Convention to Combat Desertification

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Committee on Science and Technology
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Item 2 (c) of the provisional agenda
Items resulting from the work programme of the Science-Policy Interface for the biennium 2018–2019
Coordination activities of the Science-Policy Interface work programme 2018–2019

Policy-oriented recommendations resulting from the cooperation with other intergovernmental scientific panels and bodies

Report by the Executive Secretary

Summary

As defined in decisions 23/COP.11 and 19/COP.12, the Science-Policy Interface (SPI) of the United Nations Convention to Combat Desertification (UNCCD), under the leadership of the Bureau of the Committee on Science and Technology (CST), is requested by the Conference of the Parties (COP) to interact with several existing scientific mechanisms in order to provide the CST with clear and well-defined thematic guidance on scientific knowledge requirements for implementing the UNCCD.

By its decision 21/COP.13, the COP requested the SPI to help prepare and review those scientific reports listed in its 2018–2019 work programme which would be published during the biennium, and to provide scientific review and other support, as relevant, for the other coordination activities. By this same decision, the Executive Secretary was requested to report on the coordination activities conducted by the SPI, as contained in the annex to this decision. For those scientific assessments listed among the coordination activities identified in the SPI work programme which were published during the 2018–2019 biennium, the SPI has conducted analysis and synthesis in order to provide the CST with clear and well-defined thematic guidance on new scientific knowledge relevant for implementing the UNCCD.

This document presents the coordination activities undertaken by the SPI as well as a summary of the key findings relevant to the UNCCD emerging from the three scientific reports published during the 2018–2019, including proposals for consideration by the CST at its fourteenth session. The CST may wish to consider these proposals for the development, as appropriate, of recommendations to the COP.

Contents

List of abbreviations

CBD	Convention on Biological Diversity
COP	Conference of the Parties
CSO	civil society organization
CST	Committee on Science and Technology
FAO	Food and Agriculture Organization of the United Nations
GEF	Global Environment Facility
GLII	Global Land Indicators Initiative
GLO	*Global Land Outlook*
GM	Global Mechanism
GSP	Global Soil Partnership
IPBES	Intergovernmental Science–Policy Platform on Biodiversity and Ecosystems Services
IPCC	Intergovernmental Panel on Climate Change
IRP	International Resources Panel
ITPS	Intergovernmental Technical Panel on Soils
LDN	land degradation neutrality
SDG	Sustainable Development Goal
SLM	sustainable land management
SPI	Science-Policy Interface
SPM	Summary for Policymakers
UNCCD	United Nations Convention to Combat Desertification
UNEP	United Nations Environment Programme
UNFCCC	United Nations Framework Convention on Climate Change

I. Background

1.   In line with its mandate, as defined in decisions 23/COP.11 and 19/COP.12, the Science-Policy Interface (SPI) of the United Nations Convention to Combat Desertification (UNCCD), under the leadership of the Bureau of the Committee on Science and Technology (CST), is requested by the Conference of the Parties (COP) to interact with several existing scientific mechanisms in order to provide the CST with clear and well-defined thematic guidance on scientific knowledge requirements for implementing the UNCCD. Also, by its decision 23/COP.11, the COP called upon international science-advisory bodies, scientific institutions and networks, the scientific community, and other relevant stakeholders to support the work done in the provision of scientific advice in order to support the position of the UNCCD as a global authority on scientific and indigenous and local knowledge pertaining to desertification/land degradation and drought.

2.   By its decision 21/COP.13, the Executive Secretary was requested to report to the fourteenth session of the CST (CST 14) on the coordination activities conducted by the SPI, as contained in the annex to this decision, during the biennium 2018–2019. The scientific mechanisms for the coordination activities identified in this decision are:

(a)   The Intergovernmental Science–Policy Platform on Biodiversity and Ecosystems Services (IPBES) of the United Nations Environment Programme (UNEP);

(b)   The Intergovernmental Panel on Climate Change (IPCC);

(c)   The Intergovernmental Technical Panel on Soils (ITPS) of the Global Soil Partnership (GSP) of the Food and Agriculture Organization of the United Nations (FAO);

(d)   The International Resources Panel (IRP) of UNEP;

(e)   The *Global Land Outlook* (GLO) of the UNCCD; and

(f)   The Global Land Indicators Initiative (GLII) of the United Nations Human Settlements Programme.

3.   Furthermore, the COP, in decision 19/COP.13, requested the SPI, in close collaboration with the secretariat, to clarify the potential benefits, costs, conditions and procedures for establishing more formal relationships between the SPI and the IPBES, IPCC, ITPS, and IRP in order to develop synergies and avoid duplication of efforts. By the same decision, the COP encouraged the SPI to continue fostering partnerships with scientific bodies and institutions, international organizations, civil society organizations (CSO) and other relevant stakeholders and to invite the representatives of these entities to its meetings as external observers when feasible, with a view to strengthening substantive exchanges and collaboration.

II. Coordination activities of the Science-Policy Interface work programme 2018–2019

4.   In keeping with decision 21/COP.13, the SPI, as part of the SPI work programme for the biennium 2018–2019, cooperated with the aforementioned scientific mechanisms, and the activities and sub-activities proposed in the annex to that decision were accomplished. Specifically, the SPI:

(a)   Reviewed the IPBES *Assessment Report on Land Degradation and Restoration*,[1] analysed its key messages relevant for the UNCCD, and reviewed the IPBES *Global Assessment Report on Biodiversity and Ecosystem Services*[2] and its associated Summary for Policymakers (SPM);

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[1]   <https://www.ipbes.net/assessment-reports/ldr> *NB: Prior to final publication, this report had a different title, namely the Intergovernmental Science–Policy Platform on Biodiversity and Ecosystems Services "Land Degradation and Restoration Assessment".*

[2]   <https://www.ipbes.net/global-assessment-report-biodiversity-ecosystem-services>.

