

Research supporting development



ELYX 87/24K

17 GOALS FOR A SUSTAINABLE FUTURE

French National Research
Institute for Sustainable
Development



Institut de Recherche
pour le Développement
FRANCE

17 GOALS FOR A SUSTAINABLE FUTURE

*Sustainable development is defined as
“development that meets the needs of the
present without compromising the ability of future
generations to meet their own needs”.*

Gro Harlem Brundtland, 1987

In 2015, at the UN General Assembly, 193 countries adopted the 17 Sustainable Development Goals (SDGs). Their ambition is to transform the world in which we live by 2030. Each country is free to apply and adapt them in accordance with the local situation if they wish. Although not legally binding, the signatory countries have accepted a moral obligation to implement this programme.

Universality

These are universal goals which involve the entire world, developed and developing countries alike.

Legitimacy

They have been devised using a participative approach and following consultation in order to guarantee their legitimacy.

Scope

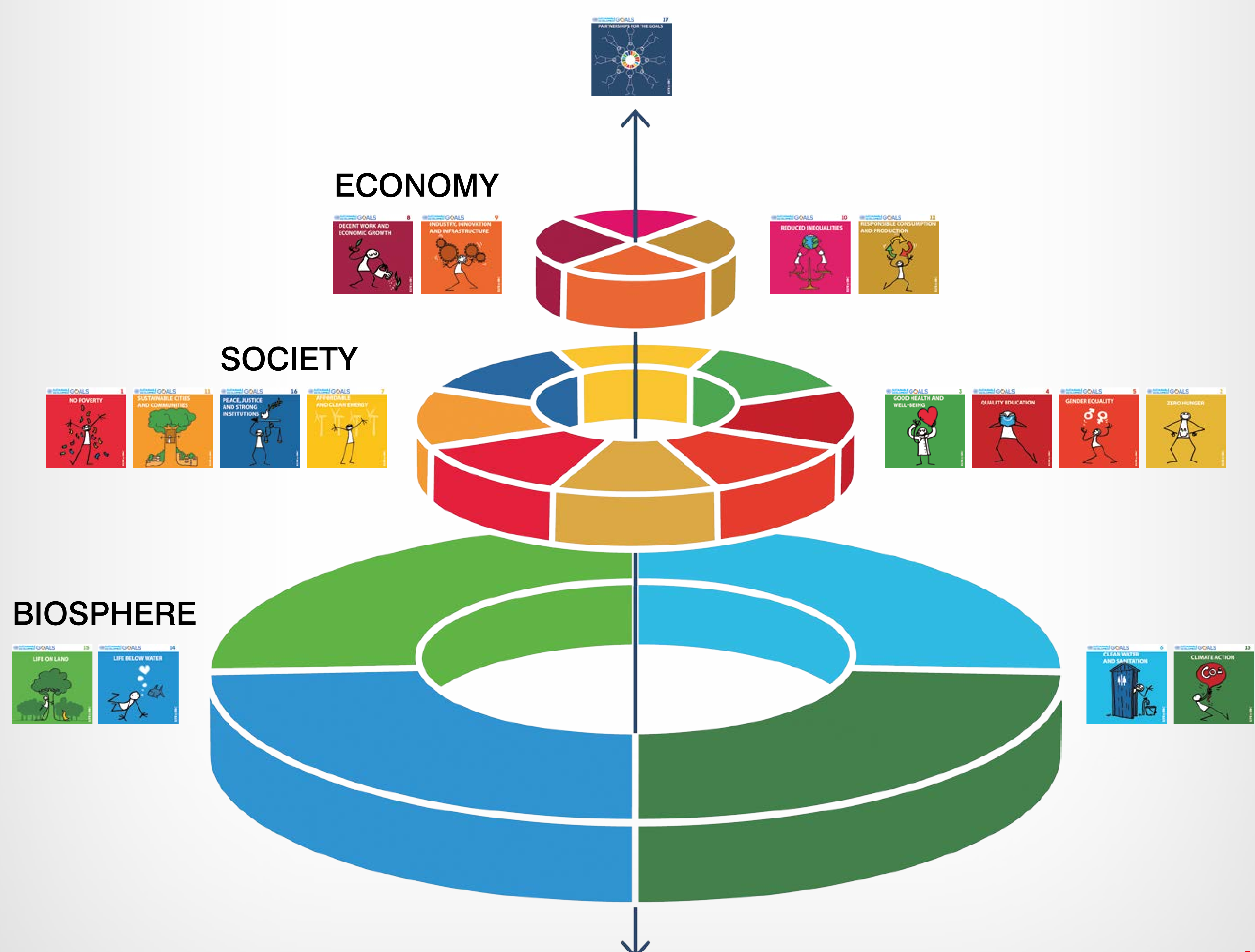
The SDGs cover the economy, social development, environmental protection, governance with topics such as energy, production, consumption, the world's oceans, the fight to reduce inequality, peace, etc.

Interdependence

The SDGs are integrated and indivisible and balance the three dimensions of sustainable development: the economic, social and environmental -including governance aspects.

Ambition

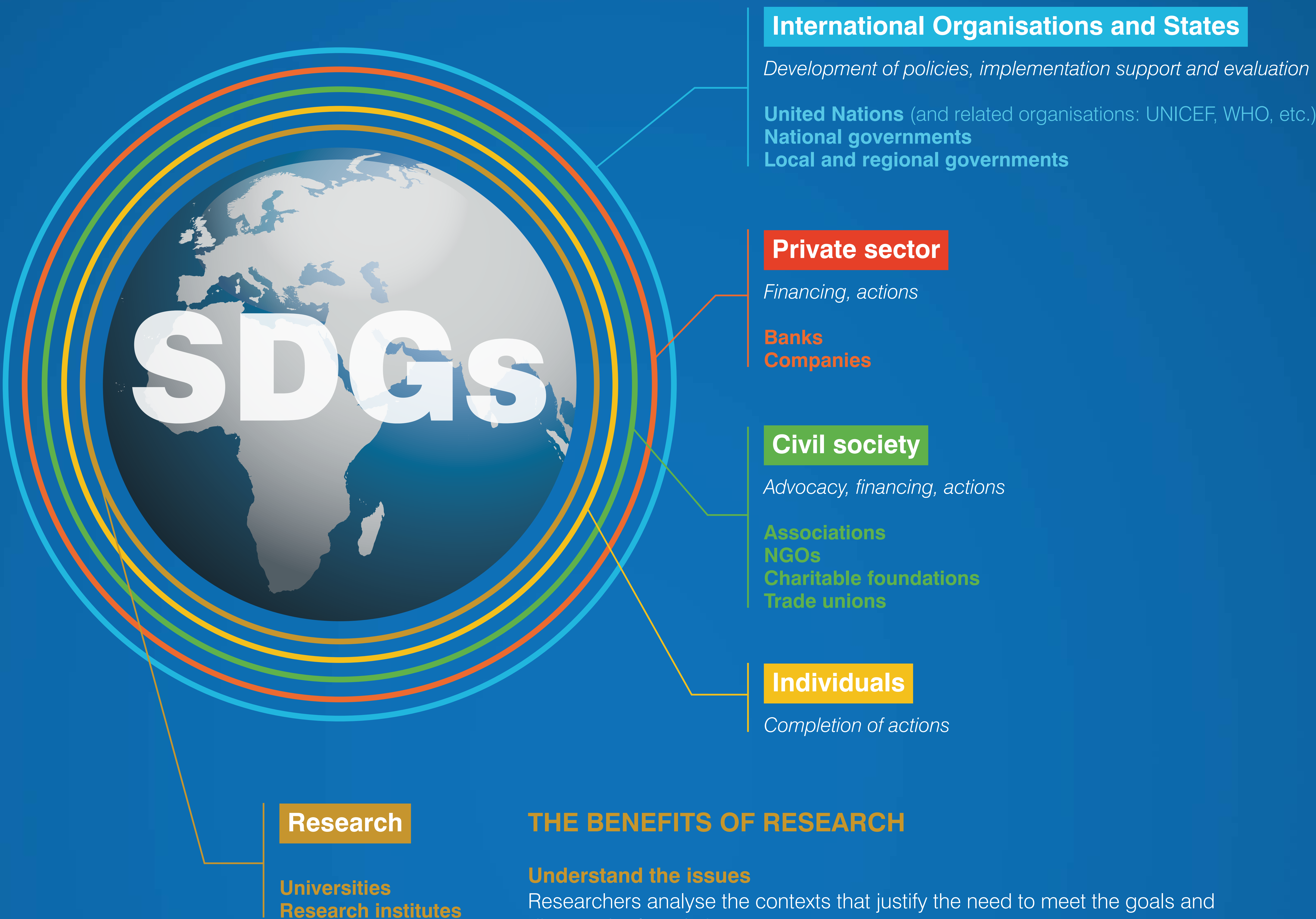
The SDGs are intended to be ambitious by seeking, for example, to end poverty and hunger in the world by 2030.



