2 hectares. Turkmenistan's *Forest Code (2011)* establishes special forests, production forests and forests for protective purposes. The latter include, similar to the Rwandese statute, trees that are found: near water bodies, along transportation routes, in arid and semi-arid areas, around cities and in mountain areas. This category thus demonstrates that forests are not only protected for their intrinsic value, but for their environment functions and social good. Special purpose forests are also urban and recreational forests, those of historical significance or those in protected areas. In these types of forest, use is limited or prohibited. Similarly, this category demonstrates a mix of social and environmental objectives. Industrial purpose forests are those with economic management objectives such as the harvesting of wood and other forest resources. These types of forests require utilization in a manner that results in the least negative environmental impact. Under Argentina's (San Juan) *Law on a program for the protection, sustainable management and restoration of Native Forests (No. 1 094 as amended in 2010)*, land management of native forests involves aligning territorial zoning with different conservation categories according to environmental criteria. This text sets out three conservation categories. High conservation Category I forests merit their existence in perpetuity as a result of their location or biological value

or environmental services, even where they house indigenous communities. Protection, collection of products, and other prescribed activities except for forest production or exploitation, may be carried out provided that the intrinsic qualities of forests are not altered. These permissible activities are to be conducted according to conservation plans. Category II forests have medium conservation value that are degraded or in recovery, but that with the implementation of restoration activities may have a high conservation value, and that may be used for tourism, sustainable use, collection, and scientific research. Category III are native forests of low conservation value that can be partially or completely transformed and available for different land use options.

**Any changes to categorization of a forest must take into account the rights of forest dwellers,** and the local and indigenous communities that access forest resources. There may be tensions between protected categories for environmental conservation purposes and community rights with traditional access (see Section 8.3.3).

### 8.3.2. Connecting land-use planning to forest management

**Integrated land-use planning or spatial planning provides a strategic framework for balancing competing land uses at the national, regional and local levels.** Chapter 3 on land, details how spatial planning guides sustainable land use and allocation. Land-use matters are often addressed in land-related legislation, but references can also be found in forestry legislation.

**Spatial planning may guide conversions from forestry to other land-use types and vice versa through afforestation and other restoration programmes.** The biggest immediate threat to forest biodiversity is deforestation, and the latter may be a result of various land-use changes (i.e. in favour of agriculture, infrastructure or urban development). Deforestation is generally recognized as the conversion of forest area to another land use, whether human-induced or otherwise, while afforestation is where trees are planted or seeded, implying a transformation in land use from non-forest to forest uses. Some forestry legislation such as the *Forestry Act* of Ireland *(No. 31 of 2014),* reflects the

'land change' element in the definitions of these terms. Spatial planning instruments outside forest-specific legislation may also contain forest-specific references. Indonesia's *Law on Spatial Planning (No. 26 of 2007)* requires that in the evaluation of spatial planning, forest areas must be maintained at a minimum of 30 percent of the watershed area for environmental conservation purposes. Under Article 12 of *Regulation on the Procedures to Change the Designation and Function of Forest Areas (No. 104 of 2015)*, which implements *Law on Forestry (No. 41 of 1999)*, any change of a forest area to other purposes must maintain the coverage of at least 30 percent of the watershed, island or province on a proportional basis.

**States must look holistically at the drivers of land-use changes before determining appropriate restrictions, prohibitions or incentives.** If food security is a driver of subsistence agricultural expansion into forest areas, other initiatives for poverty alleviation and rural development strategies can be used to ease pressure off forest areas. Similarly, sustainable intensification of existing agricultural areas rather than expansion of the surface areas may offer an alternative policy avenue (FAO, 2016h).

**Incentives for agroforestry in legislation may reduce pressure on forest areas coming from agricultural expansion.** Rwanda's *Law governing the management and use of forests (No. 47bis of 2013)* requires that agroforestry trees shall be planted on land designated for crops and livestock, and Ministerial guidelines are to establish the selection of agroforestry tree species. Samoa's *Forestry Management Act (No. 3 of 2011)* promotes farm agroforestry projects and replanting of trees. To this end, farm forests are to enjoy certain entitlements, such as tax concessions, benefits relating to carbon credit schemes, extension services, access to market information for forestry products, exemption from fees, and permission to harvest products in the prescribed manner (Section 50). Furthermore, all sustainable management plans under the country's *Planning and Urban Management Act (2004)* are to be consistent with farm agroforestry policies. The Act calls for the competent authority for forestry, and the planning authority, to streamline the processes for authorizing registered farm agroforestry development undertaken in

accordance with an approved policy. The Brazilian (Acre) *Law creating the State Programme for incentives to Rural Family Farming and Agro-Forestry Production (No. 2 024, as amended by Law No. 2 293, 2010)* seeks to strengthen family forestry and agroforestry production by offering support in terms of pricing and marketing of products. Incentives are also intended to reduce the number of farmers moving to urban centres. Special public procurement programmes under the Law prioritize the use of products from these centres for meals in schools and other public institutions. The Russian Federation's (Voronezh) *Law on conservation and reproduction of protection forest on agricultural land (No. 33-OZ of 2011)* sets out in Article 2, the concept of protective forests and lists their functions. Protected forest plantations are artificially created by planting on land that is designated as agricultural, in order to protect these types of land from degradation (thereby benefiting from soil protection, water regulation and other protective properties of trees). The state support granted to protective plantation forests includes conservation and seeding, economic incentives for agroforestry, and other agroforestry activities.

**Land that is not suitable for agriculture may be converted to forest.** Under the Australian (New South Wales) *Forestry Act (No. 96 of 2012),* the minister is to take into account the potential for economic timber production in any land that is not of adequate quality for agriculture or grazing, but through soil treatment or rehabilitation, may sustain commercial plantations.

**The concept of forest use versus agriculture use becomes blurred when considering monoculture 'forest' plantations** (such as for palm oil and rubber) for the production of agricultural commodities (some monocultures are for timber production). While laws may follow the internationally recognized definition of forests in terms of size, height or canopy cover, the absence of references to diversity of species or regeneration process, leaves open the inclusion of the aforementioned plantations as forests. This creates a loophole with respect to the conversion of natural forests for these plantation forests, in categories where conversion to agriculture or non-forest uses is prohibited.

**Landscape approaches can yield multiple biodiversity benefits, and protect against climate change impacts and desertification.** Ecosystem integrity at landscape level is challenged by fragmentation of parcels, and some legislation prohibits the division of forestland into parcels smaller than a minimum area. These rules may be established in forest legislation or land-use legislation. While forest management planning is often site-based, spatial planning and its inter-sectoral nature allow for forest benefits to be integrated into the broader landscape (FAO, 2007b). Canada's (Ontario) *Crown Forest Sustainability Act (S.O. 1994, c. 25, as amended in 2017)* calls for the preparation of a Forest Management Planning Manual, which sets out that each plan should contain diversity objectives such as a consideration of natural landscape patterns, animal habitat, and abundance and distribution of forest ecosystems. This statute recognizes that the long-term health of Crown forests should be ensured through management practices that emulate natural landscape patterns.

**Legislation may explicitly require the consideration of land-use plans and environmental impact assessments when determining permissible forest activities.** The Argentinian (Cordoba) *Law on the territorial organization of native forests (No. 9 814 of 2010)* seeks to encourage productive activities in native forests subject to the Conservation Plan, the Sustainable Management Plan, the Land Use Change Plan and an environmental impact assessment according to the conservation category to which the forest belongs. The text defines land-use changes as:

> A total or partial severe alteration of the forest for its replacement by another type of rural environment and its adaptation to a productive activity of an agricultural, urban or mining type.

Lao People's Democratic Republic *Forestry Law (No. 06/NA of 2007)* states that forestry planning should be consistent with the socio-economic development plan, national defence and security, and forest land use plan (Article 16). The Brazilian (Minas Gerais) *Law on the State Policies on Forestry and Biodiversity Protection (No. 20 922 of 2013)* stipulates in Article 6 that land use changes will be made in such way as

to minimize the environmental impacts. The guidelines to be followed include conservation of biodiversity, including water, soils and genetic heritage, and promoting a balance between socioeconomic development and environmental protection.

**Multi-stakeholder engagement and cross-sectoral coordination is important for spatial planning that reconciles different land uses, and also when changing between one forest category and another.** As highlighted in Chapter 3, inter-ministerial or inter-sectoral committees are called upon to develop national, regional and local land-use plans. The absence of coordination and legislative prescriptions on taking balanced multi-sectoral approaches may result in the predominance of one use or user to the detriment of the broader system. Furthermore, legislation rarely contains categorical prescriptions regarding land use; often, flexibility is afforded by requiring multi-level multi-stakeholder plans that are periodically reviewed. Any land-use changes should also consider the interplay of land rights and the rights of forest-dwelling communities. These rights must be balanced with environmental protection and conservation, agricultural development and urbanization of rural areas among many other considerations. As well as land-use plans and coordination bodies, National Biodiversity Strategies and Action Plans under the framework of the Convention on Biological Diversity are useful to highlight the linkages between food, land use, forestry and agriculture with legal components designed to improve coordination in the legal framework. Multi-stakeholder buy-in is not only critical for development of plans but also for their implementation and monitoring. Viet Nam's *Joint Circular guiding forest allocation and lease in association with forestland allocation and lease (No. 07/2011/TTLT-BNNPTNT-BTNMT)* sets a highly procedural framework for coordination among a range of agencies with regard to the allocation or lease of forest areas. Liberia's *Regulation on Forest Land Use Planning (FDA Regulation 102-07 of 2009)* issued under the *National Forestry Reform Law (2006)* promotes a participatory and locally validated process to determine the suitability of forestlands for sustainable land-use allocations, i.e. for economic development, local community benefits and environmental protection. Under the Central African Republic *Law on*

*the Forest Code* (*No. 08-22 of 2008),* land is assigned either as permanent or non-permanent forest estate of the state, or transferred from one forest category to another. Any such change involves a public inquiry prior to submission to the Council of Ministers; the competent minister is to publicize by radio and other means, the scope of public inquiry and allow for taking comments, opinions and concerns of the public (Article 144). Forest areas can be removed from their particular classification only in the absence of other available areas, and only for reasons of public interest in the aforementioned procedure. The subsidiary instrument that regulates changing forest areas to an alternative land use shall stipulate the objectives of the change, the location and area of the change and the conditions of use and any other relevant justification for the change (Article 150). Guyana's *Forestry Commission Act (No. 20 of 2007)* requires Commission members to have skills and qualifications that include, among other experience, land-use planning expertise. Australia's (Tasmania) *Forest Management Act (No. 50 of 2013)* puts the process of converting potential production forest land to permanent timber production zone land (Section 11B) through the rigours of Parliamentary approval following a ministerial land conversion order.

### 8.3.3. Designation of areas for environmental purposes: refuges, reserves and protected areas

#### a. Establishing designations

**Designations of forest areas for environmental purposes can be found in legislation for forestry, the environment, national parks, protected areas or other.** Designations that benefit from the highest level of legal protection and for the long-term should be set out in primary legislation (i.e. approved by the highest legislative body – Parliament, National Assembly, etc.). Forest designations, such as refuges, reserves, protected areas, etc., should be clearly defined and have corresponding rights and responsibilities. Consistency in the use of terms across sectors and laws is also important. In cases where multiple laws govern forest areas, it is important that the boundaries between the laws are clear. Notably, the scope of each instrument should make clear which

institution is responsible for a given function. This avoids contradictions relating to permissible activities or overlaps in authority mandates. The Honduras *Decree on Forest Law, Protected Areas and Wildlife (No. 98 of 2007)* contains detailed enumeration of the functions of various competent authorities with regard to protected areas. Sierra Leone's *National Protected Area Authority and Conservation Trust Fund Act (No. 11 of 2012)* is similar in its extensive detail regarding its statutory body. Responsibilities are set out at various tiers of government. Generally speaking, the role of local authorities is key to ensure effective enforcement. In addition to regulatory coherence, coordinated actions across sector and administrative boundaries may pool inspection and other resources. This is particularly useful in countries with limited financial human and technical resources.

**Legislation may establish the procedures by which designations are made.** Argentina's (Mendoza) *Law on Norms for the organization of native forests (No. 8 195 of 2010)* requires the categorization process to integrate a weighting system of criteria and indicators for sustainability (Article 5). Among the criteria is linking protected areas through ecological corridors, thus enabling the complementarity of landscape units and regional integration. Any proposed changes to such designation must demonstrate that there will be no detrimental social or environmental impact to the area. Under Belize's *National Protected Areas System Act (No. 17 of 2015),* any declaration of a new protected area requires an integrated assessment of the ecological, social and economic status of the area, potential impacts, and contribution to the national protected areas system. Also required is a preliminary management plan, as well as any other study or plan requested by the minister (Section 14). Prior to making a declaration, the competent authority is required to consult with other public authorities including those responsible for petroleum and mining (Section 17), as well as with nearby communities and affected parties of the area, following a process of public participation. Any private land designated as a protected area is subject to the consent of the owner and such land receives relevant protections in perpetuity. The owner may be eligible for tax allowances or other fiscal benefits owing to such designation (Section 20). Any

proposed re-classification of a protected area is required to take into account: socio-economic aspects; the environmental functions; potential impact; or any other factor of concern (Section 9). Under Ecuador's *Framework Law on the Environment (PAN-GR-2016-2824)*, the competent environmental authority is to carry out periodic technical evaluations in order to verify that the protected areas meet the recognized objectives. Following technical evaluations, the environmental authority may redefine or change protected area categories. Australia's (Western Australia) *Conservation and Land Management Act (No. 126 of 1984, as amended in 2015)* empowers the competent authority to declare any public, private or community forest as a nature reserve, following prescribed consultations (Section 39). Where such designation is on private or community land, the authority is to make prior arrangements for compensation to the forest owner. Nature reserves are established for the following objectives: (i) the protection of forests of particular environmental, cultural, scientific or other special significance; and (ii) the conservation of biological diversity. The authority is required to consult broadly before making such decision. Specific management plans shall govern these areas.

### b. Managing protected areas

**Legislation should make clear that management of a designated area, and the activities permitted therein should be in accordance with the objectives for which the site was designated.** The Russian Federation (Kabardino-Balkaria) *Law on protected areas (No. 46-RZ of 2015, amending Law No. 37-RZ)* classifies regional protected areas into natural parks; state nature reserves; nature monuments; and other parks and botanical gardens (Article 3). The basic premise of these categories is that certain activities are forbidden or restricted. The Russian Federation (Saratov and Khanty-Mansi) *Regional Decree validating the Regulation on access to protected areas (No. 310-P of 2015)* creates protected area categories and regulates public access on the basis of the following activities: (i) excursion activities, tourism and sport; (ii) scientific research; (iii) collection of mineralogical, zoological and other species; (iv) harvesting and picking of wild fauna, ornamental and medicinal plant species; (v) compilation of herbal and biological collections; and

(vi) hunting and capture of wild fauna species for scientific research and/or for controlling the number of wild fauna species. The Italian (Trentino-Alto Adige) *Act on management of forest and mountain areas, water courses and protected areas (No. 11 of 2007)* defines a system of protected areas "as all the areas designated for the conservation of habitats, species and … for socio-economic and cultural sustainable development". According to Article 33, such designation ensures in addition to conservation, the application of appropriate management that balances human activities and environmental needs through the protection of anthropological, archaeological, historical and architectural values. It also enables the social use of environmental goods in a manner compatible with their conservation.

**Management plans are typically used to determine the specific conservation measures and permissible activities for protected areas.** Under the Italian (Trentino-Alto Adige) *Act on management of forest and mountain areas, water courses and protected areas (No. 11 of 2007)*, general conservation plans are prepared by the provincial competent authority; thereafter specific conservation measures shall be developed for each zone. An evaluation is required of the impact of the management plans (Article 39), and where such assessment reveals a negative outcome, this triggers certain procedures detailed in the Law. Under Ecuador's *Framework Law on the Environment (PAN-GR-2016-2824)*, tools for the management of these areas include: a framework strategic plan, implemented by management and operational management plans, plans for effectiveness, and financial sustainability strategies. Among other aspects, management plans should include, the assessment of population density, land uses, peasant family farming arrangements and productive, social and cultural activities. Sri Lanka's *Forest (Amendment) Act on Reserved and Conservation Forests (No. 65 of 2009)* requires management plans to be developed for reserved forests that allow for prescribed activities and community access, with the objective of conserving biodiversity and forest functions (Section 3). The Act prescribes penalties for going against prohibitions (such as cutting or clearing trees, allowing livestock to graze, uprooting plants, etc.) in these areas. The Act also calls for regulations to specify the administration

and management of such reserved forests, including management agreements that enable community participation in such management and benefit sharing mechanisms.

### c. Social dimensions relating to protected areas and other environmental protection designations

**Laws establishing protected areas should either recognize local community rights to such areas or designate a separate status to forest areas that are inhabited by communities.** Preventing access to protected areas on environmental conservation grounds has caused significant concern in some countries owing to the effective exclusion of indigenous groups and other local communities from resources that provide their food security, livelihood, shelter and cultural identity. South Africa's *National Environmental Management Protected Areas Act (No. 57 of 2003)* allows a nature reserve to be declared for the purposes of biodiversity, and also in order to:

> Provide for a sustainable flow of natural products and services to meet the needs of the local community [and] to enable the continuation of such traditional consumptive uses as are sustainable or to provide for nature-based recreation and tourism opportunities (Section 23(2)(c)–(e)).

Under Ecuador's *Framework Law on the Environment (PAN-GR-2016-2824)*, in delineating protected areas (and forest heritage), the environmental authority is required to coordinate with the agricultural authority to determine ownership of the proposed areas. The fractionation of protected areas is prohibited, however, notwithstanding, the right of private owners of protected area lands to alienate and divide these rights is maintained (Article 37). With respect to the fractionation of community lands, the restrictions established in the Constitution prevail. Furthermore, the Law determines that in protected areas, limitations on the use and enjoyment of property and other rights are necessary to ensure compliance with their conservation objectives. In Article 38, among the objectives of protected areas are guaranteeing environmental goods and services, and respecting and promoting cultural manifestations, traditional knowledge, and collective and ancestral knowledge of the indigenous communities. The text contains a

number of provisions regarding ownership and possession in protected areas (Article 50). No person may enter these areas to occupy land after declaration of the area. The performance of works or activities in community or ancestral territory within protected areas, may be carried out to satisfy basic needs such as health and education or for ecotourism activities, provided they do not directly or indirectly affect the functionality and the conservation of the protected area. Sustainable production activities are encouraged in so far as they prevent the encroachment of the agricultural frontier. Extractive activities are prohibited. Buffer zones are set up to enable ecological corridors, and management plans should establish the use and characteristics of such buffer zones. Community subsystems (Article 45) comprise protected areas in community lands, and shall be administered in accordance with a management plan relating to that community's jurisdiction, with the participation of such communities (Article 48). Article 48 guarantees that forest communities within a protected area can:

> Take advantage of natural resources in a sustainable way according to their traditional uses, ancestral craft activities and for subsistence purposes. This use must be made in accordance with the management plan, the category, the respective zoning and the public policies dictated by the [competent authority].

In particular the text recalls international instruments and prescribes the rights of peoples to live in voluntary isolation in the protected areas. Brazil's *Law on the protection of Native Forests (No. 12 651 of 2017)* creates permanent preservation areas that are protected areas that may or may not be covered by native vegetation, but that have environmental functions. The functions are noted to include: preservation of water resources, geological stability and biodiversity, the exchange of genetic resources and the well-being of human populations. The Law is specific in terms of locations of such areas, such as areas around water bodies, slopes that exceed certain gradients, mangroves, hillsides, etc. Notably, Article 9 allows for the access of people and animals to 'permanent preservation areas' to access water or carry out activities that are of low environmental impact.

**Various types of co-management arrangements may feature in legal frameworks for protected areas.** Belize's *National Protected Areas System Act (2015)* stipulates that the minister may enter into a publicly consulted agreement with an NGO, organization, local community, or other entity for the co-management of the area (Section 30). The statute cautions that co-management should not result in the duplication or fragmentation of management functions. An agreement should set out: the delegation of powers by the public managing authority to the other party, the use of and access to the area, the occupation of the area, possibilities of economic opportunities within and adjacent to the area, knowledge exchange and capacity building on management, and financial support arrangements (Section 31).

### 8.3.4. Private forest ownership and private management

Forests may be managed according to their ownership type (public, private, jointly managed, community-based, etc.). Although a majority of forests are publicly owned, and of this total, a majority are publicly managed, this section highlights brief points relating to the management of privately-owned forests.

**Legislation often requires private owners to develop forest management plans, which align with forest management plans established by the state.** National forest management plans are discussed in Section 8.4. This mitigates the risk of private owners overexploiting their forest, or not sufficiently investing in the proper management of forest areas under their ownership. Ireland's *Forestry Act (No. 31 of 2014)* requires forest owners to submit a plan to ensure that activities such as afforestation, felling, restocking and forest road works are undertaken in accordance with good forest practice (Section 10). The minister may approve or reject a plan, and is required to set out regulations that prescribe the form, content, duration and implementation of plans. According to the Bahamas *Forestry Act (2010),* the owners of private forests cannot undertake harvesting for commercial purposes without a plan that is approved by the competent authority. A plan for this purpose must include: (i) a statement of management objectives; (ii) details on silvicultural harvesting and reforestation measures; (iii) fire

prevention and wildfire suppression measures; (iv) prescribed burning for fire management and control, and soil and water conservation; (v) site plans and details regarding storm water and run-off management, dust, erosion, and sediment control; and (vi) information regarding transport infrastructure (Section 21). Under the Canadian (Quebec) *Sustainable Forest Development Act (A-18.1 of 2014),* any forest development plan requires certification by a forest engineer as being consistent with the by-laws of the competent regional agency for private forest development. Any changes relating to the entire forest area must be registered with the competent authority. Certification as a forest producer may be denied where the owner does not join a forest fire protection organization. Regional agencies established in support of private forest owners should promote sustainable forest development, in particular through protection and development plans, as well as financial and technical support (Section 149). The protection and development plan should establish production objectives and recommended management methods, particularly for the sustainable supply of timber. The plan can only come into force where it is consistent with the regional county municipality's land-use planning and development plan (Section 150).

**The private management of state-owned forests should be distinguished.** As an illustration, Kenya's *Forest Conservation and Management Act (No. 34 of 2016)*, allows the competent authority to delegate its management functions through a competitive process for forest management contracts (by private or other entities) and an agreement is entered into for such purposes (Section 45). Like the Belize protected areas legislation cited in the foregoing section, the Kenyan statute declares that the agreement should stipulate: the duration, terms and conditions of forest management, charges payable to the competent authority and benefits to be extended to the local community.

**Without creating fragmentation of land parcels, some laws may promote private forestry by offering various incentives.** In the Kyrgyzstan *Law No. 43 amending the Forest Code (No. 66 of 1999, as amended in 2014),* private land plots may be allocated for the purposes of reforestation or afforestation (Article 12). Under Estonia's *Forest*

*Act (RT2 I 2006, as amended in 2009),* the state is obligated to support private forestry by, for example: (i) advising and training of owners; (ii) stimulating investments aimed at increasing the economic, ecological, social and cultural value of the forest by private forest owners, including the preservation of heritage culture; (iii) promoting forestry-related joint activities of private forest owners; and (iv) supporting the inventory of private forests as well as the preparation of forest management plans. In Kenya's *Forest Conservation and Management Act (No. 34 of 2016)*, a person who owns a forest may apply for registration, and where successful upon criteria prescribed in implementing regulations, such person is eligible to receive technical advice on forestry practices and conservation, and funds for forest development. Furthermore, a person who owns a private forest may be exempt from land rates and other taxes and charges.

## 8.4. Forest management plans

**Legislation may establish the basic parameters of forest management plans, and identify the key stakeholders to be involved for public (or privately owned) forests.** Forest management plans are tools that enable specific actions and measures in alignment with the categorization and objectives of the forest area and the designated land use. National plans that cover the entire territory may also set out the parameters that guide certain elements of local or private forest plans. The Bahamas *Forestry Act (No. 20 of 2010)* requires the development of a national forest plan which includes the following, among other aspects: (i) a statement of forest management objectives for the country; (ii) a financial estimate of supply and demand for forest products; (iii) an estimate of the potential economic value of such products; (iv) an estimate of the volume of growing stock and sustainable yield of timber and other products; and (v) more generally, the contribution of forests to the economy (including water production, recreation use, conservation of biological diversity, biofuels and agriculture). Upon approval by Parliament, the plan is to be published in the Official Gazette. Germany's (Bavarian) *Forestry Law (1974, as amended by Law No. 392 V of 2014)* establishes in Article 5 that the principles of forest planning must

comply with the requirements of the land planning system. Furthermore, plans must be subject to continuous review (Article 6). The forest management plan under Peruvian *Law – Repealing Legislative Decrees No. 1 090 of 2009 on Forest and Wildlife Law and No. 1 064 on Legal Regime for the use of land for agricultural use (No. 29 382 of 2009)* comes in two phases: the general management plan and the annual operating plan (Article 11). The former should include an evaluation of environmental impact, while the latter will detail the location of usable trees. Any commercial or industrial utilization requires a management plan approved by the competent authority. The preparation of such plans is to be carried out by professionals with expertise in the matter. The plans must consider the various characteristics of the different types of forest, such as: humid forests of the Amazonian plain, forest canopy, hydromorphic forests, dry forests of the coast and others. Chile's *Law on the recovery of native forest and forest development (No. 20 283 of 2008)*, defines a management plan as an instrument that provides for sustainable use of the forest resources including the protection of water and soil. Plans with the key objective of biodiversity conservation are referred to as 'conservation management plans' while those that are for economic exploitation are termed 'forest management plans.' Under Article 5, any harvesting of forest products requires compliance with the forest management plan, and such plans must be freely available for the public to view at any time. Similar to Peruvian requirements, a plan should be prepared by a professional forester, agronomist or other related professional. Where infrastructure development such as road construction or pipelines requires the cutting of native forests, a corresponding management plan must be prepared and submitted to the competent authority. The Law also details the evaluation procedure of the competent authority in the review of management plans (Article 18). The competent authority is required to keep a database that contains the management plans, disaggregated by province, that are available to the public. Plans should not contain any false statements; the law sets out penalties for breach of this provision. The Republic of Korea's *State Forest Administration and Management Act (No. 7 677 of 2005 as amended by Act No. 14 269 of 2016)* requires the competent authority to formulate and implement comprehensive plans for state forests according to the

national forest master plan and regional forest plans (Article 6). Plans should include management measures, budget and other administrative matters and should be accompanied by assessments. Advisory committees may support the formulation of comprehensive state forestry plans (Article 7).

**Forest management plans may also be required for community forests as well as joint management areas.** Kenya's *Forest Conservation and Management Act (No. 34 of 2016)* requires every public forest, nature reserve and provisional forest to be managed consistently with a management plan that meets the requirements prescribed in regulations (Section 47). The responsibility for a management plan shall be with the county government. For community forests, the community may prepare such plan or may request the relevant county government to do so. The Act establishes who will supervise implementation of forest management plans for public forests and community forests. Zambia's *Forests Act (No. 4 of 2015)* stipulates that managing a joint forest management area and distributing benefits among local communities are the functions of a joint forest management committee (Section 38). This committee is also tasked with preparing and implementing forest management plans that seek to "reconcile the various uses of land in that area". Section 40 of the Act requires a forest management plan to be developed according to the purposes for which the area is established. The content of management plans (including the requirement of maps) are set out in a Schedule to the Act (see Box 8.1). National and local consultations are required on the plans, as are consultations of rights holders and other interested persons in the forest areas. The competent authority is to publish a notice in the Official Gazette, stating the time and place at which the forest management plan may be inspected by members of the public and where objections can be made (Section 43). Registration or rejection of the plan will also be published in the Gazette. The minister is only able to reject a plan on the basis that it is contrary to the purposes of the Act.

**Box 8.1**
**Zambia's *Forests Act (2015)* Schedule under Section 40**

**Content of a management plan**

1. The conservation of biological diversity taking into account all other users of the forest resources.
2. The protection of ecosystem and species, including the species which indicate the health of an ecosystem.
3. The designation of nature reserves and areas of stabilization of watersheds.
4. Designation of areas for agroforestry, traditional agriculture and recreation areas to provide buffer zones to National and Local Forests.
5. Commercial timber production and commercial agriculture on the edges of National and Local Forests.
6. Afforestation and reafforestation.
7. The restoration and rehabilitation of degraded ecosystems.
8. The requirements for a forest monitoring system and carbon stock assessment.
9. The requirements of environmental impact assessments under the Environmental Management Act, 2011.
10. The use of traditional knowledge and practices conducive to the rational utilization of forest resources and the conservation of biological diversity and the equitable sharing of benefits arising from the use of such knowledge with the affected local communities.
11. The designation of sites for social amenities for the local communities.
12. The designation of areas for the protection of relics and other national heritage.
13. Re-investment in the forestry sector including in the welfare of local communities.

## 8.5. Measures for environmental conservation of forests

### 8.5.1. Recognition of the multiple environmental and social functions of forests

**Forestry laws often emphasize forest ecological functions and environmental services, as well as social and economic values and benefits of forests.** The Brazilian (Minas Gerais) *Law on the State Policies on Forestry and Biodiversity Protection (2013)* recognizes the importance of the role of forests in "sustainability, economic growth, [and] improvement of the quality of life of the Brazilian population". The Law stipulates that forestry and biodiversity protection policies have the following objectives among others: the conservation of forest, and forest flora and fauna; the exploitation of forest products and associated value chains; the development of agroforestry and payment schemes for environmental services; and the promotion of ecotourism (Article 5). The text expressly requires forest policies to comply with agriculture, energy, environment, food and other related policies and legislation. Guatemala's *Decree on the Law to promote the establishment, recovery, restoration, management, production and protection of forests – PROBOSQUE (No. 2-2015)* demonstrates how the PROBOSQUE programme garners specific environmental, social and economic benefits. The objectives of the programme include: increasing forest coverage in order to generate ecosystem and environmental services as well as protecting watersheds; invigorating rural economies through public investments in the forestry sector; increasing forest productivity; promoting forest diversification in favour of parallel agricultural and livestock activities; and enhancing livelihoods, food security, energy security and the reduction of risks to natural disasters associated with climate change.

**The role of forests in the water cycle, for carbon sequestration, habitat protection and biodiversity may often be explicitly stated in legislation.** Ethiopia's *Forest Development, Conservation and Utilization Proclamation (No. 542 of 2007)* declares that "development, conservation and utilization of forest plays a decisive role in preventing soil erosion, expansion of desertification, disturbance of ecological balance, [and] depletion of biodiversity". Argentina's (San Juan) *Law on a program for*

*the protection, sustainable management and restoration of Native Forests (No. 1 094, as amended in 2010)* recognizes the services of native forests, the tangible and intangible benefits that such ecosystems provide to the environment and to society, contributing to water quality and quantity, biodiversity, food, biodiversity and genetic diversity.

### 8.5.2. Protecting forest genetic resources for biodiversity

**Protecting forest genetic resources, involves ensuring diversity of tree species, in addition to protecting the habitat and ecosystem that supports the biodiversity of other species. At a basic level, this involves the designation of certain species as protected, and therefore, not available for cutting or harvesting.** The FAO notes that the prioritization of inventory assets should be consistent with the genetic resource conservation and management strategies as well as overall national development goals and international agreements (FAO, 2014b). Countries typically prioritize species with economic and other uses and applications; however, social, cultural, recreational, ornamental and gardening purposes are cited as the reasons for 41 percent of species nominations for priority listing, including traditional medicines (FAO, 2014b). It should be recalled that the social values including sacred and religious values may be important, particularly with regard to native species, to which local communities develop a strong cultural identity. For example, Zambia's *Forests Act (2015)* empowers the competent minister to declare protected flora by statutory instrument and prohibit the felling, cutting or removal of protected species. Protected flora are so-designated in regard to their rarity, economic significance, role in the health of an ecosystem or generally for biological diversity conservation (Section 43). Angola's *Law on Forest and Wildlife Basic Legislation (No. 6 of 2017)* defines the term 'protection' to mean the maintenance, restoration and improvement of genetic resources (of forests and wildlife), among other elements.

**Requiring comprehensive national inventories of forest genetic resources based on standardized technical protocols enables the study of trends in the status of genetic variability** (FAO, 2014b). Kyrgyzstan's *Law No. 43 amending the Forest Code (No. 66 of 1999, as*

*amended in 2014)* refers to the forest inventory as the "totality of activities to describe and map forests and individual forest stands". In Article 84, the text refers to forest inventory as the system of activities aimed at ensuring rational use and efficient protection of resources, and the scientific basis for forestry policy. The Law lists various activities as comprising forestry inventory: (i) identification of species composition and age of forest stands, and description of their condition, qualitative and quantitative characteristics; (ii) an identification of forest stands that need reforestation or regeneration; (iii) the division of forests into protection categories; (iv) determination of boundaries; and (v) estimations of wood-cutting areas relating to industrial plantations. Forest inventory materials are explicitly identified in the Code as tools for forestry planning and projections. The Law also identifies the source of budget for the financing of these activities. Article 19 requires *oblast* authorities to approve forest cadastre and inventory records within their administrative boundaries, while Article 86 requires inventory within the areas covered by the Forest Fund to be carried out by the national competent authority.

**Generally, forest legislation may also provide for information management systems, including databases and geographical information systems, for inventory and monitoring.** Angola's *Law on Forest and Wildlife Basic Legislation (No. 6 of 2017)* tasks the competent authority with establishing a database in Article 44 that contains the forest inventory and related scientific and technical information, and that links data to similar global and regional networks.

**Forest inventory and assessments are used to inform national forestry management plans; conversely, plans are also used to establish frameworks for genetic resource management.** Samoa's *Forestry Management Act (2011)* requires the national forest plan (which provides for the sustainable management of forestry resources), to be based on a certified National Forest Inventory (Section 29). This Act stipulates that the inventory should include details on the existing native forestry resources; areas and species of planted trees on plantations and farm forests; areas determined to be protected forests and production forests; areas of national parks and reserves; and forestry resources

in water catchment areas. Indeed, Estonia's *Forest Act (as amended in 2009)* requires an inventory to underpin planning processes. Under this text, the forest inventory is to be the basis for carrying out regeneration (Article 42). For private forests, a plan is to be prepared together with the forest inventory concerning that private forest (Article 43), and this can be paid for by the government. On the other hand, forest planning guidelines may establish the objectives and methods of forest inventories. Under the Republic of Korea's *Forest Protection Act (No. 9 763, amended by Act No. 13 138 of 2015)*, master plans are to be established and updated every five years regarding the management of forest genetic resources protection zones, and shall elaborate aspects such as research, geographic distribution, sustainable use and management of forest genetic resources (Article 10). 'Forest genetic resources protection zones' are to be evaluated in terms of efficacy of protection and management and the results are to be reflected in reviews of the master plan.

**Provisions for *in situ* and *ex situ* collections also contribute to maintaining genetic variability of forest resources**. Angola's *Law on Forest and Wildlife Basic Legislation (No. 6 of 2017)* calls for *ex situ* conservation of forests through botanical gardens, nurseries, arboretums, and gene banks (Article 19). Article 25 mandates germplasm storage and conservation, ensuring the appropriate variation and integrity of the material. Hungary's older *Decree (VIII. 14) FVM concerning the conservation and use of plant genetic materials (No. 95 of 2003),* covering plant species in addition to forestry, goes into considerable detail in Article 6 on the methods of *in situ,* on farm, *ex situ* and in vitro conservation. For example, the text requires that genetic material preserved in *ex situ* conditions must meet specific requirements, in order to create conditions required for exploitation, reproduction and research without endangering the survival of the original stock. The Decree goes into further specifics on the precise handling, temperature and other conditions in accordance with international standards. *Ex situ* strategies and technologies are often prescribed as a complement to *in situ* and other conservation methods.