(b)   Contributed to the scientific review of the IPCC *Special Report on Climate Change and Land*,[3] submitting 250 and 461 comments on the first and second order drafts, respectively, and developed a plan for the review of the IPCC Sixth Assessment Report, particularly the working group II assessment of impacts, adaptation and vulnerability[4] and the working group III assessment of mitigation of climate,[5] when these become available;

(c)   Also contributed to the scientific review of the zero order draft of the FAO/ITPS International Code of Conduct for the Use and Management of Fertilizers, and co-organized, under the leadership of FAO, the Global Symposium on Soil Erosion[6] (15–17 May 2019, Rome) with the ITPS, the GSP and the International Atomic Energy Agency, establishing a common platform to present and discuss the latest information on the status of interventions and innovations in the field of soil erosion and related land management;

(d)   Further contributed to the development of the IRP think piece,[7] *Land Restoration for Achieving the SDGs* [8] (Sustainable Development Goals) through the authorship of Chapter 3.7 "Land Restoration for Achieving SDG 7" and Chapter 3.15 "Land Restoration for Achieving SDG 15";

(e)   Participated in the steering committee for second edition of the GLO; and

(f)   Cooperated with the GLII to ensure the harmonization of land indicators developed by the GLII to measure tenure security, with land indicators used to measure progress towards land degradation neutrality (LDN).

5.   In accordance with decision 19/COP.13, the SPI worked in close collaboration with the secretariat towards clarifying the potential benefits, costs, conditions and procedures relevant to the scientific mechanisms listed in paragraph 2 with respect to establishing more formal relationships with each. The most significant was established with the IPBES through the signing of a Memorandum of Cooperation between the secretariats of the IPBES and the UNCCD.[9] Through conference calls and the exchange of letters, joint efforts were also pursued to encourage the complementarity in the work programmes of the SPI and the activities of the IPCC, ITPS, IRP, GLO and GLII.

6.   In keeping with the same decision, the SPI is fostering a future partnership to support scientific work in drought. Specifically, the SPI is exploring future collaboration with the Integrated Drought Management Programme (IDMP),[10] a joint initiative of the World Meteorological Organization and the Global Water Partnership. The IDMP works to support stakeholders at all levels by providing policy and management guidance and by sharing scientific information, knowledge and best practices for integrated drought management, with the aim of achieving a coherent global framework for drought management, prediction and monitoring by networking new and existing programmes and activities worldwide. This collaboration has been proposed as a new coordination activity in the SPI work programme 2020–2021 (ICCD/COP(14)CST/6).

7.   During the biennium 2018–2019, the SPI also fostered cooperation with several UNCCD-accredited CSOs, which, with the support of the secretariat and the SPI, organized

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[3]   <https://www.ipbes.net/global-assessment-report-biodiversity-ecosystem-services>.

[4]   <https://www.ipcc.ch/site/assets/uploads/2018/12/Timeline_WGIIAR6.pdf>.

[5]   <https://www.ipcc.ch/site/assets/uploads/2018/12/Timeline_WGIIAR6.pdf>.

[6]   <https://www.ipcc.ch/site/assets/uploads/2018/12/Timeline_WGIIAR6.pdf>.

[7]   As documented in the Policies and Procedures of the International Resource Panel (IRP) approved at the nineteenth meeting of the IRP (Paris, 15–18 November 2016) (Ref: IRP-PP-2016), a 'think piece' is defined as "a technical or policy paper based on IRP scientific studies and assessments and other relevant literature, on topics related to the IRP's objective for which a scientific perspective is deemed essential. A think piece is not a full study and assessment but science-based reflections, which may catalyse the generation of new scientific knowledge or highlight critical topics to be considered in policy discourse. A think piece may be published in academic journals and online platforms". <https://www.resourcepanel.org/sites/default/files/documents/document/media/policies_and_procedures_of_the_irp.pdf>.

[8]   <https://www.resourcepanel.org/reports>.

[9]   <https://www.ipbes.net/system/tdf/memorandum_of_cooperation.pdf?file=1&type=node&id=29347>.

[10]   <http://www.droughtmanagement.info/>.

a session at the United Nations Framework Convention on Climate Change (UNFCCC) National Adaptation Programme (NAP) event: NAP Expo 2019,[11] entitled "Synergy between the UNFCCC and UNCCD: Achieving Co-Benefits," which led to recommendations on overcoming barriers to the simultaneous achievement of the co-benefits of climate change adaptation and LDN.

8.   The SPI also fostered cooperation with several UNCCD-accredited inter-governmental organizations working to support country efforts to achieve LDN (e.g. African Union,[12] World Agroforestry[13] and the International Crops Research Institute for the Semi-Arid Tropics).[14]

III.   Scientific reports relevant to the United Nations Convention to Combat Desertification published in 2018–2019

9.   For those scientific reports listed among the coordination activities identified in the SPI work programme which were published during the biennium 2018–2019, the SPI has conducted analysis and synthesis in order to provide the CST with clear and well-defined thematic guidance on new scientific knowledge relevant to implementing the UNCCD. These include:

(a)   The IPBES *Assessment Report on Land Degradation and Restoration*;[15]

(b)   The IPBES *Global Assessment Report on Biodiversity and Ecosystem Services*;[16] and

(c)   The IRP think piece: *Land Restoration for Achieving the SDGs*.[17]

A.   Assessment Report on Land Degradation and Restoration[18]

10.   The IPBES undertook a thematic assessment of land degradation and restoration as part of its work programme for the period 2014–2018 (IPBES/2/17). This work was undertaken in response to requests made to the IPBES by several multilateral environmental agreements, including the UNCCD and the Convention on Biological Diversity (CBD), as well as several governments and several non-governmental stakeholders.