Source: Stockholm Resilience Centre (Johan Rockström and Pavan Sukhdev)

THE SUSTAINABLE DEVELOPMENT GOALS (SDGs): **WHO DOES WHAT?**

The SDGs involve a large number of actors at all levels – local, regional, national and global:



THE BENEFITS OF RESEARCH

- Understand the issues**
Researchers analyse the contexts that justify the need to meet the goals and discuss the foundations.
- Produce data**
Scientists collect data that can be used in particular to evaluate progress on goals.
- Provide innovative solutions**
Research provides knowledge, new technologies and innovations suitable for supporting our societies and economies in achieving the SDGs.
- Inform and mobilize support from actors**
The outcomes and solutions proposed by research provide the various actors with a shared basis for discussions aimed at achieving the Sustainable Development Goals.

It always seems impossible until it's done.

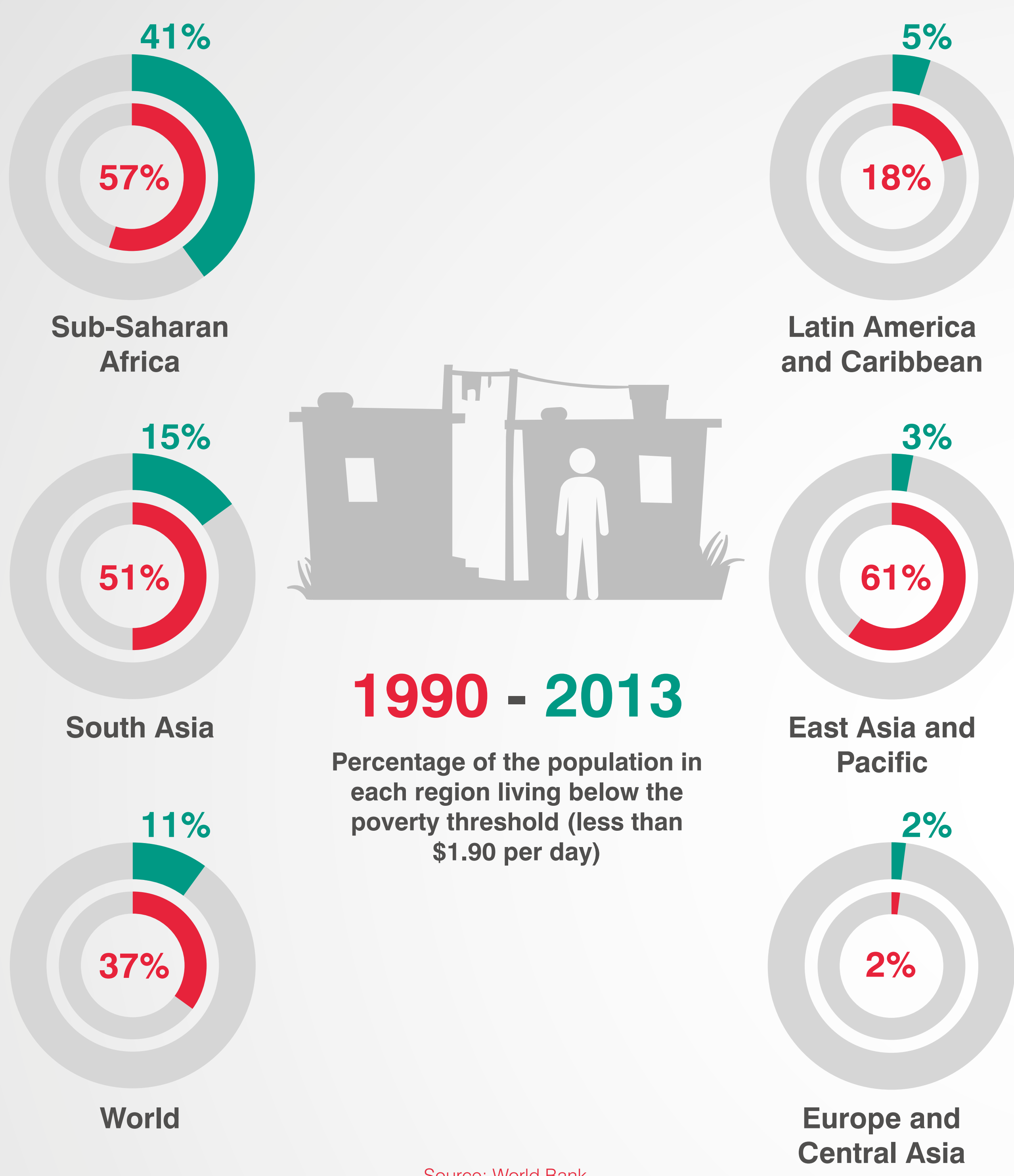
Nelson Mandela



NO POVERTY

In the last quarter of a century, the number of people living in extreme poverty has been cut by more than half, going from 1.9 billion in 1990 to 836 million in 2015. Despite this progress, one in eight people, mainly in developing regions, still live in extreme poverty. However, poverty is more than just a lack of income and resources. Its manifestations include hunger and malnutrition, limited access to education, healthcare services and social welfare, discrimination and exclusion, etc. Researchers strive to understand the causes so that policies aimed at reducing poverty are more effectively targeted. Furthermore, new threats are appearing (climate change, wars, etc.) and the poorest populations (isolated groups, minorities and migrants) are often more difficult to reach. Scientists work in to improving their knowledge of the characteristics of these groups, understand the limits of current policies and propose new forms of intervention.