The Republic of Korea's *Forest Protection Act (No. 9 763, amended by Act No. 13 138 of 2015)* creates *in situ* protection mechanisms through

forest conservation zones in accordance with a number of classifications that include a forest genetic resources protection zone (Article 7). The latter is a zone for the preservation of genes and species of plants in a forest or for the conservation of forest ecosystems. The Act restricts certain activities within such zones, such as thinning, mining, extracting forestry products, grazing livestock and restricted access to persons. Under Article 10, the competent authority may establish facilities for preservation and research of genetic resources, relating to the zone. Where such zones are in national parks, the competent forest authority must liaise with the park management authority. France's *Decree on the conditions for the inclusion in the national register of basic materials for the in situ conservation of forest genetic resources of national interest (2008)* establishes the following requirements, among others, for the registration of genetic material *in situ* (Article 3): (i) the species must be identified in a five year national conservation strategy which must be included in the application for registration *in situ*; (ii) the origin must be certified in accordance with prescribed methods; (iii) the plots and surfaces constituting the conservation nucleus and the buffer zone are to be precisely demarcated; and (iv) the renewal of the conservation unit is carried out by natural regeneration or with forest reproductive material from the conservation core.

**Some provisions on forest genetic resources are designed to enable regeneration and reforestation activities of particular species.** Czechia's *Amendment Act on introducing the reproductive material of forest woody plants of important species and artificial hybrids intended for forest regeneration and reforestation (2014)* aims to protect forest genetic resources through a national programme that seeks to protect trees *in situ* and *ex situ* at all developmental stages, to preserve samples in appropriate conditions and prevent damage; to enable the reproduction and restoration of tree species and to set out measures for rescuing species that are at risk.

Invasive tree species from different geographic locations pose a significant threat to the integrity and conservation of genetic resources, as they may create an imbalance in the local ecosystem by diminishing one species that then has knock-on effects on others. The issue of invasive species

is addressed under forest health in Section 8.6.2 of this Chapter. Forest genetic resources are also preserved and conserved through traditional knowledge that may provide insight into centuries old practices for the conservation of forest species. This is further examined in Section 8.11.4 of this Chapter.

### 8.5.3. Conservation for climate change mitigation and adaptation

Extreme climatic events (such as cyclones, intense rainfall, strong hurricanes, severe droughts, etc.) create a challenge for sustainable forest management. At the same time forests offer a means for climate change mitigation and adaptation.

**While deforestation and forest degradation contribute to climate change, sustainable forest management supports mitigation of, and adaptation to, climate change by maintaining and increasing forest and tree cover, thereby sequestering carbon.** Mexico's *General Law of Sustainable Forestry Development (2018)* includes as its objectives, increasing and maintaining carbon stocks, reducing emissions from deforestation and forest degradation, as well as strengthening resilience to climate change. Management measures should aim to achieve a zero percent carbon loss rate in native forest ecosystems, while developing forest regions and supporting community forest management. Other mitigation and adaptation functions include: (i) developing specific climate-related actions such as combating desertification and the degradation of forest lands; (ii) promoting economic instruments that foster environmental services; (iii) and promoting the knowledge and practices of local communities.

**Forest legislation may also require mainstreaming climate change in forest management generally and also in the development of forest plans.** Under Zambia's *Forests Act (No. 4 of 2015)* 'forest resources' are defined as "means vegetation, wood and non-wood products and forest ecological services, including the maintenance of soil quality, control of erosion, provision of organic materials and *modulating climate*" (emphasis added). This climate-related service provided by forests is therefore recognized in every use of the term. In Ireland's *Forestry Act*

*(No. 31 of 2014),* the competent authority is required to consider climate change in the performance of any relevant function under the Act.

**While the focus of this Chapter is on forest legislation, a few laws on climate change refer to the role of forests in carbon conservation and sequestration.** The Republic of Korea's *Framework Act on Low Carbon, Green Growth (Act No. 9 931 of 2010)* offers an illustration of generic legislation provisions to mitigate climate change through the expansion of forests and the conservation of greenbelts. Article 55 requires the competent authority to increase carbon sinks by preserving and developing farmland, and to expand carbon sinks by conserving forests. Mexico's *Law on Climate Change (2012)* calls for mitigation actions to preserve ecosystems and biodiversity by maintaining and increasing carbon sinks; reducing emissions from deforestation and degradation of forest ecosystems; strengthening forest management and restoration schemes; improving ecosystem conservation practices and payment for environmental services schemes; establishing measures to combat forest fires; and establishing economic incentives to sequester carbon in natural protected areas and ecological conservation zones (Article 34).

This Chapter does not go into extensive detail on legislative provisions for reduction of carbon emissions either through arrangements for Reduced Emissions from Deforestation and Degradation (REDD+),[14] nor the Kyoto Protocol's Clean Development Mechanism (CDM) of the United Nations Framework Convention on Climate Change (UNFCCC) – see Chapter 2 for an introduction to these concepts and see Box 8.3 for an overview of REDD+ at the national level. It is viewed that these subjects are extensively addressed elsewhere, and the focus of this Chapter is to serve as a reminder of the holistic nature of sustainability solutions, of which REDD+ or CDM schemes are a part. Thus, it suffices to note that sustainable forest management will contribute to the goals of those mechanisms in addressing, mitigating and adapting to climate change.

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[14] Reducing emissions from deforestation and forest degradation and the role of conservation, sustainable management of forests and enhancement of forest carbon stocks in developing countries (REDD+).

### 8.5.4. Other tools for conservation of forests

Forest legislation employs a range of measures specifically geared at conservation and enhancement of forest resources. This section offers a brief overview of some of these measures.

#### a. Environmental impact assessments and social impact assessments

**Environmental impact assessments (EIAs) can be found in forest management laws or general environmental laws to determine impacts of certain activities on an area.** Ireland's *Forestry Act (No. 31 of 2014)* empowers the minister to request a screening for environmental impacts through an assessment or a statement that facilitates decision-making for the issuance of permits under the Act, and to safeguard the environment. Similarly, Argentina's (Salta) *Law on the territorial organization of native forests (No. 7 543 of 2008)* requires compliance with environmental and social impact assessments for each of the activities granted within various forest categories (Article 23). The Bahamas *Forestry Act (2010)* requires persons applying for a permit for commercial forestry activities that may adversely affect the environment, to submit an EIA containing prescribed information (Section 17).

**The EIAs may be required prior to major land-use transformations, including clearing or the changing of one type of protected forest category to another.** Under the Argentinian (Formosa) *Law on the program of land management (No. 1 552 of 2010),* authorization land-use changes at the farm scale or in any of the categories for protection of native forests requires an EIA as well as a corresponding environmental management plan (Article 22). Kenya's *Forestry Conservation and Management Act (No. 34 of 2016)* allows any person to petition the National Assembly or Senate for variation of forest boundaries; however, such petition shall be subjected to an independent EIA (Section 34).

**Social impact assessments (SIA) involve looking at the impacts on local forest-dependent communities, including on their culture and livelihoods.** The EIA processes sometimes include a consideration

of social parameters. Alternatively, legislation may specify that an SIA should be undertaken. Both EIA and SIA should include measures to mitigate the potential negative impacts of activities that are identified in the study. The Democratic Republic of Congo's *Ministerial Order relating to standards for installations to be established in forest concessions (No. 021/ CAB/MIN/ECN-T/151/JEB/2008)* calls for social (and environmental) studies to include measures to mitigate negative impacts. Kenya's *Forest Conservation and Management Act (No. 34 of 2016)* Section 44, requires a concessionaire to prepare an SIA, and states that a user will not be granted rights where the requirements of an SIA licence have not been complied with. Similarly, the Lao People's Democratic Republic *Forestry Law (No. 6/NA of 2007)* requires the lease or concession of forestland for regenerating forests, planting trees, industrial trees plantations to be subject to an SIA (approved by authorities) that includes appropriate risk mitigation measures.

### b. Afforestation and reforestation

Paraguay's *Law for the restoration of protective forests of watercourses within the national territory (No. 4 241 of 2010)* declares of "national interest… the re-establishment of protective forests of the waterways […] compliance with […] environmental protection measures [and] guaranteeing the integrity of water resources." Protective forests are to be restored where required, with native species. Article 11 requires municipalities to compile data of persons with any use or ownership rights of land that has water channels, in order to determine plan actions for restoration of protective forests. Article 13 offers the support of municipalities to persons who may have limited resources to carry out afforestation and restoration of forests by providing seedlings for such trees. Municipal governments must carry out monitoring, control and inspection (Article 15) to ensure implementation. The national forestry institute may also provide technical assistance regarding restoration activities. The Bolivarian Republic of Venezuela's *Forest Law (2013)* requires all tiers of government to develop programmes geared towards improvement of forest areas, specifically: afforestation, reforestation, conservation of natural and planted forests, conservation of forest areas that are significant carbon sinks, and the provision of seeds and seedlings

to conserve forest genetic material (Article 54). The Venezuelan Law also empowers municipalities, to ensure the conservation of trees outside forests (e.g. on streets and urban public spaces), and to promote sustainable urban arboriculture with forest species suitable for this purpose. The latter contributes to protection of the environment, and social benefits such as the greening of public spaces and recreation areas. Local municipalities are to support the development of sustainable forest production chains, and extension activities.

### c. Prohibiting and restricting clearing

**Clearing trees has ecosystem impacts, such as changed light conditions resulting from removal of the canopy or changes to microclimatic conditions, as well as social or cultural negative impacts.** The Swiss *Federal Law on Forests (1991, as amended in 2017)* defines 'clearing' as any lasting or temporary change in use of forest land. Article 5 prohibits clearing except where it can be shown that: the clearing is necessary to conserve the forest; the clearing will be carried out only in the specified area; the clearing fulfils the requirements under planning rules; and the clearing does not pose a threat to the environment. Similarly, Kyrgyzstan's *Law No. 43 amending the Forest Code (as amended in 2014)* allows certain types of tree felling for preservation purposes (Article 57). Some cutting is allowed in order to improve the species composition and growth conditions for trees of the main forest species; as well as sanitary cuttings, to improve the health of forest stands that may be damaged by pests or dead or sick trees. Under Argentina's (Santiago del Estero) *Law on Conservation and multiple use of forest areas (No. 6 841 of 2007)*, total or partial clearing is prohibited in sites of cultural value, or in areas that may affect the rights of indigenous persons (Article 361). Under Australia's *Forestry Act (No. 96 of 2012)*, clearing requires a licence, granted according to the grounds listed in Section 44. These grounds include prohibiting clearing in lands that are subject to a biodiversity conservation trust, or a conservation agreement, among other types of land. Often, clearing in one area may require replanting in another either directly, or through clearing taxes, which are imposed to fund reforestation programmes.

**Legislation may also allow clearing only when supported by an environmental impact assessment (EIA).** In such case, the law may clarify the procedure and parameters for the EIA to influence decision-making.

### d. Targeting incentives for deforestation: a focus on second-generation biofuels

**Deforestation may be de-incentivized through a number of mechanisms; selected for brief mention here are biofuels.** Biofuels present a variety of considerations from impact on energy prices and food security, to income generation and development opportunities, and further, to climate change impacts. Local communities around the world have traditionally used wood for charcoal and fuel. Feedstock for the production of liquid biofuels was traditionally derived from agricultural products (including palm oil and other crops). However, significant concerns regarding these sources centre on the negative impact on food security of diverting crops from food uses to possibly more lucrative energy ones. Environmental concerns also consider the impact on biodiversity of razing native forests for palm oil plantations. Options to use lignocellulosic biomass from wood 'waste' or residues for second-generation biofuel feedstock would mean that there is no direct competition with food production. Honduras appears to move in this direction through *Agreement – Authorizes under the modality of sanitation plan, the extraction and utilization of dry and/or dead pine wood to be used as biomass for energy generation (No. 31 of 2015)*, which states that in the broader context of clearing for sanitation purposes, the extraction and utilization of dry or dead pine wood (chips, firewood, charcoal, tips and round wood) can be used as biomass for energy. The legislation specifically targets wood that is affected by pests or diseases on community or private land, and refers to the use of clearing in this manner to also reduce the risks and damages caused by forest fires and diseases.

### e. Funds for conservation

**A number of laws establish funds financed from various sources, to be managed for the purposes of forest conservation.** Argentina's (San Juan) *Law establishing a program for the protection, sustainable management and restoration of native forests (No. 1 094 as amended in 2010)* creates a Provincial Fund for Native Forests in order to preserve, protect and sustainably use these areas (Article 27). The Fund is to be composed of allocations: (i) fees for authorizations, permits, technical services and other services relating to forest products; (ii) fines associated with breaches of the law; (iii) provincial budgets; (iv) balances from previous year; donations and loans; (vi) interest; (vii) percentage of sales for publication material relating to the forest; and (viii) interest from unpaid fees and fines. Gabon's *Law on the creation, organization and operation of the National Forestry Fund (No. 4 of 2010)* is focused on the implementation of sustainable management plans for community forests. The Fund is also to be used for forest inventory operations; reforestation and forest regeneration programmes; industrialization of the timber industry; training and education costs relating to management; conservation and protection of wildlife activities; and the operating costs of the Fund's management committee. The latter committee approves the acquisitions and expenses relating to the Fund, establishes the rules of procedure, sets out the programme of activities, and controls Fund activities (Article 6). Independent financial audits may be requested under Article 7. Guatemala's *Decree on Law of the Sierra Caral Water and Forest Reserve Protected Area (No. 16 of 2014)* calls for regular contributions from the Executive Secretariat of the National Council of Protected Areas (CONAP) and from the National Fund for the Conservation of Nature. Other sources of funding include donations or contributions of the state through other entities, as well as donations from individuals or legal entities. In addition, CONAP may establish the rates, rents or quotas, for sustainability-oriented activities envisaged in the protected area master plan. In this regard, CONAP may establish agreements for the sustainable use of environmental services in the protected areas, and must guarantee that these agreements generate income for the protected area (Article 25). These agreements will be subject to the payment of royalties

or fees. The income generated from the payments for environmental services is to be used for the protected area and local communities. Article 24 of this instrument empowers the competent authority to establish a private fund for the administration, conservation and management of the area.

## 8.6. Protecting forest health

**Forest health threats may come from natural disasters or human activities.** Threats include fire, air-borne pollutants (particularly those that cause acidic deposition), as well as the introduction and spread of pests, diseases and invasive species.

Many jurisdictions contain detailed provisions for fire management separately to combating and protecting against pests. However, a few laws refer in general to forest health, and create provisions for fire and pests in the same article. Mongolia's *Law on Forestry (2012)* Section 13, calls for plans and protective measures from outbreaks of fire and pests, and calls for reforestation in places damaged by forest fires and pest incursions. Also, Slovenia's *Regulation on Forest Protection (No. 114 of 2009)* sets out measures to prevent forest fires and forest damage due the spread of pests and diseases. The text also calls for the rehabilitation of forests damaged by these factors and predictive-diagnostic services to forewarn and highlight risk conditions.

### 8.6.1. Mechanisms to manage forest fires

Legislative frameworks addressing forest fires take on a renewed importance in the context of increasing incidences of large-scale forest fires owing to unseasonably warm temperatures or prolonged periods without rainfall as a result of climate change. Forest legislation may contain a chapter on protection against fires, or forest fire provisions may also be found in self-standing texts (either at primary or secondary legislation level).

**Often legislative provisions entail prohibitions (typically the use of fire for hunting or for agriculture is forbidden) as well as restrictions**

**(certain activities may be restricted or limited in certain times or seasons).** The Samoa *Forestry Management Act (2011)* notes that when weather or conditions arise that present an extreme fire hazard and that an outbreak of fire is likely, the responsible authority may issue certain precautionary measures, such as the prohibiting of fires in an open area, restricting entry into an area, or carrying out operations that may cause fires (Section 64). Where any person carries out operations that create a fire hazard and the person is not compliant with restrictions or other measures imposed, the competent authority may intervene to take such measures at the cost of the person to whom the directions were imposed (Section 67).

**Controlled fires are sometimes used for management and prevention, usually in specifically prescribed seasons and periods.** The impact of suppression actions on the environment, the role of fire in the ecosystem, and cultural practices should be taken into account, as should changing climatic conditions (FAO, 2009c). Legislation may prescribe specific conditions for controlled fires. Canada's (New Brunswick) *Forest Fires Act (S.N.B. 2014, c. 110)* defines 'prescribed burning' as the burning of forest fuels within a specific area only under predetermined conditions (for forest or wildlife management, or sanitary or other hazard reduction). This text contains exact dates of the fire season, with flexibility through a provision that allows the minister to vary the date a fire season commences or ends, where the revised dates are publicized broadly (Section 4). Certain sections of the Act apply only during the fire season. The Brazilian (Alagoas) *Law establishing procedures, prohibitions, rules and precautions for the use of fires in farming, silvo-pastoralism and forestry practices (No. 7 454 of 2014)* forbids the use of fire, including controlled burning, within a certain distance from urban centres. Controlled burning, which is recognized in the text as a tool for management and production in agricultural, pastoral or forestry activities (as well as for scientific and technological research purposes), requires authorization from the competent authority. An application for such authorization shall include: a description of techniques and equipment use; the area to be burned; material to be burned; trained personnel on site; and how certain climatic and weather

conditions that may accelerate fires may be avoided, etc. The authorities may temporarily suspend controlled burning based on atmospheric conditions, and where monitoring of air quality shows that the level of concentration of pollutant in the air is already high. The use of fire for preventive and management purposes is allowed in the following cases in Italy's (Piemonte) *Regional Act implementing Act on forest fires (No. 353 of 2000, as amended in 2013)*: to decrease the intensity and the spread of fires by reducing the burnable biomass where the fire risk is high; where firebreaks are maintained; for scientific research; and where the conservation of certain species of vegetation is favoured by periodic fires. Authorization is required for controlled burning. Under Portugal's *Decree-Law establishing the Second Amendments to Decree-Law No. 124/2006 on National Forest Protection System (No. 17 of 2009),* controlled fires and fire suppression using fire (termed as 'technical fires') can only be carried out in accordance with technical and operational standards established by the competent authority (Article 26). Controlled fires may only take place during periods of low risk. Technical fires must be carried out under an accredited technician.

**Legislation may require the development of fire management plans and specify the core elements and periodicity of such plans.** These instruments are key tools to manage fires; they offer an elucidation of the fire policy and the actions, processes and operations required to protect people, property and forest areas from fire. These plans are also used for forest management and land use objectives through the use of fire (FAO, 2007c). Australia's (Northern Territory) *Bushfires Management Act (2016)* calls for the development of different types of plans. Section 70 requires a property fire management plan to be prepared by an owner or occupier of land, and such plan must specify arrangements for the mitigation, management and suppression of fire on the land. Regional bushfire management plans (under Section 78) and area fire management plans (under Section 83) are to be developed in consultation with the regional committee for a fire management zone, and these tools should also specify arrangements for the mitigation, management and suppression of fire within the fire management zone. The Russian Federation's *Ministerial Decree validating the Regulation*

*on elaboration and validation of plan for extinguishing forest fires (No. 377 of 2011)* lays down the modalities for elaborating and validating plans by various institutions. The plans are to include information on: (i) forest characteristics; (ii) fire-protection arrangements and forest fire monitoring; and (iii) schematic diagrams for fire-protection arrangements; and (iv) terrestrial and aerial patrolling mechanisms. Any monitoring and evaluation systems should include a feedback process for amending the plans based on changing conditions.

**Preventive measures against forest fires generally include the creation of firebreaks, setting up observation posts (in areas susceptible to fire or in critical periods of the year), or the setting up of early warning systems and firefighting units.** The Italian (Piemonte) *Act No. 21 implementing Act on forest fires (No. 353 of 2000, as amended in 2013)* contains a number of provisions on direct and indirect prevention. The latter includes dissemination and awareness-raising targeted at various learning institutions. Direct prevention, on the other hand, includes all interventions designed to limit the spread of fire, such as firebreaks placed in strategic locations as per a prescribed plan, forest service roads, towers and lookout posts, signalling and communications, pipelines and other channels for water. Also, cultivation may be restricted in certain areas to reduce the amount of vegetation that would serve as fuel in a fire. Mongolia's *Law on Forestry (2012)* empowers competent authorities to prohibit certain activities during periods that are prone to forest and steppe fires (Article 13). These authorities are instructed to provide timely updates regarding weather conditions and fire occurrence. The Law also imposes fire prevention measures such as clearing, thinning and building fire breaks in conservation forest zones. Agreements can be entered into with neighbouring countries with regard to prevention and extinguishment of transboundary forest fires. Local communities are involved in patrolling forests and receive prevention guidance and training, particularly during fire seasons. Section 17 allows for the compensation of any entity that took action to immediately suppress forest fires through the mobilization of persons and equipment, and the funding for this shall derive from the local budget. The Republic of Korea *Forest Protection Act (as amended in 2015)* contains provisions

on a "forest fire index" that indicates the degree of risk during certain periods (Article 31). The public declaration of a forest fire alert period may trigger special measures for prevention.

**The preparation of plans should be participatory and should cover all aspects of forest fire management including inter-sectoral cooperation.** Typically forest legislation varies in terms of geographical coverage of applicable provisions, which stakeholders are responsible for preparing the plan, and the scope of the plan (suppression only, or prevention and response). Legislation may set out the legal implications of the plans, such as limits to property rights in forest and adjacent areas.

**Inter-sectoral cooperation is essential in controlling the response of various authorities to fire prevention and control.** The Bolivarian Republic of Venezuela's *Law on Forests (2013)* coordinates the actions of different authorities by establishing a chain of command at various administrative levels of government for effective and speedy responses (Article 14). The system of protection should also promote research into high-risk zones, climatic factors and other elements that favour the occurrence and spread of forest fires, and also establish strategies for the control of forest fires. The Republic of Korea's *Forest Protection Act (No. 9 763 of 2009, as amended in Act No. 13 138 of 2015)* similarly establishes a chain of command structure for firefighting (Article 37), and establishes procedures for operations by those responsible in the response structure. The causes of forest fires and the extent of damage caused are to be investigated (Article 42) and rehabilitation plans should be developed for damaged areas (Article 43). Importantly, Article 39 envisages cooperation by a number of agencies to provide equipment or human resources for controlling and extinguishing the fires. The Act also establishes a Fire Prevention Technology Association for education and training on forest fire prevention, research and investigation.

### 8.6.2. Tools to prevent the introduction and spread of pests and diseases

**The risk of introduction and spread of pests and invasive species are increased by land-use changes, changes in forest activities,**

**and transport, tourism and trade.** Climate change also impacts the dispersion of pests, diseases and invasive species (as well as having impacts on pollinators), which affect production and forest composition (FAO, 2014b). Genetic diversity of forests within an area will provide natural buffering, but greater management intervention and manipulation may be required, including movement of tree germplasm to respond to new climates, and changed pests and diseases (FAO, 2014b). The full economic, forest health and environmental costs of pest or invasive species incursions are difficult to quantify.

**Forestry legislation may contain a range of provisions for the control of pests and diseases in the specific context of trees and forest areas. Phytosanitary (plant health) legislation** normally provides generic and overarching import control measures, including quarantine, border and transit checks as well as the phytosanitary actions and measures to control the spread of pests, such as surveillance, treatment and emergency responses. Consistency between the different types of legislation is important, including as regards the mandates of institutions responsible for forests and plant protection. Honduras' *Agreement on Creating the Department of Health and Forestry Health (No. 26-2017)* lists the functions of the competent authority as being, among others: to prepare the annual plan for protection from pests and disease, to diagnose and monitor pests, to establish early warning systems (including the design of measures aimed at prevention, detection and monitoring of pests), to develop strategies and technical guidelines for pest responses, including coordinated action, and to carry out training on pest management. Turkey's *Regulation on technical eradication of forest pests implements Law on the General Directorate of Forests (No. 3 234 of 2015)* establishes that biological, biotechnological, mechanical and chemical methods can be used for forest areas (public or private), to eradicate pests. It also establishes procedures for the technical eradication of pests and the pest control products that can be used. The latter mechanism of listing chemicals approved for specific use in forestry is a common feature, as are provisions that prohibit aerial spraying. The Russian Federation's *Order of the Federal Forest Agency validating the Regulation on management, protection, conservation and reproduction of*

*protection forests, precious forests and forests of protected areas (No. 485 of 2010)* also prohibits the application of toxic chemicals to counter forest pests. The text envisages mechanisms for protection against forest fires, pollution (including radioactive pollution) and pests and diseases. Finland's *Act to amend the Forest Insect and Fungi Damage Prevention Act (No. 201 of 2011*) makes provision for the release of biological pe sticides from the air. Biological pesticides are defined as those deriving from naturally occurring organisms used for the treatment of plants for the control of plant diseases or pests. This provision enables landowners (at their own expense) to combat pests by spraying biological agents from the air in the prescribed manner. Under the Republic of Korea's *Forest Protection Act (as amended in 2015),* where pests or diseases are likely to develop or have developed, the owner is required to take necessary control or prevention measures including the following: (i) the removal of infected trees, branches and roots; (ii) restrictions on relocation of felled trees and on seedlings or other matter that may be infected; and (iii) disinfection of seedlings and soil. Under the Canadian (Manitoba) *Forest Health Protection Act (C.C.S.M. c. F151 of 2007)*, forest threat response zones may be established where a threat may cause significant damage in a short period of time, or is extremely contagious or mobile. These zones may also be established where trees in the area have become affected to such an extent that there is a significant risk of spread outside the area (Section 17). The Act imposes reporting requirements on any person who has information relating to an invasive alien species (Section 5). The entry into the province of certain forest products or classes of product may be restricted (Section 7). The Act employs the use of forest threat notices in the prescribed form and manner, that prohibit movement or cutting of products from the tree on which the notice is posted. The Act also empowers inspectors to issue preventive quarantine orders (Section 13).

**Aside from preventing the spread of pests and diseases, (preventive) forest health may be promoted and strengthened in a number of ways.** The Republic of Korea's *Forest Protection Act (as amended in Act No. 13 138 of 2015)* requires the competent authority to examine and assess levels of health and diversity of each forest ecosystem (in order to

enhance the functions of forests). The specific standards for examination of health and vitality of forests, the method of assessment and other measures are to be detailed in implementing regulations (Article 19). Article 20 calls for the establishment of framework plans for the prevention of diseases and pests to be updated every ten years, as well as the development of annual plans at various administrative levels (Article 21). The ten-year plans should include budgetary arrangements, the mobilization of human resources, research and cooperation, the improvement of systems for control measures and the recovery of areas damaged by pests and diseases. Research into the type, spread and ecological characteristics of forest pests and diseases is required, as well as the development of preventive technology (Article 21). Under Canada's (Yukon) *Forest Resources Act (S.Y. 2008, c. 15)*, the competent authority may set aside land for the purpose of establishing areas for research into forest resources management (Section 34). Research and monitoring plans may be set up to investigate the spread, effect and control of pests and diseases.

## 8.7. Green economic development and forestry-related markets

**Green economy strategies look to increase the long-term value of wood products through efficient production and processing, reuse and recycling** (FAO, 2012b). Forestry regulatory frameworks may be designed to reduce opportunity costs, strengthen safety nets and stimulate economies (by generating income, employment and fiscal revenue) (FAO, n.d.(g)). This involves looking at aspects such as income potential (of both large-scale and small-scale investments in addition to subsistence users). Regulatory frameworks must also balance the need for adequate investment through incentives, and on the other hand, protecting the resource itself as well as forest-dependent communities.

**Forest legislation contains sustainability-oriented economic development in the context of forest exploitation.** Mexico's *General Law of Sustainable Forestry Development (2018)* provides in Article 33, the mandatory criteria for forestry economic policy. These include:

expansion of the contribution of forest production to national economic growth; the development of infrastructure; the promotion of diversified forest industry and related value chains; the support of forest enterprises for foreign and domestic markets; the full utilization of forest ecosystems to enable production; research into forestry-related technology; financial assistance to forest organizations; incentives for investment; the valuation of environmental goods and services; and the promotion of restorative and regenerative activities. Under Article 31, social forest policies also have an economic dimension. The goals of social policies are to promote production and trade in forestry products, and to stimulate the growth of associated industries. The Law calls for the improvement of the quality and capacity of human resources through training, education and employment opportunities in forestry production. The Canadian (Quebec) *Sustainable Forest Development Act (RSQ, c.A-18.1 of 2010)* calls for sustainable forest development standards to guide any development activities and focuses on First Nations communities. The main objectives of such standards are to preserve or renew forest cover, protect the environment and reconcile development activities with those pursued by First Nations communities and other forest users (Section 38). Additional standards may also be imposed at the request of a First Nation community. In particular, the Act refers to facilitating the pursuit of development activities consistent with the ritual or social needs by such communities. The United Kingdom of Great Britain and Northern Ireland's (Scotland) *Forestry and Land Management Act (2018)* requires the preparation of a forest strategy that includes the economic development of forestry, the realization of social benefits of forestry and the production and supply of timber and other forest products (Section 3). Section 11 contains a duty to manage land in a manner that promotes sustainable development. Ministers may enter into agreements with certain types of landowners to give effect to these provisions.

The transition towards a green economy depends heavily on policies and market-based instruments, that are underpinned by a clear regulatory framework, not only for forestry, but more broadly encompassing investment, technology, environment, trade and industry and other types of legislation. International trade agreements and timber regulations

also have significant influence, along with non-regulatory systems such as voluntary certification programmes. Authorizations for access to forestry resources, in particular for timber and non-timber products is examined in Section 8.8 of this Chapter. This section looks specifically at the main fiscal instruments used in forestry legislation.

### 8.7.1. Fees, charges and taxes

**Forestry legislation may establish a range of fees, taxes and charges that are then channelled back for forest management.** Fees may be charged in connection with authorizations to use or access the forest resources. Under Ghana's *Timber Resource Management and Legality Licensing Regulations (LI 2254 of 2017),* 'stumpage fee' refers to the rate to be paid by persons holding a timber utilization contract for timber harvested, based on the market demand and the inventory levels of timber species. This fee refers to royalties that provide a basic return to the landowner, and contribute to the cost of forest management and timber regulation. Regulation 60 stipulates that stumpage fees are to be calculated in accordance with the formula set out in the Fifth Schedule. Viet Nam's *Decree on the principles and methods of determining prices of forests of different types (No. 48/2007/ND-CP)* offers an example of how prices are set for the use of natural forests, forest rents, and for the ownership of plantation forests. The text sets out the calculation methods for incomes, expenses, and comparisons. The text provides a way to ensure that prices are determined in a transparent and objective manner, and based on the forest location, stock and quality of forest product (Article 5). It stipulates that forest blocks of the same type, location, stock, status, quality etc., should have the same price. Article 5 sets out increased state intervention when the market price of forest use or plantation ownership sees big fluctuations.

**Legislation may specifically direct this revenue generated from taxes to go towards certain community benefits in addition to protecting the resource itself.** For example, the Lao People's Democratic Republic *Decree on the sharing of revenue from timber harvested in the Production Forest Areas (No. 1 of 2012)* stipulates that revenue is to be used for forestry management and conservation, in

support of development activities initiatives for communities in forest production areas, and for funds for villages that border these areas.

### 8.7.2. Economic incentives and technology

**Legislation should offer a framework for private sector development comprising financing strategies that take into account domestic, private sector and foreign funding sources. Offering fiscal incentives for sustainable forest management is also a means by which to reduce the profitability gap between illegal operations and sustainable forest management activities.** The type of economic instrument used as an incentive for, or promotion of social, economic and environmental gains will vary from country to country, according to the legal framework, economic and political systems, and practical priorities. **Where fiscal incentives are not available, legislation may reduce taxes (stumpage fees) on legally harvested timber, offer technical assistance programmes and other tax incentives, or enter into cost-sharing arrangements, in order to encourage forest operators to follow legal guidelines.**

**Legislation may promote investment, and offer incentives and subsidies for forest development.** Mexico's *General Law of Sustainable Forestry Development (2018)* establishes economic programmes to support and encourage forestry activities (subject to general laws on finance and budget) including fiscal stimuli, credits, bonds, insurance, funds and trusts (Article 134). The competent authority is tasked with designing, applying and evaluating programmes for these purposes, and favouring activities that sustainably manage forest ecosystems. Article 135 stipulates that the competent authority shall establish fiscal incentives to give long-term continuity to forestry activity, including programmes for forest development, community forest management, commercial plantations, and reforestation and soil conservation. Federal budget is assigned, under Article 136, to various areas including: (i) to develop technological innovations along the production chain; (ii) to increase forest productivity with predominantly commercial forests or for domestic use; (iii) to support the provision of environmental goods and services among other aspects; (iv) to enhance forest infrastructure;

and (v) to promote certification programmes that cover all stages of the forest production cycle. This Law also calls for financing mechanisms that take into account long-term forest production, slow growth and production risks, and where required, issue guarantees in the form of credits, bonds and insurance. The Canadian (Quebec) *Forestry Credit Act (R.S.Q., c. C-78 of 1975, as amended in 2016)* establishes rules for credits relating to forestry. The Act stipulates that the purchase of forest seeds and plants, forest machinery, or equipment, entitles the forest owner to credit. Other grounds for credit include forest improvements, taking action to protect the forest against harmful agents or to improve associated infrastructure. Panama's *Law creating an incentive program for forest cover and the conservation of natural forests (No. 69 of 2017)* establishes a forest incentive programme to support activities geared towards protection and conservation of forests, regeneration, agroforestry, exports of forest products that meet legality requirements, commercial plantations, nurseries, and research and development, among other activities (Article 4). Persons undertaking these activities are eligible for deductions relating to income tax, property tax, property transfer tax and non-reimbursable financing (Article 7). The Law establishes a Reforestation Fund with allocations from the state budget. A responsible committee identifies priorities for direct non-reimbursable financing, approves project and investments, and leverages opportunities for additional funds. Article 25 requires beneficiaries of financing incentives to take out insurance for the duration of the incentive.

**Legislation should specifically promote small and medium forest-based enterprises, local community enterprises, as well as ensure gender equity through these initiatives.** The Bolivarian Republic of Venezuela's *Law on Forests (2013)* offers economic and tax incentives to persons or communities that carry out activities relating to conservation, plantation, agroforestry, sustainable use, and improvement of resources, including the production of forest genetic resources (Article 92). For a maximum period of seven years, the National Fund may waive the payment of forest taxes for those engaged in the aforementioned activities. Value added tax, income tax and import tax may be waived, where the activities are undertaken by rural or indigenous communities

(for the purposes of community forest management, the establishment of nurseries, or participation in productive forestry activities (Article 93)). Tax benefits are also granted for: (i) ecotourism activities; (ii) processing of forest products; and (iii) developing technologies for management practices that reduce the impact on ecosystems and that contribute to sustainable use. Credits are also made available for forestry equipment and machinery, prioritizing clean technologies, the activities of small and medium enterprises, and social/community production initiatives. Brazil's *Law promoting actions for forestry rehabilitation and settlement of agroforestry systems in rural areas (No. 12 854 of 2013)* promotes actions for forestry rehabilitation and settlement of agroforestry systems in degraded rural areas owned by *Quilombolas* and indigenous farmers.