11.   This assessment report was prepared by a group of 86 experts composed of two co-chairs, 18 coordinating lead authors and 66 lead authors, who were selected by the IPBES Multidisciplinary Expert Panel from nominations received from governments and other stakeholders, including from the UNCCD secretariat in consultation with the CST and the SPI. The assessment engaged over 160 experts from 72 countries.

12.   The assessment report received a total of 2277 comments from 85 external reviewers in the first round and a total of 5053 comments from 131 external reviewers (including governments and scientific bodies) in the second round of the external review phase.

13.   The UNCCD is recognized as a key potential user of and key contributor to this IPBES assessment. In this context, the IPBES called for a development of its collaboration with the UNCCD, especially its SPI and CST (IPBES-3/1, Annex VIII, page 42). In response to this call, and following the mandate given by Parties through decisions 23/COP.11, 21/COP.12 and 22/COP.13, the SPI and the UNCCD secretariat contributed to the IPBES assessment, in accordance with the procedure established by the IPBES, as one of the activities in the SPI

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[11]   <http://napexpo.org/2019/>.

[12]   <http://www.ua-safgrad.org/news-and-announcements/news/221-au-safgrad-to-organize-a-training-workshop-on-ldn-implementation-for-the-unccd-stc-and-ggwssi-s-focal-points>.

[13]   <https://www.worldagroforestry.org/event/global-soil-week>.

[14]   <http://www.tropentag.de/2018/abstracts/links/Orr_7jYe6HnK.php>.

[15]   Ibid, 1.

[16]   Ibid, 2.

[17]   Ibid, 8.

[18]   Ibid, 1.

work programmes for 2014–2015, 2016–2017 and 2018–2019. The objective of this collaboration was to ensure that the thematic assessment of land degradation and restoration shall be of relevance to the UNCCD process and the needs of its Parties.

14.   Three of the experts nominated by the UNCCD secretariat in consultation with the Bureau of the CST and the SPI were selected as authors of the assessment report. In addition, two SPI members and one observer to the SPI were nominated by their respective governments or organizations and formed part of the expert group which developed the assessment.

15.   The SPI submitted 176 comments in the first round and 185 comments in the second round of the external review phase of the thematic assessment of land degradation and restoration, and 97 comments on the first order draft of the associated SPM. The Chair of the CST, who is also Co-Chair of the SPI, provided collective input on the eight chapters of the assessment to the IPBES, summarizing the views expressed by the SPI. Additionally, the UNCCD secretariat submitted a total of 71 comments in the first and a total of 16 in the second round of the external review phase.

16.   The UNCCD secretariat participated in the sixth session of the IPBES (IPBES 6) and was invited to express its views on the relevance of the SPM key messages for the implementation of the Conventions, particularly with regard to the Scientific Conceptual Framework for LDN which was produced under the SPI and endorsed by country Parties in decision 18/COP.13.

17.   At IPBES 6, in its decision IPBES-6/1, section V, paragraph 1, the Plenary of the IPBES approved the SPM of the thematic assessment of land degradation and restoration as set out in the annex to document IPBES/6/15/Add.5.

18.   By its decision 22/COP.13, the COP requested the SPI to review the thematic assessment on land degradation and restoration, analyse its key messages relevant to the UNCCD and present an analysis at CST 14.

19.   The IPBES *Assessment Report on Land Degradation and Restoration* warns that, worldwide, biodiversity loss is clearly linked to land degradation, and that achieving LDN through measures to avoid and reduce land degradation and restore degraded land can substantially contribute to the protection and sustainable use of biodiversity, thereby supporting progress towards meeting the Aichi Biodiversity Target 15 of restoring degraded land under the Strategic Plan for Biodiversity 2011–2020 of the CBD, [19] and the implementation of the Post-2020 Global Biodiversity Framework (CBD/POST2020/PREP/1/1).[20]

20.   Achieving LDN by avoiding and reducing land degradation and restoring degraded land requires an understanding of the underlying drivers of land degradation. This assessment report emphasizes that there are multiple drivers at global, national and subnational levels and the country-specific context driving the loss of biodiversity and ecosystem services. These include the increasing consumption of and demand for land-based goods and services, the globalized flow of goods which affect access to land resources and agriculture worldwide, the associated increasingly transboundary nature of production systems, technological advancements that support agricultural intensification, changing consumption patterns and population dynamics. Climate change impacts increase risks emerging from the increasing global and national demand for land resources and intensify ongoing land degradation.

21.   Drivers of land degradation include all external factors with the ability to either directly or indirectly result in declines in the biological and/or economic productivity of land. Direct drivers have a direct effect on the structure, function and composition of ecosystems and are the human activities that in turn give rise to degradation processes, including through unsustainable land-use and land management activities (table 1). Indirect drivers, on the other hand, are factors that underpin direct drivers of land degradation (table 2) and include key institutional and governance structures in addition to the social, economic and cultural context in which land degradation occurs. As such, they are often related to one or more of

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[19]   <https://www.cbd.int/undb/media/factsheets/undb-factsheet-sp-en.pdf>.
[20]   See CBD/POST2020/PREP/1/1.

the SDGs. Considering the findings of the IPBES *Assessment Report on Land Degradation and Restoration* and in anticipation of the IPCC Special Report on Climate Change and Land, country Parties may wish to consider this suite of direct and indirect drivers and the relevance of these drivers to achieving SDG targets.