Changes in extreme poverty



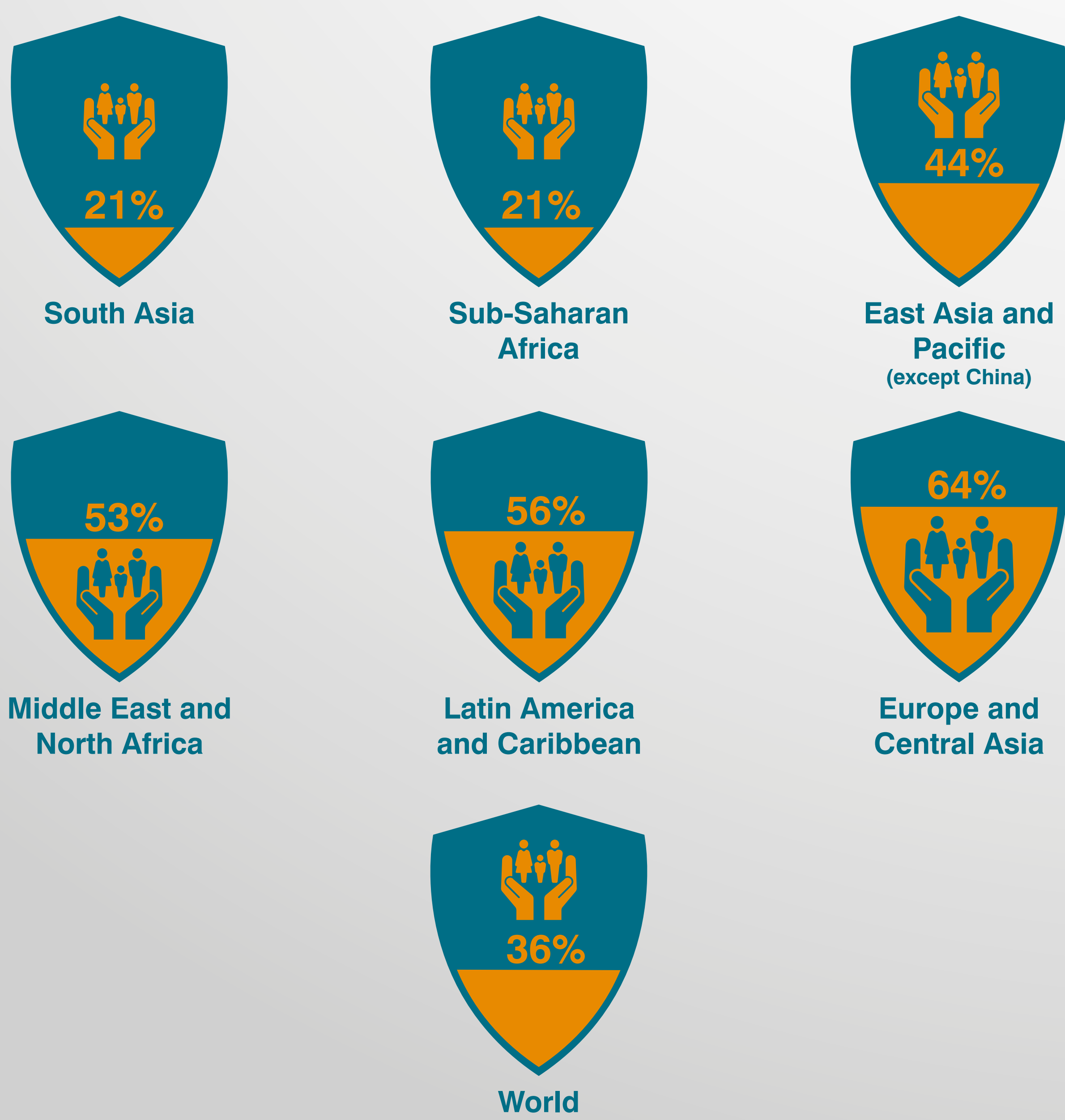
Source: World Bank

Poverty around the world



Source: World Bank

Social welfare



Portion of the population, by region, with at least one social welfare programme in 2015

Source: FAO

Multi-dimensional poverty

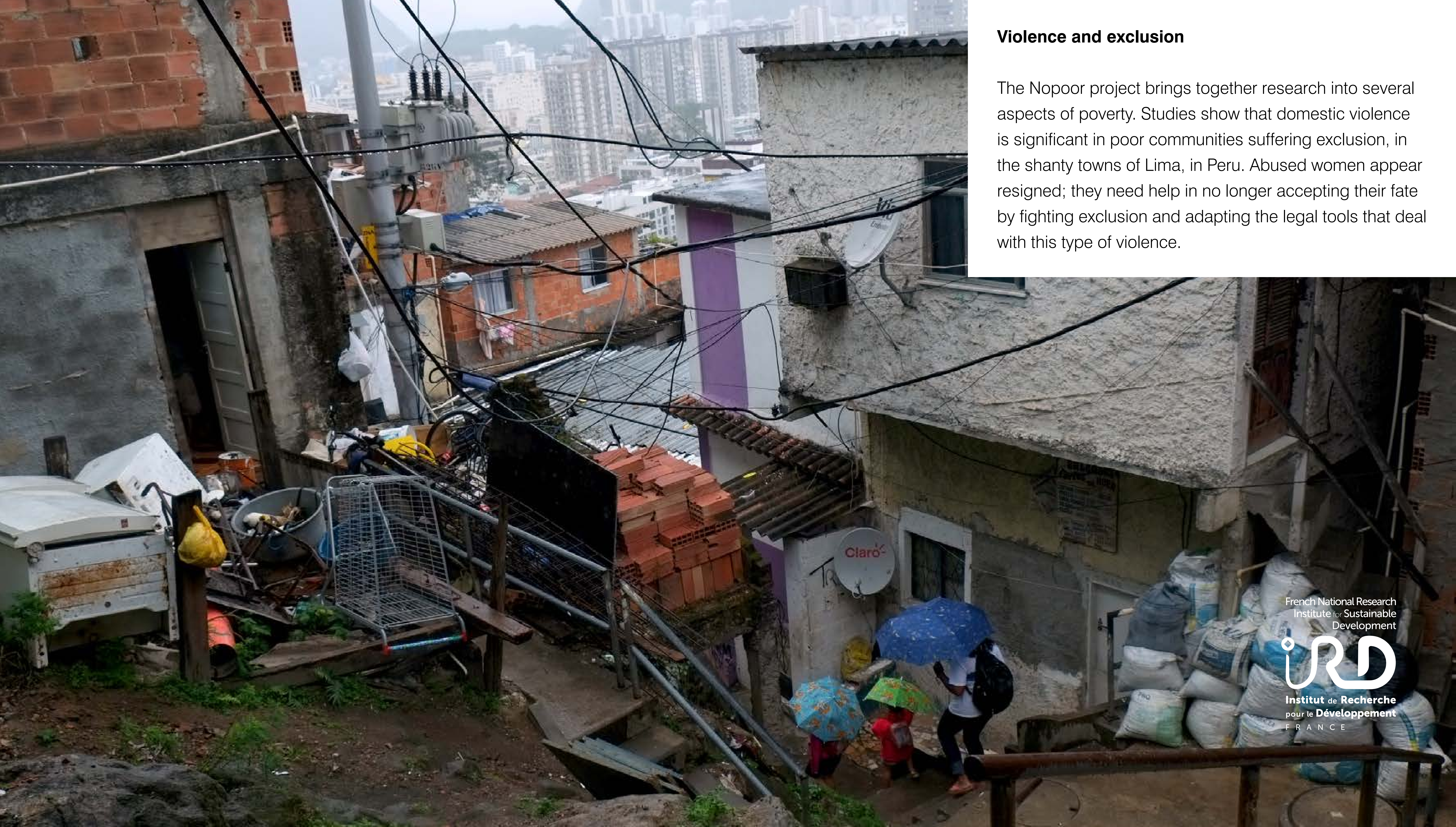


Multidimensional poverty takes into account 10 criteria, such as access to education, healthcare, electricity, drinking water, sanitation, information, mobility, etc. A person is considered to be living in multidimensional poverty if he/she is deprived of more than a third of these "basic services". These people are not necessarily suffering from income poverty.

Source: UN, Human Development Report 2015. Data: 2000 to 2012.

Violence and exclusion

The Nopoor project brings together research into several aspects of poverty. Studies show that domestic violence is significant in poor communities suffering exclusion, in the shanty towns of Lima, in Peru. Abused women appear resigned; they need help in no longer accepting their fate by fighting exclusion and adapting the legal tools that deal with this type of violence.