**Recent forest legislation also includes incentives for, or the promotion of, science and technology for improved forest management.** Under the Argentinian (San Juan) *Law for the program for the protection, sustainable management and restoration of native forests (No. 1,094, as amended in 2010)*, new technologies that improve the capacity or adaptability of production systems will be evaluated according to the social, ecological and economic benefits to be achieved in the productive units where it intends to be implemented (Article 13). Mexico's *General Law of Sustainable Forestry Development (2018)* calls for research, innovation, technological development, scientific dissemination and the transfer of knowledge and technologies. Generally speaking, legislation may facilitate access to (and transfer of) environmentally sound technologies and practices for sustainable forest management, and also for higher income generating activities such as value-added processing of forest products. The Bolivarian Republic of Venezuela's *Law on Forests (2013)* states the fundamental and inalienable right of all citizens to access scientific knowledge, both general and traditional, which enables them to make the best decisions on forest conservation (Article 19). The state is obligated to disseminate scientific knowledge, as well as customary practices, through communication at all levels and though all modalities necessary for effective dissemination (Article 20).

### 8.7.3. Production, harvesting and marketing of forest products

**The different categories of forest (production, conservation, etc.) established in legislation determine their use and the associated access rights of entities.** The discussions below centre primarily on production uses, but laws increasingly recognize multiple-use forest management, enabling diversity in forest use and encapsulating a sustainable development approach that caters to multiple functions simultaneously. Multiple uses can be at landscape level by spatially segregating production and conservation objectives; and here forest units would be specialized in single dominant uses, such as the production of timber and non-timber forest products (NTFPs), ecotourism or ecosystem services (FAO, 2013e). Alternatively, multiple uses can be achieved within a single management unit or at stand level. Angola's *Law on Forest and Wildlife Basic Legislation (No. 6 of 2017)* declares that the purpose of forest plantations is to: reduce the pressure on natural forests, enable reforestation, increase the production of timber and other non-timber forest products, enable recovery of forest cover, protect water basins and prevent soil erosion (Article 80). Implementing regulations should specify other use rights, such as the right of private use of water, and funeral rights on such land. Under Mexico's *General Law of Sustainable Forestry Development (2018),* commercial forest plantation in areas of natural forest vegetation is forbidden. Forest plantations are encouraged to use native species that are technologically and economically viable (Article 79). Domestic use, agroforestry, silvo-pastoral activities and grazing in forestlands is subject to specific restrictions. Use of forest resources for domestic purposes cannot jeopardize the habitat of endangered species (Article 90). Brazil's (Acre) *Law creating the assistance programme to indigenous populations and small producers (No. 2 689 of 2013)* establishes incentives for production by indigenous groups and small producers. The competent authority should establish the general framework of the programme, evaluate proposals, ensure implementation in line with environmental norms, manage finances for the programm and set out operational aspects.

### a. Timber

**Laws may establish procedures for the preparation, implementation and evaluation of management plans for commercial forests.** In the Brazilian (Roraima) *Law establishing technical procedures for Sustainable Forest Management Plan (PMFS) in native forests within the State of Roraima (No. 986 of 2015),* the plan may govern primary or secondary forests, and describe the products to be managed, the intensity and manner of harvesting, and other aspects. Under Article 13, the harvest intensity is designed to regulate forest production, achieve the objectives of sustainable forest management and take into account technical aspects relating to the harvest cycle and the estimation of available stock. Practices and procedures for efficiency in harvesting are further addressed in Section 8.7.3 of this Chapter.

**A circular economy enables not only resource-efficient production, but the use of waste (for example for second generations biofuels (see section 8.5.4) or the recycling of used or other forest materials. Legislation may require loggers to employ reduced impact harvest methods, as well as enable adequate regeneration after wood harvesting.** The United States of America's *Cooperative Forestry Assistance Act (16 U.S.C. 2100 et seq. of 1978, as amended in 2014)* affirms in its perambulatory paragraphs that adequate supplies of timber are predicated on efficient methods for managing and harvesting trees, processing, and using wood and wood products. The competent authority is therefore required to support the efficient utilization of wood and wood residues, including the recycling of wood fibre. Under Zambia's *Forests Act (No. 4 of 2015),* holders of licences or permits can only perform operations under their licences in such manner as to cause the least possible waste of, or damage to, trees and forest produce (Article 57) and in such case should be liable to pay such value for the trees or forest produce damaged or wasted. Mongolia's *Law on Forestry (2012)* for example prohibits damaging or cutting of up to the fifth age category, young trees of all species, and prescribed other species. It also forbids logging by way of clear cutting, harvesting on cultivar and seedlings plantations and tree nurseries.

### b. Non-timber forest products

**Non-timber forest products can offer subsistence safety nets. However, the effective realization of such safety nets may be limited by insecure tenure rights or restrictions in access to forest resources (further discussed in Chapter 3 on land tenure rights) and the absence of clear legislative provisions guaranteeing access rights of local communities to NTFPs.** The NTFP can potentially offer food security for the rural poor by providing tubers, fruits, edible leaves, bushmeat, mushrooms and honey. The NTFPs provide medicinal products, fuelwood for cooking, fodder for animals and supply construction materials for shelter. Liberia's *Regulation on the Commercial and Sustainable Extraction of Non-Timber Forest Products (NTFPs) (No. 111-08 of 2008),* issued under the *National Forestry Reform Law (2006),* sets out a detailed framework for the production and use of NTFPs. This Regulation emphasises sustainable and equitable exploitation of NTFPs and states among its objectives, the provision of social and economic livelihoods, cultural and religious benefits for forest-based communities and sustainable forest development. The text distinguishes between non-wood forest products and NTFP, the latter describing a broader category that include, small products from wood, in addition to non-wood products that comprise goods of biological origin, and also include related services such as rope-making and gum-collecting. Under Section 9, the text recalls the social and economic values of NTFPs to people living in rural communities that depend on NTFPs for income and sustenance.

**A forest category may automatically regulate access to NTFPs as conditioned by management plans, permits and concessions or other limitations. Generally, this refers to commercial not subsistence access, although the latter is subject to certain parameters as well**. Indonesia's *Regulation on forest arrangement and formulation of forest management plan as well as forest exploitation (No. 6 of 2007)* requires in Article 26, that NTFPs collected in protected forests must be available naturally, does not damage the environment, and does not change or eliminate the main function of the forest. Collection of NTFPs in these forests is only permitted for local communities. In protected forests,

quantities exceeding a certain threshold are prohibited. In natural forests and production forests, collection of NTFPs may be allowed to fulfill the needs of local communities and for trade and commercialization purposes. The Lao People's Democratic Republic *Forestry Law (No. 6/NA of 2007)* is explicit in the provisions relating specifically to non-timber forest products, and stipulates that research should be promoted to improve the quality and quantity of forest products (Article 17). Surveys for harvesting forest products should define the quantities and species of non-timber forest products in different types of forests (Article 19). Plantations for non-timber forest products are to be promoted through the use of appropriate policies on land tenure, credit, the exemption or reduction of land taxes, taxes on tree species as well as technical assistance (Article 35). These forest products are to be used to supply raw materials to industry and handicraft processing factories to produce commodities for sale, as well as to "improve people's living conditions in accordance with the socio-economic development plan." Such plantations are prohibited in protection forest and conservation forest areas to preserve water resources, biodiversity and environment. Liberia's *Regulation on the Commercial and Sustainable Extraction of Non-Timber Forest Products (NTFPs) (No. 111-08 of 2008)* requires forest use permit holders granted harvesting rights to: (i) compensate the community for extracting the NTFPs; (ii) pay extraction fees; and (iii) enter into written agreements with local communities. Local communities and producer groups can sustainably harvest NTFPs for use within the community or for commercial purposes. Local community producers are exempt from fees, although registration is still required for management and statistics purposes. Community forest management bodies may also levy fees on NTFP production by community members, that is credited to a community forestry fund. Processing of NTFPs requires a permit and fee payment, although some village-level activities are exempt from the associated fee (Section 25). The text states that NTFP harvesting and commercialization respect the concerns of local communities (Section 31). Therefore, this requires that: (i) all processing industries are located within relevant communities; (ii) preference for labour is to be given to local communities; and (iii) 25 percent of the harvesting fee is to be contributed to the community management fund.

The text sets out a categorization and quantitative assessment system for NTFPs and imposes certain requirements on the exportation of non-timber products.

### c. Marketing of timber and non-timber forest products

**Legislation may support the marketing and promotion of forest products, as well as access to micro-financing or processing technologies and the strengthening of local infrastructure.** Such provisions may be geared generally towards the support and development of socially and environmentally sustainable small and medium enterprises. The harvesting of NTFPs may be commercial or subsistence-focused. In the latter case, activities and any sales or distribution is marked by low productivity, little to no processing or value addition and poorly integrated markets (FAO, n.d.(g)). Increased incomes from these activities may result in better incentives for improved conservation and management of forest resources. The Republic of Korea's *Forestry and Mountain Villages Development Promotion Act (as amended by Act No. 11 690 of 2013)* stipulates as one of its basic principles that forests should be managed in order to sustainably increase productivity and the support for value-addition for forest products. Article 7 seeks to improve distribution mechanisms, including through facilities that promote direct transactions and price stability of forest products. Local governments may provide information on the distribution of forest products. Viet Nam's *Decision approving the forest protection and development plan during 2011-2020 (No. 57/QD-TTg)* calls for the use of new technologies for harvesting and processing, and for the diversification of products to increase their added value and mitigate environmental pollution. In addition, trade is to be promoted by expanding and promoting market access of forest products, and developing forest product processing and sale networks. Under Ethiopia's *Forest Development, Conservation and Utilization Proclamation (No. 542 of 2007),* farmers, semi-pastoralists, investors and others are to be given marketing advice and state support to produce forest products for local and international markets. Information on forest products markets is to be shared with producers and consumers through various mass media. Forest products trade and industrial development is to be elaborated in forest management plans.

### 8.7.4. Forest certification and certification of products

**Legislation may establish legal (mandatory) requirements for certification of sustainability parameters or for branding and quality purposes (such as to protect the reputation of products from that particular the origin).** A case in point is the Fiji *Mahogany Industry Licensing and Branding Decree (No. 53 of 2011)*, which recognizes that the purpose of certification and branding is to prevent illegal practices and foster a sustainable mahogany industry. Under this text, Section 7 states that only timber harvested under the direction of the competent authority and produced in compliance with the Fiji Mahogany Brand Protocols and Standards (contained in the Schedule to the Decree) may be branded with the Fiji mahogany brand. The legislation details how to apply for use of the brand, and the process for the stamping of the brand. The text recognizes that:

> With the licensing and exclusive branding of Fijian mahogany, Fiji will be able to obtain maximum benefit and premium prices for Fijian mahogany products. In addition, apart from the revenue generated from the annual sale of mahogany products, the licensing and branding regime will result in additional substantial annual revenues for Fiji (Schedule 2, Section 1.3).

In addition, the text identifies that the benefits of the regime are the optimal use and sustainability of mahogany resources, job creation, lower carbon footprint, *Lacey-Act* verified – see Section 8.8.3 for a discussion of the United States of America's *Lacey Act (1900, as amended in 2008)* – and a source of funding for reforestation and replanting of mahogany. Only the competent public authority has the power to use the mahogany brand.

**Forest legislation may establish certification schemes that are mandatory only in certain areas or for certain types of forest. Certification schemes may only apply to certain producers.** Angola's *Law on Forest and Wildlife Basic Legislation (No. 6 of 2017)* defines forestry certification to mean a mechanism intended to identify a particular quality of forest produce or its production process. Under Article 55, the competent authority is called upon to progressively add natural or planted forests to be included in a certification scheme for the

sustainable management of forests. The Law instructs the government to support companies in complying with the certification. Mexico's *General Law of Sustainable Forestry Development (2018)* identifies certification as a means to accredit sustainable and responsible forest management, improve the protection of forest ecosystems and to facilitate access to national and international markets (Article 107). Certifications are to be carried out in accordance with the *Federal Law on Metrology and Standardization*. The competent body is responsible for promoting the certification scheme, including among national and international buyers (Article 108). The certification process shall comprise technical audits, carried out either directly by the competent authority, or through authorized third-party certifiers, who shall verify compliance with forestry and environmental legal provisions of the respective programmes (Article 109). Implementing regulations are to flesh out the requirements that the technical auditors must meet to be a certifier, as well as the procedures and requirements to perform technical audits.

Voluntary (private) standards are discussed in Box 8.2. Voluntary certification programmes should be distinguished from initiatives that are set out as mandatory in legislation.

**Box 8.2**
**Private standards forest certification (voluntary certification)**

Forest certification promotes the sustainable management of forests by identifying sustainably produced items to the final consumer, thereby creating a market incentive for sustainable practices. Forest certification is an assessment of the quality of forest management and production against a set of standards predetermined by a public or private certification organization, which is carried out by an independent third party. Forest certification confirms to consumers through the use of specific logos and labelling statements, that a particular product was sourced from a sustainably managed forest.

There are two types of forest certification processes:

i. certification of forest *management*, which assesses whether forests are being managed according to a specified set of standards; and
ii. certification of the chain of custody, which verifies that certified material is identified or kept separate from non-certified or non-controlled material through the production process, from the forest to the final consumer.

To label an end-product as certified, both forest management certification and chain-of-custody certification are required.

*Extracted from:* FAO, n.d.(i).

### 8.7.5. Payments for ecosystem services and remuneration of positive externalities

**Payments for Ecosystem Services (PES) are the transactions by a public or private entity for the provision of ecosystem services and benefits, to the provider who is securing those services.** Resource management 'actions' are purchased from a provider on condition that the provider manages the land or resource in such a way as to enable the functioning of the ecosystem and its benefits. Mexico's *General Law of Sustainable Forestry Development (2018)* stipulates that within the

framework of international treaties, the competent authority should promote economic instruments for the conservation of environmental goods and services that benefit the public interest, deriving from sustainable forest management carried out by owners or rights holders of forest land (Article 129). A separate authority is assigned the task of issuing certifications verifying the conservation efforts of such owners or rights holders and demonstrating their participation in these schemes. The text declares that such owners or rights holders will receive the economic benefits for conserving or improving environmental/ecocsystem services of forests. The Argentinian (La Rioja) *Law on the protection, conservation, sustainable management and restoration of native forests (No. 9 711 of 2015)* states that owners or persons that have rights of possession to lands covered by native forests are entitled to receive national contributions as well as special funds in recognition of the ecosystem services provided by those forests (Article 14). These owners or persons with rights of possession have the right to receive national or provincial benefits in a timely manner and such that the funds can be used for the further maintenance and conservation of native forests. Notably, Article 21 stipulates that projects that use local labour, or that promote the participation of small producers in sustainable projects will receive additional benefits.

**The PES schemes rely on a broader supporting legal framework spanning land use, contract, financing, and other types of legislation.** Many developing countries struggle with putting these programmes into effect owing to the high costs of data collection, analysis, the procedures for the collection and transfer of funds, and the establishment of stable markets for such payments (FAO, 2007b). The Mexican (Morelos) *Sustainable Forest Development Law (No. 4 573 of 2007)* gives an indication of some of the prerequisites for a functioning PES system, in particular for the benefit of marginalized indigenous communities, *ejidos* and rural communities: (i) clarification and security of land ownership rights; (ii) institutional cooperation to reduce transaction costs; (iii) effective and flexible payment mechanisms; (iv) flexibility for eligible land uses; (v) access to start-up financing; and (vi) resources for community capacity and development. The role of the government is to facilitate

access to financing for the negotiation and conclusion of PES agreements. According to Article 108, the state should further seek to strengthen the capacity of indigenous communities to participate in marketing, negotiation, management, financial accounting, contracting and conflict resolution. In addition, the state is to establish a market support centre for market price information and transactions, serving as a point of contact for prospective buyers, sellers and intermediaries. The Argentinian (Misiones) *Law on Payments for Environmental Services generated by Native Forests or Forest Plantations (No. 103 of 2009)* identifies the tasks of the competent authority in administering the PES scheme as, among other aspects: (i) receiving and evaluating requests for payments for environmental services; (ii) issuing annual certificates of conservation of environmental resources; and (iii) entering into agreements with a range of entities that may participate in the PES programme. Article 9 determines that the certificate of conservation certifies: ownership; surface and demarcation of the property; applicable forest conservation category; a description of the environmental goods that have been generated; and related data. The annual renewal of these certificates (Article 11) requires monitoring of conservation activities that have taken place. Honduras' *Agreement on the Special Regulation for the Implementation of Compensation Mechanisms for Ecosystem Goods and Services (No. 21 of 2015)* sets out the framework of how the compensation mechanism functions. These include: an identification of the applicable land area; an inventory of suppliers and the beneficiaries; the establishment of an administrator; a system of regulating the funds used in the payment mechanism; an overarching plan for conservation of the area; model contracts for compensation; and monitoring schemes. The text indicates that sources of funding include, among others, the fees chargeable under the country's legislation on forestry, protected areas and wildlife, which is paid in by companies that benefit from the environmental services of a protected area. Of the 10 percent that can be collected, 7 percent will be used to finance protection, conservation or restoration activities where the benefits originate and the remaining 3 percent allocated as cash contribution to capitalize the ecosystem services fund.

**The forest function of carbon sequestration and storage is recognized in forest legislation or more broadly in climate change or environmental legislation.** Foremost among schemes for carbon storage in the forestry sector in developing countries is the REDD+ initiative (see Box 8.3). As a type of PES scheme, legal frameworks for REDD+ extend beyond the forestry sector and require a raft of legislation that is conducive for the successful implementation of these programmes. The elements of such frameworks are extensively discussed elsewhere, but a brief overview is provided in Box 8.3.

**Box 8.3**
**REDD+ at national level**

Reducing Emissions from Deforestation and Forest Degradation, as well as promoting the Conservation, Sustainable Management of Forests, and Enhancement of Forest Carbon Stocks (REDD+) is a voluntary initiative established under the United Nations Framework Convention on Climate Change (UNFCCC) to create financial incentives for developing countries to reduce forest-related greenhouse gas emissions. The REDD+ activities confer benefits to the climate, to biodiversity, and to communities that depend on forests. By the same token, REDD+ poses risks of negative impacts, particularly if the rights of local communities are not respected, if a gender sensitive approach is not taken and if REDD+ activities are not embedded in the overall framework of environmental protection. Good governance is critical to successfully implement REDD+ at national level. Good governance enables inclusive and meaningful participation during decision-making and law-development processes, while promoting equity, fairness, transparency and justice during all phases of REDD+.

Some key steps to enable the successful implementation of REDD+ at national level include:

1. Identification and understanding of applicable international law.
2. Identification of relevant REDD+ stakeholders using a transparent, gender sensitive and participatory process, and paying particular attention to indigenous peoples, forest-dependent communities, and local communities.
3. Gathering of baseline data and mapping information.
4. Identification and assessment of the laws, regulations, policies, and institutions that govern forest governance, land-use planning, law enforcement, and jurisdictions.
5. Assessment of whether the legal framework is consistent with international obligations regarding REDD+ implementation.
6. Assessment of whether the legal framework supports delivery of multiple benefits and equitable benefit-sharing.

*Source:* UNEP, 2014.

Costa Rica's PES programme was heralded as a pioneer of large-scale PES initiatives, established under the *Law on Forests (No. 7 575 of 1996)*. The programme was financed through the national fund for forest financing, which pooled fossil fuel sales tax, donations and loans, and payments from the beneficiaries of environmental services. The Law set out requirements for the participation of landowners, and schedules for payments. While this is an older Law falling outside the temporal scope of this Study, and the Costa Rican framework has been extensively reviewed elsewhere, brief mention is made regarding some key elements of some of the recent implementing regulations issued under that Law. The *Decree on the Prioritization Policies and Criteria for the Payment for Environmental Services Program (No. 39 660 of 2016)* identifies key priority areas for the PES programme and reiterates several items of policy that are useful for illustration. The PES programme is designed to improve and protect the environment in selected areas, guaranteeing the generation of environmental services by forests (including plantations and agroforestry systems). Among the types of environmental services, such as watershed and biodiversity protection, is the mitigation of greenhouse gas emissions by the sequestration, storage and absorption of carbon.

The PES system is to embody inter-institutional coordination among competent authorities and financing bodies. The latter are tasked with ensuring that the programme is developed and monitored, that information comprising the payments and services is adequately maintained, and that small and medium forest producers are integrated into the programme. These institutions are to be provided with the technology that facilitates these responsibilities. The procedure for the PES programme is set out in *Agreement on the Manual of procedures for the payment of environmental services (No. 11 of 2009, as amended by Agreement No. 8 of 2016).* The *Decree on Sustainability Standards for Management of Secondary Forests: Principles, Criteria and Indicators, Code of Practice and Procedures Manual (No. 39 952 of 2016)* aims to establish an efficient verification system for the viable and sustainable socioeconomic use of secondary forests and to increase forest coverage in the landscape. Forest management should improve the condition

of secondary forests, augment natural and assisted regeneration, and thereby contribute to the rehabilitation of the landscape.

**The PES system is being reframed in recognition of social benefits, including poverty reduction.** The FAO refers to the Remuneration of Positive Externalities (RPE) model as moving beyond exclusively environmental concerns in the strict sense, in order to embrace all sustainability dimensions. Elements of this shift can be seen in Costa Rica's *Decree Modifying the Regulations of the Forestry Law (No. 39 871 of 2016)*. This text simplifies the conditions for PES, and establishes PES quotas specifically for prescribed small- and medium-scale producers, in order to ensure the participation of traditionally marginalized groups, including indigenous groups' associations. This Decree contains provisions for the participation of indigenous groups that take into account the intrinsic characteristics of such groups (i.e. that they may not have titles indicated on cadastral maps) and instead proffers the use of other legal information by the national forestry financing fund (Article 4), in order to secure their participation. In areas under the PES programme for which contracts have been signed, these groups may continue to carry out traditional activities, including the establishment of subsistence agricultural crops, as long as such activities do not exceed 2 percent of the area under contract, and as long as there is monitoring by the staff of the national forestry financing fund.

## 8.8. Authorizations for forest uses

### 8.8.1. Criteria and considerations for authorization

**Licences, concessions, leases, permits or other contractual arrangements (collectively referred to as authorization in this Section) are used to regulate access to, and use of, forest resources.** Authorizations are required to control behaviour, and encompass a consideration of economic, social and environmental criteria. Authorization spans all types of forest market operators (such as loggers, transporters, sawmill owners, importers and exporters). Recent forestry legislation demonstrates a wide variety of procedures and

requirements, for a variety of activities and forest types. The legislative examples in this Section attempt to illustrate only a sample of that range and diversity, demonstrating that context and national priorities are the determining factor for any decisions on conditions and criteria relating to authorizations. For example, Rwanda's *Law governing the management and use of forests (2013)* requires licences for land clearing; forest harvesting in state; district and private forests; forest products transportation; and sale. A transportation licence is required for post-harvest and post-processing transport, and the licence would include details on the nature, means of transport, quantity, origin and destination of the products (Article 55). A sale licence shall show where business is conducted and indicate the origin and nature of the products. The Australian (New South Wales) *Forestry Act (No. 96 of 2012)* distinguishes between permits for non-forestry uses and forest operations licences. The Act allows for the issuance of various types of licences on Crown land: timber licence (according to class or description of timber), products licence, forest materials licence and clearing licence. In the Act, Section 60 on non-forestry uses allows the competent authority to issue a permit for recreational, sporting or commercial activities (but not forest operations). Such permits cannot be issued within a flora reserve except by ministerial approval and in accordance with the working plan for the reserve (Section 61). These permits must be consistent with any existing forest rights in the relevant area as well as any restrictions on land use or forestry covenants. Specific restrictions are made for Crown land areas. Forest leases may be issued (under Section 62) and must be consistent with forestry operations in the relevant area. Suspensions or cancellations may be made where the holder has failed to comply with its conditions, or the permit is not used for the reasons it was granted.

**Legislation should not promote unfeasible or unnecessary administrative burdens on public or private actors** (more so in the case of under-resourced forestry services and micro and small-scale operators). Therefore, instead of permits, some countries allow for notices to be provided in certain carefully delineated circumstances that usually entail annual volume limits and other safeguards. While this type of mechanism can have social gains by improving access, it must be

coupled with monitoring mechanisms to ensure larger corporations do not use the facilitated access to circumvent provisions that do apply to them. In some countries, harvesting in a private forest area of less than half a hectare does not require a licence. Samoa's *Forestry Management Act (2011)* grants an owner of forestry resources the right to harvest without a licence for personal non-commercial use (Section 37). In order to prevent the contemporaneous harvesting of adjacent forests, Rwanda's *Law governing the management and use of forests (2013)* requires the forest to be harvested to be at least 20 metres away from an area where a similar forest was harvested the previous year.

**Environmental and social impacts are required in association with authorizations.** Mexico's *General Law of Sustainable Forestry Development (2018)* stipulates that certain forests (tropical forests, for forest species that are difficult to regenerate, and for protected areas) require an environmental impact statement in accordance with general environmental legislation (Article 75). Environmental screening is streamlined into the main authorization procedure, resulting in a single administrative process. Authorization is denied where the legislation is contravened, the forest management programme is inconsistent with the regional forestry plan, the biodiversity and regeneration and productive capacity is compromised, or the application is false in any aspect. Samoa's *Forestry Management Act (2011)* Section 38, calls for mandatory assessment reports prior to the authorization, including: the harvesting contract; the logging, sawmilling, product reselling and financial plans; and a preliminary calculation of the natural resource fee. A forestry harvesting licence is subject to the provision of the following additional information: the proposed logging, harvesting or clearing, as well as the qualifications held by the applicant's personnel. Liberia's *Regulation on Tender, Award, and Administration of Forest Management Contracts, Timber Sale Contracts, and Major Forest Use Permits (FDA Regulation 104-2007)*, implementing the *National Forestry Reform Law (2006),* grants authorizations for management or harvesting of forest products as well as timber, in areas that satisfy three criteria: (i) identification in the national forest management strategy as suitable for commercial use; (ii) local validation; and (iii) suitable following a pre-feasibility

assessment involving forest inventories, biological studies, and socio-economic assessment of the area. Additionally, the competent authority shall grant the two types of rights where the area is reasonably contiguous, large enough to sustain commercial purposes, but small enough to be feasibly managed by a single contract holder. The area under such rights should not be in protected areas (unless a written finding by the competent authority states), and in an area that excludes lands that are unsuited to the commercial purposes of the contract. Timber sale contracts are prohibited on forest lands whose prior use, present condition, or planned future use makes them unsuitable for management under a forest management contract. Timber sale contracts should not cover more than 5 000 hectares.

**In jurisdictions where land is privately owned or used by a local community, consultation of the landowner or the community is required and the local community may have a say in determining the social responsibilities of the licensee.** This consultation process may conflict from overlapping concessions, and increases the likelihoods of existing rights to be respected and protected. Under Samoa's *Forestry Management Act (2011),* applicants for forestry harvesting licences are required to verify the ownership of the land and forest area to which the application pertains. The application should detail arrangements made to identify all persons with a right to the resources, and should demonstrate that such persons are entitled to receive their due share of benefits to be paid. The Act requires the written consent of all landowners and copies of any agreements pertaining to the harvesting and sale of forest produce. Bonds are to be submitted by the applicant in the manner set out in the legislation, as a guarantee against non-performance. Trinidad and Tobago's *Forests Act (Cap. 66:01, as amended in 2011)* requires permits for the removal of timber and Balata gum (Section 5). Balata gum removal requires the consent of the owner of the land, and timber requires approval of the permit (by the owner of the land).

### a. Large-scale contracts

**Large-scale timber harvesting is often subject to a competitive bidding process.** Kenya's *Forests (Participation in Sustainable Forest*

*Management) Rules (Cap. 385, 2009),* implementing the *Forest Act,* details the bidding procedure for timber licences. Under Rule 16, bidding documents shall be submitted, and such bid shall include the payment of a fee, the proposed management plan, as well as a bond equivalent of 2 percent of the reserve price. The management plan is to be reviewed first, and the bidder may withdraw at this stage without forfeiture of the latter bond. The bid is awarded to the highest bidder above the reserve price. Under Rule 18, a performance bond must be submitted before a licensee can commence any harvesting operations. Additionally, prior to harvesting in a particular unit, the bidder must pay the competent authority the bid price assigned to such unit. The competent authority is to periodically monitor and evaluate the licence and such licence is not transferable.

**Large-scale contracts may only be awarded to entities or persons that meet prescribed criteria.** Under Guyana's *Forests Act (No. 6 of 2009),* large-scale contracts (including for exploration) over a prescribed size of forest area can only be granted where prescribed criteria are met, namely the approval of a forest management plan and an annual operations plan, and also compliance with a forest concession agreement (Section 8). The latter refers to a legally-binding agreement stating that the person may occupy a specific area of state forest, cut and take forest produce, and carry out forest operations, including conservation operations. Ghana's *Timber Resource Management and Legality Licensing Regulations (2017)* distinguishes between large-scale and small-scale timber utilization contracts (Section 12). Large-scale timber contracts are subject to two phases: pre-qualification followed by a bidding process. Prequalification requirements in Section 14 include a successful demonstration of: ownership of a registered company, payment of forest levies, statement of timber rights and other logging permits, qualifications of staff, and a projection of incomes for forest processing, among other requirements. The bid is to be awarded to the applicant who demonstrates the required technical and financial capabilities as well as the requisite regulatory compliance (Section 17). Liberia's *Regulation on Tender, Award, and Administration of Forest Management Contracts, Timber Sale Contracts, and Major Forest Use Permits (FDA Regulation 104-2007)*,

implementing the *National Forestry Reform Law (2006),* contains preferences towards nationally-owned companies for certain sizes and contracts, but opens international competitive bidding to contracts for larger areas (Section 42). This text also contains provisions relating to fair and open competition by prohibiting bid rigging, market division, and price fixing (Section 44). Only those entities who complete all stages (e.g. operational planning and environmental assessment requirements, among other aspects), shall be granted timber harvest rights.

**Legislation may also set out the rights and obligations of licensees, which are typically environmental or social aspects.** Under Ghana's *Timber Resource Management and Legality Licensing Regulations (2017),* a notice of a grant of timber rights should indicate the activities to be completed by the winner. Among other requirements, holders of a timber right are to negotiate social responsibility agreements with communities in and around the contract area that hold the value of 5 percent of the stumpage fee. A social responsibility agreement shall take into account the terms in the Social Responsibility Agreement Guidelines and Code of Conduct. The bid winner is to make a commitment to assist local communities by enabling the provision of amenities, services or benefits, the total cost of which are to be the aforementioned 5 percent of the value of the stumpage fee. Failure to comply with these requirements results in nullification of timber rights.

**Transparency is important throughout the tender process to ensure that only entities that meet technical and capacity criteria are awarded licences.** Transparency not only promotes accountability in decision-making, but also helps provide a level playing field for interested competitors. The *Timber Resource Management and Legality Licensing Regulations (2017)* require public access to information on forest resource management (Section 76) by way of posting on websites and/or providing information upon request. This provision for transparency requires making public, for example, details relating to the list of preregistered timber companies, the list of large-scale and small-scale timber utilization contracts, salvage permits, and the list of certificates of purchase.

### b. Small-scale contracts

According to Ghana's *Timber Resource Management and Legality Licensing Regulations (2017)*, areas identified for small-scale timber rights are production forests not eligible for a full-cycle harvest rotation, owing to insufficient quantities for long-term timber operations, but that are due for harvesting as per the harvesting schedule (Section 10). Small-scale timber rights may also be allocated where tree stocking per unit area is low and cannot qualify for large-scale timber utilization contracts. Small-scale rights are granted for a maximum of two years, should not exceed a prescribed size, and should not result in the fragmentation of a production forest. Field inspections are required to determine the need to grant these rights and the suitability of the land for such rights. Inspections are also useful to estimate the quality, quantity and value of timber on the land, as well as any specific contextual considerations pertaining to the area (Section 11). Small-scale contracts shall also be based on a competitive procedure and qualification requirements. Like large-scale contracts, rights are rewarded on the basis of technical and financial capabilities as well as social responsibility agreements undertaken with regard to local communities (Section 20). Also, the winner of the small-scale timber right shall undertake to assist local communities with amenities, services or benefits totalling 5 percent of the value of the stumpage fee. Competent authorities establish timber harvesting schedules. Performance bonds are also required, among other obligations.

On a different note, Angola's *Law on Forest and Wildlife Basic Legislation (No. 6 of 2017)* grants rural communities (and individuals within such communities that have rights to use and enjoyment of forest areas), licences for community forestry (Article 76). This licence is issued on the basis of a simplified procedure. Such licence shall include the community undertaking, either jointly or individually, a description of the area of logging, the maximum of the type and species to be exploited annually, and processing plants, if any. Under this Law, the competent authority must register the communal lands for forest exploitation and register the licence. This Law also grants an annual operating licence to persons that operate in volumes that do not exceed 500 cubic metres. It also grants

licences for the exploitation of charcoal and non-timber forest products of prescribed quantities and duration (Article 77).

### 8.8.2. Conditions relating to permits and licences

#### a. General conditions

**Legislation often stipulates a range of conditions relating to licences, often with a view to resource protection.** Under Samoa's *Forestry Management Act (2011),* for example, the conditions include compliance with: (i) the forestry harvesting plan; (ii) orders for the protection of forest resources; (iii) rules relating to national parks and reserves (Section 46); as well as (iv) the control of fires; and (vi) where relevant, the replanting of trees. Ghana's *Timber Resource Management and Legality Licensing Regulations (2017)* subjects timber contracts to conditions such as the size and limits of the contract area, timber rights fees, performance bonds, the provision of information, insurance coverage, and periodic monitoring and audits. Contract holders are also to provide amenities and services for the inhabitants of the contract area in accordance with the relevant social responsibility agreement.

**Permit conditions relating to quantity should be based on inspections, forest inventory and monitoring.** The Lao People's Democratic Republic *Forestry Law (No. 06/NA of 2007)* requires in Article 18, that logging surveys are to set out the quantity and species of timber approved for logging in production forests. The logging survey should detail inventories, contain maps identifying tree stands, and generally seek to ensure regeneration and limit negative environmental impacts.

#### b. Harvesting plans and codes of practice

**Harvesting plans and codes of practice impose context-specific conditions of compliance by permit holders.** Under Guyana's *Forests Act (2009),* a Code of Practice is required to regulate any class or description of forest operation under Section 35, and all forest operations are to comply with such code. Under Section 46 of Samoa's

*Forestry Management Act (2011),* permit holders must submit harvesting plans (which comprise the operational plans for any forestry operation) for approval to the competent authority. The plan should comply with legislation as well as the national Code of Practice. Where there is any inconsistency between the plan and the Code, the latter shall prevail. The provisions of such plans are deemed conditions of associated permits and licences. According to Section 45 of the Samoa *Forestry Management Act (2011)*, a notice in Savali should be issued regarding the approval of Codes of Practice and written notices are given to all existing permit holders. Codes of Practice requirements relating to logging and harvesting serve as conditions of permits, while requirements relating to processing of products serve as conditions of registration for sawmill operators and forestry related businesses. Similarly, under Ghana's *Timber Resource Management and Legality Licensing Regulations (2017),* implementing the *Timber Resource Management Act (Act 547 of 1997)*, the harvesting plan should be drawn up in accordance with the Logging Manual, and should describe the timber operations with explanatory maps (Section 56). The Logging Manual is a Code of Practice for timber utilization contract operations, and is subject to periodic revision.

**Local communities may be given the opportunity to participate in the development of a harvesting plan.** Canada's (Yukon) *Forest Resources Regulation (Y.O.I.C. 2010/171)* requires the engagement of affected First Nations, i.e. their participation (notification, the provision of information and an invitation to make comments) for the development and review of a timber harvest plan (Section 7). Affected First Nations should be given a copy of the plan and afforded the opportunity to comment. These procedures also apply to amendments to a timber harvest plan, and prior to making a decision regarding the allowable cut (Section 28).