Table 1
Direct anthropogenic drivers of land degradation identified in the Assessment Report on Land Degradation and Restoration

Direct (Anthropogenic)	*Direct (Anthropogenic) subcategories*	*Linked degradation or restoration processes*
Deforestation and clearance of other native vegetation	N/A	Fragmentation; soil erosion; change in runoff and infiltration regime; climate feedbacks
Grazing land management	Livestock type; stocking rates; rotation regime; supplementary feeding; irrigation	Soil erosion; soil compaction; change in soil nutrient content; change in runoff and infiltration regime; invasive species; change in fire regime; secondary succession
Cropland and agroforestry management	Crop type; soil management; harvesting and fallow cycles; fertilizer, pesticide and herbicide; irrigation	Soil erosion; soil compaction; change in soil nutrient content; eutrophication; soil and water salinization; sedimentation; water contamination; species invasions; change in fire regimes (as related to agroforestry management)
Native and planted forest management	Harvesting intensity, rotation, silvicultural techniques; spatial zoning	Soil erosion; soil compaction; change in soil nutrient content; change in runoff and infiltration regime; water and soil salinization; change in species composition and species invasions
Non-timber natural resource extraction	Fuelwood harvesting; hunting; harvesting of wild foods, fodder, medicinal and other products	Changes in species composition
Fire regime change	N/A	Changes in species composition; soil erosion; loss of aboveground biomass; species invasions; change in runoff and infiltration regime;
Invasive alien species	N/A	Changes in species composition
Land abandonment	N/A	Secondary succession; species invasions; change in fire regime; change in soil nutrient content;
Mineral resource extraction	Mine type; extraction and refining techniques; pollutant discharge; spatial zoning	Soil pollution and contamination; water contamination
Infrastructure, industry, urbanization	Dams and hydroelectric; roads; pollutant discharge; irrigation	Soil pollution and contamination; water contamination; atmospheric pollutants
Climate change	Extreme weather events and long-term changes in temperature, precipitation, atmospheric composition	N/A

Table 2

Indirect drivers of land degradation identified in the *Assessment Report on Land Degradation and Restoration* and their relationship with the Sustainable Development Goals

Indirect drivers	Subcategories	Related Sustainable Development Goals
Demographic	Population growth; migration (including to urban centres); density; age structure	1, 2, 3, 4, 5, 6, 8, 9, 10, 11, 13, 15, 16
Economic	Demand; poverty; commercialization and trade; urbanization; industrialization; labour markets; prices; finance; consumer behaviour	1, 5, 7, 8, 9, 10, 11, 12, 15
Science, knowledge and technology	Education; indigenous and local and knowledge; research and development investments; access to technology; innovation; communication and outreach	3, 4, 5, 6, 7, 9, 10, 11, 12, 15, 16
Institutions and governance	Public policy (regulatory and incentive based); property rights; customary law; certification; international agreements and conventions (trade, environment etc); competencies of formal institutions; informal institutions (social capital)	1, 3, 4, 5, 6, 7, 8, 9, 10, 12,13, 15, 16
Cultural	Worldviews; values; religion; consumer behaviour; diet	2, 3, 4, 5, 10, 12, 13, 15, 16

22.   To address the multiple drivers that underpin land degradation, global and national processes and their country-specific interactions can be used to inform national policies to strengthen procedures that support the implementation of sustainable land management (SLM) practices that secure biodiversity, soil and water resources. Often, there are barriers to the large-scale implementation of SLM practices at national levels to regulate global and national pressure on land resources. To overcome these barriers and trigger the wide-scale acceptance and successful implementation of SLM practices and the monitoring of their impacts, an enabling environment must be created at national and subnational levels.

B.   Global Assessment Report on Biodiversity and Ecosystem Services[21]

23.   The IPBES published the *Global Assessment on Biodiversity and Ecosystem Services* as part of its work programme for the period 2014–2018 (IPBES/2/17). This work was undertaken in response to a request made to the IPBES by the CBD at the eleventh meeting of its COP. The scope defined was to assess the status and trends with regard to ecosystem services, the impact of biodiversity and ecosystem services on human well-being and the effectiveness of responses. It was envisaged that this assessment would also contribute to the process for the evaluation of the CBD Strategic Plan for Biodiversity and its Aichi Biodiversity Targets to inform the development of the post-2020 global biodiversity framework of the CBD.

24.   By its decision 22/COP.13, the COP requested the SPI to review this and its associated SPM if this report was available in time for the SPI to complete the review.[22]

25.   The SPI notes that the primary focus of this assessment is the status of biological diversity and the health of ecosystems services, however draws attention to the role of land use change, mostly for agriculture, as a direct driver of biodiversity and ecosystem loss. It warns that one million species are threatened by extinction largely because 75 per cent of land surface has been altered from its natural state, and that the rates of species extinction are accelerating. The assessment lays out the importance of land management and restoration in reversing these trends. It cautions that some actions, such as replacing natural forests with

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[21]   Ibid, 2.
[22]   The assessment report and Summary for Policymakers were released in May 2019.

monocultures of introduced species, can provide economic advantage while limiting the potential for other ecosystem services and greater biodiversity.