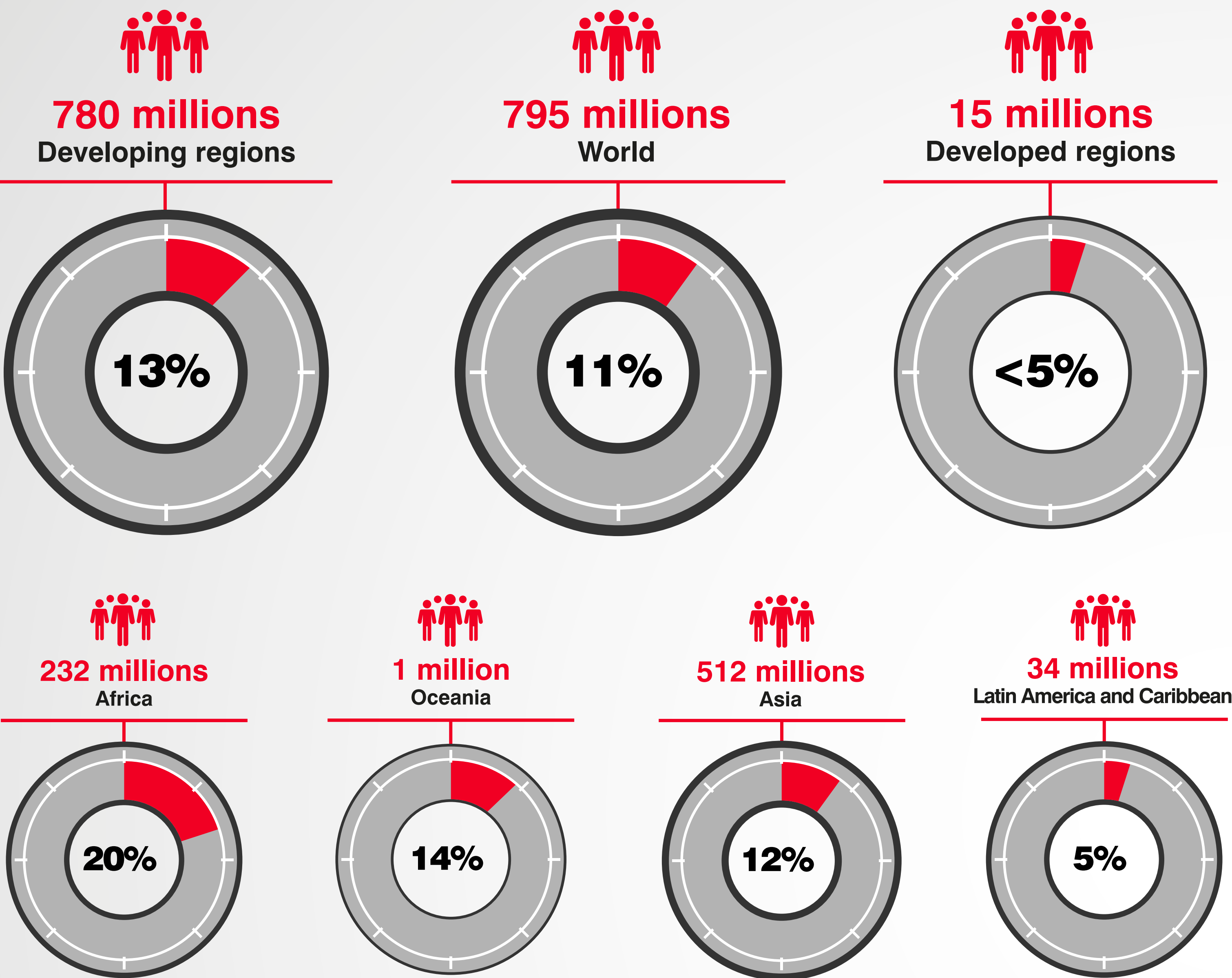




ZERO HUNGER

Almost 800 million people are chronically malnourished. In other words, they do not have sufficient intake of food to provide the energy required for a healthy, active life. More than two billion people are undernourished. Women and children are disproportionately affected. Researchers are working to highlight the causes of the various forms of malnutrition to define, apply and evaluate sustainable solutions at various levels, from local to international. There are many proposed solutions: improved nutritional value of food, especially of traditional foodstuffs, enrichment of foods with micronutrients, promotion of food diversification linked to agricultural production more geared to producing healthy, balanced food, support for public policies (fight against poverty, economic, agricultural and public health measures, educational policies), etc.