### 8.8.3. Legality licensing and certificates of origin

**Many forest laws criminalize logging without authorization. Notwithstanding, forest resources are under threat from illegal logging, partly owing to the difficulties in monitoring vast forest areas as well as weak enforcement.** Illegal loggers do not pay taxes or fees for the standing wood, and do not have to comply with licensing

conditions or with management plans. Often, the target of illegal loggers is valuable or rare wood species. Strengthening enforcement provisions of legislation through the imposition of tougher sanctions for illegal activities, robust provisions for monitoring, and clear procedural rules for punishing offenders, may diminish the benefits of illegal logging.

**Legislation can be used to boost the profitability and competitiveness of authorized forestry operations,** for example, by granting preferential treatment when awarding concessions, or promoting public procurement practices that favour forest products that are demonstrated to be legally harvested. Timber is recognized as legal (or legally harvested) when legislation for timber harvesting has been complied with; this may be certified following specific procedures. Angola's *Law on Forestry and Wildlife (2017)* states in Article 84, that all forest products from forest concessions, community farms or forest plantations shall be identified by a certificate of origin and a transit guide, and no forest products can circulate outside of concession areas or community forest areas without these documents (Article 84). Operators dealing in forest products, directly or indirectly are to have a copy of the certificate of origin or transit guide, and shall make these documents available for inspection upon request by the competent authority for forestry, customs, the police or the public (Article 85). The Peruvian *Decree on Measures to promote trade in forest products and wildlife of legal origin (No. 1 319 of 2017)* establishes measures aimed at promoting the trade of legally harvested forest products. The text points to implementing legislation for setting strategic transit control points, and the types of products that are to be controlled at these points (Article 5). The legislation empowers the competent authority to liaise with other authorities for the purposes of administrative, civil and criminal sanctions (Article 7). Movable sawmills, forestry tractors and other vehicles for the extraction and transport of timber forest products should be authorized by the competent authority (Article 8).

**Certification regarding legality of timber may also facilitate international trade.** Perhaps the most prominent of legislation that promotes distribution of only legally harvested products is the European Union *Timber Regulation (No. 995/2010 of the European Parliament*

*and of the Council of 20 October 2010).* This Regulation applies to a wide range of timber products (including pulp and paper), and seeks to prohibit illegal timber or timber products from accessing markets in the European Union. The European Union's Forest Law Enforcement, Governance and Trade (FLEGT) Action Plan, see Box 8.4, is predicated upon the recognition that, as one of the largest consumers of timber products in the world, companies and member states could significantly impact illegal logging by ensuring that illegal loggers could not access European Union markets. 'Legal' timber is defined as timber produced in compliance with the laws of the country where it is harvested. The text sets out three main requirements for operators in Europe that place timber or timber products on the European Union market for the first time. These include: (i) not placing illegally harvested products on the market; (ii) exercising due diligence in the placement of any products on the market; and (iii) keeping records of suppliers and customers. The obligation of due diligence entails acquiring accurate information on the origin of the product. Records should be kept of the results of a risk assessment of the likelihood of illegal timber ending up in the supply chain, as well as the risk mitigation measures taken.

**Box 8.4**
**European Union's Forest Law Enforcement, Governance and Trade (FLEGT) Action Plan**

The European Union's FLEGT Action Plan, established in 2003, sets out measures to prevent the import of illegal timber into the European Union, bolster the supply of legal timber and boost demand from forests that have been managed sustainably. The Action Plan focuses on seven key themes.

These include:

1. Supporting timber-producing countries.
2. Promoting trade in legal timber, including developing and implementing Voluntary Partnership Agreements between the European Union and timber-producing countries.
3. Promoting environmentally and socially beneficial public procurement policies, including guidance on achieving sustainability goals.
4. Supporting private sector initiatives, for example, by providing technical and financial assistance to help the private sector ensure that supply chains are free of illegalities.
5. Financing and investment safeguards, where investment bodies and mechanisms are encouraged to use strong due-diligence procedures to limit the social and environmental effects of investments in the forest sector.
6. Using existing or new legislation to support the Action Plan, including the European Union Timber Regulation.
7. Addressing the problem of conflict timber, including supporting the development of an international definition of conflict timber (i.e. profits from timber that are used to fund armed groups).

*Source:* EU FLEGT, n.d.

**A FLEGT licence may be issued by a country that has ratified a Voluntary Partnership Agreement with the European Union.** This licence provides assurance that timber and timber products were harvested in accordance with the laws of the country of origin. A FLEGT licence ensures that the issuing country maintains a robust legality assurance system that control supply chains, verifies legal compliance and is independently audited. The legality system is predicated on practical definitions of what constitutes legal timber, and is based on legislation that was approved through stakeholder participation. European Union importers do not need to carry out due diligence on timber that has been issued with a FLEGT licence. Ghana's *Timber Resource Management and Legality Licensing Regulations (LI 2254 of 2017),* implementing the *Timber Resource Management Act* (*Act 547 of 1997),* provides for a legality licensing scheme. This text implements Ghana's commitments under the Voluntary Partnership Agreement between Ghana and the European Union, establishing a Legality Assurance System through the legality matrix. Legality licensing is defined as "the process for ascertaining compliance with the legality matrix for the purpose of the issuance of a legality licence". Under Section 31, legality licensing applies to timber products listed in two Schedules to the Regulations. Legality licences are to be issued only where the timber product destined for export (or for distribution for sale on the domestic market) has been legally produced (Section 40), checked in accordance with the wood tracking system, and complies with principles and standards established in the Regulation. In addition, the product covered by the licence should not include a timber product imported from another country that is in a form, or produced in such manner, as is prohibited by the laws of that country. Persons are prohibited from mingling legally licensed timber with that for which a licence has not been obtained. The text makes provisions for inspections, monitoring and investigations to prevent abuse or manipulation of the verification and validation process.

The Australian *Illegal Logging Prohibition Act (No. 166 of 2012)* provides another example of detailed provisions to ban the import and use of illegally harvested timber. The Act requires that importing companies

carry out due diligence. This text covers both domestic and imported timber and certain imported wood-based products. The United States of America's *Lacey Act (1900, as amended in 2008)* extends the Law's original scope covering illegal trade in wildlife or animals to include timber, paper and other forest products, including anything for which wood has been used. The Act sets out penalties for those found to be engaged in the import, export, transport, sale, receipt, acquisition or purchase of illegally sourced forest products. The requirements of the Act are valid across the United States of America supply chain.

## 8.9. Forest communities and indigenous groups

### 8.9.1. General recognition and protection of rights

**Where local and forest-dwelling communities do not have secure tenure rights, their traditional rights of access and use may be curtailed.** Chapter 3 of this Study addresses in detail matters relating to tenure rights over the use, enjoyment and management of land resources. Access rights granted to licensees for the harvesting of forest products may also imply the right to exclude other parties to other resources in certain situations. There may be forest areas that are subject to multiple overlapping rights, e.g. traditional rights occupied and accessed by local or indigenous groups that do not have formal tenure over an area that is the object of a third-party concession right granted by the competent authority. Access rights by forest communities, either under customary law, or where enshrined in a country's constitution, for example, may also be impinged by protected area zoning which forbids any access to forests that are so designated. In the latter case, some legislation may either allow community exceptions for those residing within or adjacent to a protected area.

**Although a majority of global forest areas are publicly managed, forest-dependent and forest-dwelling communities and indigenous peoples have a significant role to play in forest conservation and management.** Increasingly, this role is recognized in legislation, with varying degrees of autonomy, participation, management and rights

accorded to such communities. For example, Liberia's *Community Rights Law (2009)* applies specifically to forestlands and has the explicit aim of empowering communities to fully engage in sustainable forest management, and share in the benefits from those resources. The Act offers a supportive legal foundation for the management and use of forest resources.

**Forest law may seek to ensure the geographic boundaries of areas that are under community tenure are clearly identified.** Burundi's *Law revising the forest code (No. 1/07 of 2016)* sets out provisions to demarcate land by fixing the area and boundaries by reference to visible landmarks. The competent authority is to establish an order of classification of lands on the proposal of a communal council; boundaries are to be established in consultation with affected communities. Article 44 states that the act of classification fixes the limits and the objectives of management of the forest concerned. It also enables the granting of a land title in the name of the community. As soon as the classification order comes into effect, the characteristics of the classified domain must be recorded in the forest inventory.

**Legislation may recognize an array of rights and safeguards with regard to local and indigenous communities.** Mexico's *General Law of Sustainable Forestry Development (2018)* Article 8, calls for the guarantee of human rights and the minimization of social and environmental risks. Its implementing regulations are to elaborate on the following matters: (i) culturally appropriate dispute resolution mechanisms; (ii) ensuring free, prior and informed consent; (iii) equitable distribution of benefits, access and ownership of land; and (iv) social integration and territorial, cultural, social and gender equity. It expressly recognizes and respects the traditional cultural practices of local and indigenous communities. The text identifies principles such as: access to justice, transparency and accountability, multiculturalism, participation and sustainability. Socially-focused forest policies are to recognize and protect the rights of indigenous communities, ensure their full participation in forestry programmes in line with other national legislation on rural development, and facilitate community forest management (Article 31). The Bolivarian Republic of Venezuela's *Forest Law (2013)* refers in Article 17 to 'forest

culture/norms', which contribute to conservation and the sustainable use of forest resources (including respecting the customs of forest communities). Forest culture/norms are guided by the following principles: (i) the autonomy of forest dwellers; (ii) equal rights of forest dwellers; (iii) a balancing of the interdependence of forest inhabitants and ecosystems harmony as a complete entity; (iv) a view of conservation of forests as an ethical intrinsic value for the well-being of humanity; and (v) an embracing of the diversity of forms of life in the ecosystem as well as cultural expressions of different communities (Article 18).

**At the same time, legislation may also place restrictions on the rights of indigenous communities.** These include requiring harvesting for subsistence only; capping harvesting at certain volumes; prohibiting the harvesting of endangered species; and requiring certain conservation techniques to be adopted and others, such as shifting cultivation, to be discontinued. An assessment may be required as to whether customary rules are consistent with national Constitutions; and on the other hand, there should be an opportunity for local contexts and practices to inform legislation. Under Article 11 of Venezuelan *Forest Law (2013)*, the competent authority is to disseminate knowledge related to conservation practices, develop programmes that disseminate traditional knowledge practices and promote traditional practices that conserve forests (see Section 8.10.4 for safeguards relating to traditional knowledge).

### 8.9.2. Procedural rights

**Mechanisms for consultation and participation of local forest communities and indigenous peoples in decisions relating to forest resources are staples of modern forest legislation.** Conversely, decisions on forest management that are imposed on stakeholders that live in the area and rely on its resources without their participation, lack legitimacy. This may result in non-compliance with the law, destruction of livelihoods and cultural identities, and possibly conflict. There are varying degrees of participation, consultation being at one end and direct management being at the other. Joint management is discussed in Section 8.10.

Mexico's *General Law of Sustainable Forestry Development (2018)* requires various authorities to promote participation in the planning, design, application and evaluation of forestry policy programmes and instruments (Article 147). This Law calls for the inclusion of a range of stakeholders: foresters, industrialists, farmers, indigenous communities, research institutions, associations and other individuals to express their views and make proposals. The Law stipulates that guidelines may be developed to enhance the participation of different stakeholders in planning activities designed to increase the quality and efficiency in the conservation, commercialization and management in a forest area (Article 149). Participation also extends to the development of relevant Official Mexican Standards, as well as proposals for development, financing and policies.

**Free, Prior and Informed Consent (FPIC) is a cornerstone of consultation, participation and engagement.** The requisite elements of FPIC are discussed in greater depth in Chapter 1. Forest legislation sometimes makes these procedures explicitly inclusive of women, youth, and other groups that may traditionally be excluded or marginalized. The Bolivarian Republic of Venezuela's *Forest Law (2013)* subjects the design and implementation of activities relating to forest exploitation to consultations and the decisions of local communities (Article 15). Any administrative act for forest activities affecting indigenous community lands requires prior consultation (Article 16). Through community organizations, these groups can also promote programmes for forest conservation and management (Article 17). Guyana's *Forests Act (No. 6 of 2009)* prohibits the execution of a forest management agreement without verification by the competent authority that the persons living in close proximity to the forest, or that have strong traditional ties to the use of it, were provided a free and fair opportunity to join or participate in the agreement (Section 11).

**Access to information is also an important procedural right.** Liberia's *Regulation to the Community Rights Law with Respect to Forest Lands (2011)* states that all documents and information relating to community forestry are public, unless restricted as per the requirements of general legislation (Section 6). The participation of civil society organizations is

enshrined in Section 7, which states that various authorities shall operate with openness, inclusiveness, and accountability. All residents older than age 18 can participate in activities of the community forestry programme and relevant meetings shall be open to civil society organizations as observers.

### 8.9.3. Representation of women's interests

Men and women may use resources in different ways, and may have different opportunities with regard to market access, access to credit, education and training. Women often have fewer opportunities in forest enterprises and value chain of related industries. Women often do not receive the same level of benefits in benefit-sharing arrangements. The operation of customary rights may result in entrenched discrimination against women, particularly where customary rights are recognized and protected by formal legislation. The different impacts of tenure insecurity on men and women are discussed in Chapter 3.

**Primary forest legislation in recent years has not typically incorporated extensive gender-related provisions, and instead focuses on ensuring the participation of women in decision-making processes.** Notwithstanding, it should be recalled that land or environment laws may contain gender-specific provisions that are applicable to forestry. Guyana's *Forestry Commission Act (No. 20 of 2007)* establishes a Commission to encourage sustainable forestry. This statute requires women, among other traditionally marginalized groups, to be included in the staff of the Commission. Zambia's *Forests Act (2015)* mandates the competent authority to design participatory approaches to forest management for local communities, traditional institutions and other stakeholders based on equitable gender participation. The Act also states that the participation of local communities and traditional institutions along gender equitable lines would be the subject of more detailed regulations.

## 8.10. Shared responsibility and benefits for forest management

**The duty to manage forest areas may be assigned to local and indigenous communities through forest laws directly, or by way of an agreement for joint management that is provided for in legislation.** Various arrangements and varying degrees of autonomy and responsibility can be granted to local communities, with corresponding degrees of control and oversight by the competent authorities. Legislation may transfer management of selected forest areas to local communities, who are then responsible for developing a management plan that serves as a roadmap and guideline for their activities. The competent authority in the latter case may intervene only where the management plan stipulations are not complied with. However, in many cases, local communities require the support of the forestry authority to develop management plans. Joint forest management agreements on the other hand may stipulate varying responsibilities (and benefits) as shared between the state and the local communities; in these cases legislation may set out a framework that provides a loose structure. The specific joint management agreement can then be tailored to the needs and capacities of local communities. These arrangements are frequently found in jurisdictions where forest resources are owned by the state, but where local communities have traditionally used and accessed the resources. Finally, stronger community rights, the right to self-govern and autonomy in management of resources, may also be found in some forestry laws for certain areas, where the state's role is limited to monitoring for overall compliance with management plans.

### 8.10.1. Community forest management

**Forest laws may set out the basic parameters and conditions for forests under community management.** In the *Law on Forests (No. 08-022 of 2008)* of the Central African Republic, Article 166 refers to participatory management of forests as being conditioned upon: (i) the undertaking of forest training for sustainable harvesting and the approval of a simple management plan developed by the community and approved by the forest administration; and (ii) the participation

of licence holders. This Law is clear on compliance with the plan as a fundamental requirement. The Law describes a management agreement as being between the competent authority and a local community for the purposes of management conservation and exploitation, as well as a simple management plan (Article 134). 'Local community' includes any indigenous or other communities living on or nearby the forest areas, and that rely on the area for subsistence. Where several communities border a forest, it may be the subject of a collective management agreement (Article 137). In these areas, forest resources (including wildlife) belong entirely to the local communities, except any (endangered) species that may be prohibited for hunting (Article 139). Article 167 goes further to stipulate that the right to participatory management engages the collective community, who may also be liable for damages caused to the forest ecosystem. The Law provides appeal rights on management issues by the local community. Liberia's *Act adopting the National Forestry Reform Law (2006)* calls for the competent authority to determine in regulations, the measures to institutionalize forest communities' participation in forest management. The measures include protecting land rights, offering technical assistance, developing a code of conduct, and enabling social agreements between licence holders and communities that specify rights, benefits and obligations of the parties.

**Community forest management arrangements may set out specific requirements relating to those responsible for management of the area as well as the rights and obligations of the community.** Zambia's *Forests Act (2015)* establishes that a 'community forest management group' may be formed by members of a village in or near a forest, or by persons that manage a forest, or persons that wish to manage the forest on behalf of the local community. The group is to be guided by a series of principles, including the following: (i) those living close to the forest (or whose livelihoods are based on traditional ties to the forest) are afforded an opportunity to join the group; (ii) the group shall promote sustainable management of forest ecosystems and biological diversity; (iii) the objectives of the group are to be explained to all who wish to join; (iv) management of the group is to be based on transparency, fairness, impartiality and non-discrimination; (vi) all members shall be encouraged

to participate; and (vii) the operating guidelines and procedures are to be based on principles of natural justice. Where the requirements of the Act are met, the competent authority may approve the group of persons as a 'community forest management group'. Where this approval is not granted, the applicants may appeal to the minister and ultimately to the High Court. Once a group has been formed, a community forestry agreement may be entered into between the group and the competent authority. The competent authority should evaluate the suitability of the forest for community forestry management in comparison with the current or potential uses of the forest (Section 31). The minister should establish regulations that detail the content, terms and conditions of community forestry agreements, as well as designate areas where an agreement is concluded. The obligations of the community are laid out in Section 32. These include the following: (i) to protect, conserve and manage the forest pursuant to the management plan; (ii) to design forest management consistently with traditional forest user rights; (iii) to protect sacred groves and trees; (iv) to assist in enforcement actions relating to illegal harvesting; (v) to enter into partnerships for sustainable management; and (vi) to help in fire-fighting initiatives. Community rights on the other hand include collecting medicinal herbs, harvesting honey, harvesting timber or fuel wood, and grazing animals. Supported activities include harvesting forest produce for forest-related industries, ecotourism ventures, recreational activities and educational activities. The community group may be supported through training, technical advice, extension services, material or financial assistance, and the provision of seeds and plants. These communities are also to be supported during disasters. The Act also provides details on third party rights and the grounds for terminating an agreement. In these cases, the legislation contains procedural safeguards relating to how such termination can be effected.

### 8.10.2. Joint management

**Participatory management is not limited solely to local and indigenous communities but can be extended to other public or private bodies.** Mexico's *General Law of Sustainable Forestry*

*Development (2018)* Article 148, lays the foundation for agreements to be entered into with public or private sector entities. Agreements can cover all aspects relating to planning, monitoring and other forestry management activities. These agreements are to take into account the relationship and degree of integration between the resource and industry or users, including private individuals, local communities or businesses. Agreements may also be used for voluntary conservation and protection actions for special projects (Article 150). Zambia's *Forests Act (2015)* empowers the competent authority to declare various types of forests, plantations or botanical reserves as a joint forest management area upon the consent of the local community or owner of the forest area (Section 36). A joint management committee may be established comprising the area chief, and representatives of: the forestry department, the authority for agriculture, water, lands and fisheries, the authority for wildlife, licence holders and the local community. The functions of such a committee are to manage and develop the joint forest management area and to distribute the benefit among local communities in the area, including by developing management plans and negotiating co-management agreements with other stakeholders.

### 8.10.3. Mechanisms for benefit sharing

**Benefit-sharing mechanisms for the forestry sector may be sourced from a number of income-generating activities.** These include forest exploitation (e.g. harvesting permits, or authorizations to access forests), the commercial use of traditional knowledge, or payments that are derived from a service or good from the conservation of forest resources through payment schemes as set out in Section 8.7.5. However, forest communities are often marginalized from development activities and programmes that may be extended to rural areas. Additionally, communities may have limited access to markets for their forest products, owing to their physical remoteness. Even where FPIC mechanisms are in place, communities may not have sufficient negotiation capacity to effectively acquire their fair share of benefits in forest exploitation projects. Legislation may thus seek to apply different benefit-sharing mechanisms to better include local forest communities in the financial

income, and other benefits generated from the resources on which they rely and are custodians.

**Legislation may provide for social agreements that enumerate benefit-sharing provisions for local communities. Legislation should establish the source of the benefit (i.e. the particular activity such as forest concessions that are to provide the benefit), the provider and recipient of the benefit, the minimum of financial or other benefits, and the methods by which the funds are to be distributed and subsequently managed.** The legislation should clarify the state role in supervising or directly managing the benefit-sharing arrangements. Transparency is critical for the successful implementation of benefit-sharing arrangements. Liberia's *Act adopting the National Forestry Reform Law (2006)* calls for the competent authority to determine in regulations, the measures to institutionalize forest communities' participation in forest management. Under the *Regulation on Major Pre-Felling Operations under Forest Resources Licenses (No. 105-07 of 2009)*, licence holders are to negotiate social agreements for the benefit of local forest communities. The Regulations set out in detail the procedure of giving notice of intention to conduct negotiations (including through newspapers and radio, sending written notices, etc.). Community Forestry Development Committees are permitted to seek the assistance of experts, legal counsel, NGOs or other persons to assist in the representation of affected communities in negotiating or administering a social agreement. Under this text, a social agreement is to contain a code of conduct that details the rights and responsibilities of members of the affected communities and the rights of the licence holders, as well as dispute resolution mechanisms (Section 33). Model codes of conduct are to be developed by the competent authority and made widely available. The social agreement should detail the financial benefit that will accrue to the affected communities, and such benefit is subject to the minimum set out in the Regulations. This financial amount must be paid on a quarterly basis into an interest-bearing escrow account that the licence holder maintains on behalf of affected communities. Funds are released from the escrow account upon request by a community forestry development committee in writing, in accordance with certain

conditions. The Regulations contain details on how negotiations can be conducted and how participation of communities may be secured. Participants may comment orally or in writing, and the meetings are to be held in English and any local language necessary to enable the understanding of the community (Section 35). The licence holder is obligated to "use best efforts to involve women, youth, and other historically excluded groups in each public meeting." Public meetings are to be located following a consideration of: their proximity to the forest, the ease of access to the resources, and a suitable size to accommodate all participants. The licence holder is also called upon to use various methods to ensure maximum participation, including by means that may be specific to locality and community needs. Signed social agreements are to be submitted to the authority for review for completeness, accuracy and conformity with relevant legislation. The competent authority may serve as mediator where the two sides fail to agree on the terms of an agreement following *bona fide* negotiations. Generally speaking, legislation should also establish mechanisms for monitoring the implementation of benefit-sharing mechanisms, and addressing any negative impacts on local communities.

**Rules for the protection of forest genetic resources may address bioprospecting and access to genetic resources, as well as the sharing of benefits deriving from that access.** Chapter 9 offers a discussion on access to genetic resources. Provisions on benefit sharing that are applicable to forests and forest products, may be found in legislation governing genetic resources as well as forest sector legislation. Bioprospecting may cover research, development or application of biological resources for commercial or industrial exploitation. Legislation may also protect traditional knowledge used either towards the conservation of forest resources, or that is related to use of a particular forest product for certain beneficial (e.g. medicinal) purposes. Where traditional knowledge is accessed by third parties, benefit-sharing mechanisms should cover the entire value chain from harvesting to final sale to the consumer.

**Legislation therefore addresses the modalities of access to resources and related traditional knowledge, transfer procedures**

**and determination of value, for the fair and equitable sharing of benefits.** Mexico's *General Law of Sustainable Forestry Development (2018)* states that the collection and use of forest biological resources for the purpose of research or biotechnology requires express authorization of the competent authority as well as the owner of the forest (Article 86). Authorization may only be granted if the "prior express and informed consent" of the owner is obtained. Where the entity collecting the resources is from the federal government, only a notice is sufficient for submission to the competent authority; however, the "prior written, express and informed consent" of the owner is still required. Implementing regulations are to specify the requirements for authorization, as well as the manner in which the transportation, storage and commercialization of forest biological resources will be carried out. Any collection and use of forest biological resources shall recognize the rights of indigenous communities to the ownership, knowledge and use of local varieties. Furthermore, when the knowledge, innovations and practices of the indigenous and local communities is accessed, an agreement between the applicant for authorization and such communities must be presented demonstrating the prior, express and informed consent of such communities.

**The benefits accruing to local communities are not restricted to transfers of funds.** Laws may promote the social (and geographic) integration of remote communities through infrastructural development, access to services (such as hospitals or schools) and related initiatives. Legislative provisions on benefit sharing may expressly recognize women as beneficiaries and require that all members of the community are to benefit equally so that the funds or other benefits do not entrench power dynamics or discriminatory practices within the community.

### 8.10.4. Traditional knowledge

**Traditional knowledge covers forest management practices as well as the range of uses of forest products for medicinal, nutritional or other purposes.** This section highlights legislative provisions relating to the former, while Chapter 9 offers a discussion on safeguards and rights with regard to traditional knowledge. The traditional knowledge of local

forest communities and indigenous peoples has been developed over generations.

**Laws should recognize and protect traditional knowledge and state categorically that local and indigenous communities are holders of rights related to traditional knowledge.** The Philippines *Administrative Order (No. 2008-01)* establishes the procedures for the recognition, registration and confirmation of all sustainable traditional practices. The text is designed to protect the right of indigenous groups to pursue their economic and cultural traditions and to share in the benefits arising from the natural resources within their ancestral lands. This text defines 'indigenous knowledge systems and practices' as:

> Systems, institutions, mechanisms and technologies comprising a unique body of knowledge evolved through time that embody patterns of relationships between and among peoples, their lands and resource environment, including such spheres of relationships which may cover social, political, cultural, economic, religious spheres, and which are the direct outcome of the indigenous peoples' responses to certain needs consisting of adaptive mechanisms which have allowed indigenous peoples to survive and thrive within their given socio-cultural and biophysical conditions (Section 4(c)).

Under Angola's *Law on Forest and Wildlife Basic Legislation (No. 6 of 2017),* 'traditional knowledge' is defined as:

> The accumulated knowledge, innovations, practices and technologies which are essential for the conservation and sustainable use of natural forest resources, or which have socio-economic value and which have been developed over time by communities or people living in a given locality.

The Law encourages extension and inspection officers to raise awareness of the importance of preserving and protecting traditional knowledge, among local communities.

**Traditional knowledge for conservation is highlighted here owing to the adaptive capacity of such systems to changing environmental patterns, which may be strategically applied in the context of climate change.** There are different types of knowledge, some that are open to

wider dissemination such as agricultural or forest practices, while other types of knowledge may not be subject to dissemination according to the wishes of the community. Angola's *Law on Forest and Wildlife Basic Legislation (No. 6 of 2017)* Article 42, requires the state to promote the collection of traditional knowledge; this is for the purposes of recording, systematization and dissemination of traditional knowledge on forest and wildlife resources. The Bolivarian Republic of Venezuela's *Law on Forests (2013)* notes that the traditional knowledge of indigenous peoples is recognized as a substantive part of forest research (Article 31) and that forest information systems should incorporate this knowledge as a source of forest heritage (Article 41).

## 8.11. Key chapter messages

**National Constitutions** may require the preservation of forest resources for sustainable development. As the highest law, enshrining sustainable development imperatives in connection with the use of forest resources defines the parameters within which forestry legislation will be developed.

In the context of **land-use planning**, conversion from forest to non-forest uses or vice versa, should consider the interplay of land rights and the rights of forest-dwelling communities, environmental protection and conservation, agricultural development and urbanization of rural areas among other sector perspectives. Forest types may be distinguished and managed not only according to their management objective (e.g. production, conservation or social service forests) but also according to their inherent characteristics; these in turn guide land-use planning.

**Forests may be classified** according to their use and characteristics. Such designations accord an area a particular status, with corresponding rights and obligations, and management objectives. Legislation may state the procedure or requirements for a change in forest category or classification of a particular area.

**Areas designated for particular environmental purposes,** such as refuges, reserves and protected areas, should be made in the highest-

level legislation. With the need to prohibit certain activities comes the duty to balance the rights of communities that inhabit those areas.

**Forest management plans** are tools that enable specific actions and measures to be taken that are in alignment with the classifications and objectives of the forest area and land use. National plans that cover the entire territory may set out the parameters that guide certain elements of individual forest plans. Alternatively, legislation may set out the basic parameters of such plans, and key stakeholders to be involved for public or, where it may be the case, privately owned forests.

**Provisions on the multiple environmental and social functions of forests** in legislation demonstrates recognition of the role of forests in the water cycle, for carbon sequestration, habitat protection and biodiversity, and also the role of forests in providing livelihoods, food security and a way of life for forest-dependent communities.

**Protecting genetic resources,** and thus, diversity of tree species, complements other mechanisms to protect the biodiversity of forests. Some tools include: comprehensive national inventories of forest genetic resources based on standardized technical protocols; *ex situ* conservation of forests; and germplasm storage and conservation.

**Forests impact and are impacted by climate change.** While deforestation and forest degradation contribute to climate change, sustainable forest management supports mitigation of, and adaptation to, climate change by maintaining and increasing forest and tree cover, thereby sequestering carbon.

**Tools for forest conservation** that frequently feature in forest legislation include: environmental impact assessments (EIAs) and social impact assessment (SIAs); afforestation and reforestation programmes; prohibitions or restrictions relating to clearing of forest areas; mechanisms to de-incentivize deforestation, such as stimulating second-generation biofuels using plant and tree waste; and establishing funds for the specific purposes of forest conservation.

**Forest health measures include: fire prevention and suppression** (for example, through forest fire planning, actions to be taken on certain types of land, activities that are prohibited in certain seasons and burning permits) **and also preventing the introduction and spread of pests and diseases** that affect trees (for example, through quarantine measures, border and transit checks, surveillance, treatment and emergency responses). Climate change exacerbates the incidence of both fires and pest outbreaks.

**Fees, charges and taxes** are finance generating mechanisms that can be used for sustainable forest management, including for the benefit of local communities. Stumpage fees are calculated in the prescribed manner and are to be used for prescribed purposes.

**Economic incentives and other economic instruments** such as credits, bonds, insurance, funds and trusts, can be used for sustainable forest management, thereby reducing the profitability gap between illegal operations and sustainable forest management activities. Credit can be made available for forestry equipment and machinery, prioritizing clean technologies, in support of small and medium enterprises, and social/community production initiatives.

**Plantation and production forests** must be managed sustainably, for example, through the following mechanisms: management in accordance with forest plans that adhere to prescribed criteria; environmental and social safeguards associated with authorizations; requiring reduced impact harvest methods; and ensuring adequate regeneration after wood harvesting, among others. Provisions to encourage the marketing and promotion of both wood and non-wood forest products include promoting access to micro-financing, developing local infrastructure, enabling access to processing technologies and promoting socially and environmentally sustainable small and medium enterprises.

**Certification** may be based on legal (mandatory) requirements on sustainability parameters or this process can be for branding and quality purposes (such as protecting the reputation of products from that particular origin). Certification schemes can be mandatory only in certain areas or for certain types of forest, or for certain types of producers, or

it can be a voluntary framework for those who wish to benefit from the market advantages of certification.

**Payments for ecosystem services and remuneration of positive externalities** allow forest owners and managers to be compensated for the range of environmental and social functions provided by forests. Legislation should set out: criteria for qualifying for such remunerations; how management activities can be tracked and priced; and the mechanisms for disbursement of the payments.

**Environmental and social criteria and considerations** in the issuance of licences, concessions, leases, permits or other contractual arrangements, include compliance with: a prescribed harvesting plan; orders for the protection of forest resources; the replanting of trees; performance bonds; insurance coverage; facilitating periodic monitoring and audits; and other requirements. **Compliance with harvesting plans, codes of practice, logging manuals or felling directions** are often used as conditions of compliance by permit holders.

**Legality licensing and the issuance of certificates of origin** are requirements used to counter illegal logging by demonstrating that the timber was produced in compliance with the law. Many countries create an offence for the distribution or sale of timber products without appropriate documentation.

**Tenure rights of forest communities affect traditional rights of access and use.** Legislation may safeguard and protect rights of indigenous groups and local forest communities; at the same time, laws may place restrictions on the rights and traditional practices of such communities. An assessment should be made whether customary rules are consistent with national legislation; and on the other hand, there should be an opportunity for local contexts and practices to inform legislation.

**Procedural rights entail the right to be consulted and to participate** in the planning, design, application and evaluation of forestry policy, programmes and instruments. Access to information is also an important procedural right. Mechanisms to ensure the free, prior and informed consent process for engaging local forest communities should

be explicitly inclusive of women, youth, and other groups that may traditionally be excluded or marginalized.

**Gender perspectives** are often considered in terms of greater inclusion of women in decision-making and this should be extended to the sharing of benefits as well. Women should be represented in decision-making bodies.

**Community forest management** provisions in legislation typically detail what constitutes a community and the specific management responsibilities of such a community. Local communities can develop a management plan that serves as a roadmap and guideline for their activities and a competent authority may have oversight.

**Joint forest management agreements** stipulate varying responsibilities (and benefits) as shared between the state and the local communities; in these cases, legislation may set out a framework that provides a loose structure that can be narrowed and tailored according to different communities and forest areas within a country in the specific joint management agreement.

**Benefit-sharing mechanisms** that seek to better include local forest communities in the financial income and other benefits generated from local resources may include disbursements of funds, but also apply to other non-financial benefits such as infrastructural development, access to services and related initiatives. Legislation should establish the source of the benefit, an identification of the provider and recipient of the benefit, a stipulated minimum benefit, and the mechanisms for disbursement, management and monitoring.

**Traditional knowledge** developed over generations by forest communities and indigenous peoples can be used to improve forest management practices and also for medicinal, nutritional or other purposes. The knowledge associated with conservation is usually allowed to be disseminated in order to enhance management practices, while use for the other aforementioned purposes are often subject to specific conditions of access.

# Appendix G. Key international instruments to guide national legislation

## I. Legally-binding instruments

*Convention on Biological Diversity* (CBD), adopted in Nairobi, 22 May 1992, and open for signature in Rio de Janeiro, 5 June 1992. (also available at https://www.cbd.int/doc/legal/cbd-en.pdf).

*Convention on International Trade in Endangered Species of Wild Fauna and Flora* (CITES), 3 March 1973, amended 1979 and 1983. (also available at https://www.cites.org/eng/disc/text.php).

*Convention on Wetlands of International Importance especially as Waterfowl Habitat* (Ramsar), adopted in Ramsar, 2 February 1971. (also available at http://www.ramsar.org/sites/default/files/documents/library/current_convention_text_e.pdf; https://www.ramsar.org/about/the-convention-on-wetlands-and-its-mission).

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This Chapter should be read in conjunction with Chapter 2 on themes that are common to all the sectoral chapters in this book. The diverse illustrative snapshots of legislative elements on select subjects offer an aerial view to demonstrate how countries have captured the interplay between social, economic and environmental exigencies, while using the very narrow and specific lens of highlighted legislative provisions. The reader should not infer that the examples selected are necessarily successfully implemented, or result in the desired impact; the chapter does not examine country contexts, allocation of resources, political priority or any of the myriad factors that may affect successful implementation and enforcement. Assessing the effectiveness, regulatory performance and range of potential externalities is an undertaking that is highly context-specific. Accordingly, the examples here do not make recommendations that are applicable to all jurisdictions, but rather draw attention to the way in which different countries have approached sustainable governance of the resource.