26.   The SPI noted that a number of the key messages in this assessment are relevant to the UNCCD. These include:

        (a)   **Land use change is the main driver of terrestrial ecosystem change**, and these (negative) transformational changes are creating the conditions for rapid evolutionary change that is visible over just a few years. If evolutionary processes are responding to land use change on much shorter time scales than previously assumed, there are opportunities to consider these changes in land management and policy interventions;

        (b)   **The conversion of land for agriculture is the leading driver of land-use change**, with meeting the demand for food, feed, fibre and bioenergy in the lead. Forests, wetlands and grasslands are paying the price. The consequence is that local varieties and breeds of domesticated plants and animals are disappearing at accelerating rates. Many of the wild relatives of crops that are important for food security lack effective protection, and the conservation status of the wild relatives of domesticated animals and birds is deteriorating;

        (c)   **Holistic approaches to reverse negative land transformation trends are now essential.** Siloed solutions – the use of biophysical measures, economic incentives or governance measures individually to induce change often fails because other factors, such as expanding economic activity, are prioritized over conservation or restoration. LDN provides a framework within which holistic approaches can be pursued. Adding ecosystem value to economic incentives would help conservation/restoration goals;

        (d)   **Tropical regions face severe challenges in the future due to the interactive effects of climate change, land-use change and fisheries exploitation; and**

        (e)   **Land-based climate change mitigation activities can support conservation goals effectively if the right measures are applied in the right place at the right scale.** Supporting integrated land use planning so that interventions can be spatially optimized and environmental, social and economic trade-offs can be navigated is critical (this is the core of LDN). Some of the approaches documented in the assessment include:

        (i)   Nature-based solutions, which can be cost-effective in meeting SDGs, particularly if all aspects of land are taken into consideration and a landscape/regional approach is pursued where the dynamics between rural and urban zones can be more strategically managed for the benefit of both;

        (ii)   Sustainable intensification which, if governed properly, may also be one solution, particularly if pursued under the principles of agroecology; and

        (iii)   Bioenergy plantations and afforestation of non-forest ecosystems, which the report warns can have side effects on biological diversity and ecosystem function and yet, with proper governance, balancing environmental, food and energy needs, can be part of the solution.

C.   Land Restoration for Achieving the Sustainable Development Goals think piece[23]

27.   In resolution UNEP/EA.2/L.28, the second United Nations Environment Assembly (UNEA) of UNEP, inter alia, called upon Member States to take action towards achieving the SDGs and reaching voluntary targets regarding LDN. And in its resolution UNEP/EA.2/Res.24, UNEA, inter alia, called upon UNEP to provide support to the UNCCD to facilitate the sharing of best practices for the development and implementation of strategic frameworks and early warning systems for enhanced disaster risk management, SLM, land restoration and resilience to drought.

28.   Upon the request of its Steering Committee, the IRP has continued its work on land and land restoration. Subsequent to its publication entitled, "Unlocking the Sustainable

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[23] Ibid, 8.

Potential of Land Resources – Evaluation Systems, Strategies and Tools",[24] the IRP and its Steering Committee developed a process to prepare a think piece on *Land Restoration for Achieving the SDGs*, with the aim of broadening understanding, exploring and underlining the links between land restoration and all SDGs. Chapter authors selected for this think piece responded to an open call from the IRP launched in early 2018. To implement decisions 18/COP.13 and 21/COP.13, the SPI was subsequently invited by the IRP to develop Chapter 3.15 on *Land Restoration for Achieving SDG 15*: Protect, restore and promote use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and biodiversity loss".

29.   The SPI addressed this need by identifying two members of the SPI, representatives of a developed and developing country[25] with expertise in LDN, land degradation and the SDGs, who were tasked in early 2018 with developing the chapter in accordance with the time frame and procedures set by the IRP, and under the leadership of members of the IRP and the UNEP.

30.   During the development of the chapter, the SPI considered recent relevant publications, as well as evidence emerging from the implementation of the Scientific Conceptual Framework for LDN[26] developed by the SPI, the GLO[27] report of the UNCCD, the *Checklist for Land Degradation Neutrality Transformative Projects and Programmes (LDN TPP)*[28] developed by the Global Mechanism (GM) of the UNCCD in collaboration with the UNCCD secretariat and in consultation with the Global Environment Facility (GEF), and from the *Assessment Report on Land Degradation and Restoration* of the IPBES, to also benefit from information provided by recent science-policy processes. The analysis of relevant documentation focused on exploring solutions to address land degradation, that is, opportunities for transformative change in the way human beings engage with this most fundamental resource.

31.   In Chapter 3.15 of the IRP think piece, the SPI highlights that land degradation is most efficiently and cost-effectively addressed by adopting a hierarchical response that prioritizes measures to avoid and to reduce land degradation, for instance through the use of SLM, and then aims to reverse degradation through restoration or rehabilitation. The chapter argues that: (a) restoration of degraded lands is integral to achieving all targets of SDG 15; (b) the avoidance and reduction of land degradation, together with land restoration, provides a clear pathway to achieving LDN (SDG target 15.3) while supporting the achievement of most of the other SDGs; and (c) a focus on sustainable management and restoration of the land base is the central tenet of a better and sustainable future, where poverty is reduced, food and water are secured, biodiversity is safeguarded, and sustainable livelihoods are promoted. In concert with the other chapters of the think piece, diverse reflections are provided for policymakers, academics and practitioners for the development of strategies to maximize the co-benefits of land restoration and rehabilitation for life on land by highlighting the risks, trade-offs and costs of land restoration and rehabilitation for the achievement of the 2030 Agenda for Sustainable Development and its associated goals.