Under-nourishment in the world

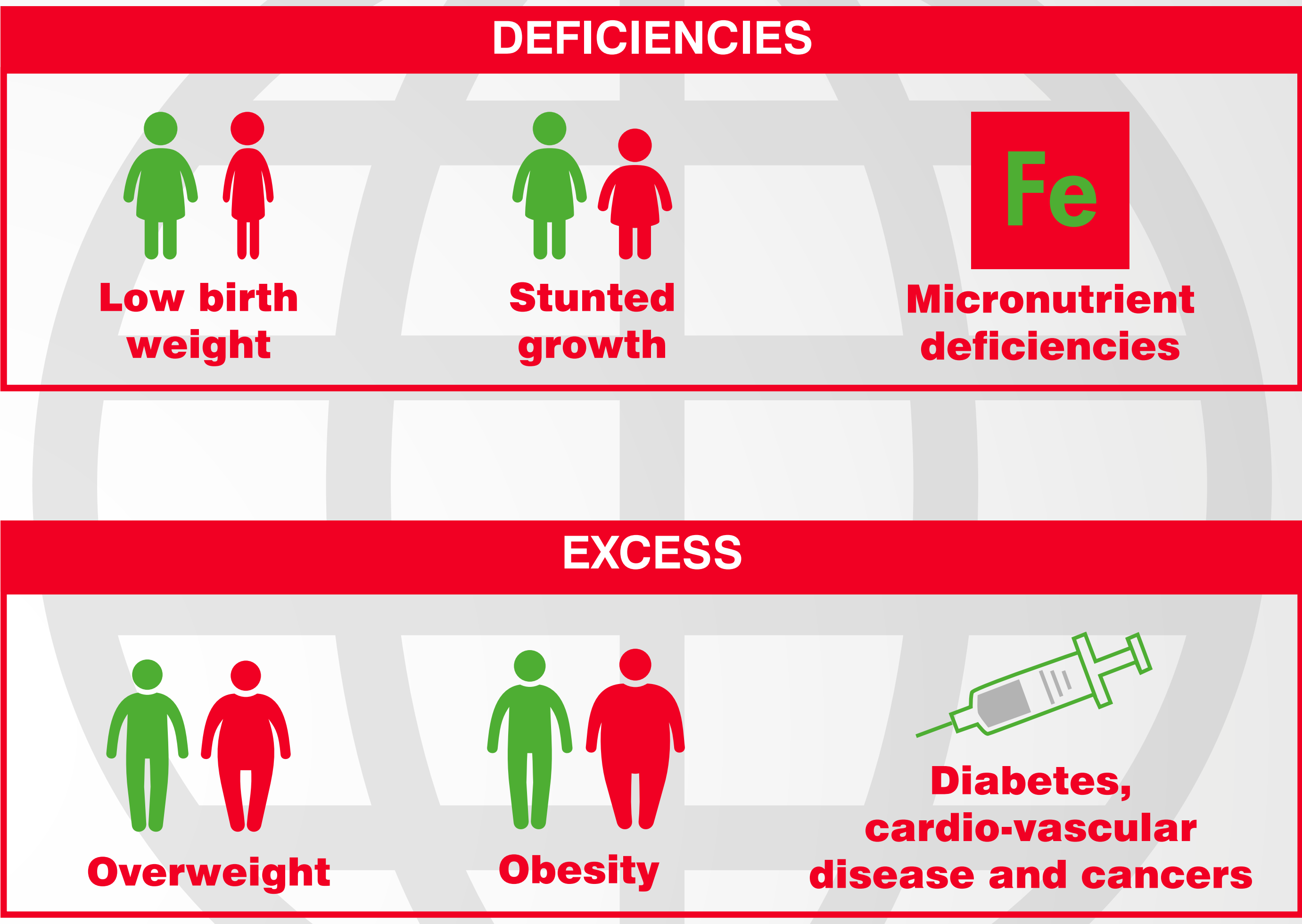


In % of the population in the regions

Source: FAO 2015

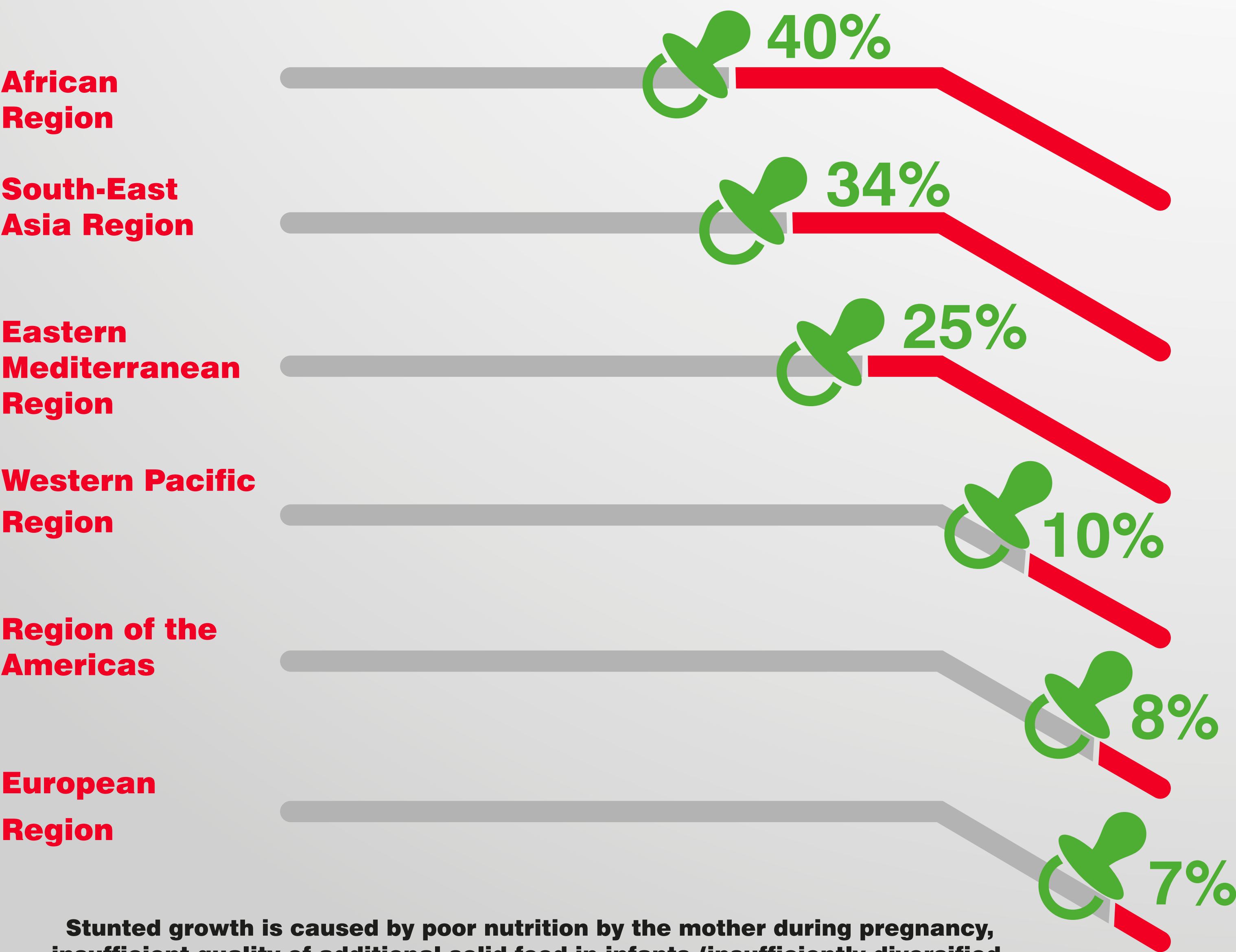
Malnutrition

MALNUTRITION AFFECTS MORE THAN TWO BILLION PEOPLE



Source: Global nutrition report 2016

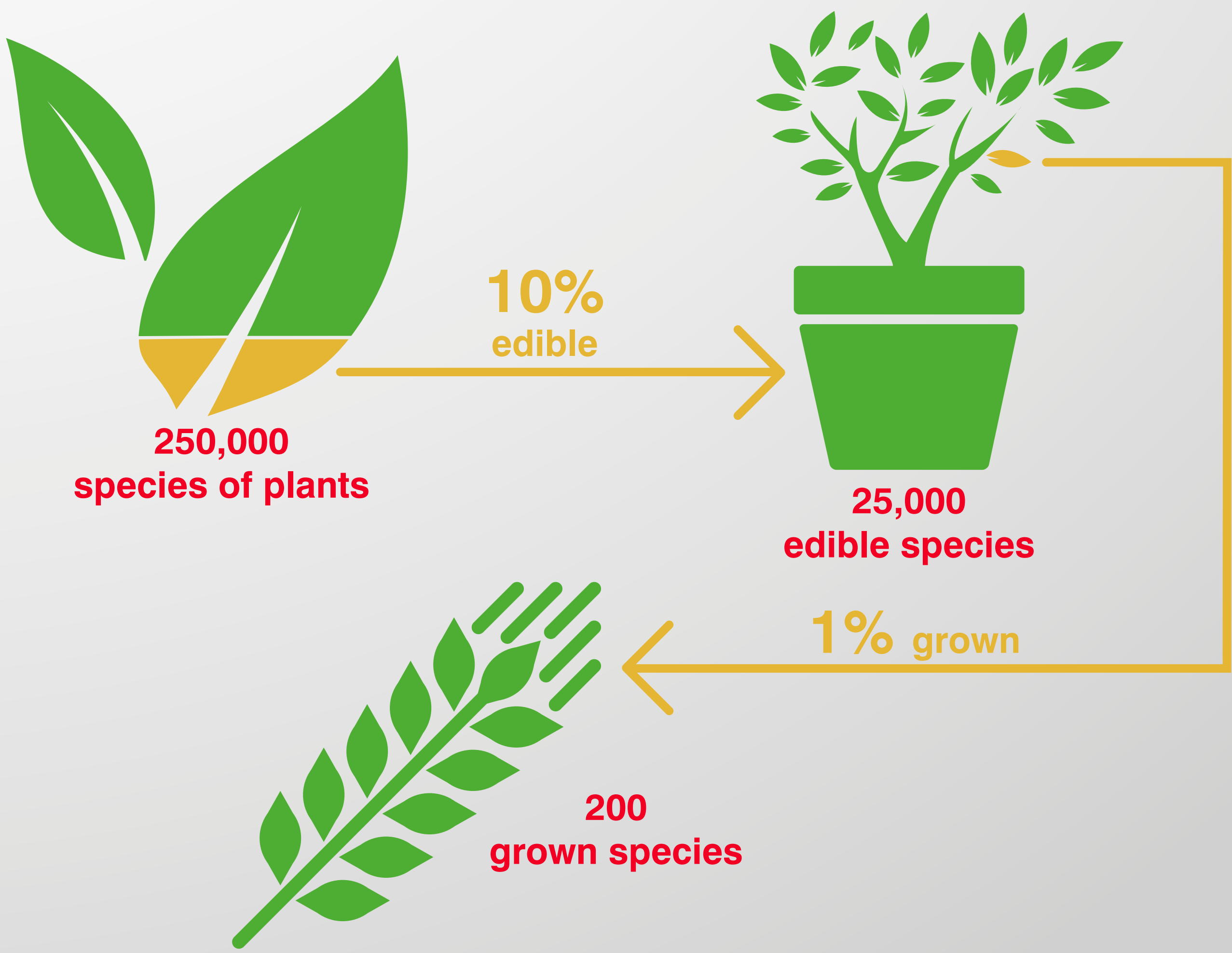
Proportion of children under five suffering from stunted growth



Stunted growth is caused by poor nutrition by the mother during pregnancy, insufficient quality of additional solid food in infants (insufficiently diversified, micronutrient deficiencies), repeated infections related to poor hygiene in their surroundings and insufficient access to healthcare services. Stunt growth often jeopardizes the long-term physical and mental development of the children, thus perpetuating malnutrition and poverty.

Source: WHO 2014 report, 2012 data

Genetic diversity of crops plays a crucial role in food safety



Only three species (rice, corn and wheat) provide 60% of the kilocalories and vegetable proteins consumed in the world.