While this Chapter explores sustainability dimensions from the narrow lens of sectoral legislation, i.e. agriculture-specific laws, it should be emphasized that in practice, an approach that recognizes inter-sectoral linkages and policy coherence necessarily involves a contemporaneous examination of legislation on, among other areas, environment, land use and land tenure, water, natural disasters and emergencies, food, industry, manufacturing and processing, investment, infrastructure, public-private partnerships and local government administration.

## 9.1. Introduction to the agricultural context

### 9.1.1. Challenges for sustainable agricultural production

Agriculture spans the production of crops for human or animal consumption, and livestock production for food or non-food purposes, as well as the cultivation of non-food crops such as biomass, cotton, dyes, flowers and raw materials for other industrial products (FAO, 2014c). Demographic changes, principally the growth of the world's population to over 9 billion by 2050, necessitates a 60 percent increase

in food production. While increased population numbers with growing incomes drives the demand for food, conversely agriculture is expected to deliver increased rural incomes. Access to food is restricted by poverty, unemployment and inequality. This demand is compounded by the challenges in supply when considering the natural resources on which agriculture depends, including land and soil, water, climate and other factors (land and water challenges are explored in varying degrees in Chapters 3 and 4). Land conversion, particularly in forest areas, and resulting biodiversity loss is often attributed to agriculture, as are excessive chemical use and pollution, particularly of soil and water bodies. Agriculture is also a major user of water resources. The balance required between intensification of agricultural production to meet increased demand and the protection of natural resources, therefore, becomes acutely important for food security, biodiversity, employment and poverty reduction. Input-intensive systems present sustainability challenges while low-input practices may have growth and scale challenges. Climate change impacts both yields and livelihoods, and the agriculture sector is a main contributor to greenhouse gas emissions (FAO, 2018c). Agricultural production is also hampered by insufficient investment in sustainable agriculture.

### 9.1.2. Legislation governing agriculture

Thus, the concept of 'sustainable agriculture' involves production with farming techniques that protect public health, conserve biodiversity and the environment, strengthen human communities, and ensure animal welfare (FAO, 2014c). Agriculture comprises different subsectors (such as crops and livestock) and these subsectors are dissected by a number of different regulatory areas, for example, sanitary and phytosanitary legislation, rules relating to the use and conservation of plant and animal genetic resources, or laws for agricultural financing or insurance. Legislation may address the agriculture sector as a whole (defining the scope of agriculture) or in specific legislation, may be used to address a particular regulatory area or commodity. Owing to the sheer volume of these themes and the breadth of issues and requisite regulatory elements to explore, the approach in this Chapter is to offer a light canvassing of

select tools, mechanisms or principles that recognize the key dimensions of sustainable agriculture.

Agriculture laws regulate, in a single legal instrument, key subjects, principles and mechanisms. However, subsector-specific laws offer more detail on regulatory requirements at primary legislation level, particularly, those that have cross-sectoral implications such as sanitary and phytosanitary measures that impact health and trade, or agricultural inputs that have implications for natural resources, food security and the environment. A review of Constitutions approved in the last decade or so reveals that these texts, the highest laws of a country, for the most part do not contain specific references to sustainable agricultural production. However, the opposite is true for agriculture-specific and agriculture-related laws, which were found to contain principles and tools that further environmental, economic and social gains, and reflect the connection of agricultural activities on rural development and vice versa.

## 9.2. Sustainable agricultural and rural development

This Chapter frames sustainable agricultural development in the broader context of rural development. The latter's multi-disciplinary elements bring together environmental, social and economic challenges and opportunities. Environmental aspects such as climate change and biodiversity are to be considered, alongside social challenges relating to the integration of youth, women, smallholders or other marginalized groups into productive industries, while improving overall employment opportunities, financing options, access to markets for products as well as access to services and infrastructure.

### 9.2.1. Sustainable agricultural development

**A number of recent laws call for sustainable development of the agricultural sector as an over-arching principle and priority of the regulatory framework.** For example, the Republic of Korea's *Framework Act on Agriculture, Rural Community and Food Industry (No. 13 356 of 2015, as amended by Act No. 14 647 of 2017)* stipulates that agriculture

serves as a foundation for the economic, social, and cultural development of all citizens (Article 2). Farmers' incomes should parallel workers in other industries, and Article 8 indicates this will be achieved through a reform of: the ways personnel engage in the industry; agricultural business management methods and ownership and use of farmland. Competent authorities are also to focus on supporting distribution and market access of agricultural products; and the specific stimulation of supply chains. Rural communities are encouraged to maintain unique traditions and cultures that can be integrated into living spaces and industrial models. Environmental conservation is also an overall goal of agriculture (Article 38 and 44), and may be achieved by: (i) promoting production technologies and methods that are not detrimental to the environment; (ii) providing different types of support to items produced through sustainable practices; and (iii) transforming waste into usable material.

**The three pillars of sustainable development (environmental, social and economic) are also evident in subsector specific texts.** The Mexican (Tabasco) *Law on livestock development (2011)* calls for improved technologies, research, and diversification of financing options to enable the sustainable development of the livestock sector, the improvement of the socio-economic conditions of producers, and the rational use of natural resources (Article 7). Good livestock production practices, noted as a means to protect, are offered in Article 11. These include agrosilvopastoral systems that integrate reforestation programmes (which provide shelter, quality forage, and water and soil conservation), as well as the promotion of technology (such as solar panels to capture energy and biodigesters to generate energy). Côte d'Ivoire's *Law on agricultural strategy (No. 537 of 2015)* calls for developing energy policies specifically for sustainable agricultural production and environmental protection (Article 67). The Law promotes research relating to crop varieties with high-energy production potential as well as, on the flip-side, simple technologies that are energy efficient for use in agriculture. Any energy infrastructure is subject to an environmental impact assessment (Article 68). Efforts are to be made towards the provision of electricity or the construction of grids in rural areas.

**Sustainable development of the agriculture sector is predicated on improved efficiency in the use of available resources.** Mexico's (Nayarit) *Law for sustainable agricultural development (2012)* states that sustainability is the guiding principle for agricultural production and the rational use of natural resources (Article 20). Priority economic zones and regions for efficient sustainable production that can be effected are to be identified, prioritizing broad participation of local and indigenous populations. The competent authority is to promote sustainable practices that increase efficiency, productivity, competitiveness and profitability while protecting the environment (Article 21). Specific initiatives include, for example, the promotion of improved and certified seeds and other inputs that augment productivity and preserve biodiversity. Fiscal instruments, such as loans and credit, are also included under this framework. Production reforms are geared towards ensuring stable supplies of certain commodities, leveraging market opportunities for strategic products, using land efficiently with respect to agro-environmental parameters and generating local employment. Technologies that improve productivity while mitigating climate change are also encouraged as are traditional practices (Article 82). This range of reforms is to be preceded by feasibility studies, and accompanied by training and education for beneficiaries in technical and management skills (Article 84).

**Legislation on rural development may also have specific themes of focus, and such themes are often highlighted in regional texts.** The Russian Federation's (Ulyanovsk) *Regional Law on legal regulation of sustainable development of rural areas (No. 82-ZO of 2015)* emphasizes employment of rural youth, promotion of state programmes for development, and the material support of farming activities through subsidies. Brazil's (Mato Grosso) *Law establishing the State Policy on Sustainable Rural Development of Family Farming (No. 10 516 of 2017)* policy objectives are: increasing production and efficiency; boosting agricultural market stability; improving the living conditions of rural area dwellers; conserving the environment; and supporting farmers' associations. Family farmers, and indigenous and local communities are given priority in programmes with specialized access to infrastructure,

health services and social services. Programmes must protect biodiversity and cultural heritage, respect social and ethnic diversity, and ensure gender equity as well as inter-generational equity.

### 9.2.2. Rural development

Rural development programmes can support the provision of goods and services such as health, education, capacity development, finance and public infrastructure. The approach and priorities in legislation may vary in developing and developed countries, but common themes are evident.

Mexico's *Sustainable Rural Development Act (2011, as amended in 2017)* defines sustainable rural development as the improvement of social welfare and economic activities outside urban areas in such manner as enables environmental conservation. The Act stipulates that a special programme will be established to protect the rural environment, to boost socio-economic activities and to support the provision of environmental services. The Law prioritizes gender equity, the protection of women and youth in development programmes, and the protection of vulnerable groups such as children, the elderly, disabled and terminally ill people in rural communities. The Law also calls for the development of infrastructure for sustainable rural development. Finland's *Act on Support for Rural Development (2010)* seeks to diversify economic activities in rural areas, to improve operating conditions of rural enterprises and to boost the competitiveness of their products. At the same time emphasis is given to augmenting the quality of life of rural residents in furtherance of sustainable development principles. Similarly, Luxemburg's *Law for the sustainable development of rural areas (No. 150 of 2016)* stipulates that in order to improve the economic and environmental performance of agricultural holdings, as well as to both minimize agricultural impacts on the climate and strengthen agricultural resilience to climate change, a financial aid scheme for the use of advisory services is established in Article 39. Such advisory services would cover, for example, advice relating to the building of small and medium-sized enterprises (SMEs), and a focus on improving the economic and environmental performance of enterprises. Advisory services may also focus on climate change mitigation and resilience with regard to SMEs. Further, the Act sets up

a scheme for compensation for damage caused by natural disasters and adverse climatic events (Article 20) and investment aid for rehabilitation of agricultural production damaged by natural disasters (Article 21).

The Republic of Korea's *Framework Act on Agriculture, Rural Community and Food Industry (No. 13 356 of 2015, as amended by Act No. 14 647 of 2017)* prioritizes increasing the income of all farmers through education and training. Article 49 stipulates that in order to enable more balanced income between urban and rural areas, measures should target ways to augment rural incomes and improve quality of life in rural areas. Industrial complexes may be established in rural communities, including those that favour the development of local produce, local specialities and foods, and other activities relating to agricultural processing and agribusiness (Article 50). The Act identifies the promotion of social and economic activities in rural areas, and the promotion of tourism and leisure in rural areas for those that live in urban areas (Article 51), as a means for more balanced approach between urban and rural areas. This may include publicizing events such as local cultural fairs or local characteristics of a particular region. Rural communities are to be transformed into industrial, living and recreational spaces that are well-connected to urban areas, and their traditions and cultures are to be preserved (for example, by maintaining landscapes). Social and welfare benefits for rural communities include medical care, education, housing and water supply (Article 10). The Law also encourages the development of opportunities for persons to enter into agricultural enterprises (by means of training, information, etc.) in Article 29.

## 9.3. Policy coherence and multi-stakeholder inclusion

### 9.3.1. Policy coherence

Sustainable agriculture has implications for, and is impacted by, policy imperatives across a number of different sectors: environment, land rights, health, economy and trade, to name a few. Consistency in policy setting as well as policy-implementation through legislation should be both horizontal (multisectoral) and vertical (across various

administrative tiers of government). Legislation for sustainable agriculture must therefore ensure that its provisions move in the same policy direction as related sectors, and that these sectors are mutually reinforcing of agriculture-sector goals through their governance frameworks as well.

**Legislation can further foment well-integrated policy.** Mexico's (Nayarit) *Law for sustainable agricultural development (2012)* states that in the absence of a governing provision in the text, other legislation is to be applied in a supplementary manner, including legislation in the following areas: rural development, seeds, health, cooperative societies, environment, and municipal law, among others (Article 6). In addition, the guiding principles for agricultural planning are identified as: the broad participation of a range of agricultural producers and social groups, consistency with national and state development plans, and the coordination between various levels of government (Article 17). Consistency in vertical levels of government as well as horizontal policy matters is also underscored in Côte d'Ivoire's *Law on agricultural orientation (No. 537 of 2015).* This Law declares that local communities must elaborate and implement the agricultural development plans consistently with national spatial planning policies. Agricultural development plans should specify how the lands should be used and the types of production that are most suited to local conditions. At the same time, it is the priority of the state to avoid prioritizing perennial crops at the expense of food crops. (For more on spatial planning that embraces multisectoral perspectives, see Chapter 3). The Republic of Korea's *Framework Act on Agriculture, Rural Community and Food Industry Act (No. 13 356 of 2015, as amended by Act No. 14 647 of 2017)* requires that other legislation within the subsector of agriculture, i.e. concerning the food industry and rural communities, comply with this overarching Act (Article 5). 'Agricultural development planning' is identified as the means of implementing the legislation through master plans, sectoral and strategic plans, and agricultural programmes for the economic, social and cultural development of local communities. The Act calls for the development of a master plan that sets out development and policy directions for matters within its scope, in addition to "policies that

are connected to this scope" among other matters. Article 176 requires that the government should, within the framework of the Finance Act and public expenditure and investment planning laws, allocate substantial cash resources in relation to the objectives of the statute.

### 9.3.2. Multi-stakeholder cooperation and participation

**Multi-stakeholder decision-making or advisory bodies are a tool often used to foster policy consistency, coordination, and the consideration of the perspectives of various sectors as represented by different types of stakeholders.** Mexico's (Nayarit) *Law for sustainable agricultural development (2012),* for example, calls for cooperation among the ministries responsible for economic development, health, state authorities, the environment and public security, in addition to agriculture. Viet Nam's *Law on Animal Health (No. 79/2015/QH13)* requires multi-sector cooperation in Article 8, which provides the specific areas and subject matter on which ministries must cooperate. That article calls for the defence authority to coordinate with the Minister of Agriculture and Rural Development in directing the border and marine authorities to coordinate the prevention of smuggling and illegal cross-border transportation of animals, animal products and veterinary drugs. Also, the environmental authority is to assume the prime responsibility for, and coordinate with the Minister of Agriculture and Rural Development in, promulgating regulations on environmental protection related to animal health.

**In some cases, the call for holistic approaches do not specify multi-stakeholder cooperation by name but make this inference through the subject matter to be addressed.** For example, in the Republic of Korea's *Act on the Promotion of Environment-Friendly Agriculture and Fisheries and the Management of and Support for Organic Foods, etc. (No. 11 459 of 2012, as amended by Act No. 13 383 of 2015)*, the environment-friendly agriculture and fisheries promotion plan is to encompass aspects such as: environmental protection; the use of new technology; a model industrial complex of environment-friendly agriculture; and measures to enable the production, distribution, and exportation of processed agriculture and fisheries products.

Multi-stakeholder participation and perspectives in decision-making can be effected through advisory or executive bodies that reflect membership from a range of sectors.

### 9.3.3. Integrating marginalized groups into development schemes

Legislation can be used to recognize women's role in agriculture by requiring gender equality in participation within programmes and with regard to incentives. Legislation can also foster the participation of youth in rural and agricultural development. These groups may be targeted for training, education and mentorship programmes to increase their access to decent work and entrepreneurship opportunities.

**Such objectives may receive generic and cursory treatment in legislation, but are given importance as fundamental guiding principles for implementation of measures and projects and also for interpretation of the law.** A case in point is Kenya's (Tana River County) *Agriculture Development Act (No. 18 of 2016)*, which declares in Section 4 that executive bodies are to be guided by principles such as: (a) public participation and financial inclusiveness; (b) protection of the interests of the marginalized, persons with disability, women and youth; and (c) local ownership and sustainability. Paraguay's *Law on Public Policies for Rural Women (No. 5 446 of 2015)* contains similar guiding principles, i.e. equality, equity, empowerment and social inclusion.

**In other countries, the specific actions to support traditionally disadvantaged groups are set out in agriculture laws.** Under the Republic of Korea's *Framework Act on Agriculture, Rural Community and Food Industry (No. 13 356 of 2015, as amended by Act No. 14 647 of 2017),* state and local governments are to give preferential treatment to disadvantaged rural communities (i.e. those that are disadvantaged in terms of historic provision of public services, agricultural production conditions, and living conditions). An emphasis is made on ensuring harmony between development and conservation. In disadvantaged areas, the state is to introduce new crops, support the production and marketing of local specialities and improve the residential spaces (Article 49). Côte d'Ivoire's *Law on agricultural strategy (No. 537 of 2015)*

promotes the entry of youth and women in farming roles and opportunities by supporting their access to inputs, as well as to financial and technical support (Article 15). In particular, a financing mechanism is to be established to facilitate access to land by women and youth. Article 61 directs preferential treatment to be provided to traditionally marginalized groups (which is identified as comprising youth, women and persons with disabilities) for participation in agricultural development programmes. The Argentinian (Entre Rios) *Law on the Promotion Regime for Young Entrepreneurs (No. 10 394 of 2015)* seeks to promote diversification of employment by facilitating financing of agricultural production projects through a specially established fund. The Law also seeks to support young producers in rural areas, as a means to reduce migration to urban areas and to strengthen rural sustainable development. Agricultural production is supported to ensure the sector continues to provide income and employment. Within the context of economic rights of rural women, Paraguay's *Law on Public Policies for Rural Women (No. 5 446 of 2015)* states that women are to be better integrated in programmes involving industrial and technological innovation in agriculture, especially clean technologies as well as technical assistance (Article 6). In addition, the Law calls for the right to decent employment, opportunities relating to employment, promotion and training and also access to land. Women are notably highlighted for their role in protecting seed and plant varieties, and contributing to food security and sustainable national development (Article 7).

**Gender-neutral policies do not necessarily yield results for equality when considering starting points and historical discrimination. Legislation may therefore grant special or preferential access to programmes and incentives in favour of prescribed groups.** This point is made directly in Spain's (Basque Country) *Law on the Status of Women Farmers (No. 8 of 2015),* where Article 4 points to affirmative action to achieve effective gender equality in agriculture, through specific and temporary measures to address de facto gender equalities. The text recognizes that equality of opportunity must be understood in the context of possibly unequal starting points in access to resources, benefits and outcomes. The responsible authorities must

enable the effective equality of men and women as regards political, civil, economic, social and cultural rights (Article 5). Gender perspectives are compulsory in the design and implementation of all policies and actions, such that rights are protected and inequalities are eliminated (Article 6). Authorities are tasked with carrying out studies to determine the circumstances in which various forms of discrimination may arise in the agricultural sector, and should also develop strategies in response. As examples of some specific tools and mechanisms: Article 10 identifies the right of women to physical or associative ownership of agricultural holdings; Article 17 promotes women's participation in agriculture social security schemes; and Article 27 promotes the public recognition of women's agricultural work through studies, information campaigns, and other mechanisms for visibility and recognition. The Republic of Korea's *Framework Act on Agriculture, Rural Community and Food Industry (No. 13 356 of 2015, as amended by Act No. 14 647 of 2017*) enshrines the importance of women farmers' participation in programmes and benefits, and elevating their professional status through targeted policies (Article 27). With regard to the latter, the Act calls for the recognition of female farmers' contribution to agricultural enterprises. Côte d'Ivoire's *Law on agricultural strategy (No. 537 of 2015)* contains a clear gender policy enshrined in the context of greater social cohesion, that directs the reduction of gender inequalities through greater involvement of women in agriculture (Article 85).

**Gender equality can be promoted by legislation through provisions that expressly include women in access to credit, natural resources and inputs as well as access to and leadership in decision-making. Legislation can address the gender gap in resources, opportunities, assets, inputs and services when addressed as an integral part of overall policy instead of a separate consideration.** This means considering the different experiences of rural men versus rural women and their specific roles and constraints; thus, interventions should be designed accordingly. The Philippines *Act Amending the Comprehensive Agrarian Reform Law (No. 9 700 of 2009)* requires that agricultural support services beneficiaries should be assisted based on the fundamental principle of gender equality, as well as on respect for

human rights, social protection and decent working conditions for all (Section 37). The Act defines 'rural women' as those engaged directly in "farming or fishing as their source of livelihood, whether paid or unpaid, regular or seasonal, or in food preparation, managing the household, caring for children" or other similar activities. The Act expressly recognizes that support services must address the specific needs and well-being of women farmer-beneficiaries as well as their female family members. Rural women may form associations and gain access to agricultural credit and loans, marketing facilities and technology. Under the text, rural women must be accorded equal treatment in land reform and resettlement schemes. A women's centre is responsible for developing programmes for the promotion of rural women's rights and for registering complaints and grievances. Section 41 stipulates that membership of the key decision-making and advisory body, established under the Act, is to comprise at least 20 percent of women, with at least one representative of a rural women's organization.

## 9.4. Sustainable production systems

### 9.4.1. Agroecology

The concept of agroecology has been recently gaining ground in sustainable agriculture discourses. Agroecology entails environmental, social and economic interactions that are characteristic of diversified agricultural systems.

> Agroecology applies ecological concepts and principles to food and farming systems, focusing on the interactions between microorganisms, plants, animals, humans and the environment, to foster sustainable agriculture development […] and integrate transdisciplinary knowledge, farmers' practices and social movements while recognizing their mutual interdependence (HLPE, 2018).

Agroecology is a bottom up approach that addresses root problems with contextualized solutions and combines science with the traditional, practical and local knowledge of producers while enhancing their autonomy and adaptive capacity – see Box 9.1 (FAO, 2017e). Agroecology

entails an integrated and holistic approach to agricultural and food systems embracing social and economic dimensions such as the rights of women, youth and indigenous peoples.

**Box 9.1**
**The 10 elements of agroecology**

1. Diversity: Diversification is key to agroecological transitions to ensure food security and nutrition while conserving, protecting and enhancing natural resources.
2. Co-creation and sharing of knowledge: Agricultural innovations respond better to local challenges when they are co-created through participatory processes.
3. Synergies: Building synergies enhances functions across food systems, supporting multiple ecosystem services.
4. Efficiency: Innovative agroecological practices produce more using fewer external resources.
5. Recycling: More recycling means agricultural production with lower economic and environmental costs.
6. Resilience: Enhanced resilience of people, communities and ecosystems is key to sustainable agricultural systems.
7. Human and social values: Protecting and improving rural livelihoods, equity and social well-being is essential for sustainable food and agricultural systems.
8. Culture and food traditions: By supporting healthy, diversified and culturally appropriate diets, agroecology contributes to food security and nutrition while maintaining the health of ecosystems.
9. Responsible governance: Sustainable food and agriculture requires responsible and effective governance mechanisms at different scales – from local to national to global.
10. Circular and solidarity economy: Circular and solidarity economies that reconnect producers and consumers provide innovative solutions for living within our planetary boundaries while ensuring the social foundation for inclusive and sustainable development.

*Source:* FAO, 2017e.

Many tenets of agroecology are quite technical, and in some cases, specific to certain agricultural and climatic conditions. Thus, this means that the specifics of agroecology mechanisms and tools will be found in lower-level legislation and thus, beyond the purview of this Study. Typically, primary legislation provides the framework that sets the priorities and overarching principles to be expounded in subsidiary legislation. One of the exceptions is the Argentinian (Misiones) *Law for the Promotion of Agroecological Production (VIII No. 68 of 2014),* which details key technical elements regarding agroecological production practices. These are useful to list for illustrative purposes. Crop cover must be maintained through minimum tillage practices, and year-round crop cover is also to enable water retention (Article 3). The establishment of agroecological production zones are to be based on soil types. Crop rotations, agroforestry and intercropping are among the ways to enable nutrient recycling. Natural means of preventing pests and diseases include natural traps and repellents, and the use of natural enemies. The Law also prioritizes the conservation of local genetic materials of seeds, seedlings and animals. Local genetic resources are to be protected via mechanisms to enable the access, use, exchange and multiplication of native genes and germplasm.

While many laws embrace the various elements that comprise the environmental, social and economic dimensions of agroecology, this section focuses on legislation that *explicitly* refers to agroecology as a concept. The most common examples are found predominantly in Central and South America, with varying definitions of agroecology that are essentially similar. Brazil's (Rio Grande do Sul) *Law creating the State Policy on Organic Production and Agroecology (No. 14 486 of 2014)* declares that the Law is guided by the principles of sustainable development. These include among others: participation; ecological conservation coupled with social inclusion; food security and sovereignty; socioeconomic, gender and ethnic equity; and agricultural, biological, territorial, landscape and cultural diversity.

Nicaragua's *Law to promote agroecological or organic production (No. 765 of 2011, as amended in 2014)* defines 'agroecosystems' to mean:

> Ecological systems that have one or more types of agriculture whose main components are the subsystems of crops or animal production, identified with the parcels or areas of the farm, and the broader environment with which those components interact.

The Bolivarian Republic of Venezuela's *Decree Law on Comprehensive Agricultural Health (No. 6 129 of 2008)* frames the promotion of agricultural health through the use of agroecological science. In this text, agroecology is expressly framed to include traditional knowledge regarding the respect for and preservation of all-natural components of agriculture. In co-management among local and indigenous communities and local authorities, the competent authority will carry out assessments and diagnostics to detect agricultural health challenges caused through use of ecologically unsustainable practices, and instead, apply agroecological solutions to enable production that is in harmony with the natural and cultural environment (Article 50).

The Brazilian (Rio Grande do Sul) *Law creating the State Policy on Organic Production and Agroecology (No. 14 486 of 2014)* sees agroecological production as a tool for social inclusion, poverty reduction and greater equality and equity and calls for the promotion of agroecology via various mechanisms. The Law seeks to stimulate the demand side by calling for methods by which to promote the increased consumption of agroecological and organic food, to enhance market access and to increase distribution of agroecologically produced goods. The Law requires equitable participation of communities in processes of quality assurance, rural development and knowledge of management of agroecosystems. Agroecological systems qualify for payment schemes for environmental services. The text refers to 'agroecological transition' as the:

> Gradual process of conversion of an agricultural system towards an agroecological paradigm, in which ecologically sustainable practices and management as well as environmentally sound technologies are

> incorporated, in accordance with the principles, guidelines and norms of agroecology and organic agriculture.

Recognition of the temporal and transition aspect in legislation is important given that this factor (i.e. the transition takes about 2–3 years) is a gradual process that hinders farmers into adopting agroecological practices. Accordingly, the Law supports agroecological producers and producers in agroecological transition through membership in social organizations, cooperatives and associations. The state is required by the Law to take actions to provide training, technical assistance and rural extension. Access to inputs, technology, credit, and economic incentives are also to be rolled out in support of agroecological producers.

Ecuador's *Framework Law for Food Sovereignty (2009)* also promotes agroecology by requiring the state to carry out training, open special lines of credit, and develop marketing strategies, all in support of agroecological producers (Article 14). Similar to the Brazilian legislation cited above, this Law states that measures to boost consumption of nutritious foods of agroecological origin are to be implemented alongside education campaigns and informative labelling programmes (Article 27). Agroecological producers are given preference in public procurement schemes (Articles 13, 15). The Argentinian (Misiones) *Law for the Promotion of Agroecological Production (VIII No. 68 of 2014)* requires agroecological producers to be registered, with detailed information regarding the productive units and spatial distribution (Article 4). A participatory certification system is established to verify production processes, foster economically viable production that promotes the dignity and welfare of family farmers, and enable fair prices for all consumers (Article 5). Agroecological producers may apply for credit for qualifying activities, and such producers enjoy priority in credit schemes (Article 10). The competent authority may enter into agreements with municipal governments, public and private institutions, and national and international bodies, for the promotion and development of agroecology (Article 13). Importantly, funding to support implementation of the Law is explicitly provided for through fees from various funds, levies and charges, as well as the general regional budget. The uses of these funds are circumscribed in the Law as earmarked solely for the organization

and promotion of agroecological projects, and for the provision of related inputs and infrastructure (Article 15).

### 9.4.2. Organic production

Codex Alimentarius Commission defines organic agriculture as a:

> Holistic production management system that avoids use of synthetic fertilizers, pesticides and genetically-modified organisms, minimizes pollution of air, soil and water, and optimizes the health and productivity of interdependent communities of plants, animals and people (Scialabba, 2013).

Organic agriculture inherently results in better adaptation to local conditions in order to harness ecosystem services (such as improved water retention, carbon sequestration and other positive impacts on land, soil and water resources) as well as contributing to mitigate climate change through improved livestock, crop and farm management and restoration of degraded lands (Scialabba, 2013). Organic agriculture's social benefits include: avoided harms to human health, community development, public benefits through its contribution to a more nutritious food supply, improved environment and lower pollution of land, air and water resources.

The legislative framework for organic farming spans rules for production, procedures and requirements relating to conformity assurance and the certification process, labelling rules, and the institutional responsibilities for organic production, certification and monitoring. This section thus focuses specifically on: (i) environmental and social requirements for production; (ii) certification; and (iii) organic claims and logos on labels of products.

#### a. Requirements for organic production

Detailed rules on production are not typically incorporated in parliamentary-level legislation, as technical specifics are often relegated to subsidiary instruments that can be more easily amended as necessary. Countries may also use national standards for setting out technical

details on organic production practices after having an appropriate legislative foundation for such details. Nonetheless, the primary law must establish the power to approve and modify production methods as well as the key principles applicable to organic production. Where primary laws do go into production practices, outcomes for environmental protection, social sustainability and animal welfare protection can be seen. Given that legislative requirements are mandatory, the provisions on production rules should reflect local conditions and resources (FAO, 2012c). Where legislation is oriented towards exports, legislation may position requirements towards importing country rules while being cognisant of what is economically and practically feasible in domestic organic production (FAO, 2012c).

**Some legislation does detail the general restrictions on the use of certain products or practices in organic production.** The European Union's *Regulation of the European Parliament and of the Council on organic production and labelling of organic products and repealing Council Regulation (EC) No. 834/2007 (2018/848)* requires operators to comply with general production rules, and this involves, for example, the use of products or substances that have been authorized for organic production (Article 9). Restrictive lists guide the use of plant protection products, soil conditioners and fertilizers, non-organic feed or feed additives. Ionizing radiation is not to be used to treat organic food or feed or composite raw materials. The text states certain practices and materials can be prohibited on the basis of the precautionary principle to avoid deleterious effects on the environment or human health. Animal cloning, genetically-modified organisms (GMOs) and their derivatives, as well as chemically synthesized substances, are prohibited. The Regulation calls for compliance with the prescribed conversion period, and products cultivated before the end of that period are not to be labelled as organic or in-conversion products. The United States of America's *Organic Foods Production Act (7 CFR 205.1-205.690, as amended in 2015)* requires an operator to develop a production or handling system plan that is certified by an accredited agent. Such plan must include, for example, a description of practices and frequency or intensity; a list of each substance to be used as a production or handling input; the monitoring

procedures to be performed; the record-keeping system; and the physical barriers established to prevent commingling of organic and non-organic products on a split operation. This text also sets out land requirements, soil fertility and crop nutrient management practices, seeds and planting sock practices as well as crop, weed and disease management practices. The Russian Federation's *Federal Law on Organic Production (No. 280-FZ of 2018)* calls for the following requirements: separation of organic production (as well as handling, transport and storage) from non-organic products; prohibitions relating to hydroponic cultivation of plants; and a prohibition of application of agrochemicals, pesticides, antibiotics, plant growth stimulants and animal fattening stimulators, hormonal preparations except for specifically authorized for use in organic production. Animal breeds that are resistant to relevant animal diseases are encouraged for use as are biological microorganisms traditionally used in the processing of foodstuffs.

**While animal welfare contributes to animal health, ensuring animals are raised in a manner that meets consumer expectations vis-à-vis welfare principles is also a feature recognized in organic legislation.** Morocco's *Law on organic production of agricultural and aquatic products (No. 39 of 2012)* makes provision for animal welfare by prohibiting ill-treatment of animals (Article 11). The European Union's *Regulation (2018/848)* advocates for species-specific behavioural needs and declares that organic livestock housing conditions and husbandry practices should ensure a high level of animal welfare, exceeding the animal welfare requirements that are applicable to livestock production in general.

**Organic production standards may include fair trade and human rights principles relating to labour rights, through minimum standards that necessitate liveable wages, safe and healthy working conditions and access to social services, as well as non-discrimination and equal opportunities.** Detailed social standards are more often found in voluntary or private standards than in legislation, though legislation may include basic requirements relating to workers' safety. Legislation may provide a legal foundation for the adoption of national standards that are often based on international

or regional standards. The East African Organic Products Standards (EAS456: 2007), is an example of the latter, as a voluntary standard approved by supranational public and private representatives of the East African Community member countries. Under this Standard, employees and workers are guaranteed basic human rights and fair working conditions in accordance with national and international law. Operators are prohibited from using forced or involuntary labour and employees and contractors have the freedom to associate, the right to organize and the right to bargain collectively. Employees have equal opportunities and equal wages when performing the same level of work regardless of gender or ethnicity. Child labour is prohibited although children may work on their family farm or neighbour's farm for as long as their allocated tasks are not dangerous and do not put at risk their educational, moral, social and physical development. Supervision by adults is required. Child labour is defined by the Standard as "any employment that interferes with the legal rights of a child and culturally appropriate educational needs." Operators are to ensure adequate health and safety measures for their workers.

Guiding principles that are oriented towards ecological and social gains, and in particular the indivisibility of these two dimensions, can be seen in the International Federation of Organic Agriculture Movements (IFOAM), Principles of Organic Agriculture. The IFOAM and Codex standards are most frequently the basis of national standards. The IFOAM principles are highlighted in Box 9.2 as demonstrative of the holistic sustainability approaches espoused by this Study that consider the linkages among a range of factors and stakeholders.

**Box 9.2**
**International Federation of Organic Agriculture Movements, Principles of Organic Agriculture**

**Principle of Health:**
Organic Agriculture should sustain and enhance the health of soil, plant, animal, human and planet as one and indivisible. The health of individuals and communities cannot be separated from the health of ecosystems – healthy soils produce healthy crops that foster the health of animals and people. Immunity, resilience and regeneration are key characteristics of health.

**Principle of Ecology:**
Organic Agriculture should be based on living ecological systems and cycles, work with them, emulate them and help sustain them. Organic management must be adapted to local conditions, ecology, culture and scale [and] attain ecological balance through the design of farming systems, establishment of habitats and maintenance of genetic and agricultural diversity.

**Principle of Fairness:**
Organic Agriculture should build on relationships that ensure fairness with regard to the common environment and life opportunities. Fairness is characterized by equity, respect, justice and stewardship of the shared world, both among people and in their relations to other living beings. Organic agriculture should provide everyone involved with a good quality of life, and contribute to food sovereignty and reduction of poverty. This principle insists that animals should be provided with the conditions and opportunities of life that accord with their physiology, natural behaviour and well-being.

**Principle of Care:**
Organic Agriculture should be managed in a precautionary and responsible manner to protect the health and well-being of current and future generations and the environment. Practitioners of organic agriculture can enhance efficiency and increase productivity, but this should not be at the risk of jeopardizing health and well-being.

*Extracted from:* Principles of Organic Agriculture, 2005.

### b. Certification

**Legislation should govern basic requirements for inspection and certification procedures.** The United States of America's *Organic Foods Production Act (7 CFR 205.1-205.690, as amended in 2015)* stipulates the requirements for certification as being in compliance with the Act's production and handling rules, a periodically updated plan, compliance with onsite inspections and the maintenance of records. Certification is to be granted within a prescribed period after onsite inspections of each production unit, and such inspections are to be conducted annually. Certification may also include tests and analysis and requirements to correct minor non-compliances within a prescribed time.

**Legislation should set out institutional aspects relating to the obligations of certifying entities as well as the mechanisms for accreditation or authorization of entities carrying out certification (the procedure and criteria for such accreditation or authorization).** Chile's *Decree – Approving Technical Standards of Law No. 20 089 on the National Certification System for Agricultural Organic Products (No. 2 of 2016)* defines certification as the procedure by which the certification body certifies that the process of agricultural and forestry production has been developed according to the applicable technical standards. The certifying authority may be a public authority, parastatal or a private third party that has received delegated public functions in accordance with set criteria under a regime of accreditation and supervision. Morocco's *Law on organic production of agricultural and aquatic products (No. 39 of 2012)* sets out the basic requirements for such authorization as impartiality, independence and objectivity in addition to technical skills and capacity for carrying out inspections and certifications (Article 23).