32.   The SPI also contributed to Chapter 3.7 of the IRP think piece *Land Restoration for Achieving SDG 7: Ensure access to affordable, reliable, sustainable and modern energy for all*. This chapter highlights the opportunities for the production of biomass for energy on degraded land, for example, on contaminated land that is unsuitable for food production, thereby providing renewable energy without impacting food security, and generating a financial return to support land rehabilitation. It also describes how energy crops such as

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[24] <https://wedocs.unep.org/bitstream/handle/20.500.11822/7708/-Unlocking_the_sustainable_potential_of_land_resources_Evaluating_systems,_strategies_and_tools_Summary_for_policymakers-2016Unlocking_the_Sustainab.pdf?sequence=3&isAllowed=y>.

[25] The IRP recognizes that the perception of land is complex and varied and has thus purposely sought input from scientists and thinkers from around the world, to ensure that developed and developing country perspectives are represented in each chapter.

[26] Ibid, 19.

[27] <https://www.unccd.int/sites/default/files/documents/2017-09/GLO_Full_Report_low_res.pdf>.

[28] Experts serving on the Science-Policy Interface of the UNCCD have conducted a scientific review of the checklist. The list can be accessed at: <https://knowledge.unccd.int/knowledge-products-and-pillars/access-capacity-policy-support-technology-tools/checklist-land>.

perennial grasses can be used to manage soil erosion, reducing the risk of land degradation, and how the sustainable harvest of woodfuel and improved charcoal production can provide clean energy and reduce forest degradation.

33.   The *Land Restoration for Achieving the SDGs* think piece draws five general conclusions from the highly diverse chapters written in response to each of the first sixteen SDGs, which the SPI deems relevant to the UNCCD:

(a)   **Land restoration and rehabilitation may have significant co-benefits for all SDGs.** The SPI noted that, similarly to the IPBES *Land Degradation and Restoration Assessment*, this report intentionally considered all of the SDGs and did so by selecting authors from diverse disciplines and geographies to participate in the process. The observations and conclusions provided by these authors, while by no means exhaustive, provide hope and aspirations for investments in land restoration and rehabilitation across the globe;

(b)   **The extent of the restoration/rehabilitation co-benefits and potential risks and trade-offs vary widely among the SDGs.** The SPI noted that this conclusion confirms the need for integrated land use planning in SDG implementation and aligns with findings from the SPM *Assessment Report on Land Degradation and Restoration* and from the SPI report on Objective 1.2;

(c)   **The co-benefits of restoration and rehabilitation processes often differ greatly from those of the restored land and the relative benefit of each varies among the SDGs.** The SPI feels that this conclusion has significant implications in terms of how programmes and projects attempting to address land restoration or rehabilitation together with one or more other SDGs are both planned and financed: co-benefits of the restoration process (e.g. on poverty through incomes) are realized immediately, while the benefits of restored land and, to a lesser degree, rehabilitated land may require years or decades to be realized;

(d)   **A landscape approach, including targeting investments, is key to increasing the total return on land restoration and land rehabilitation investments.** The SPI notes that a landscape approach based on integrated socio-ecological systems,[29] integrated land use planning and integrated land management, as outlined in the LDN Conceptual Framework, is useful for optimizing returns on land restoration and land rehabilitation investments. A landscape approach facilitates targeting investments to those parts of the landscape that are most likely to respond, and where recovery is likely to persist; and

(e)   **Quantitative and qualitative modelling, including scenario development, at local to global scales can help guide future investments.** The think piece notes the potential challenges to realizing the potential synergies and co-benefits of the SDGs due to the extent to which development initiatives tend to be compartmentalized (e.g. even projects funded by the same government, government agency or donor can often be uncoordinated), restricting innovation, and leading to unnecessary trade-offs. In this regard, the SPI notes that scenarios included in the UNCCD's GLO[30] and the *IRP's Summary for Policy Makers Global Resources Outlook 2019*[31] are one example of the power of developing and applying integrated models to help structure and navigate the complexity of interacting factors that determine the extent to which co-benefits of restoration and rehabilitation will be realized.

34.   The SPI also noted that SDG 17 "Partnerships for the Goals", presented in Chapter 3.17 of the think piece, provides practical "lessons learned" over a lifetime of work in conservation and development, which emphasize the point that while there is much to be learnt, there is also a solid foundation of good practices on which all actors engaged in land

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[29] A socio-ecological system context presupposes that promoting and maintaining well-functioning land ecosystems depends not only on politically-driven initiatives to avoid, reduce and/or reverse land degradation, but also requires land managers/institutions to ensure humans relate to, care for, and value ecosystems through the efficient allocation of rights and privileges across time and locations. See <https://doi.org/10.1016/j.envsci.2018.07.003>.

[30] Ibid, 28.

[31] <https://www.resourcepanel.org/reports/global-resources-outlook>.

restoration and rehabilitation can build, together. The SPI recognized that one of the challenges of maximizing the benefits of major restoration and rehabilitation initiatives around the world is the limited coordinated communication among them, and lack of cohesion in the underlying principles and standards which guide their implementation. Partnerships among these initiatives and their collaboration with organizations, such as the Society for Ecological Restoration, which developed and published principles and standards in 2016 and which have launched an open, consultative process to refine them,[32] are essential.