Deficiencies

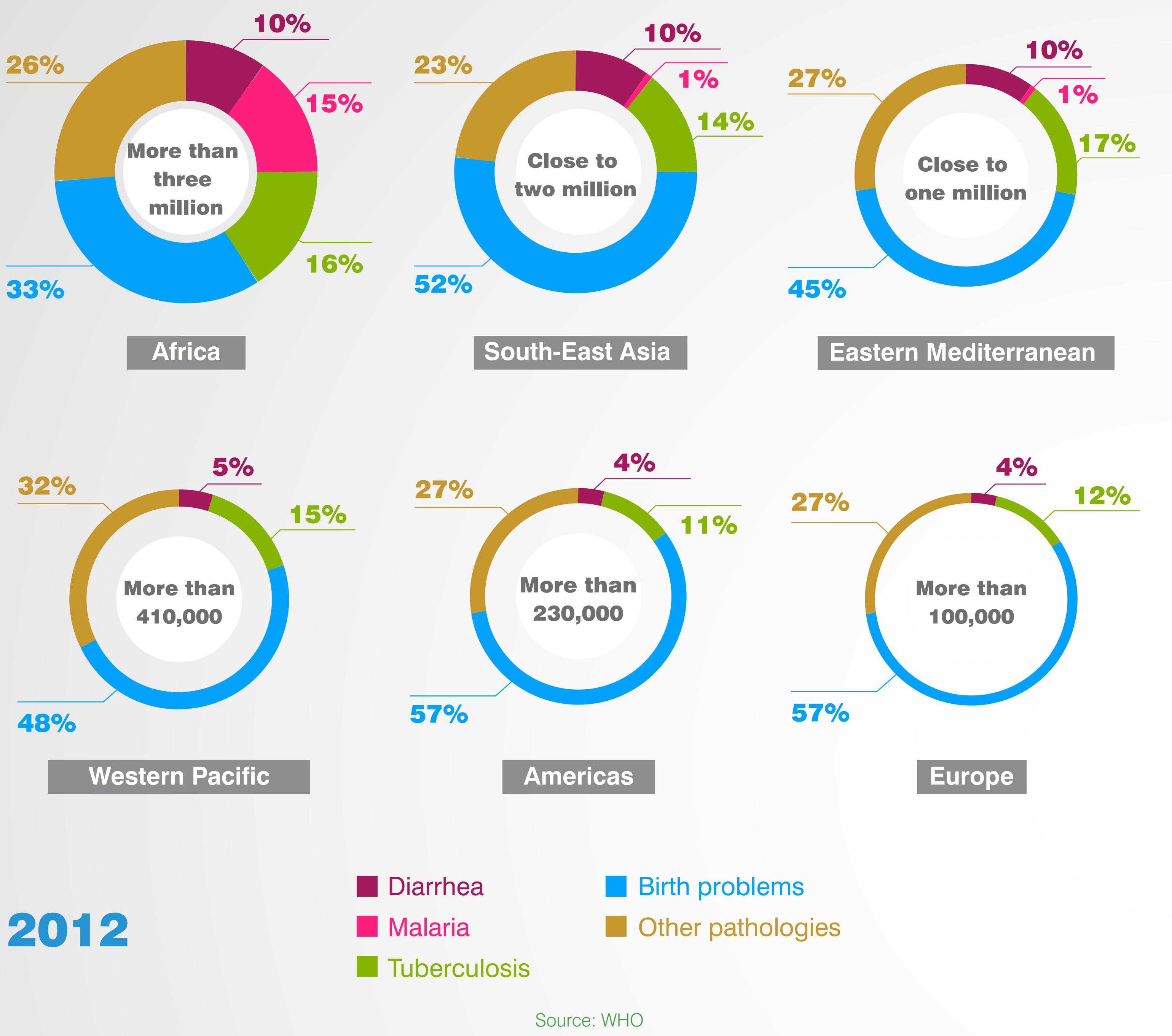
In Vietnam, researchers have shown that many women and children only consume 1% of the recommended intake of vitamin D and 40% of those for calcium. These deficiencies affect the development of bone tissue in young children and lead to chronic illnesses in adults (osteoporosis, cardio-vascular diseases). These results highlight the urgency of implementing measures aimed at improving nutrition.



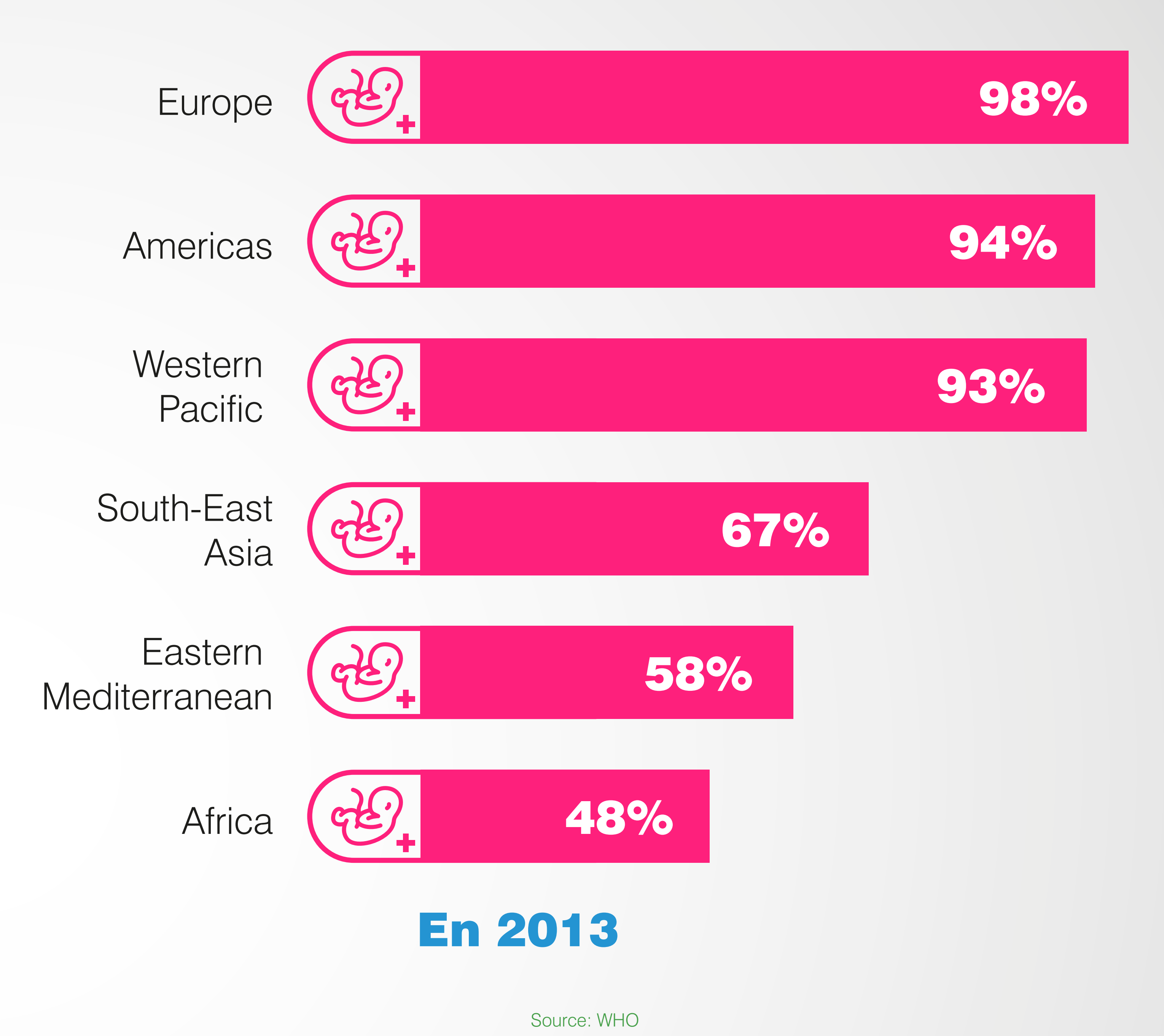
GOOD HEALTH AND WELL-BEING

Health is a universal right. Ensuring healthy lives and promoting the well-being for all at all ages is essential to sustainable development. In recent years, significant steps have been taken in increasing access to clean water and sanitation, reducing malaria, tuberculosis and the spread of HIV/AIDS. However, in order to keep making progress, epidemiological, socio-economic, demographic and environmental data is still missing, especially in developing countries. Researchers are focusing their efforts, in particular, on studying the impact of environmental changes on the distribution of diseases and the organisms that transmit them (insects and mites). Scientists are also trying to better understand the behaviour of populations regarding prevention and healthcare, they also analyze food habits that may or may not lead to better health and strive to develop new medicines and vaccines.