International recognition of a certification system may be achieved through compliance with the International Organization for Standardization/ International Electrotechnical Commission (ISO/IEC) 17065:2012 on Conformity assessment – Requirements for bodies certifying products, processes and services. The standard, which can be used as accreditation criteria, elaborates the conditions to conduct

certification schemes in a competent, consistent and impartial manner, to enable the acceptance of certified products and processes.

### c. Labelling

To enable fair competition for organic producers and to protect consumers from being misled about the organic identity of a product, legislation should identify what constitutes an organic product and what can therefore be labelled as such (FAO, 2012c). Laws often distinguish categories of organic products. Legislation such as the European Union example mentioned previously may prohibit in-conversion products from being labelled as organic, but some jurisdictions may allow use of the in-conversion claim on the label. In other words, an organic label is an attestation that the product has been produced in accordance with legislative requirements.

Legislation may further designate a pictogram logo for organic products and the use of additional pictograms, such as private certification logos. Specific rules regarding selling unpackaged organic products may also be required (FAO, 2012c). Labelling provisions for organic products should be consistent with other national legislation on labelling of food and food products.

The Philippines *Organic Agriculture Act (No. 10 068 of 2010)* in Section 17 requires the label of organic produce to contain the name, logo or seal of the certifying body and the entity's accreditation number. Morocco's *Law on organic production of agricultural and aquatic products (No. 39 of 2012)* states in Article 28, that agricultural products cultivated in accordance with the law's requirement may include on the label, reference to the term 'organic', use the prescribed logo, contain the names of the inspection and certification bodies and the certificate number. Such references must be legible and firmly affixed to the product or package, in compliance with food safety legislation requirements that relate to labelling.

The European Union's *Regulation (2018/848)* allows a product to bear reference to organic production where the product, its ingredients or

feed materials used for its production, are described in terms that suggest compliance with the Regulation (Article 30). This Article cautions against the use of terms in trademarks or names if to do so would result in a consumer being misled with regard to compliance with the Regulation. Article 33 allows the organic production logo of the European Union to be used on products that comply with the Regulation. The United States of America's *Organic Foods Production Act (7 CFR 205.1-205.690, as amended in 2005)* allows the terms '100% organic', 'organic' or 'made with organic ingredients' to be used to designate an agricultural product that is produced and handled in accordance with requirements of the Act. The law also states that products for export, certified in accordance with the importing countries' standards, may be labelled as per the requirements of such importing country, contingent upon the shipping containers and documents meeting prescribed labelling criteria.

### 9.4.3. Good Agricultural Practices

**Good Agricultural Practices (GAP), refer to the different sets of codes, standards and regulations developed by governments, NGOs and the private sector for the purposes of sustainable agricultural production (these standards can also cover packing, transportation, storage and distribution).** Legislative recognition may serve to prioritize implementation, establishing incentives or labelling schemes, or meeting third countries' export requirements. Some GAPs relate to private schemes applicable to specific value chains or market segments. In other cases, GAP is given passing references in primary legislation and the specific practices are rather promulgated as standards or guidelines. Alternatively, governments may decide to promote the implementation of GAP by including them in national legislation, also possibly to provide a framework for certification. Montenegro's *Law on Agriculture and Rural Development (2009)* requires in Article 46, that all holdings engaged in agricultural production are to comply with GAP, and such GAP regulations are to be established by the responsible ministry. Such wording implies that GAP standards have the force of law and are compulsory for all agriculture producers. On the other hand, some laws make passing references to the application of GAP for the health of plants and animals.

For example, Viet Nam's *Law on Plant Protection and Quarantine (No. 41/2013/QH13)* recalls GAP as a means to reduce the incidence of harmful organisms in production. Similarly, the Bahamas *Animal Health and Production Act (No. 7 of 2016)* states as its objective, the promotion of animal health and production through good agricultural practices.

**Certifications that a product has been produced in accordance with a particular GAP standard are the result of an auditing and inspection process.** In principle, this works similarly to the process outlined in Section 9.3.2 for organic agriculture, albeit with different standards relating to processes and documentation. The Republic of Korea's *Agricultural Products Quality Control Act (No. 5 667 of 1999, as amended by Act No. 9 932 of 2010)* Article 5, stipulates that the responsible minister shall publish standards for good agricultural practices and the ministry shall be responsible for training farmers in the use of those practices. Those that comply with those standards may be issued certification that is valid for two years. The Act provides further details regarding the procedures for recognizing and authorizing certifying institutions and the procedures for applications for certifications.

## 9.5. Agricultural inputs

Laws make reference to agricultural inputs in overarching and generic terms, or may address each type of input in specialized legislation. Feasibility and scope considerations preclude an extensive review of all the types of agricultural inputs, and indeed all the legislative elements for sustainable management of the relevant regulatory area. Focus on this Section is instead on select regulatory areas and sub-themes which demonstrate a consideration of impacts on social, environmental and economic matters.

### 9.5.1. Fiscal and related incentives

**Agricultural inputs such as seeds, pesticides, fertilizers, machinery and equipment may be eligible for tax exemptions, subsidies or other fiscal incentives to stimulate agricultural production by micro and small enterprises.** Côte d'Ivoire's *Law on agricultural strategy*

*(No. 537 of 2015)* promotes agricultural mechanization and the manufacturing of specialized equipment for cultivation, and seeks to transition family farmers towards more industrialized and mechanized models. The Law highlights support for small and medium-sized agricultural equipment companies (Article 81). Kenya's *Crops Act (No. 16 of 2013)* establishes a Commodities Fund in Section 9 from various sources, which may be used to provide credit and advances to farmers for inputs for certain crops and other agriculture-related uses. Institutional coordination among various authorities is also deemed necessary to enable access to inputs (Section 12). Under the Philippines *Act amending Republic Act No. 6 657 on the Comprehensive Agrarian Reform Law (No. 9 700 of 2009),* a prescribed percentage of budget should be allocated for support targeted at farm inputs as requested by accredited associations for seeds and planting materials, pesticides, fertilizers and machinery. It should be noted that especially where there is growing local production of simple or less sophisticated equipment and machinery for agriculture, legislation may offer incentives for these types of enterprises. In such countries, strong import tax exemptions, a frequent feature of legislation, may not be appropriate, depending on the context.

**While employing a range of fiscal support for access to inputs to boost agricultural production, prioritizing energy-efficient machinery contributes to environmental protection while promoting these types of technology.** For example, Côte d'Ivoire's *Law on agricultural strategy (No. 537 of 2015)* supports the use of renewable energy in relation to increased mechanization of agriculture.

Generally speaking, it is important to minimize environmental and social risks relating to facilitated access to certain inputs, such as pesticides or fertilizers, by ensuring that the incentives only apply to registered and perhaps pre-selected products that are efficient and present reduced environmental and health risks.

### 9.5.2. Pesticides

The risks associated with pesticide use can be reduced through the adoption of integrated pest management techniques, as well as through the judicious selection of pesticides and proper pesticide management. Legislation for the management of pesticides involves a life-cycle approach. This means controls over registration, manufacture and formulation, import and export, sale and distribution (including ensuring the quality of pesticides) packaging and repackaging, transport, labelling, storage, advertising, rational use and environmentally-friendly disposal (including the management of empty containers). The regulatory framework should provide for effective coordination and enforcement, including advisory, training and health-care services. Legislation typically covers processes for registration and controlling the pesticides products available, as well as the licensing of the persons who deal in pesticides such as sellers, manufacturers, pesticides applicators and importers. Effective provisions for post-registration surveillance and enforcement are crucial for preventing illegal and counterfeit products. Legislative provisions that set maximum residues in food (often in food safety legislation) protects consumer health (and keeping within these maximum residue levels facilitates access to international markets of agricultural products).

This Section focuses on legislative examples for selected areas of the pesticides management lifecycle that leverage key benefits for sound pesticides management and that demonstrate recognition of the various pillars of sustainability. This includes: (i) ensuring the use of less hazardous and more selective products during the registration process (ii) ensuring proper use and disposal in a manner that protects human health and the environment; and (iii) ensuring effective institutional coordination to enable a consideration of a range of sectoral perspectives and stakeholders.

#### a. Registration of pesticides

**The selection of less hazardous products begins at the registration process, which seeks to screen products suitable for distribution**

**and use, and determine the pesticides permitted or restricted in a country.** Bermuda's *Pesticide Safety Act (No. 3 of 2009),* for example, empowers competent authorities to deny inclusion of a pesticide on its list of approved pesticides on any grounds relating to public health, safety or the environment (Section 8). Similarly, a pesticide can be removed from this list where information shows unacceptable negative impacts regarding health, safety and environmental risks posed by the particular pesticide. Ethiopia's *Pesticide Registration and Control Proclamation (No. 674 of 2010)* requires that any pesticide submitted for registration is subject to efficacy, safety and quality testing. Among the decision-making criteria for registration, the authority is to consider: effectiveness of the pesticide for the purpose for which it is intended; availability of other products which may be equally or more effective but less hazardous; the human and animal health hazards; the negative impacts of the pesticide on the environment and non-targeted species; the residue of the pesticide in food; and the benefits outweigh the risks of use under local socio-economic conditions (Section 5). Re-evaluation of a registered pesticide may take place in periodical manner or if new information procedures or other advances have come to light or where there are grounds to believe that the human, animal or plant health hazards or environmental hazards are unacceptable. Generally speaking, legislative provisions on monitoring and reporting of environmental accidents and pesticides poisoning also provide information to be evaluated during re-registration.

### b. Ensuring proper use and disposal

**Legislative provisions on use of pesticides contain prescriptions to reduce the risk to human health and the environment.** Pesticide legislation might refer to specific policy objectives, such as the importance of Integrated Pest Management (FAO, 2015e). Pesticide legislation may mandate the use of protective equipment, or prohibit the use of pesticide in a manner other than as prescribed. Provisions for occupational safety are often mandatory. Children, pregnant women or other vulnerable persons should not be engaged to apply any pesticides since these may pose an unacceptable risk to their health. Ethiopia's *Pesticide Registration and Control Proclamation (No. 674 of 2010)*

Section 22 prohibits any person from using or requiring an employee to use a pesticide in any manner other than in accordance with the law and the label instructions. Employees hired to handle pesticides are to be provided with protective clothing and equipment, and employers are required to ensure these are used. Employers are to provide training and instruction to enable employees to have the necessary competence to handle pesticides. Employers are to ensure employees go for periodic check-ups and pay for medical expenses and compensation for damages where this has been due to the absence of sufficient direction and protective equipment on the part of the employer.

**Use of pesticides may be controlled indirectly through legislative provisions that govern labelling requirements.** The label conveys information needed to make decisions on what, how, when and how much of the product to use, enabling the end-user to use the product properly and to take the necessary precautions (FAO, 2015e). Afghanistan's *Pesticides Law (No. 110 of 2015)* requires the label to be in one of the official languages of the country and include details such as the target pest and the recommended dosage; use instructions, application methods and pre-harvest intervals; and warnings and cautionary measures, including symptoms of poisoning; and safety, health and first aid measures (Section 23).

**In many (particularly developing) countries, disposal of pesticides is a particular challenge.** Bermuda's *Pesticide Safety Act (No. 3 of 2009)* illustrates various ways of ensuring risks from disposal of pesticides, pesticide waste and pesticide containers, are reduced. Under Section 13, a pesticide licence issuance is contingent on the licensee undergoing training in the use and disposal of pesticides, and to keep records on the use and disposal of pesticides that are applied by such licensees. Under Section 18, a pesticide must be disposed as per the label instructions, and at a site and in a manner directed by the competent authorities. Cambodia's *Law on the Management of Pesticides and Fertilizers (2012)* Article 43 requires that the disposal of pesticide wastes and used containers should comply with prescribed rules including, for example, that waste should not be buried or burned without authorization and pesticides containers should not be reused without adequate treatment

(and never be re-used for food or feed). Guidelines for safe disposal of pesticides wastes are to be addressed in a joint legal instrument of the authorities responsible for both agriculture and the environment. The Law lists among applicable offences, the disposal, burial, burning, pouring or draining of the pesticide waste, or the disposal of used containers of pesticides or obsolete pesticides into the water sources.

#### c. Multi-sector collaboration

**Multi-sector coordination and cooperation involves the (horizontal linkages) of health, agriculture, the environment and trade as well as the (vertical) competences of various levels of administration.** Coordination and collaboration mechanisms are primarily facilitated through Boards or Committees. These bodies can be executive, if comprising public sector participants only (to prevent conflicts of interest), or a multi-stakeholder body may include the private sector where its functions are exclusively advisory. Ethiopia's *Pesticide Registration and Control Proclamation (No. 674 of 2010)* offers a third variation, with an advisory Board, in Section 27, that is exclusively comprised of public stakeholders. These include representatives from the registration unit, as well as the following sectors: health, environment, standards and quality, agricultural research institution, biodiversity institution, labour and social affairs, and the authority for customs. Among other matters, the Board is tasked with advising on policy formulation relating to safe use and management, the implementation of international conventions relating to pesticide, and the criteria or conditions relating to product registration or licensing of pesticide businesses.

### 9.5.3. Fertilizers

Fertilizer use has a direct effect on agricultural production yields, efficiency and thus, income earnings. Various sections of this Chapter canvass regulatory issues relating to fertilizer, for example, in connection with agroecological or organic practices (Section 9.4.1), or with regard to waste management considerations (Section 9.7.3). While the procedures for controlling fertilizers and pesticides are often similar, it is often recommended that these inputs are regulated separately, under discrete

systems and discrete legislation. Regulatory control of fertilizers seeks to: (i) ensure the quality and efficacy of products through registration; (ii) prevent and mitigate environmental harm; and (iii) to prevent fraudulent or adulterated products from entering the market. The following discussion focuses on the first two of the foregoing elements, which demonstrate a consideration of various dimensions of sustainability.

### a. Registration of fertilizers

**A registration process determines what chemical fertilizers are permitted for use in a country.** Among other technical considerations such as efficacy for intended use, the screening and evaluation process includes environmental and public health parameters. Registration criteria or the entry of a product on an approved list of fertilizers is a mechanism by which the competent authority evaluates efficacy and risks to human health and the environment. Ghana's *Plants and Fertilizer Act (No. 803 of 2010)* takes a much more generic and overarching approach. The Act states that grounds for refusal to register a fertilizer may include: any compelling reason on technical or economic grounds, on the grounds of national security or for public safety reasons. Finland's *Fertilizer Product Act (No. 539 of 2006, as amended by Act No. 340 of 2010)* reflects the range of considerations when undertaking registration by requiring applicants to supply information relating to: the principal raw materials used; the main chemical and biological composition and physical properties; recommended dose rate, instructions for use and factors restricting use as well as storage properties, with due account for preventing health, safety and environmental damages (Section 7).

### b. Preventing environmental damage

**Legislative provisions on mitigating against potential damage to the environment are often overarching in wording.** The United Republic of Tanzania's *Fertilizers Act (No. 9 of 2009)* calls upon the competent authority to ensure that it adheres with rules under the *Environmental Management Act (No. 20 of 2004)*, in particular, prior to issuing of any

permit (Section 4). Persons are prohibited from selling 'adulterated fertilizers', defined to mean a fertilizer that:

> Contains any deleterious or harmful substance in an amount that renders injurious to plant life, animals, humans, aquatic life, soil, air, water or environment in general when applied in accordance with directions for use (Section 30(2)(a)).

The Republic of Korea's *Fertilizer Control Act (No. 5 019 of 1995 as amended by Act No. 13 135 of 2015)* empowers the competent minister to restrict, in collaboration with the trade authority, the importation of "organic fertilizers, by-product fertilizers, ordinary fertilizers, and their raw materials, if such products are likely to cause serious harm to the soil, environment or plants," or alternatively, if they contain heavy metals or create sanitary or phytosanitary risks (Article 10). Finland's *Fertilizer Product Act (No. 539 of 2006, as amended by Act No. 340 of 2010)* restricts imports, manufacture or sale and distribution, if there are grounds to believe a fertilizer or its raw material may cause significant danger to human or animal health or safety, plant health or the environment (Section 10). Prohibited products may be recalled and withdrawn from markets and collected from farms. Fertilizer businesses must run their operations such that they do not cause any danger to human or animal health or safety, plant health or the environment. Under Ghana's *Plants and Fertilizer Act (No. 803 of 2010),* where the ingredients of a fertilizer used on specific crops or in specific applications are harmful to the growth of the plant, the Act prescribes the maximum content of the potentially harmful ingredients to be indicated on the label (Section 92).

### 9.5.4. Seed systems: a focus on diversity and quality

Seed systems should contribute to the conservation, diversification, adaptation and improvement of seeds. According to the Food and Agricultural Organization of the United Nations (FAO), currently 250 000 plant species of higher plants are identified, of which 30 000 are edible, but of these, only 30 percent actually represent crops that feed the world (and of the latter figure, five cereal crops provide

60 percent of the world's energy intake).[15] Farmers in developing countries face challenges in accessing good quality seeds owing to ineffective production, distribution and quality assurance systems. Seed legislation should set out seed quality standards and may regulate distribution and marketing rules relating to import, manufacture, sale, advertising, labelling and packaging.

**Seed laws protect the farmer by imposing on the seller the duty to guarantee the quality of seed put on the market** (FAO, 2015f). Canada's *Seeds Act (R.S.C. 1985, c. S-8, as amended in 2015)* prohibits the sale, import, export or distribution of seed that does not conform to the prescribed quality standards, and those that are not compliant with packaging and labelling requirements. Also prohibited is the sale or import of a seed that is not registered (Section 3) or labelled in a misleading manner. The Act also sets out overarching provisions that serve as a legal basis for regulations that set out the core elements for seeds standards, i.e. purity, germination, and disease factors.

**Quality assurance systems may take the form of standardized inspection and testing procedures, including certification, accreditation and authorization procedures, or otherwise protecting and promoting sellers that produce quality seeds.** Latvia's *Seed and Variety Circulation Law (1999, as amended in 2014)* establishes a seed category system for seed of various plant species, the requirements for seed growing fields (for example, field inspections, the purity and health of the variety, the minimum distances between sowings, and other aspects affecting the seed quality) and the requirements for taking samples, and the requirements for the seed quality (specifically purity, germination and health). This Law defines seed certification as the process by which varieties are identified, and seed quality is tested including inspecting growing conditions. Seeds may be certified if: the variety has been included in the Latvian Catalogue or relevant European Union Catalogue, or the variety has been included in the list of varieties in the national seed scheme for the Organisation for Economic Co-operation and Development (OECD) scheme; the field

[15] For more information, see: FAO, n.d.(j).

where the seed is grown conforms to the requirements; and the quality of seed conforms to the requirements. Procedures shall comply with methods provided for in the regulations of International Seed Testing Association (ISTA), although regulations will be prescribed for the species that are not subject to ISTA. The European Union's *Commission Directive providing for certain derogations for acceptance of agricultural landraces and varieties which are naturally adapted to the local and regional conditions and threatened by genetic erosion and for marketing of seed and seed potatoes of those landraces and varieties (2008/62/EC)* (hereafter European Union *Commission Directive 2008/62/EC*) states that seed testing is to be carried out (Article 12) to verify that seed of conservation varieties comply with the certification requirements in accordance with current international or other prescribed methods. The Mauritius *Seeds Act (No. 10 of 2013)* sets out the requirements for certification, i.e. that a seed is: of known derivation; produced by a seed producer; produced on land approved by the competent authority; sown, cultivated and produced in the prescribed manner; and inspected during cultivation in the prescribed manner. The seed must be found to conform to germination, varietal and physical purity and seed health (Section 24). The certification schemes of other countries may be recognized according to prescribed eligibility criteria under a scheme for certified imported seed.

**Quality assurance systems should also ensure the participation of farmers to determine seed quality parameters, and consider various cropping systems and sustainable use of plant genetic resources** (FAO, 2015f)**.** Ecuador's *Framework Law of Agrobiodiversity, Seeds and Promotion of Sustainable Agriculture (No. 10 of 2017)* recognizes two key production systems in Article 25: traditional seed systems (developed by natural or legal persons or local or indigenous communities) producing, reproducing, exchanging, marketing and maintaining their own seed, under multiple modalities; and seed certification systems regulated by the state. The Law's sustainability principle guarantees the production of seeds by ensuring efficient use and conservation of agrobiodiversity to guarantee food sovereignty and security. Respect for traditional values, cultural practices and national identity is also listed as a principle to

facilitate the production, use and exchange of native and traditional seeds, as well as the sharing of such seeds and associated practices. Native seeds are considered the cultural heritage of communities. The Law reiterates the constitutional right of citizen participation, and in this context, in the management of agrobiodiversity. The Law also calls upon the equal participation of men and women in terms of equitable access to native, peasant and certified seed, as well as in the formulation of policies for agrobiodiversity, and seed production and marketing. In furtherance of this participatory approach, a Council is established for advisory work on seed policies which brings together a range of public, private, community, research, and other stakeholders (Article 15). The Law directs competent authorities in Article 7 to: (i) establish programmes for seed breeding, production and commercialization, with particular focus on small- and medium-scale seed producers; (ii) to extend financial support services, insurance and lines to incentivize seed production; (iii) to design programmes for the provision of infrastructure, equipment and technology; and (iv) to support seed producer associations and various entities for public and private seed companies. Article 18 calls upon the competent agricultural authority to coordinate with the environmental authority, local authorities and research institutions to provide assistance and training to farmers to recover systems of seed production and agrobiodiversity in case of natural disasters or climate change impacts.

The European Union *Commission Directive (2008/62/EC)* requires that seed shall descend from seed produced according to well-defined practices for maintenance of the variety (Article 10). The National Plant Genetic Resources Centre under Kenya's *Seeds and Plant Varieties (Amendment) Act (No. 53 of 2012)* is tasked with ensuring the protection of the ownership of indigenous seeds and plant varieties, their genetic and diverse characteristics, associated indigenous knowledge and use by local communities (Section 27).

### 9.5.5. Agricultural mechanization

Mechanization spans all farming types and processing technologies, from simple hand tools to motorized equipment. Mechanization directly and

indirectly affects yield and reduces both harvest and post-harvest losses. It reduces hard labour, improves productivity and timeliness, enhances market access and contributes to mitigating climate-related hazards (FAO and AUC, 2018). Machinery costs may be significant in terms of procurement, maintenance and other factors.

**Sustainable mechanization considers technological, economic, social, environmental and cultural aspects, and legislation should be flexible to promote mechanization and supportive industries in contexts where it would be feasible to do so.** The Philippines *Act promoting Agricultural and Fisheries Mechanization Development in the Country (Republic Act No. 10 601 of 2012)* establishes a National Agrifishery Mechanization Program which offers research grants, credit, transparent and predictable regulatory frameworks in support of greater mechanization and supports local development and manufacture. This Programme is also tasked with the establishment of quality, safety and performance standards. The research and development agenda identifies certain areas of focus of renewable resources such as wind, biomass, solar, etc., for equipment and machinery, local manufacture and the assembly of spare parts. The research and development agenda calls for location-specific and cost-effective equipment to be developed, in addition to the training of farmers and fishers in the use of technology through extension activities. Machinery service centres reflecting private sector and rural entrepreneur collaboration are encouraged. An engineering resource network is created for online registration of agri-fisheries equipment, and the monitoring of agri-fisheries mechanization and infrastructure projects. The Republic of Korea's *Agricultural Mechanization Promotion Act (No. 4 788 of 1994, as amended by Act No. 13 465 of 2015)* offers subsidies for the purchase or use of agricultural machinery or for local manufacturers of such machineries. Master plans for agricultural mechanization are to address aspects such as: distribution and use of machinery; research development and testing; technical training; managing the lifecycle of the equipment; and commercialization of equipment, especially for female farmers. Before implementing a mechanization project, the responsible ministry is required to carry out a survey for demand in advance.

**Context-specific approaches should be piloted before attempting to scale up mechanization approaches.** A case in point is Viet Nam's *Decision approving the Plan of Action to develop agricultural machinery industry in implementation of Viet Nam's industrialization strategy within the framework of Viet Nam – Japan cooperation through 2020, with a vision toward 2030 (No. 1342/QD-TTg of 2014),* which focuses principally on agricultural machinery for rice cultivation and production while recognizing potential application for other agricultural commodities. This text is essentially a strategy document, albeit with the force of law of secondary legislation. The Plan entails: demand-side activities that encourage farmers to use agricultural machinery by providing quality equipment to them; encouraging manufacturers to supply agricultural machinery based on the demand; and establishing a regulatory framework for trading in agricultural machinery and fostering a market for equipment and spare parts.

## 9.6. Plant and animal health

Plant health and animal health laws are geared towards: (i) preventing health risks and protecting the health of humans, animals and plants; (ii) facilitating safe trade, and enabling the country to meet its obligations under international agreements; and (iii) creating a conducive, transparent and reliable environment for trade and business, as well as agricultural activities. The importance of controlling the outbreak of pests and diseases that affect crop and livestock production increases in significance when framed from the perspective of the need outlined in Section 9.1, i.e. to boost production intensification. Crops or livestock that are lost as a result of pests and diseases reduce the output efficiency and quantity of production units. Among the factors to be addressed, climate change affects risk assessment processes inherent in establishing measures to control pests and diseases (such as evaluating climatic conditions); and climate change also affects the emergence and re-emergence of animal diseases (STDF, 2011). These concerns reinforce the need for the resilience of agricultural systems, including improved sanitary and phytosanitary measures.

Increased trade (which boosts incomes and can be a tool for improved livelihoods and poverty reduction), and increased movement of persons across borders, presents increased risks for a country's plant and animal resources that must be controlled through health measures for import, export and within the country. Primary commodities, mostly unprocessed, are sensitive to a wide range of risks requiring animal health or plant health control measures by an exporter in order to gain access to international export markets. Export systems must provide confidence that the goods exported do not present a significant risk to the importing country. A single rejection of commodities for non-compliance may result in tighter controls by importing countries, increased transaction costs, damaged reputation and a loss of confidence in the exporting country's certification process (Gobena, 2016). In terms of import control systems, countries must prevent the entry of specific pests and diseases that may damage their natural resources, public health and local economy.

International standards of the International Plant Protection Convention and the World Organization for Animal Health shape national regulatory frameworks by harmonizing phytosanitary and sanitary measures (respectively) to prevent the spread of plant pests and animal diseases, enable safe trade and facilitate access to markets. These regulatory frameworks (which typically address animal health and plant health in separate instruments and regimes), include primarily import and export requirements, inspections and other controls for the purposes outlined in the foregoing paragraph. Regulatory frameworks also set out means to prevent the spread of pests and diseases, for example, by, establishing lists of regulated pests and lists of notifiable diseases, setting up arrangements for surveillance, designating certain areas as infected, quarantined or disease/pest free and providing emergency powers for the effective and rapid response to pest or disease detections. The discussion below highlights how provisions governing these aspects have integrated economic, social or environmental considerations.

### 9.6.1. Protecting plant health

**While the primary emphasis of phytosanitary legislation is to protect plant resources and plant health, these objectives are aligned**

**more broadly with environmental protection.** Armenia's *Law on Phytosanitary Matters (No. OH-140-N of 2014)* expressly underlines this goal in its statement of objects as the detection and control of regulated pests (quarantine and non-quarantine), and measures to enable the health of agricultural and ornamental crops while preventing damage to natural flora and the environment. The Bahamas *Plant Protection Act (No. 6 of 2016)* refers to the need to prevent the "introduction and spread of invasive alien species [IAS], in accordance with the relevant provisions of the Convention on Biological Diversity" (Article 6). This provision recognizes that trade is one of the means by which IAS is introduced into a new country where they threaten the ecological balance and diversity of the new habitat in which they are introduced. This function is particularly important where landscapes or ecosystems are vulnerable and that could face environmental damage (as well as resultant tourism and income loss and disruption to livelihoods and food security).

**A number of phytosanitary terms are defined in legislation in such manner as to recognize environmental and biological impacts, as well as socio-economic ones.** Phytosanitary legislation should specify that a process of risk analysis should determine which phytosanitary measures are to be applied in a particular situation. The Bahamas *Plant Protection Act (No. 6 of 2016)* defines a pest risk analysis, as an evaluation of biological, technical and economic considerations. Guyana's *Plant Protection Act (Cap. 68:03, of 2011)* defines pest risk analysis as the process of evaluating biological and other scientific and economic evidence to determine the measures to be used. Phytosanitary legislation also defines other key terms with reference to environmental or socio-economic parameters, in accordance with the internationally agreed meaning of those terms. The Bahamas *Plant Protection Act (No. 6 of 2016)* frames regulated and non-regulated pests in terms of the economic importance or economic impact. Similarly, Guyana's *Plant Protection Act (Cap. 68:03, of 2011)* defines a quarantine pest as "a pest of potential economic importance to the area endangered by it […]", while 'phytosanitary measures' and 'phytosanitary requirements' reflect the need to limit the economic impact of regulated non-quarantine pests. The latter is defined to mean a pest "whose presence in plants

for planting affects the intended use of those plants with unacceptable economic impacts".

**Import controls are critical to protect a country's plant resources, but measures that are applied should be proportionate to the risks so as not to have a disproportionately restrictive impact on trade.** Legislation should include the import rules with which plant commodities should comply; the legal authority for the competent authority to apply phytosanitary measures; and phytosanitary actions that may be taken when incidents of non-compliance or incidents requiring emergency action are detected (IPPC, 2018). Uganda's *Plant Protection and Health Act (Cap. 31, 2015)* stipulates a range of import control measures – requiring import permits, prohibiting entry of articles carrying pests, inspection and phytosanitary actions, including treatment, reconfiguration and reshipment, among other measures. All these measures should be designed and implemented in a manner that is proportionate to the risk, justified technically and least trade-restrictive.

**The requirement of phytosanitary certification is often a condition of import and for this reason, export provisions are focused on creating a system of certification that is geared towards meeting the requirements of importing countries and thus enabling access to foreign markets.** Uganda's *Plant Protection and Health Act (Cap. 31, 2015)* outlines pre-export inspections and related procedures which result in the issuance of a certificate once the inspector is assured that the item is in compliance. The Bahamas *Plant Protection Act (No. 6 of 2016)* creates various designations, such as pest-free area, pest-free place of production and pest-free production site, which have specific meanings that enable and facilitate the export of plants, plant products or other regulated articles from within those areas. These specific areas are subject to a monitoring and inspection regime that enables those sites to be pest-free or have low rates of pest incidence. The Bahamas *Plant Protection Act (No. 6 of 2016)* requires a phytosanitary certificate to be issued by the exporting authority prior to accepting imports of prescribed regulated articles.

### 9.6.2. Protecting animal health

**The rationale for the control of animal-based imports and exports is similar to that for plants and plant products outlined in Section 9.6.1.** Animal health import control provisions in legislation also empower the competent authority to set animal health measures, including implementing inspection systems and taking of actions where a disease is detected. Veterinary certification is used to demonstrate that an export meets an importing country's requirements. Legislation also contains provisions to enable the integrity of the certification process by asserting the control and responsibility of the competent authority for issuing certificates, for carrying out bilateral consultations and agreements, ensuring the independence and impartiality of its officials, and establishing laboratories to carry out analysis of samples taken during inspections. Veterinary certificates should be exact and concise, convey the requirements of the importing country, and the content should be a result of prior consultation between the importing and exporting competent authorities (Article 5.1.1, OIE Terrestrial Animal Health Code). Both plants and animals and their products should consider the internationally recognized principles of least-trade restrictiveness, proportionality and minimal impact. Nonetheless, it should be noted that there are clear regulatory and technical distinctions in the areas of plant health and animal health.

**Economic considerations are also inherent in control frameworks for establishing disease control.** The European Union *Regulation of the European Parliament and of the Council on transmissible animal diseases and amending and repealing certain acts in the area of animal health (2016/429)* authorizes a competent authority to take into account economic, social and environmental impacts when determining disease control measures. Criteria for the application of certain types of disease prevention and control rules are those that have the most significant animal health, public health, economic, social or environmental impacts. In other cases, regard is to be given to the impact of a disease on society, in particular those with an impact on: (i) labour markets; (ii) animal welfare; and (iii) the environment, biodiversity or the protection of endangered species or breeds.

**Legislation governing animal health often contains a range of measures applicable to domestic livestock activities.** Animal health measures can potentially affect not only food security of the area or country, but also the livelihoods of persons involved in livestock production. In addition, animal health measures have a public health dimension in terms of zoonoses (animal diseases that are transmissible to humans) and livestock production is also relevant to the safety of foods of animal origin. Viet Nam's *Law on Animal Health (No. 79/2015/QH13)* declares that animal health activities are designed to improve socio-economic efficiency and sustainability of animal husbandry, and protect human health and the environment, among other aspects. Namibia's *Animal Health Act (No. 1 of 2011)* contains a number of mechanisms to prevent the outbreaks of animal diseases, such as: powers and procedures once an infection is detected on a premise; the measures to be taken to prevent its spread (Section 17); the various authorities involved in a response; and the legal and practical significance of declaring emergencies and quarantine areas.

**Animal welfare requirements are increasingly linked to animal health (as well as public health and economic development), such rules may be housed in animal health legislation or in self-standing animal welfare legislation.** Disregard for animal welfare may result in poor animal health, increased susceptibility of the animal to disease and injury, and poor quality or unsafe foods of animal origin for human consumption. These may all also lead to economic losses due to low animal production performance. Animal welfare is not only achievable in industrialized, high-technology facilities, it is also feasible and relevant to, developing countries as well. Basic welfare provisions in legislation define cruelty and make cruelty to animals an offence. Malaysia's *Animal Welfare Act (No. 772 of 2015)* defines cruelty to animals as a list of 21 types of actions or behaviour that constitute cruelty and therefore a punishable offence under the Act. This Act also prescribes transport rules in Section 27, creating obligations for transport operators to provide clean and adequate facilities, sufficient food and water, and a safe delivery of animals. Animals used in research and testing and also for performance are subject to specific rules and conditions. Ireland's *Animal Health and*

*Welfare Act (No. 15 of 2013)* contains a Schedule that itemizes the animal health and welfare regulations that will be elaborated in implementing regulations. This includes the "appropriate welfare standards for animals at all stages of their lives, including during sale, transport or, in the case of farm animals, lairaging or at slaughter." The regulations are also to elaborate provisions on husbandry and housing, for the proper supply of food and liquid to an animal and to ensure that an animal has adequate space for movement, exercise, socialization and other needs.