IV.   Conclusions and recommendations

35.   **The SPI drew six main conclusions from the two IPBES assessments and the IRP think piece which are relevant to UNCCD efforts to avoid, reduce and reverse land degradation, sustain livelihoods, ensure ecosystem service delivery and safeguard biodiversity, thus supporting national aspirations to achieve the SDGs by 2030. These include:**

(a)   *Conclusion 1:* **As the pace of negative land transformation accelerates, it is necessary to safeguard biodiversity, ecosystem services and livelihoods in a holistic, integrated and strategic way. This will require:**

(i)   **The recognition that governance of LDN is a critical element. Suitable policies should thus be enacted to support the implementation of LDN through a common national vision on the interlinkage between LDN interventions (SLM and land rehabilitation/restoration) and the conservation/preservation of biodiversity;**

(ii)   **The integration of land use planning across sectors, ensuring synergistic regional, subregional, national, subnational and local-level actions between LDN, which safeguard biodiversity, ecosystem services, and livelihoods;**

(iii)   **The systematic incorporation of indigenous and local knowledge by including indigenous peoples and local communities alongside experts and other knowledge holders in the planning and implementation of LDN in order to safeguard biodiversity, ecosystem services, and livelihoods;**

(iv)   **The development of national policy frameworks with associated policy procedures that include incentives for land users, production systems and consumption patterns to ensure that land users invest over the long term in SLM practices and the replication of successful experiences;**

(v)   **The recognition that the role women and youth play in ensuring effective management of land is fundamental to providing policies that ensure integrated land use planning to safeguard biodiversity, ecosystem services, and livelihoods;**

(vi)   **The development of national policies that provide effective regulatory measures that link the impact of global biodiversity loss and the signal of land degradation based on scientific foundations and indigenous and local knowledge; and**

(vii)   **Greater emphasis on the LDN hierarchy of Avoid > Reduce > Reverse land degradation, particularly on measures to avoid land degradation;**

(b)   *Conclusion 2:* **National, subregional, and regional capacities must be developed to assess land potential in order to facilitate choices which encourage better land use practices that support the achievement of LDN. This will require:**

(i)   **Recognition that land degradation is driven by global drivers and that there is no one-size-fits all solution to responses at the national, subregional, and regional level;**

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[32] <https://www.ser.org/page/SERStandards/International-Standards-for-the-Practice-of-Ecological-Restoration.htm>.

(ii)   Recognition that local-level land degradation interventions only implemented at local scale risk being implemented in a manner disconnected from drivers and pressures that emerge from market forces at national and global levels;

(iii)   Recognition that the fundamental potential of land differs with geographies, affecting the outcomes of restoration and rehabilitation measures. This makes it critical to assess land potential as part of integrated land use planning prior to any investment;

(iv)   The development of national capacities for assessing and monitoring land potential will require multi-institutional partnerships (e.g. universities and government agencies) and investments in infrastructure that leverage the use of globally available facilities (e.g. computational and analytical) and products and technologies (e.g. earth observation, and geomatics, blockchain technologies);[33]

(v)   The development of country-specific approaches to deliver solutions to land degradation problems, recognizing that there is local variability not only in the land base but in the value to society of effectively functioning land, and that the wealth of information from indigenous and local knowledge systems will be central to maintaining that value to society;

(vi)   Recognition that women are the primary stewards of the global land base, thus supporting the role of women in assessing and monitoring land potential which will be critical to meeting LDN goals; and

(vii)   Embracing a regional approach to support country efforts to develop their own capacities to assess and monitor land potential, which requires knowledge on how to understand and use indicators, develop data banks for policy-making, and develop capacities to evaluate the status, trends and progress toward LDN;

(c)   *Conclusion 3:* Achieving LDN can be enhanced through sustainable consumption and production flows, patterns, and practices if the existing mechanisms to collect, compile, and share information are integrated so that the flows of consumption are linked to the land which produces what is being consumed. This will require:

(i)   Recognition that sustainable flows of consumption and production chains, patterns, and practices, through the low per-capita consumption patterns, and low- and renewable energy-based housing, transportation and industrial systems can contribute to achieving LDN at regional, subregional, national, subnational and local level;

(ii)   Recognition that advances in how consumption and production flows and land's status can be measured and monitored offers an opportunity for policymakers because what can be measured and monitored can be managed more sustainably;

(iii)   The integration of work on SDG target 15.3 and SDG target 12.8 which seeks to ensure that people around the world have the information and knowledge relevant to sustainable development and lifestyles in harmony with nature;

(iv)   The development and use of the different mechanisms to collect, compile, and share information for awareness-raising on the benefits of achieving LDN through the monitoring of SDG target 15.3 and the synergies to be realized with the measurement of the indicators of SDG target 12.8, which are the material footprint per capita, domestic material consumption per capita and domestic material consumption per GDP; and

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[33]   <http://stapgef.org/sites/default/files/publications/STAP%20report%20on%20Novel%20Entities%20-%20web.pdf>.