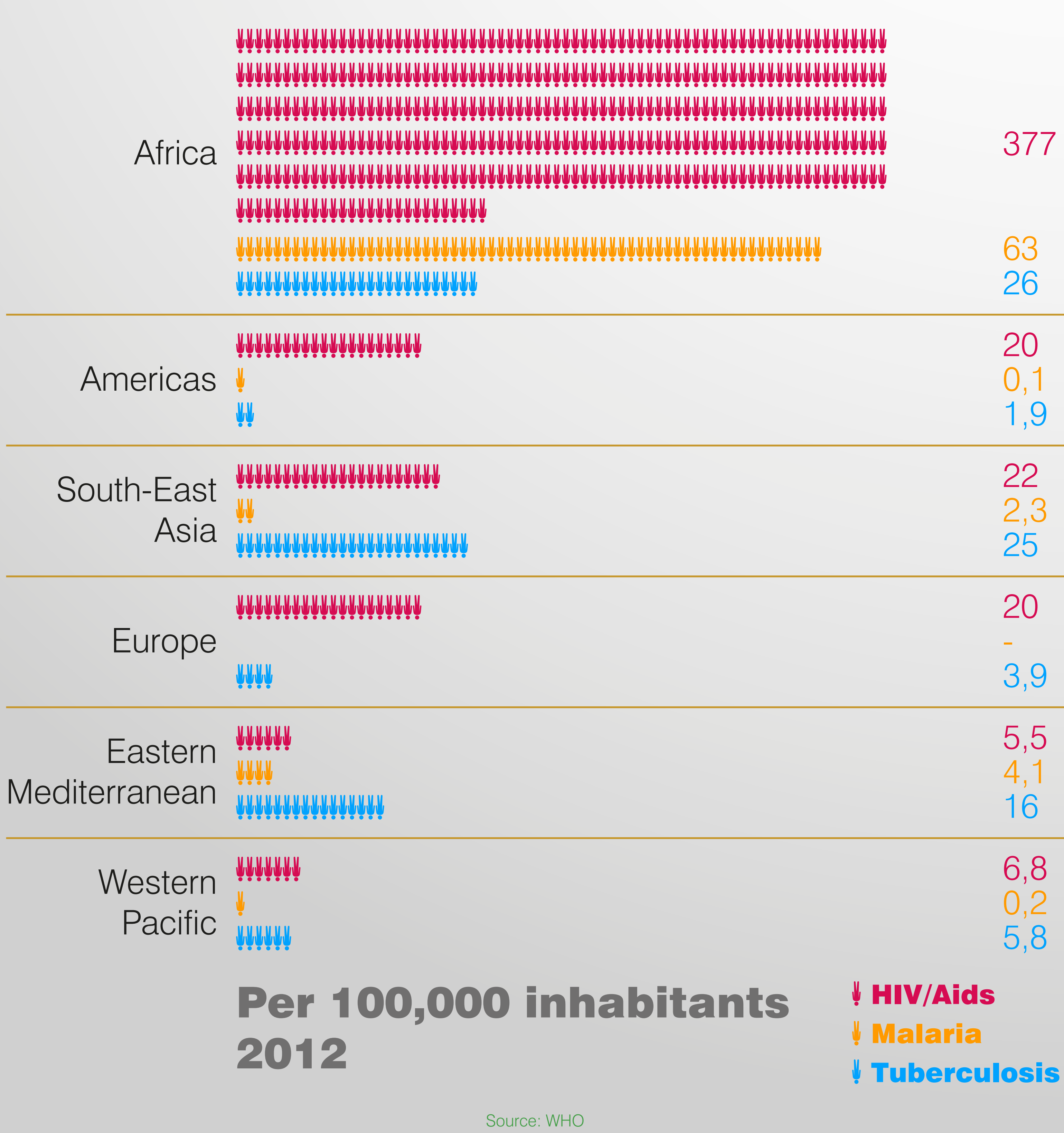
Mortality among children under five years old



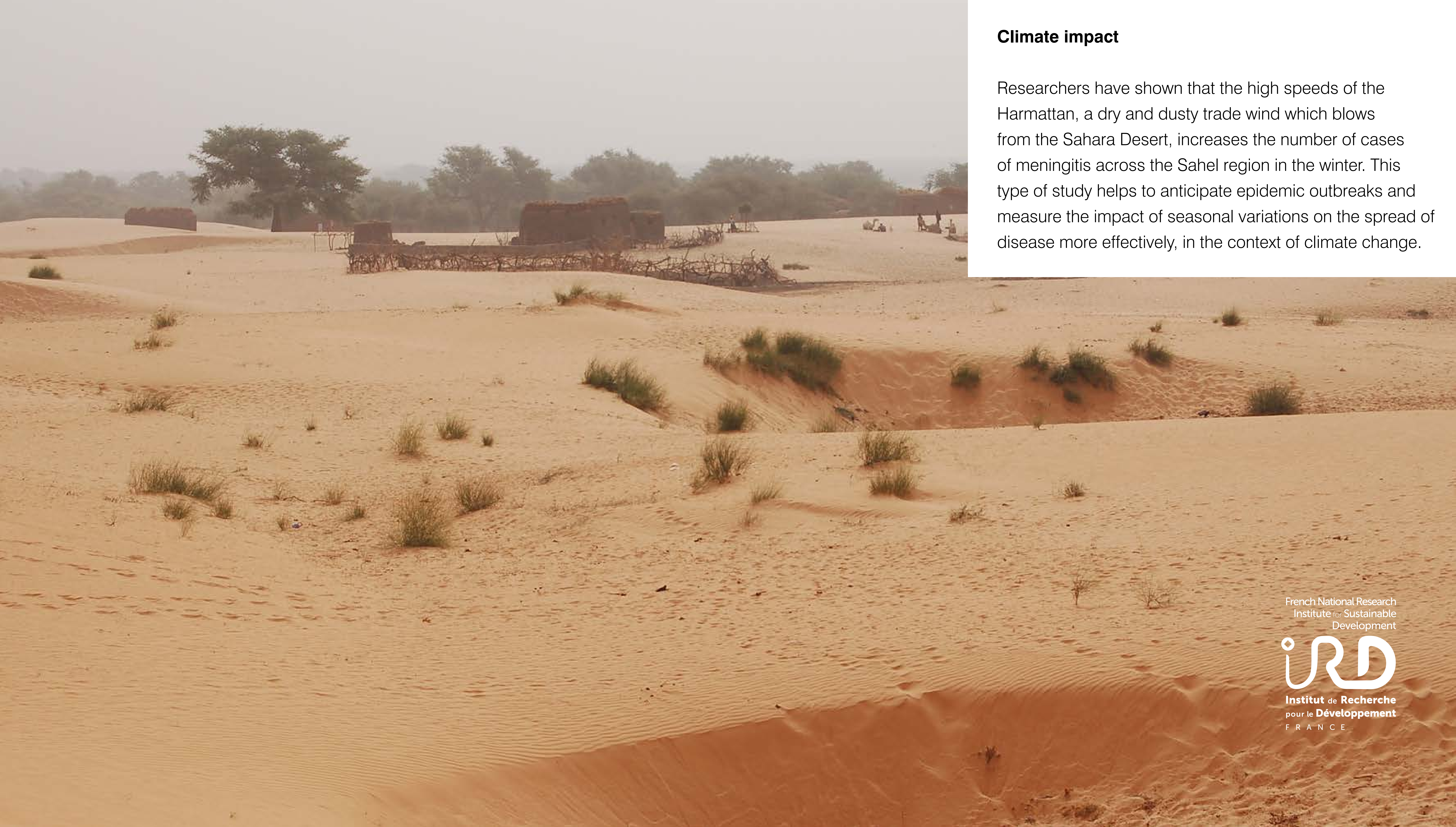
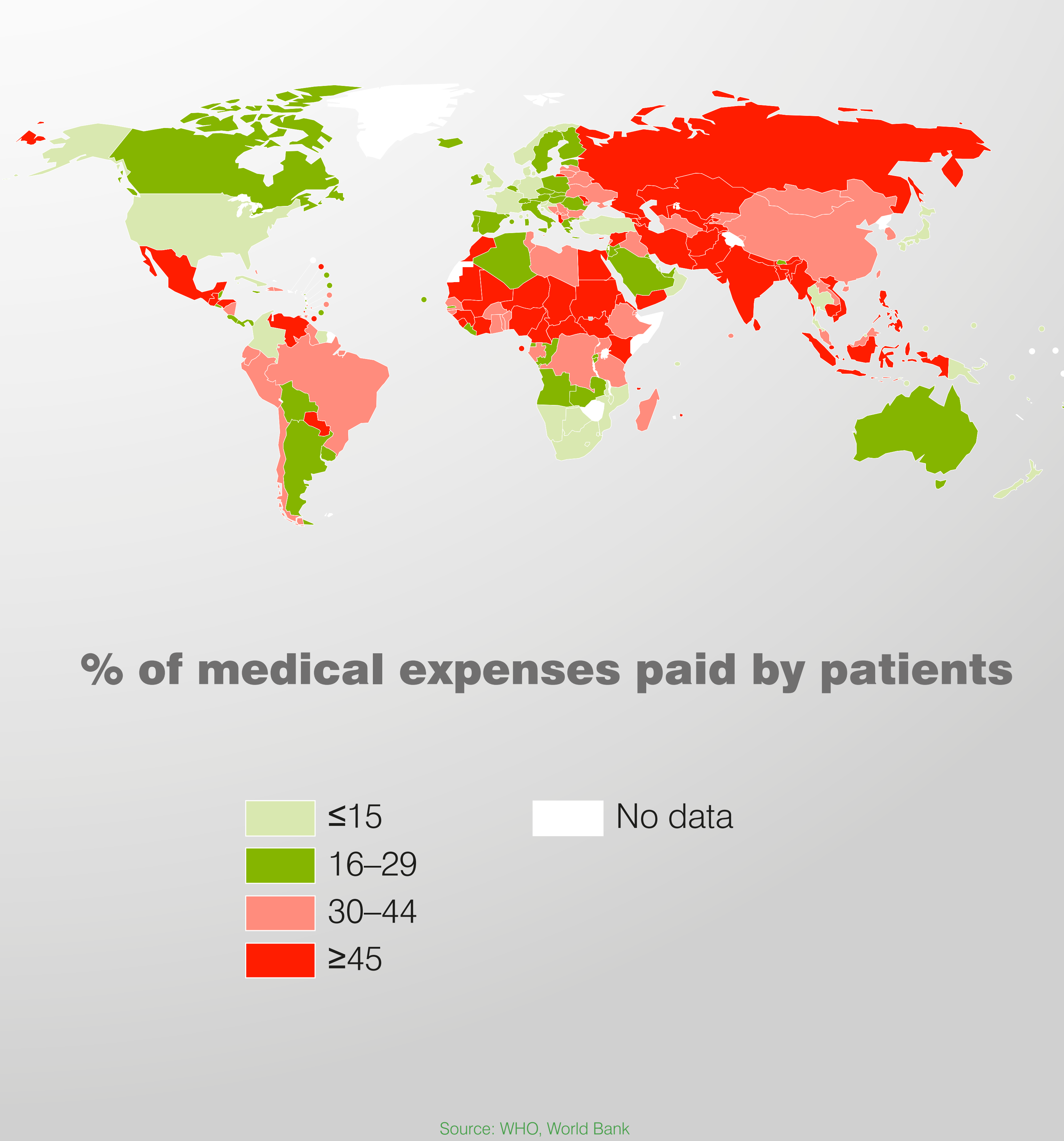
Births assisted by qualified medical personnel