## 9.7. Mitigating negative environmental impacts and enhancing conservation of ecosystem services

### 9.7.1. Targeting key agricultural impacts on the environment

**Agriculture-specific legislation may identify the need to protect the natural resources on which agricultural production depends, from the many challenges identified in Section 9.1.1 of this Chapter, as well as establish incentives for doing so.** Mexico's (Nayarit) *Law for sustainable agricultural development (2012)* calls for the promotion of agricultural research, the preservation of plant genetic resources, and the undertaking of soil and water studies to enable conservation (Article 29). Agricultural producers are called upon to use techniques and methods that reduce soil losses, and that manage water efficiently (Article 30) and in degraded areas, producers should favour using such land for forestry in such manner as does not result in a loss of biomass or other detrimental environmental impact (Article 32). The Law further offers incentives for persons who protect the environment by carrying out certain practices, by according them priority in government programmes among other types of support (Article 35). Competent authorities are to promote reforestation programmes in degraded areas following impact assessment studies (Article 34). Multiple-sector authorities and local authorities are to collaborate in inspections and surveillance programmes that ensure agricultural activities do not encroach forest areas and that such activities do not degrade the surrounding environment. Improved and certified seeds are to be promoted for more efficient production, including the use of native seeds

that also conserve genetic diversity. Fire for agricultural activities is prohibited near forest areas and must be carried out according to specific strictures. The Republic of Korea's *Act on the Promotion of Environment-Friendly Agriculture and Fisheries and the Management of and Support for Organic Foods, etc. (No. 11 459 of 2012, as amended by Act No. 13 383 of 2015),* as its title suggests is specifically designed for the furtherance of environmental protection objectives. Under this Act, 'environment-friendly agriculture and fisheries' means the production of agricultural products through strict limitations of chemical substances, and the preservation of the environment through recycling of by-products. The Italian (Liguria) *Act on landscape and environmental protection through the promotion of agriculture in the territory of Cinque Terre (No. 8 of 2009)* establishes a financial aid scheme to incentivize agricultural activities in such manner as to conserve the landscape and protect the environment. Côte d'Ivoire's *Law on agricultural orientation (No. 537 of 2015)* requires the state to manage water resources such that there is sufficient supply for agricultural production all year round, including through technologies that are adapted to local production conditions (Article 64). The Law calls for the balancing of the water needs of the population and various agricultural sectors including crop cultivation, livestock, fisheries and aquaculture.

### 9.7.2. Registration conditions for agriculture-related activities

**Legislation often includes requirements relating to the location or siting of farms, either in agriculture-specific legislation or in environmental or related legislation.** For livestock farms, considerations also involve veterinary public health and veterinary health in the selection of sites that are least likely to result in the spread of disease relating to the species that is reared. Denmark's *Act on environmental permits of livestock (No. 1 486 of 2009, as amended by the Act No. 446 of 2012)* seeks to prevent pollution sourced from livestock production. The Act includes within its scope: any property with more than three animals, holdings on which there are stables and other housing for animals, and manure facilities. Certain types of animal holdings are not permitted within 300 metres from lakes and protected

areas. Facilities for animal husbandry are to be located a prescribed distance from watercourses and roads, and require prior authorization by the local authorities. Emission limits are to be achieved using effective methods of farm operations in order to limit environmental impact, in particular with regard to the design, construction, operation and decommissioning of physical structures and facilitates for animal production. Canada's (Québec) *Animal Health Protection Act (R.S.Q., c. P-42 of 1986, as amended in 2016)* extends environmental precautionary measures to livestock auctions (which are essentially animal gatherings). Approval is not to be granted until the site location has been examined, and an analysis undertaken regarding the environmental features and the animal species involved (Section 10). Under Samoa's *Slaughter and Meat Supply Act (No. 17 of 2015),* Section 16 on the assessment of applications for the approval of slaughterhouses states that the competent authority must "consult with the ministry responsible for Environment with regards to compliance with relevant legislation concerning waste management and disposal and the Code of Environmental Practice for Slaughterhouse Development."

**Registration criteria for farms may include the submission of an environmental impact assessment (EIA) or commit to prescribed environmental standards and undertakings, in order to ensure surrounding areas (soil and water bodies) are not polluted from pesticide, fertilizer, veterinary drugs or other run-off.** Indonesia's *Law on Plantations (No. 39 of 2014)* requires in Article 67 that every plantation business is to protect the environment, and for this purpose, must carry out an analysis of environmental impacts and provide its environmental management and environmental monitoring plan. These elements are among the conditions for the issuance of a licence. Furthermore, once such licence is granted, a plantation business is further required to carry out environmental risk analysis and environmental monitoring. Plantation owners that do not do so commit an offence and are liable to criminal and civil penalties under the Law. Kenya's (Tana River County) *Agriculture Development Act (No. 18 of 2016)* requires the Board and competent authorities to ensure an impact assessment is carried out for any agricultural project under the Act.

**Environmental impact assessments or the duty to monitor environmental impacts are not limited to crop cultivation or livestock establishments, but also to manufacturing facilities for veterinary medicinal products and for feed.** Viet Nam's *Law on Animal Health (No. 79/2015/QH13)* makes an EIA issued by the relevant environmental authority a condition for the issuance of a certificate of eligibility for the manufacture of veterinary drugs. In a similar vein, Armenia's *Law on Animal Feed (HO-141 of 2014)* sets out the responsibilities of feed chain operators (dealers that range from producers to distributors of feed and feed additives) one of which is to ensure no negative impacts on the environment.

### 9.7.3. Waste management

**Traditional agriculture is potentially a high-polluting activity with acute impact on surrounding areas, and legislation often contains waste management strategies such as the imposition of standards for effluent and authorizations for waste discharge.** Agriculture contributes to the pollution of groundwater and nearby surface water sources with nitrates, phosphates and pesticides. Crop and livestock production are a major anthropogenic source of the greenhouse gases methane and nitrous oxide, and production also contributes significantly to air pollution (FAO, 2002). The Republic of Korea's *Act on the Promotion of Environment-Friendly Agriculture and Fisheries and the Management of and Support for Organic Foods, etc. (No. 11 459 of 2012, as amended by Act No. 13 383 of 2015)* calls for the state to promote mechanisms to ensure compliance with standards for the safe use of agrochemicals, require compliance with animal effluent quality standards, and prohibit the unauthorized discharge of waste water. For these purposes, routine inspections and monitoring are imposed to monitor the presence of heavy metals, pesticide and other agrochemical residues in soils and surface water and groundwater in areas neighbouring agricultural production (Article 11). Under the country's *Act on the Management and Use of Livestock Excreta (No. 8 010 of 2006, as amended by Act No. 13 526 of 2015),* wastewater discharge standards are to be set by the authority responsible for the environment, and may be stricter in areas that are

near potable water sources, and those near human settlements or areas of natural and environmental interest (Article 8 and Article 13). The Act prohibits discharging waste without treatment. Discharge is only permitted through an authorized disposal facility.

**Legislation may also encourage the recycling of waste for the production of energy.** The Republic of Korea's *Act on the Management and Use of Livestock Excreta (No. 8 010 of 2006, as amended by Act No. 13 526 of 2015)* promotes the conversion of livestock excreta either into reusable resources, or alternatively, through the proper disposal of such waste (thereby preventing pollution). The Act requires the establishment of a plan for the use of manure and liquid manure; and also requires the installation of public disposal facilities. Some of the uses for livestock excreta include solid fuel generation and liquid manure conversion. Agriculture legislation may also incentivize the re-use of waste from crops, such as stalks, branches, etc., for the generation of second-generation biofuels (see Chapter 8).

**Waste management is also an essential component in reducing the impact of antimicrobial resistance (AMR) on human health, owing to the dispersal of sources of veterinary drugs (in manure, factory waste and other waste) into the environment.** The overuse and misuse of antimicrobials, especially in the human and livestock-related food producing sectors, have resulted in microorganisms becoming increasingly resistant to the drugs to which they were previously susceptible. The AMR regulation is an excellent example of a framework that recognizes the interplay of a range of disciplines. In its presentation of waste management tools to reduce AMR, Box 9.3 offers an illustration of the multiple areas involved with regard to how waste from agriculture is managed.

**Box 9.3**
**Waste management tools to address antimicrobial resistance (AMR)**

Waste is generated from a range of establishments that deal with antimicrobials; these comprise farms, (including aquaculture facilities) and crop production areas that use manure; veterinary medicinal products factories; mills producing medicated feed; laboratories that test antimicrobials; slaughterhouses; and markets and animal gathering facilities. The legal framework should consider these point sources for antimicrobial pollutants (wastewater from this range of businesses, the indiscriminate disposal of used containers and untreated animal waste).

The tools to address these potential sources of pollution include:

1. Requirements for the approval of businesses/premises relating to the aforementioned animal or veterinary drug-related activities, contingent upon the submission of environmental impact assessments, waste management plans and AMR-specific criteria that minimize antimicrobial release or discharge into the environment;
2. Discharge permits for waste and wastewater, issued by the competent authorities;
3. Standards issued for antimicrobial waste and wastewater discharge, and related treatment requirements;
4. Monitoring programmes that cover soil, surface water and groundwater bodies;
5. Veterinary drug registration criteria that include waste disposal considerations;
6. Manure management that considers treatment methods and withholding periods, as well as appropriate treatment prior to application on crops; and
7. Specific mechanisms for the disposal of left-overs, containers and other types of antimicrobial waste.

These tools may be found in legislation regulating the aforementioned animal-related businesses or activities, or may be found in general agriculture, water, pollution or environmental legislation.

### 9.7.4. Payment schemes for ecosystem services and social benefits

Several chapters in this Study touch upon the various legislative arrangements for payment schemes for the provision of ecosystem or environmental services with regard to the natural resource addressed in that particular chapter, as well as the role played by indigenous peoples and local communities. The agriculture sector provides a range of ecosystem services such as food and energy resources, regulation of soil and water, biodiversity conservation and cultural services (such as traditional land use and landscape management).

**Placing an economic value on ecosystem services encourages investment in their potential and enhancement.** Under Mexico's *Law of Sustainable Rural Development (2001, as amended in 2018),* environmental services are defined as the benefits that society obtains from natural resources, such as the provision and quality of water, the capture of pollutants, the mitigation of the effect of adverse natural phenomena and recreation, among others. Article 15 establishes a special programme to enable care for the rural environment, the sustainability of socio-economic activities in the countryside and the provisions of environmental services. Support and compensation is to be provided to enable these environmental services. Brazil's (Distrito Federal) *Law creating the State Policy for Agroecology and Organic Production – PDAPO (No. 5 801 of 2017)* defines environmental services as actions undertaken intentionally, aiming at the conservation of ecosystems and biodiversity, which can be supported, stimulated or rewarded by economic and non-economic means. The PDAPO objectives are, among others, to establish regulatory, fiscal, credit, incentive and payment instruments for the provision of environmental services, and to protect and enhance the traditional practices relating to agrobiodiversity and agroecology. This also includes recognition and remuneration for environmental services rendered by farmers with organic certification or those who use agroecological-based practices and management (Article 5).

**A framing of Payment for Ecosystem Services (PES) that goes beyond purely environmental parameters, towards a more holistic concept of 'ecosystem' places emphasis on social elements of sustainability (FAO calls this larger perspective remuneration for positive externalities [RPE]).** In addition to incentives for environmental protection, Article 32 of Mexico's *Law of Sustainable Rural Development (2011, as amended in 2018)* directs a range of government entities towards the promotion of economic activities in rural areas, that aim to raise the income of producers, create favourable conditions to access markets and to strengthen rural enterprises. These goals will be effected through, among other tools, the valuation and payment for environmental services. Article 53 governs contracts for environmental goods and services. The federal government is tasked with covering the specific payment for the services established in the contract, and for evaluating outcomes. The Brazilian (Roraima) *Law providing for the Environmental Service Farmer using means for preserving and recovering water sources, springs and related resources (No. 733 of 2009)* demonstrates that 'payments' is not limited to capital payments, but broadly to various types of incentives. An 'environmental service farmer' is defined as one whose agricultural holding is located in a rural area and carries out any of the following: maintaining a native forest cover on an agricultural production unit; protecting sources of water by maintaining the surrounding native forest cover; for medium- or large-scale farmers, applying agroecological production processes with recognized certification; and adopting soil and water conservation practices (such as using the soil within its capacity (Article 9). The Law prescribes a range of support and incentives for medium and large-scale farmers, such as access to government programmes and credit lines, marketing support and technical assistance. Small-scale farmers also benefit from the provisions of agricultural inputs such as seeds, seedlings of cultivable or native species, prescribed fertilizers as well as agricultural equipment (Article 6). As noted in Section 9.5., the provision of agricultural inputs as incentives or government support should be those that prevent or minimize environmental damage (e.g. offering prescribed agricultural equipment that prevents soil erosion, etc.).

### 9.7.5. Climate resilience and adaptation

Agricultural land use contributes significantly towards the emission of greenhouse gases; at the same time, agriculture has enormous mitigation potential. Agriculture is susceptible to impacts of climate change such as water shortages, extreme weather and other factors that affect productivity. The European Union's *Regulation of the European Parliament and of the Council on transmissible animal diseases and amending and repealing certain acts in the area of animal health (2016/429)* recognizes climate impacts and states that "climate change may influence the emergence of new diseases, the prevalence of existing diseases and the geographic distribution of disease agents and vectors".

**Smallholder agricultural systems can adapt to climate change by adopting climate-smart practices,** increasing the resilience of agricultural systems by protecting natural resources and related livelihoods, particularly of the most vulnerable, through adaptation measures. Addressing global poverty requires addressing the resilience of smallholder agriculture to climate change impacts. While these are often rather technical to include in primary legislation, laws can identify these matters as a priority for the competent authority or provide indication that subsidiary legislation will provide further details. For example, Ecuador's *Framework Law of Agrobiodiversity, Seeds and Promotion of Sustainable Agriculture (No. 10 of 2017)* establishes as a duty of the state, the mitigation of the effects of climate change and reduction of its impact on ecosystems and populations, through the promotion of agrobiodiversity as well as good practices for sustainable agriculture. Other countries may offer a bit more specificity at the primary law level regarding actions for climate change mitigation and adaptation. For example, The Plurinational State of Bolivia's *Law on economic organizations, native indigenous and community economic organizations for the integration of sustainable family farming and food sovereignty (No. 338 of 2013)* calls for: research into the processes of climate change mitigation and adaptation; extensive national and international dialogue on the effects of climate change on sustainable family farming; and actions to mitigate and adapt to climate change by applying their own ancestral practices and knowledge (Article 12). The Republic of Korea's

*Framework Act on Agriculture, Rural Community and Food Industry (No. 13 356 of 2015, as amended by Act No. 14 647 of 2017)* Article 41, directs national and local governments to ensure the stability of agricultural operations by preparing contingency plans and facilitating recovery from natural disasters, including those caused by climate change. A climate change risk assessment is to be carried out (every five years) and a mapping of vulnerability of agricultural and rural communities. These assessments are to be made public and should inform policy-making.

**While improvements in carbon and nitrogen management will contribute to the reduction of emissions, climate adaptation and food security objectives should also be policy imperatives.** Mali's *Ordinance establishing Project 1 of the Program for Building Resilience to Food and Nutrition Insecurity in the Sahel (No. 010 of 2017)* establishes a government body tasked with improving food and nutrition security in the country by eradicating the structural causes of acute and severe food security crises. Among its key responsibilities is supporting the development of climate resilient technology for agriculture. Similarly, Croatia's *Law on agriculture (2015)* recognizes as a condition to achieve sustainable agricultural development, technologically innovative production adaptable to climate change as well as the management of natural resources in response to climate change through conservation of genetic resources. Côte d'Ivoire's *Law on agricultural strategy (No. 537 of 2015)* calls for focus on agriculture sector resilience, including the ability to withstand and recover quickly and sustainably from damage suffered as a result of climate change. Under Article 55, a seed bank is established to support agricultural production seriously threatened by climatic hazards. Capacity for resilience is also framed in the text in the context of reducing gender inequalities and improving social cohesion. Under Article 85, the government is required to promote the participation of women and rural youth in agricultural programmes; also financing mechanisms are established, specifically targeting these groups.

## 9.8. Genetic resources for agriculture

Genetic resources for agriculture provide the materials for the soil, plants and livestock that are the basis of agricultural production.

### 9.8.1. Catalogue of species and *in situ* or *ex situ* conservation

**Legislation may establish national registries or catalogues to itemize and preserve the existing species and identify endangered species.** Italy's *Act on the protection and promotion of biodiversity for food and agriculture (No. 194 of 2015)* aims to protect local genetic resources under threat of extinction or genetic erosion, among other mechanisms, through the establishment of a National Registry and a National Network on Biodiversity for Food and Agriculture as well as a Committee to oversee related matters. Inclusion in the Registry is contingent on the verification of identity, adequate *in situ* conservation or *ex situ*, the location of conservation and the options for generating propagation material (Article 3). The genetic resources registered in the Registry are in the public domain, not subject to intellectual property rights (including industrial patents or plant variety rights) or to other mechanisms, which limits access or reproduction by farmers. The Italian (Sicily) *Act No. 19 on the protection and promotion of genetic resources "Born in Sicily" for food and agriculture (2013)* provides for the preservation of autochthonous agricultural and livestock genetic resources to protect agricultural ecosystems and to enhance quality of production. Article 2 identifies the breeds and species that are to be considered as autochthonous while Article 5 establishes the Voluntary Regional Catalogue of Genetic Resources.

**Legislation may seek to promote biodiversity within and among species that are used for agriculture and also wild species through *in situ* and *ex situ* conservation.** Kenya's *Seeds and Plant Varieties (Amendment) Act (No. 53 of 2012)* establishes a National Plant Genetic Resources Centre responsible for the conservation and sustainable utilization of plant biodiversity in Section 27. The Centre's functions include: evaluating and mapping plant genetic resources' distribution and compiling this data into inventories; conserving plant genetic

diversity, including *ex situ* and *in situ* maintenance; and ensuring the safe custody and accessibility of all plant-bred and naturally occurring germplasm. Montenegro's *Law on Agriculture and Rural Development (2009)* establishes a genetic resources gene bank that collects autochthonous genetic material, including old domestic or domesticated varieties of agricultural plants and livestock breeds and types (Article 56). The competent authority is also responsible for evaluating the genetic material collected in line with international descriptors, and to maintain and exchange samples of genetic material collected. Under Article 16, agricultural programmes are to ensure environmental protection, especially the preservation and sustainable use of genetic resources in plant and livestock production. The National Network created under Italy's *Act on the protection and promotion of biodiversity for food and agriculture (No. 194 of 2015)* encourages the reintroduction of certain species in cultivation; the Network comprises local, regional and national entities for the conservation of *ex situ* germplasm, farmers and animal breeders. The Committee's functions include implementing the National Plan on Biodiversity of Agricultural Interest; facilitating the exchange of experience and information; supporting proposals for the protection and sustainable use of genetic resources; coordinating implementation actions; and defining a national system for the identification, characterization and evaluation of genetic resources of local food and agricultural interest (Article 8).

### 9.8.2. Animal breeding

Livestock development requires preservation of genetic diversity. The FAO highlights that current trends show that only a small number of breeds are raised, often without regard to the way in which local production environments affect animals' ability to survive, produce and reproduce. Animal breeding rules can be found in self-standing legislation or in livestock production or animal husbandry legislation.

**Legislation often makes provision for the establishment and maintenance of herd books.** Estonia's *Farm Animals Breeding Act (2002, as amended in 2009)* establishes a herd book as being a database that contains information such as the parentage of breeding animals,

the origin of the animals, their performance and genetic value (Section 6). Breeding animals are divided into pure-bred breeding animals, which are entered in the main section of a herd book and hybrid breeding animals, which are recorded in a register or annex to a herd book (Section 4). Under Pakistan's (Punjab) *Livestock Breeding Act (No. XIII of 2014),* an entry in the herd book is permitted only if it relates to an offspring of an animal already registered or when a recognized expert certifies it to be an animal of that breed in accordance with parameters laid down by the Registrar (Section 17). A breeders' association is to issue a unique herd book number to each registered animal and facilitate the public search of records of every animal entered in the herd book (on payment of an approved fee).

**Legislation may require the identification of endangered breeds and the prevention of their extinction through a range of mechanisms.** Estonia's *Farm Animals Breeding Act (2002, as amended in 2009)* defines an endangered breed where the number of female or male animals used for breeding is less than one thousand (Section 3). The competent authority is tasked with the establishment of a list of endangered breeds comprising breeds of historical Estonian origin. Similarly, Pakistan's (Punjab) *Livestock Breeding Act (No. XIII of 2014)* sets out steps for the conservation of near threatened indigenous breeds including: recording the pedigree and performance; sponsoring breeders' associations; and monitoring the genetic variability of indigenous breeds. Under Section 16, authorized breeders' association or other approved entities shall undertake the calculation of the genetic merit of pure-breed and hybrid-breeding animals registered in herd books or registers. In Article 6, the Lao People's Democratic Republic *Law on Livestock Production and Veterinary Matters (No. 03 of 2016)* calls for the conservation of local and indigenous livestock genetic material (to prevent disappearance of species) as well as the improvement of new genetic material (to increase productivity and quality). Accordingly, livestock production systems should preserve and improve indigenous animal genetic material (Article 12). The competent authority is to promote sufficient breeding techniques to facilitate livestock production and development in such manner as consistent with local conditions and environments.

**Legislation can incorporate various mechanisms to support the conservation of indigenous breeds or the development of new breeds.** Cambodia's *Law on Animal Health and Production (No. NS/RKM/0116/003 of 2016)* calls for the development of plans for the conservation of indigenous breeds and new breeds, as well the preservation of traditional knowledge in regard to animal breeding. China's *Law on Animal Husbandry (2005, as amended in 2015)* states that subsidies and other funds are to be allocated for stockbreeding development, for the purchase of fine breeds of livestock and poultry, and to expand breeding programmes. Particularly in rural areas the government is to focus on optimizing herd structure and diversifying livestock breeds. The support measures stipulated in Article 31 of the Lao People's Democratic Republic *Law on Livestock Production and Veterinary Matters (No. 03 of 2016)* for animal breeding include: facilitating the import of relevant materials, equipment as well as parent stock; the provision of credit for activities; and tax exemptions for businesses, and public livestock breeding improvement centres.

### 9.8.3. Mechanisms for accessing genetic resources

Legal frameworks safeguard genetic resource provisions through rules relating to access.

**Legislation must specify the categories of genetic resources covered by bioprospecting or access provisions.** Rwanda's *Law concerning biodiversity in Rwanda (No. 70 of 2013)* declares that under consideration for issuance of the permit are the interests of the owner, community or state in giving access to: (i) indigenous biological resources; (ii) traditional uses of the indigenous biological resources; or (iii) knowledge of or discoveries about the indigenous biological resources. Namibia's *Access to Biological and Genetic Resources and Associated Traditional Knowledge (No. 2 of 2017)* requires an access permit for access to biological and genetic resources, whether *in situ* or *ex situ*, as well as any intangible components such as genetic sequence, or associated traditional knowledge (Article 8).

**Legislation should specify the proposed uses that warrant an authorization for access to genetic resources. Access is typically subject to a permit issued by the competent authority.** Namibia's *Access to Biological and Genetic Resources and Associated Traditional Knowledge (No. 2 of 2017)* allows an access permit to cover any research leading to commercialization; scientific research with a commercial purpose; commercialization, including industrial application and bioprospecting; and export. Rwanda's *Law concerning biodiversity in Rwanda (No. 70 of 2013)* conditions issuance of a permit on the submission of an independent environmental impact assessment, or expert evidence (Article 34). Any permit issued shall specify the purpose for which it was issued and the period of validity.

**Legislation should enumerate the specific procedures that result in authorized use of and access to genetic resources.** Namibia's *Access to Biological and Genetic Resources and Associated Traditional Knowledge (No. 2 of 2017)* conditions access to biological or genetic resources and associated traditional knowledge on written prior informed consent of the rights holders. Prior to contacting rights holders, the applicant should notify the competent authority and receive the necessary guidance (Section 9). In considering access, the law requires right holders to "ensure the full and equal participation of women in the decision-making processes in matters relating to the giving of prior informed consent". The Act allows the minister, when required under international law, or in compliance with the Constitution, the power to override a community decision (Section 9). Zambia's *Protection of Traditional Knowledge, Genetic Resources and Expressions of Folklore Act (No. 16 of 2016)* requires any access or licence with respect to genetic resources to be in writing, and an access agreement must be approved by the competent authority in order to be considered valid (Section 28). A register must be kept of all access agreements, licences etc. Access may be denied where: (i) in relation to an endangered species, access could result in adverse effects on human health or the cultural, economic or spiritual values of the traditional community; (ii) an ecosystem is put at risk or there could be an undesirable environmental impact; or (iii) the traditional community denies consent (Section 34). A permit

holder is also subject to certain restrictions and limitations (Section 3) including the following: (i) not to deplete planting stock or wild species, or to remove significant genetic varieties from the local gene pool during collection; (ii) to observe the type and quantitative limits of the genetic resource permitted to be accessed; (iii) to respect the customary laws and practices of the traditional community; and (iv) where the person seeks to acquire intellectual property rights, to negotiate a new access agreement with the traditional community, if not included in the initial access agreement.

**Material Transfer Agreements (MTAs) are common tools outlined in legislation for accessing plant genetic resources.** Jamaica's *Protection of Plant Genetic Resources for Food and Agriculture Act, 2013 (No. 1 of 2013)* states that its provision implement the *International Treaty on Plant Genetic Resources for Food and Agriculture (ITPGRFA)* and establish a regime for the protection of the country's plant genetic resources. It seeks to conserve plant genetic resources, to facilitate access to and use of such resources, and to ensure the equitable sharing of benefits arising from their use. Under this Act, access to listed plant genetic resources for the purposes of research breeding or training, may be granted only under the terms of an MTA entered into with the competent authority. A standard MTA is included in a Schedule to the Law; see Box 9.4 for an extract summary of Jamaica's standard MTA provisions. Similarly, the United Arab Emirates *Federal Law on Plant Genetic Resources for Food and Agriculture (No. 9 of 2013)* places all plant genetic resources whether *in situ* or *ex situ* within the scope of the Act, and prohibits the removal of any plant genetic resources outside the country without a valid transfer agreement (Article 6). Access to such resources is by authorization of the competent authority only (Article 7). Namibia's *Access to Biological and Genetic Resources and Associated Traditional Knowledge (No. 2 of 2017)* forbids the transfer of any biological or genetic resources, or associated traditional knowledge, without an access and export permit and an MTA (the contents of which are to be expounded in regulations). Section 11 stipulates that an MTA may be combined with an access and benefit-sharing agreement.

**Box 9.4**
**Summary of the Standard Material Transfer Agreement Template in the Second Schedule of Jamaica's *Protection of Plant Genetic Resources for Food and Agriculture Act (No. 1 of 2013)***

**Article 2:**
Definitions: sets out key terms such as genetic material, sales, to commercialize.

**Article 3:**
Subject Matter of the Material Transfer Agreement.

**Article 4:**
General Provision: makes reference to the ITPGRFA multilateral system and Governing Body.

**Article 5:**
Rights and Obligations of the Provider: relates primarily to the terms of access to the resources.

**Article 6:**
Rights and Obligations of the Recipient: sets out terms and conditions of use, associated intellectual property rights, information to be provided to the Governing Body, terms of commercialization, and a system of payments.

**Article 7:**
Applicable Law.

**Article 8:**
Dispute Settlement.

**Article 9:**
Additional Items: this includes warranty, and duration of the Agreement.

**Article 10:**
Signature and acceptance.

Under Zambia's *Protection of Traditional Knowledge, Genetic Resources and Expressions of Folklore Act (No. 16 of 2016),* the traditional community has the inalienable right to use or exchange with other traditional communities, its genetic resources for sustaining its livelihood systems in accordance with customary laws and practices. Furthermore, legal restriction is not to be placed on the traditional systems of a community for the use and exchange of genetic resources, except where the holder refuses to grant a licence on reasonable commercial terms and conditions. The Act allows that:

> Where a genetic resource is not being sufficiently exploited by the holder or the holder refuses to grant a licence subject to reasonable commercial terms and conditions, the Minister may, in the interest of public security or public health, grant a compulsory licence to fulfil a national need [and shall] fix an appropriate amount of compensation in the absence of an access agreement between the parties (Section 30(3)).

### 9.8.4. Recognition and protection of traditional knowledge and cultural heritage

Respecting (agricultural) cultural heritage sites and systems, including traditional knowledge, skills, and practices is an important element of enabling sustainable agricultural production and the conservation of genetic resources.

**Legislation may recognize and protect the traditional practices and traditional knowledge of indigenous peoples and local communities in different ways.** Under Zambia's *Protection of Traditional Knowledge, Genetic Resources and Expressions of Folklore Act (No. 16 of 2016),* the grounds for protection of traditional knowledge include:

> (i) where such knowledge generated, preserved and transmitted in a traditional and intergenerational context; (ii) where it is associated with a distinct traditional community, individual or group; or (iii) where it is integral to the cultural identity of the group holding the knowledge through collective custodianship through customary laws and practices (Section 14).

This Act categorically states in Section 26 that the ownership of genetic resources vests in, and is held by, the President on behalf of the

Zambian people. The Act protects rights holders from infringement, misappropriation, misuse and unlawful exploitation in relation to traditional knowledge and genetic resources. It also enshrines the rights of a traditional community in regulating access, its' right to use and to share benefits from the use of its genetic resources; and the right to assign and conclude access agreements (Section 27). Namibia's *Access to Biological and Genetic Resources and Associated Traditional Knowledge (No. 2 of 2017)* has a slightly different approach. This text declares that subject to the terms of the Act, rights relating to access, prospecting, collection, sale or disposal, or control over biological or genetic resources vest in the state, regardless of ownership rights over land where such resources are found, or associated traditional knowledge a group may have associated with such resource (Section 5). Notwithstanding, the rights in relation to traditional knowledge and technologies associated with any biological and genetic resource vest in the particular local community. The rights in relation to traditional knowledge associated with any genetic resources, and the right to grant access to such traditional knowledge, may be enjoyed:

> Subject to the obligations of the State to ensure and regulate the fair and equitable sharing of the benefits arising from their utilization and associated traditional knowledge and in accordance with the international obligations and the Namibian Constitution.

A local community has the right to protect its biological and genetic resources and associated traditional knowledge as traditional custodians and users, and also in terms of customary law and practices. The Act reiterates the inalienable right of local communities to use their biological and genetic resources and associated traditional knowledge for their livelihood systems, and for the conservation and sustainable use of biological diversity.

**A traditional knowledge database can be used to register and catalogue different knowledge and practices.** Zambia's *Protection of Traditional Knowledge, Genetic Resources and Expressions of Folklore Act (No. 16 of 2016)* establishes a Register of traditional knowledge, genetic resources and expressions of folklore (Section 11) as a database

of information with clear and concise descriptions. The Register is also to include applications for the registration of protected traditional knowledge and genetic resources (including the rights holders), and details with respect to access permits. Namibia's *Access to Biological and Genetic Resources and Associated Traditional Knowledge (No. 2 of 2017)* Section 13, recognizes and protects community intellectual property rights as they are protected under the norms and practices of customary law. An item of traditional knowledge must also be identified and ascertained in accordance with customary law. The lack of registration of traditional knowledge does not remove protection of community rights, and similarly to the Zambian legislation, any publication of traditional knowledge or inclusion of genetic resources in gene banks does not preclude the assertion of the community's rights over the resource.

### 9.8.5. Mechanisms for benefit sharing

Legislation should set out mechanisms for the fair and equitable sharing of benefits arising from the utilization (and commercialization) of genetic resources, on mutually agreed terms between the rights holders and users of the genetic resources. Legislation should also include provisions for monitoring of compliance with the legislation as well as monitoring of the agreements entered into.

**Benefits must be shared equitably between the user and beneficiary and also among the beneficiary community.** According to Zambia's *Protection of Traditional Knowledge, Genetic Resources and Expressions of Folklore Act (No. 16 of 2016)*, benefit sharing means the "equitable and just sharing of benefits, whether monetary or non-monetary, from the utilization of traditional knowledge, genetic resources". One of the Act's objectives is the equitable balance between the rights and interests of holders and users. According to the Act, the benefit derived by a traditional community shall be put to the common benefit of the traditional community. The details of the benefits are to be contained in the access agreement, and in the absence of such agreement, the courts may (Section 20) determine the extent of benefit sharing. Namibia's *Access to Biological and Genetic Resources and Associated Traditional Knowledge (No. 2 of 2017)* requires right holders to "ensure the full

and equal participation of women in the decision-making processes in matters relating to [...] benefit sharing under the Act".

**Benefits may take monetary or non-monetary forms.** Namibia's *Access to Biological and Genetic Resources and Associated Traditional Knowledge (No. 2 of 2017)* states that non-monetary benefits may comprise community development initiatives tailored to the material needs and cultural preferences of the community. Section 10 of Namibia's Act lists the types of monetary and non-monetary benefits, and these are highlighted in Box 9.6. Agreements must contain mutually agreed terms and other prescribed conditions and minimum standards.

**Box 9.5**
**Namibia's *Access to Biological and Genetic Resources and Associated Traditional Knowledge (No. 2 of 2017)***

**Section 10**

1. The types of benefits [...] include
   a. monetary benefits such as:
      i. access fee or fees per sample collected or acquired;
      ii. up-front payments;
      iii. milestone payments;
      iv. payment of royalties;
      v. licence fees in case biological or genetic resources are to be utilized for commercialization;
      vi. fees to be paid to trust funds supporting conservation and sustainable use of biodiversity;
      vii. salaries on preferential terms where mutually agreed upon;
      viii. research funding;
      ix. joint ventures; and
      x. joint ownership of relevant intellectual property rights.

**Box 9.5** *(cont.)*

b. non-monetary benefits such as:
   i. sharing of research and development results;
   ii. collaboration, co-operation and contribution in scientific research and development programmes, particularly biotechnological research activities;
   iii. participation in product development;
   iv. admittance to *ex situ* facilities of biological and genetic resources and to databases by participating institutions;
   v. sharing of knowledge under fair and most favourable terms, including concessional and preferential terms where agreed, in particular, knowledge and technology that make use of biological or genetic resources, or that are relevant to the conservation and sustainable utilization of biological diversity;
   vi. developing capacities for technology transfer to Namibia;
   vii. institutional capacity building;
   viii. developing human and material resources to strengthen the capacities for the administration and enforcement of access regulations;
   ix. access to scientific information relevant to conservation and sustainable use of biological diversity, including biological inventories and taxonomic studies;
   x. institutional and professional relationships that can arise from access and benefit sharing agreements and subsequent collaborative activities;
   xi. employment opportunities;
   xii. contracts to supply the raw material in respect of the biological or genetic resources required to produce commercial products therefrom;
   xiii. access to technologies developed from biological or genetic resources or associated traditional knowledge;
   xiv. training, both at institutional or local community level, to enhance local skills in biological and genetic resources conservation, evaluation, development, propagation and use; and
   xv. provision of equipment, infrastructure and technology support.

**Agreements setting out benefit-sharing terms are to be entered into with the local community or with the competent authority on behalf of such community.** Kenya's *Protection of Traditional Knowledge and Cultural Expressions Act (No. 33 of 2016)* also sets out the requisite elements of user agreements. Such elements are: (i) the details regarding financial and other benefits, compensation, fees or royalties or intellectual property rights; (ii) whether the use will be exclusive or non-exclusive; (iii) the duration of the use and rights of renewal; (iv) disclosure requirements in relation to the use, and confidentiality requirements; (v) access arrangements; (vi) dispute resolution mechanisms; and (vii) respect for moral rights of the traditional owners. Zambia's *Protection of Traditional Knowledge, Genetic Resources and Expressions of Folklore Act (No. 16 of 2016)* allows for the alteration of an access agreement, upon the consultation of the competent authority, regarding the imposition of conditions or reducing access that otherwise may result in genetic erosion, degradation of the environment or violation of the cultural values of a traditional community (Section 43).

**Safeguards that genetic material was accessed legally by users are an important consideration in third party countries.** The European Union *Regulation of the European Parliament and of the Council on compliance measures for users from the Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from their Utilization in the Union (No. 511/2014)* directs users of genetic resources to exercise due diligence in ascertaining first, that genetic resources and traditional knowledge associated with such resources were accessed in accordance with applicable legislation, and second, that benefits are fairly and equitably shared upon mutually agreed terms (Article 4). For these reasons, original users are to transfer to any subsequent users the internationally-recognized certificate of compliance, as well as information on the content of the mutually agreed terms. Where no internationally-recognized certificate of compliance is available, other prescribed information must be provided. Users are to keep the information relevant to access and benefit sharing for 20 years after the end of the period of utilization.