(v)   The promotion of educational policies, education for global citizenship, education for sustainable development and indigenous and local knowledge in LDN activities that offer alternative options and livelihoods for all sectors and groups of society, including the empowerment of women;

(d)   *Conclusion 4:* Global momentum towards reversing land degradation could be increased through greater communication and knowledge sharing among major restoration and rehabilitation initiatives that have been launched around the world, something that could be accomplished by:

(i)   The development of a mechanism to strengthen communication among these major initiatives to overcome current limitations in institutional knowledge sharing on the scope, spatial extent and status of ongoing restoration and rehabilitation measures;

(ii)   The compilation of the spatial extent and status of restoration and rehabilitation activities worldwide and the sharing of lessons learned and success stories emerging from interventions that consider land as integrated socio-ecological systems; and

(iii)   The promotion of concerted action for addressing human, technological and financial capacity-building needs in order to promote further actions for land restoration and rehabilitation;

(e)   *Conclusion 5:* A minimum set of guiding principles would help ensure that restoration and rehabilitation initiatives worldwide strive to achieve a minimum set of socio-ecological benefits addressing a common set of criteria as result of sound restoration and rehabilitation measures, which in turn may lead to greater cohesion between major restoration and rehabilitations initiatives and foster collaborative dialogue for more coordinated action; and

(f)   *Conclusion 6:* Improving the potential to achieve co-benefits in restoration and rehabilitation initiatives requires an understanding of actual or potential trade-offs that can emerge and the means to navigate those trade-offs. This challenge is fully documented in ICCD/COP(14)/CST2, while an approach for addressing it is documented in ICCD/COP(14)/6.

36.   Parties at CST 14, with a view to preparing a draft decision on future reporting for the COP, may wish to consider these conclusions and the following policy-oriented recommendations:

(a)   *Recommendation 1:* Encourage country Parties to incorporate LDN into policy and planning across sectors in an integrated way to safeguard biodiversity, ecosystem services, and livelihoods, by:

(i)   Raising awareness and encouraging advocacy of the positive benefits of LDN to achieve SDGs across multiple sectors;

(ii)   Enhancing institutional capacities and knowledge in and across relevant sectors to mainstream and implement LDN at subnational, national, subregional, and regional levels;

(iii)   Encouraging national focal points of the UNCCD, CBD and UNFCCC, as well as the national statistics offices responsible for the SDGs and the focal points of other relevant multilateral environmental agreements, to support coordinated activities to implement LDN measures;

(iv)   Encouraging broad stakeholder participation, involving land managers, including indigenous peoples and local communities, as well as experts and other knowledge holders in policy, planning and implementation of LDN; and

(v)   Also encouraging country Parties to document and report on all three levels of the LDN response hierarchy, particularly measures to avoid land degradation;

(b) *Recommendation 2:* Encourage country Parties in partnership with relevant technical and financial partners to develop national, subregional, and regional capacities for assessing land potential in order to facilitate choices which encourage better land use practices that support the achievement of LDN, by:

(i) Inviting the IRP and the Scientific and Technical Advisory Panel of the GEF to work with the SPI to develop guidance on the assessment and monitoring of land potential that is scientifically-based and aligned with LDN guidance;

(ii) Encouraging the incorporation of existing data and information, including different knowledge systems, into land use planning processes at all levels that support the achievement of LDN;

(iii) Strengthening, as appropriate, national and regional capacities to undertake assessments of land potential that take into account both scientific and indigenous and local knowledge to implement LDN; and

(iv) Encouraging North-South, South-South and Triangular cooperation that supports technology, scientific, indigenous and local knowledge and other capacities to achieve LDN;

(c) *Recommendation 3:* Enhance the potential to achieve LDN by systematically linking the flows of consumption to the land that produces what is being consumed, which would involve:

(i) Collecting, compiling and sharing information for awareness-raising on how the benefits of achieving LDN can be enhanced through sustainable consumption and production flows, patterns, practices and technologies;

(ii) Encouraging country Parties to identify mechanisms to minimize adverse economic, social and environmental impacts leading to land degradation in other country Parties;

(iii) Empowering women to make choices based on informed decisions on SLM and consumption patterns through adequate access to information;

(iv) Raising awareness in urban and peri-urban settings on how consumption patterns impact land from local to global levels to facilitate informed choices on consumption;

(v) Identifying mechanisms to reduce food waste and loss through the entire production and distribution chain, recognizing the importance and diversity of indigenous and local knowledge, including practices;

(vi) Encouraging continued efforts to address unsustainable woodfuel usage which leads to deforestation and human health impacts; and

(vii) Requesting the secretariat to update the list of drivers and indirect drivers of land degradation listed in UNCCD reporting templates to reflect those listed in tables 1 and 2 in order to reflect the influence of consumption and production patterns and flows;

(d) *Recommendation 4:* Catalyse global momentum towards reversing land degradation by encouraging greater communication and knowledge sharing among the major restoration and rehabilitation initiatives that have been launched around the world, which can be accomplished by:

(i) Inviting relevant technical partners and the IRP and requesting the secretariat and the GM to explore options for a mechanism that could ensure meaningful collaboration among major restoration and rehabilitation initiatives worldwide, facilitate comprehensive communication on the impact of these measures to reverse land degradation taking into consideration socio-ecological systems and identify needs and required capacities for targeted actions; and

(ii) Requesting the secretariat to explore enhancing UNCCD reporting through the compilation of the spatial extent and status of restoration and rehabilitation activities worldwide, and the sharing of lessons learned and

success stories emerging from interventions that consider land as integrated socio-ecological systems; and

(e)   *Recommendation 5:* **Invite relevant organizations such as the Society for Ecological Restoration and request the SPI to collaborate in ensuring that a minimum set of principles be developed to guide restoration and rehabilitation initiatives worldwide for achieving a minimum set of common socio-ecological benefits from restoration and rehabilitation measures, ensuring that these principles are aligned with the principles set out in the Scientific Conceptual Framework for LDN** [34] **and the Voluntary Guidelines on the Responsible Governance of Tenure of Land.** [35]

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[34] Ibid, 19.
[35] <http://www.fao.org/3/a-i2801e.pdf>.