## 9.9. Food waste

**In the pursuit of holistic approaches to address food security, nutrition, and environmental sustainability, preventing and reducing food waste emerges as an important priority** (FAO, 2019b). Food waste occurs along the entire food supply chain, both in developed and in developing countries, for various reasons. Food waste means wasted resources required to produce the food, wasted money in purchasing the food, and an untenable moral context where parts of the global population is food insecure.

Many of the elements raised in this Chapter regarding efficiency in production, and support for improved market access, can help in reducing food waste and loss at post-harvest and processing stages. The following initiatives (addressed in other contexts in this Chapter) can help to reduce food loss along the production supply chain (FAO, 2019b): capacity-building for producers (and producer organizations) to reduce loss and address quality management; closer-to-home markets that may have less stringent requirements; infrastructure upgrades; and post-harvest systems development. Fiscal instruments can also be employed such as taxes, fees, incentives, or subsidies to promote the diversion of waste from landfills (e.g. landfill taxes, price support mechanisms or incineration taxes).

**In addition to targeting production and post-production stages, legislation is increasingly addressing downstream critical points of food waste and loss. For example, legislation may address date marking as a means to reduce food waste.** The European Union *Regulation on Food Information to Consumers (No. 1 169/2011)* requires pre-packed foods to display a date mark that clarifies whether such date corresponds to the product's safety ("use by") or its quality ("best before"). This is echoed in the European Union *Waste Framework Directive (EU) (2018/851).* Furthermore, the European Union *Regulation (No. 1 169/2011)* highlights in its perambulatory paragraphs that:

> Having regard to the environmental, social and economic benefits of preventing food waste, Member States should establish specific food waste

> prevention measures, including awareness campaigns to demonstrate how to prevent food waste, in their waste prevention programmes.

Member states are to incentivize the collection of unsold food products at all stages of the food supply chain for their safe redistribution, including to charitable organizations.

**Legislation may embrace the "food use - not waste" hierarchy of priority uses.** In France's *Law on the fight against food waste (No. 2016-138),* the hierarchy of actions required to be taken by each actor in the food chain are, in order: the prevention of waste; the use of unsold food for human consumption; use for animal feed; and use for composting purposes for agriculture and energy recovery, including through anaerobic digestion. The Law also targets training and education to children in schools by requiring information to be disseminated on food waste. Addressing food waste is also to be integrated into business sustainability initiatives undertaken by companies. Italy's *Law on the donation and distribution of food and pharmaceutical products for purposes of social solidarity and food waste prevention (No. 166 of 2016)*, as the title suggests, seeks to reduce waste for each of the phases of production, transformation, distribution and administration of food, and other products. Its objectives are to: (i) encourage the recovery and the donation of food surpluses for social solidarity purposes, earmarking them as a priority for human use; (ii) limit negative impacts on the environment and natural resources through actions targeting reduction of waste and promoting recycling; (iii) meet the goals of the Food Waste Programme and National Plan that works towards reducing the quantity of biodegradable waste sent to landfill disposal; and (iv) contribute to the research, information and sensitization of consumers and institutions on food waste. This Law encourages the donation of food to charities rather than throwing food away and establishes a hierarchy of priorities giving primacy to reuse for human consumption.

## 9.10. Labour rights

Foregoing sections have illustrated how legislative mechanisms are designed to improve the income of agricultural and rural populations,

encourage entrepreneurship and boost market access for farmers and processors. At the same time, those employed in agriculture should benefit from various protections under law. Occupational safety is also a feature of pesticides legislation (see Section 9.5.2).

**Legislation should restrict child labour in a manner that is culturally appropriate and protects the rights of the child.** Côte d'Ivoire's *Law on agricultural strategy (No. 537 of 2015)* requires the state to ensure the protection of minors against exploitation and the worst forms of child labour on agricultural holdings.

**Legislation also protects the well-being of workers through clear labour rights that foster decent working conditions and the provision of wages that provide an adequate living.** Peru's *Supreme Decree on the Law to Promote Competitiveness, Formalization and Development of Micro and Small Enterprises and Access to Decent Employment (No. 007-2008-TR)* sets out fundamental workers' rights as applicable to all agricultural endeavours regardless of size. These include a prohibition on corporal punishment or forced labour, the observation of minimum wages as established by general legislation, the prohibition of discrimination by employers, and the duty to respect the right of workers to form unions (Article 3).

**Employers are typically under an obligation to provide a safe and healthy work environment.** Argentina's *Law on the Agrarian Labour Regime (No. 26 727 of 2011)* requires that agricultural work must be carried out in hygienic and safe conditions in such manner as to avoid occupational diseases and accidents in the workplace (Article 45). Employers are to respect work hours and adopt measures to ensure the dignity of workers. Specific measures may be required to prevent adverse effects on those who work in difficult environments. Article 46 requires the employer to ensure the security and personal protection of their workers, notably if tasks are performed outdoors in rain, floods or similar situations. Personal protective equipment must be provided for hazardous environments. In this regard, cleaning contaminated clothing is the obligation of the employer (Article 47). A specific body is tasked with establishing hygiene and safety standards for workplaces,

machinery, tools and other work elements in the context of agricultural labour (Article 49).

## 9.11. Supporting agricultural investments

**The various needs, challenges, priorities and solutions outlined in previous sections of this Chapter are predicated on increased quantity and quality of investments made in the agricultural sector.** Farmers are the most significant source of investment in agriculture, notwithstanding the high profile of foreign direct investment and government investments; according to FAO, on-farm investment in agricultural capital stock is thrice larger than other sources of investment combined – accordingly, farmers should be the priority when designing investment strategies (FAO, 2012d). This requires the development of a sound regulatory framework that stimulates agricultural activities (such as the fiscal and social incentives touched upon in the various foregoing sections). These incentives should be predicated upon an assessment of the environmental and social costs, benefits and externalities of such incentives. It should be recalled that in order to have successful investment frameworks and interventions, broader contextual elements such as governance, adequate infrastructure and other requisites for a good regulatory and business environment are in place.

The overview provided in this Section can provide only a glimpse into the range of approaches and legal provisions in complex regulatory areas such as commercial law, banking and finance laws, property and contract laws, insurance and other types of legal frameworks. At primary legislation level, particularly in agriculture-specific laws, the details are not typically available relating to, for example, the specific structuring of financial products that can be offered, or the difference between certain types of financial products for different types of producers. With regards to distinguishing among the various types of producers (subsistence, micro, small or medium enterprises, export businesses, etc.) for favourable treatment however, legislation can contain overarching directions to target certain prescribed groups that meet listed criteria. Examples are evidenced in the sections that follow.

While agricultural investment cuts across many topics and themes that cannot be feasibly addressed in this Chapter, two key agricultural finance mechanisms (insurance and credit) are highlighted here for review. In addition, contract farming is also discussed as part of broader initiatives to stimulate, agricultural investment.

### 9.11.1. Insurance

**Agricultural investments always involve risk; the uncertainty around yields may result from poor crop or livestock management, climate conditions, pest and disease outbreaks and market and price fluctuations** (FAO, 1981). **Often legislation reflects these risks in a preliminary indication of insurance coverage.** The Republic of Korea's *Agricultural and Fishery Disaster Insurance Act (No. 9477 of 2009, as amended by Act No. 12729 of 2014)* focuses specifically on disaster insurance designed to cover losses from property damage caused by pests and diseases, fires or flooding. Any person engaged in agricultural activity is eligible for insurance coverage. However, a Deliberative Committee is established to determine the subject matter and precise scope of disaster insurance. Portugal's *Decree-Law establishing the agricultural insurance system (SSA) (No. 162/2015)* covers: crop, livestock, plants and wine for harvest. Support is provided through insurance premiums against economic losses caused to farmers by adverse climatic events, pests or disease or other factors that meet the prescribed criteria (Article 4). However, public support to compensate for losses is limited to risks that are not covered by existing agricultural insurance schemes and can only be granted to farmers who have concluded insurance contracts under the agricultural insurance system.

**Agricultural insurance is not limited to production.** Agricultural warehouse owners are required to demonstrate possession of an insurance policy under Zambia's *Agricultural Credits Act (No. 35 of 2010),* in order for a certificate (licence) for a warehouse to be issued. The policy must, according to Section 24, insure all the agricultural commodities for their full market value where loss results from fire, explosion, theft, lightening or other prescribed risk. The warehouse operator should pay all the depositors whose commodities were destroyed, within ten days

of settlement with the insurance provider. The reviewing authority may require the operator to give additional insurance if it is of the view that its insurance is insufficient.

**Insurance schemes can be mandatory or voluntary, can cover certain parts of a country only, and can be borne by the government, in whole or in part. Insurance schemes may also be entirely private, based on premiums; and in this case, governments may also supplement premiums through subsidies.** The Canadian (New Brunswick) *Agricultural Insurance Act (S.N.B. 2008, c. A-5.105)* sets out a voluntary scheme of agricultural insurance plans issued by a statutory authority at its discretion on the basis of an application (Section 3). The plans are to include among other items: the terms and conditions; the losses to be provided for; the category of eligible persons; coverage, value, yields, payment and collection of premiums; termination of participation and the making of policies and contracts. Under the Mexican (Nayarit) *Law for sustainable agricultural development (2012)*, Article 45 directs the state government to ensure the competent authority supports agricultural producers in managing risks by contributing to the premiums against risks associated with the crop and associated markets. The government may enter into agreements with private insurance companies and insurance providers. The government also reduces vulnerability and risks by identifying high-risk areas, proposing proven sustainable crop alternatives, and promoting contract farming with recognized companies. These measures are to be included in state development plans, and risk charts are to be established by the state in collaboration with the federal- level authorities with regard to flood management infrastructure.

**Premiums can be paid either directly, or through a cooperative or other intermediary entity.** Distribution of risks over a broad membership of associations or cooperative spreads risks, and the participants are thus both the insurers and the insured (FAO, 1981). These associations make assessments of average yields, premium and indemnity calculations, carry out related administrative roles such as payouts, and provide information (FAO, 1981). In such case, the farmers have a direct interest in taking all necessary measures regarding crop or

livestock management and a reduction in risks. The Republic of Korea's *Agricultural and Fishery Disaster Insurance Act (No. 9477 of 2009, as amended by Act No. 12729 of 2014)* identifies several cooperatives and insurance companies as insurers (Article 8). The latter groups are to enter into an agreement with the competent authority that sets out insurance premium rates for each type of subject covered and each compensation method, on the basis of objective and reasonable statistical data. A fund is set up for a re-insurance programme that is financed by re-insurance premiums, contributions from the government, re-insurance proceeds, and earnings from the operation of the fund (Article 22). The fund is managed by the competent authority. According to Portugal's *Decree-Law establishing the agricultural insurance system (SSA) (No. 162/2015)* Article 6, insurance contracts may be individual or based on collective organizations. A commission is established to monitor the agricultural insurance system. Funding for the insurance is achieved through the European Union and national budgets.

**For mandatory participation a mandatory formula may be applied and legislation would set out the time and form of payments and procedures for calculating the amount** (FAO, 1981). Portugal's *Decree-Law establishing the agricultural insurance system (SSA) (No. 162/2015)* states that without prejudice to the voluntary nature of insurance, mandatory application may be in place where more than 50 percent of production in a particular region is covered by insurance contracts.

### 9.11.2. Access to credit

Legal frameworks may contain credit provisions in agriculture-specific legislation, or alternatively in other sector legislation that impacts on agriculture. Legislation should also seek to enable flexibility and diversity in scope, reach and price particularly to cover remote areas. Improving access to credit should be a cross-sectoral effort.

**Credit and loans can finance a range of inputs, from seeds to agrochemicals, as well as capital for agricultural equipment and infrastructure upgrades needed for greater efficiency and productivity. Access to credit contributes to rural development**

**and rural financial inclusion.** The Mexican (Nayarit) *Law for sustainable agricultural development (2012)* provides sustainability-specific investment provisions. The Law directs the state government (supplemented by federal government budget) to allocate resources to promote agricultural capitalization to support producers seeking to modernize infrastructure and equipment, for sustainable energy-saving technology, and for the improvement of land for environmental services (Article 58). Financial support measures are to target rural social or private enterprises whose activities protect soil, capture and use water efficiently, recycle inputs and protect the environment (Article 63). Participation of different types of financial institutions specifically for financing rural and agricultural development is promoted (Article 23). Access to credit should be provided in a sufficient and timely manner for the following purposes, among others: (i) purchasing equipment or investment capital for agriculture, promoting contract farming, consolidating rural enterprises, and financing storage and other infrastructure; (ii) financing for irrigation and other types of investments that require the contribution of producers to supplement government budgets; and (iii) financing to support producers to market and distribute their products, and to innovate on production processes (Article 24). Panama's *Revised Law on the system of preferential loans in the agricultural sector (No. 4 of 2016)* provides for a scheme of loans, where agricultural sector producers that meet prescribed requirements are entitled to a discount in the interest rates for loans. The competent financial authority is empowered to allocate funds to agricultural credit cooperatives, to be used towards the promotion of agricultural production and modernization (25 percent allocation of total funds), at 1 percent annual interest and in accordance with prescribed conditions.

**Smallholders require special support to overcome challenges relating access to markets and financial services.** The Mexican (Nayarit) *Law for sustainable agricultural development (2012)* establishes specific schemes with preferential interest rates that target rural sector low-income producers of certain crops. The rural financing schemes are tailored to the socioeconomic structure and characteristics of the rural entities. The Law requires the structure and design of financial products to

consider the agricultural cash flow patterns and collateral requirements of these types of entities. Paraguay's *Law Creating the Guarantee Fund for Micro, Small and Medium Enterprises (No. 5 628 of 2016)* creates a statutory body tasked with providing guarantees, insurance, refinancing credits, payments and other financial products to those operators (agricultural among other industries) that are individuals or entities of the prescribed size. The Fund is to set out the conditions for those that wish to apply for the guarantee or credits (Article 10). Technical criteria for risk assessment and claims are to be established. Peru's *Supreme Decree on the Law to Promote Competitiveness, Formalization and Development of Micro and Small Enterprises and Access to Decent Employment (No. 007-2008-TR)* sets out training and technical assistance programmes directed at the creation of enterprises, focusing on production, marketing, financing, strategic economic activities, and legal and tax advice. Financing is provided through microfinance institutions (Article 27) as well as through public financial institutions that are required to diversify and increase the scope of services (Article 28). A specific body is tasked with designing financial products suited to SME needs (as well as tailored risk rating systems), and for the development of financial products. Risk centres provide a risk information service specifically targeted at SMEs (Article 34). The SMEs may assign their right of remuneration stemming from state preferential procurement, as credit to pay back loaning institutions under prescribed conditions (Article 35).

**Provisions can be generic or specific, for a short duration or the long term.** Peru's *Emergency Decree establishing extraordinary measures for the revitalization of agricultural and fishing production (No. 7 of 2017)* establishes fiscal measures of a temporary and urgent nature to grant liquidity and financial services to agricultural producers impacted by severe climatic conditions (in addition to broader support to reintegrate rural populations affected by natural disasters back into productive economic sectors). The Agricultural and Livestock Financial Fund extends a line of credit to national financial institutions to refinance obligations derived from agricultural credits in emergency zones, and

also to provide capital for agricultural producers suffering partial or total loss of production.

### 9.11.3. Contract farming

The economic, social and environmental issues raised in the context of contract farming cut across many of the discussions raised in foregoing sections: production practices; agricultural investment; prioritizing smallholders, etc. Contract farming refers to the contract between producers and buyers, with technical specifications relating to goods to be produced. Contract farming is a way to generate shared value for both parties to a contract, provided safeguards are in place. Depending on the specific arrangements, the benefits of contract farming for producers can be to augment the bargaining power of family farmers or small producers, facilitate access to credit, broaden market access, receive consistent demand for their products, and shielding from price fluctuations for the duration of the contract. At the same time, agribusiness investors are provided with frameworks that ensure their investments are protected, and that contractors provide goods in the time, quantity and quality agreed upon, and otherwise perform according to contract stipulations. (Agribusiness may invest in smallholders in the form of payments or loans for inputs, equipment, or may provide technical assistance). Environmental requirements and conditions relating to production may also be stipulated in contracts.

Arrangements for contract farming can be found in various types of legislation, in generic agriculture or general contract law, in contract farming specific legislation or in commodity legislation. Applicable rules to contract farming however, run far beyond those pieces of legislation to more general contract rules, and legislation on competition, tax, commerce, land, investment, finance and producer organizations, and labour law among others. Some legal systems treat contract farming agreements in the same way as other contract categories, and even where specific provisions are in place these may not be detailed and rely on rules governing traditional types of contract (FAO, IFAD and UNIDROIT, 2017).

**The key safeguard for contract farming arrangements is that both the parties to the contract have clear and enforceable rights and obligations. The contract should guarantee predictability and stability for both sides.** Thus, it is the role of legislation to ensure that contracts do in fact have these outcomes by stipulating certain requirements that balance rights and duties on both sides. Panama's *Law on the Agrarian Code (No. 55 of 2011)* stipulates in Article 42 that in case of doubt as to the scope of the terms of an agrarian contract, the interpretation that favours the continuity of the activity or the rational use of resources will prevail, for sustainable development, and for the balance of power between the contracting parties. The Law protects against abusive practices by rendering contracts with such terms null and void (Article 46).

**The rights of smallholders are balanced through provisions that mitigate the scope for abusive practices explicitly, and through mechanisms such as review and registration of contracts for transparency.** Under Ecuador's *Framework Law on Rural and Ancestral Lands (No. 711 of 2016),* the 'agrarian contract' is a civil agreement that, due to the economic status of at least one of the parties, requires the protection of the competent authority to control its design, implementation and termination. The contract must be formalized by an affidavit and submitted to the competent authority for registration. The United Republic of Tanzania's *Cashewnut Industry Act (No. 18 of 2009)* tasks the competent authority with perusal and registration of the contracts as well as monitoring to protect the interests of both parties. Chile's *Law Creating a Voluntary Registry of Agricultural Contracts (No. 20 797 of 2014)* as the title suggests creates a standard registration form that must be submitted to the Registry maintained by the competent authority. Article 6 requires such form to include, among other elements, the express stipulation that parties agree to abide by the contract, the relevant land title and other related particulars, how much of production is purchased, and a penal clause in case of a breach. Registration of the contract is the trigger at which rights and obligations become active, and a contract remains valid unless cancelled in accordance with the terms of the Law. Transparency is also achieved by another

method under Brazil's *Law on integration contracts, obligations and responsibilities in contractual relations between producers and contractors (No. 13 288 of 2016)*. This Law requires the contractor to provide pre-contractual information to the producer that includes an estimate of investments, environmental requirements, remuneration and risks.

**Legislation may set out the basic parameters and form of the contract.** This is the case in the United Republic of Tanzania's *Cashewnut Industry Act (No. 18 of 2009),* which requires the competent authority to approve the standard form of a contract but that sets out its basic elements, as follows: an identification of the parties; their specific obligations; the facilitation to be granted to the farmer; and the terms and conditions imposed on the farmer. The requisite elements of a contract contained in Brazil's *Law on integration contracts, obligations and responsibilities in contractual relations between producers and contractors (No. 13 288 of 2016)* are even more detailed: (i) the technical and economic parameters based on feasibility studies; (ii) quality standards of inputs to be provided by the contractor; (iii) formulae for calculating production efficiency (with an explanation of parameters and methodology used to obtain results); (iv) conditions for access to production areas by the contractor; (v) tax obligations; (vi) compliance requirements relating to legislation concerning agricultural production, the environment and sanitary and phytosanitary matters; and (vii) the scope of insurance coverage (Article 4).

**Provisions must guard against unintended consequences of otherwise seemingly favourable arrangements. From an environmental perspective unsustainable production practices may run counter to environmental protection goals.** Also, monoculture cash crops, for example, can result in reduced biodiversity. Ecuador's *Framework Law on Rural and Ancestral Lands (No. 711 of 2016)* sets out that contract farming should be used to achieve social and environmental objectives, equality (including economic equilibrium) for sustainable agricultural production and food security. Article 90 contains an express stipulation that all contracts must guarantee the sustainable use of land and water resources, and accordingly, must employ suitable technologies and productive systems. This text specifies that breach of terms results

in termination, including if that breach is any degradation of the land or soil fertility. The Law expressly stipulates that contract farming:

> Whatever its modality, whether to produce or market, must protect the owners or holders of land from the risk of loss of production [...], from excessive indebtedness, from unfair trade practices and from the risk of loss of ownership or possession of their land. It must be framed in respect of the capacity for food production of rural land and in the application of best practices for the protection of the land and soil. No type of contract in the matter can force the displacement or eviction of the inhabitants and local producers.

The Law explicitly recognizes the social function of agrarian contracts, as well as the environmental and social protections (the latter including basic labour rights). Brazil's *Law on integration contracts, obligations and responsibilities in contractual relations between producers and contractors (No. 13 288 of 2016)* contains a number of environmental stipulations. Any works are to be installed in accordance with environmental laws in place and the producer must be supported in establishing measures to prevent, control and mitigate detrimental environmental impacts. The contractor is to prepare with the producer a plan for the disposal of pesticide containers, disinfectants and other veterinary products, as well as a plan for waste management and the disposal of dead animals. The duty of the contractor is reiterated with regard to compliance with environmental laws, including responsibility for damages for non-compliance (Article 10).

As noted in the Ecuadorian text referenced above, it should be highlighted that contract farming should not result in negative social impacts. Legislation should safeguard against certain risks. For example, food security may decline as a result of contract incentive to grow more profitable cash crops instead of food staples when shifting to commercial agriculture (FAO, 2018d). In addition, farmers are at risk of not being able to buy food if the crops fail to generate enough income (FAO, 2018d).

## 9.12. Key chapter messages

**Sustainable development of the agricultural sector** is predicated on improved efficiency in the use of available resources.

**Rural development** frames environmental aspects such as climate change and biodiversity, to be considered alongside social challenges relating to the integration of youth, women, smallholders or other marginalized groups into productive industries. Rural development entails an improvement of employment opportunities, financing options, as well as improved access to markets, services and infrastructure.

**Policy coherence** is important for sustainable agriculture and rural development. Agriculture has implications for, and is impacted by, a number of different sectors: environment, land rights, health, trade, economy and trade, etc.

**Multi-stakeholder decision-making or advisory bodies** are a tool often used to foster policy consistency, coordination and the consideration of the perspectives of various sectors as represented by different types of stakeholders.

**Integrating marginalized groups** may be effected by requiring equality in participation within programmes, and with regard to incentives and the specific targeting of certain groups in the rural and agricultural population. Legislation may expressly require the inclusion of women with regard to access to credit, natural resources and inputs as well as access to and leadership in decision-making. Rural youth may be targeted in legislation for training, education and mentorship to increase their access to decent work and entrepreneurship opportunities.

**Agroecology** can be seen as an overarching approach that embraces strategic elements of the subjects, mechanisms and tools for sustainable agriculture. This system involves the application of ecological factors to optimize interactions between plants, animals, humans and the environment, while considering social dimensions for a sustainable and fair food system.

**Organic production** legislation sets out a framework for production practices that are verified by certification bodies, and allow for the use of specific labelling and marks to demonstrate compliance with such production practices.

**Good Agricultural Practices (GAP)**, refer to the different sets of codes, standards and regulations on production techniques and practices (these standards can also cover packing, transportation, storage and distribution). Governments may legislate on GAP in order to promote their implementation, establish incentives or labelling schemes, or to meet third countries' export requirements.

**Fiscal incentives may be applied towards low-impact agricultural inputs** such as pesticides, fertilizers, machinery and equipment. Fiscal instruments include tax exemptions or exemption from import charges. Inputs may also be eligible for subsidies or may benefit from other fiscal incentives that are geared towards stimulating agricultural production of micro and small enterprises, which in turn provide social and economic stimuli.

**Pesticides management** involves a life-cycle approach; this means controls over import or manufacture, formulation, transport, storage, packaging, labelling, advertising, distribution and sale, export, use and disposal. Sound pesticide management is contingent on risk reduction by eliminating overuse, encouraging the use of less hazardous and more selective products and ensuring proper use and disposal.

**Fertilizer use** has a direct effect on production yields, efficiency and thus income earnings. The registration process provides a key mechanism of controlling chemical fertilizers on the market, through technical evaluation of efficacy for intended use, and environmental and public health parameters.

**Seed systems** are important for the conservation, diversification, adaptation and improvement of seeds. Seed legislation should set out seed quality standards as well as regulate distribution rules relating to import, manufacture, sale, advertising, labelling and packaging.

**Plant health and animal health laws** are primarily geared towards: preventing health risks and protecting the health of humans, animals and plants; facilitating safe trade, and enabling the country to meet its obligations under international agreements; and creating a conducive, transparent and reliable environment for trade and business, as well as agricultural activities. Crops or livestock that are lost as a result of pest and diseases reduce the output efficiency and quantity of production units.

**Adverse environmental impacts relating to agricultural production can be mitigated** through a range of practices recognized in legislation. These include, for example: reforestation programmes and land use that favours conservation of soil; preservation of plant genetic resources; techniques and methods that reduce soil losses, and that manage water efficiently, etc. Laws can also advance the use of agriculture as a means to protect the environment by conserving the landscape.

**Registration conditions for farms** may reduce detrimental environmental impacts by controlling location or sites to be used for certain agricultural activities, and by requiring the undertaking of environmental impact assessments. Operators of agricultural holdings may be required, as a condition of registration, to monitor environmental impacts and comply with environment related standards.

**Waste from agriculture** can be controlled through legislative provisions that require compliance with effluent quality standards, and that prohibit the unauthorized discharge of wastewater. These controls are buttressed through monitoring and inspection schemes by competent authorities.

**Payment schemes for Ecosystem Services (PES) and social benefits** leverage the range of ecosystem services provided by agriculture; placing an economic value on ecosystem services encourages investment in their potential and enhancement. Legislation should set out: criteria for qualifying for such remunerations; how management activities can be tracked and priced; and the mechanisms for disbursement of the payments.

**Climate resilience and adaptation** provisions recognize that agricultural land use contributes significantly towards greenhouse gas emissions and at the same time, agriculture has enormous mitigation potential. Increasing the resilience of agricultural systems by protecting natural resources and related livelihoods requires a particular focus on smallholders, rural communities and indigenous groups that may play a role in sharing, adopting and scaling climate-smart practices and knowledge.

**Genetic resources for agriculture** are conserved by identifying existing and endangered species, and setting out specific measures to preserve the diversity of both plant and animal species – to prevent extinction and to increase quality and productivity.

**Access to genetic resources restrictions** underpinned by legislation are safeguards against biopiracy, and prevent the exploitation of resources without the sharing of benefits by the community that conserved the resource. Legislation may specify the categories of genetic resources covered by access provisions; the proposed uses that warrant an authorization for access; as well as the specific procedures to authorize use and access.

**Respecting traditional knowledge, skills, and practices** is important for sustainable agricultural production and practices, and the conservation of genetic resources. Legislation should recognize and protect the rights of indigenous peoples and local communities regarding traditional knowledge.

**Fair and equitable sharing of benefits** agreements may be required by legislation with key elements established to ensure appropriate safeguards are in place. Non-monetary benefits may comprise community development initiatives tailored to the material needs and cultural preferences of the community.

**Food waste** occurs along the entire food supply chain. Improving efficiency in production, and providing support for improved marketing and distribution (including donations) can help in reducing food waste

and loss at post-harvest and processing stages. Legislation should enshrine the concept of the food waste hierarchy for the management of surplus and to avoid sending food to landfills.

**Labour rights** in agriculture span a range of protections for workers, such as ensuring decent working conditions, restricting child labour, ensuring wages that provide an adequate living and requiring measures for occupational safety and health.

**Agricultural insurance schemes** not only protect capital investments but also enable the adoption of new techniques and enhanced yields. Insurance schemes can be mandatory or voluntary, can cover certain parts of a country only, and can be borne by the government, in whole or in part. Insurance schemes may also be entirely private, based on premiums; and in this case, governments may also supplement premiums through subsidies.

**Access to financial services** significantly impacts rural development. Smallholders require special attention in order to allow them to overcome constraints such as access to markets and to financial services. Credit and loans can finance a range of (low-impact) inputs, such as agrochemicals, but can also provide capital for agricultural equipment and infrastructure upgrades needed for greater efficiency and productivity.

**Contract farming legislation should guarantee predictability and stability for both sides**. Legislation may set out the basic parameters and form of the contract and establish the duty to register contracts before such arrangements are considered valid. Environmental requirements relating to production may be stipulated in contracts.

# Appendix H. Key international instruments to guide national legislation

## I. Legally-binding instruments

*Agreement on Agriculture.* World Trade Organization (WTO), 1995. (also available at https://www.wto.org/english/docs_e/legal_e/14-ag.pdf).

*Agreement on the Application of Sanitary and Phytosanitary Measures* (SPS Agreement). WTO, 1994. (also available at https://www.wto.org/english/tratop_e/sps_e/spsagr_e.htm).

*Agreement on Technical Barriers to Trade* (TBT Agreement). WTO, 1995. (also available at https://www.wto.org/english/docs_e/legal_e/17-tbt_e.htm).

*Agreement on Trade-Related Aspects of Intellectual Property Rights* (TRIPS Agreement). WTO, 1994. (also available at https://www.wto.org/english/docs_e/legal_e/27-trips.pdf).

*Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal*, 22 March 1989. (also available at http://www.basel.int/TheConvention/Overview/TextoftheConvention/tabid/1275/Default.aspx).

*Convention on Biological Diversity* (CBD), adopted in Nairobi, 22 May 1992, and open for signature in Rio de Janeiro, 5 June 1992. (also available at https://www.cbd.int/doc/legal/cbd-en.pdf).

*International Convention for the Protection of New Varieties of Plants* (UPOV Convention), adopted in Paris, 2 December 1961. (also available at http://www.upov.int/upovlex/en/upov_convention.html).

*International Plant Protection Convention, 1951.* FAO Conference, new revised text adopted in Rome, 1997. (also available at https://www.ippc.int/en/core-activities/governance/convention-text/; https://www.ippc.int/static/media/files/publications/en/2013/06/06/1329129099_ippc_2011-12-01_reformatted.pdf).

*International Treaty on Plant Genetic Resources for Food and Agriculture.* FAO Conference, adopted in Rome, 3 November 2001. (also available at http://www.fao.org/3/a-i0510e.pdf).

*Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from their Utilization,* adopted in Nagoya, 29 October 2010. (also available at https://www.cbd.int/abs/text/).

*Rotterdam Convention on the Prior Informed Consent Procedure for Certain Hazardous Chemicals and Pesticides in International Trade*, adopted in Rotterdam, 10 September 1998, as amended up until 2017. (also available at http://www.pic.int/TheConvention/Overview/TextoftheConvention/tabid/1048/language/en-US/Default.aspx).

*Safety and Health in Agriculture Convention, 2001 (No. 184)*. International Labour Organization (ILO), 21 June 2001. (also available at https://www.ilo.org/dyn/normlex/en/f?p=NORMLEXPUB:12100:0::NO:12100:P12100_INSTRUMENT_ID:312329:NO).

*Stockholm Convention on Persistent Organic Pollutants*, adopted in Stockholm, 22 May 2001, as amended up until 2017. (also available at http://chm.pops.int/TheConvention/Overview/TextoftheConvention/tabid/2232/Default.aspx).

*United Nations Convention to Combat Desertification (in those countries experiencing serious drought and/or desertification, particularly in Africa),* adopted in Paris, 17 June 1994, and open for signature 14 October 1994. (also available at https://www.unccd.int/sites/default/files/relevant-links/2017-01/UNCCD_Convention_ENG_0.pdf).

*United Nations Framework Convention on Climate Change* (UNFCCC), adopted in New York, 9 May 1992, and opened for signature in Rio de Janeiro, 4 June 1992.

- *Kyoto Protocol to the United Nations Framework Convention on Climate Change*, adopted in Kyoto, 11 December 1997. (also available at https://unfccc.int/resource/docs/convkp/kpeng.pdf).
- *Paris Agreement,* adopted in Paris, 12 December 2015. (also available at https://unfccc.int/sites/default/files/english_paris_agreement.pdf).

## II. Non-legally-binding instruments

*Aquatic Animal Health Code.* World Assembly of OIE Delegates, adopted 2019. (also available at http://www.oie.int/en/standard-setting/aquatic-code/access-online/).

*Guidelines for the Production, Processing, Labelling and Marketing of Organically Produced Foods, Third Edition.* Codex Alimentarius Commission, 2007. (also available at http://www.fao.org/docrep/010/a1385e/a1385e00.htm).

*Genebank Standards for Plant Genetic Resources for Food and Agriculture*. Commission on Genetic Resources for Food and Agriculture, endorsed in Rome, 15–19 April 2013. (also available at http://www.fao.org/3/a-i3704e.pdf).

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Conference on Plant Genetic Resources, adopted in Leipzig, 17–23 June 1996. (also available at http://www.fao.org/tempref/docrep/fao/meeting/015/aj631e.pdf).

*International Code of Conduct for Germplasm Collecting and Transfer.* FAO Conference, adopted in Rome, 6–24 November 1993. (also available at http://www.fao.org/nr/cgrfa/cgrfa-global/cgrfa-codes/en/).

*International Code of Conduct on Pesticide Management.* FAO Conference, approved in Rome, June 2013. (also available at http://www.fao.org/fileadmin/templates/agphome/documents/Pests_Pesticides/Code/CODE_2014Sep_ENG.pdf).

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*Principles for Responsible Investment in Agriculture and Food Systems.* Committee on World Food Security (CFS), endorsed in Rome, 15 October 2014. (also available at http://www.fao.org/3/a-au866e.pdf).

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*Terrestrial Animal Health Code.* World Assembly of Organisation for Animal Health (OIE) Delegates, adopted 2019. (also available at http://www.oie.int/en/standard-setting/terrestrial-code/access-online/).

*United Nations Declaration on the Rights of Peasants and Other People Working in Rural Areas.* United Nations General Assembly (UNGA) Council, A/C.3/73/L.30, approved 2018. (also available at https://undocs.org/en/A/C.3/73/L.30).

*Voluntary Guide for National Seed Policy Formulation.* Commission on Genetic Resources for Food and Agriculture, endorsed in Rome, January 2015. (also available at http://www.fao.org/3/a-i4916e.pdf/).

*Voluntary Guidelines to Support the Progressive Realization of the Right to Adequate Food in the Context of the National Food Security.* FAO Council, adopted in Rome, November 2004. (also available at http://www.fao.org/3/y7937e/y7937e00.htm).

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With the premise that legislation forms the backbone of sustainable governance arrangements, this publication seeks to highlight some of the ways in which countries from different regions manage natural resources in a sustainable manner. The concept of sustainable development is predicated on three core and interconnected elements: economic growth, social inclusion and environmental protection. Sustainability, therefore, is much more than ensuring protection of the natural resource base. To be sustainable, agriculture must meet the needs of present and future generations for its products and services, while ensuring profitability, environmental health, and social and economic equity.

This publication seeks to offer broad guidance to countries in the regulation of their natural resources by illustrating how other countries have recognized and addressed these connections and linkages. Using these pillars as a point of reference, and emphasizing a human rights-based framework, the study explores legislative approaches in the following sectors: land, water, fisheries and aquaculture, mining, petroleum, forestry and agriculture. This book is not intended to serve as a detailed manual on how to regulate each sector, rather, it presents a selection of provisions that allow a macro-level view of the linkages and connections that recognizes impacts in more than one pillar of sustainable development.

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