Mortality rate by disease



How much is spent on healthcare for patients?



Climate impact

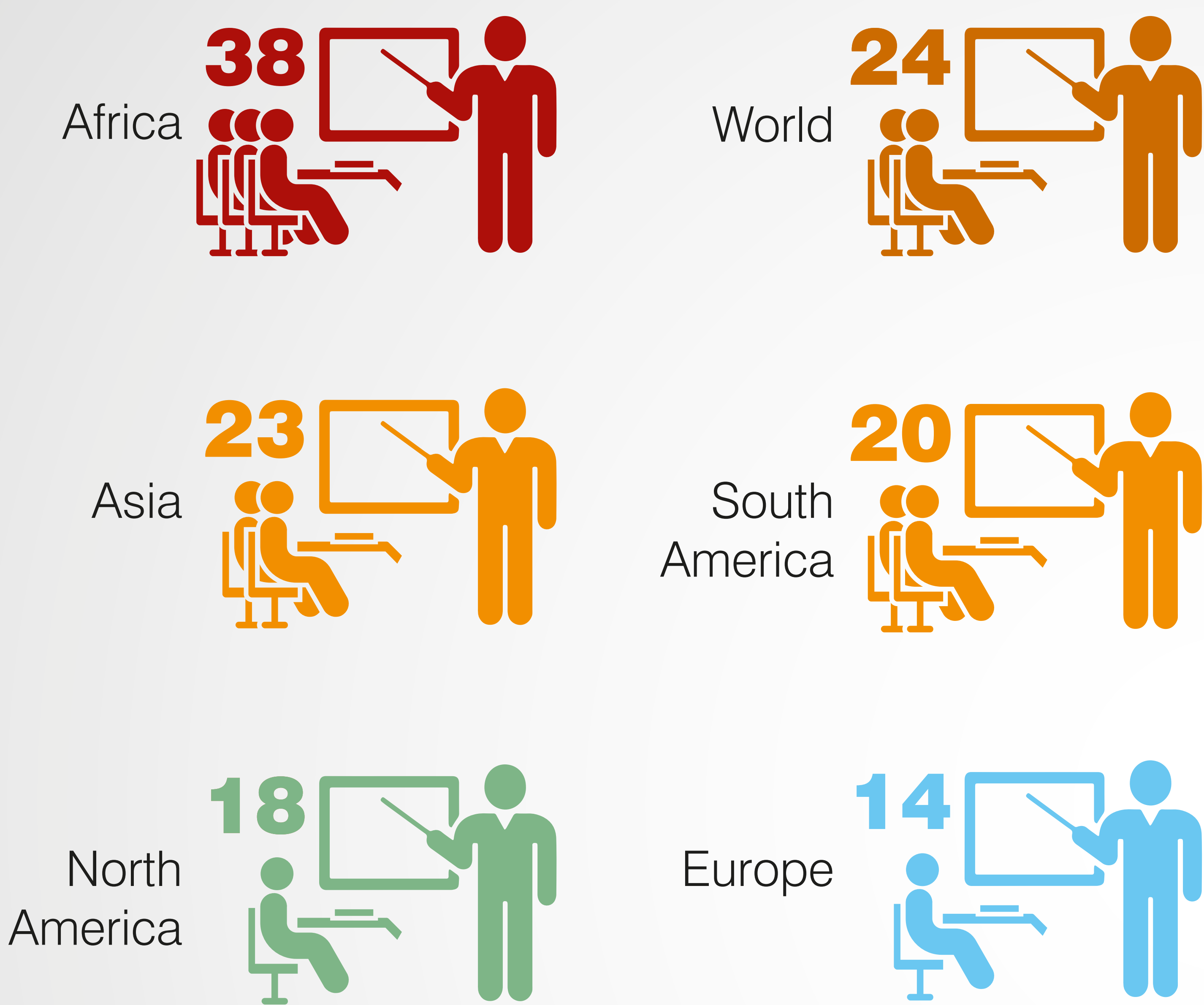
Researchers have shown that the high speeds of the Harmattan, a dry and dusty trade wind which blows from the Sahara Desert, increases the number of cases of meningitis across the Sahel region in the winter. This type of study helps to anticipate epidemic outbreaks and measure the impact of seasonal variations on the spread of disease more effectively, in the context of climate change.



QUALITY EDUCATION

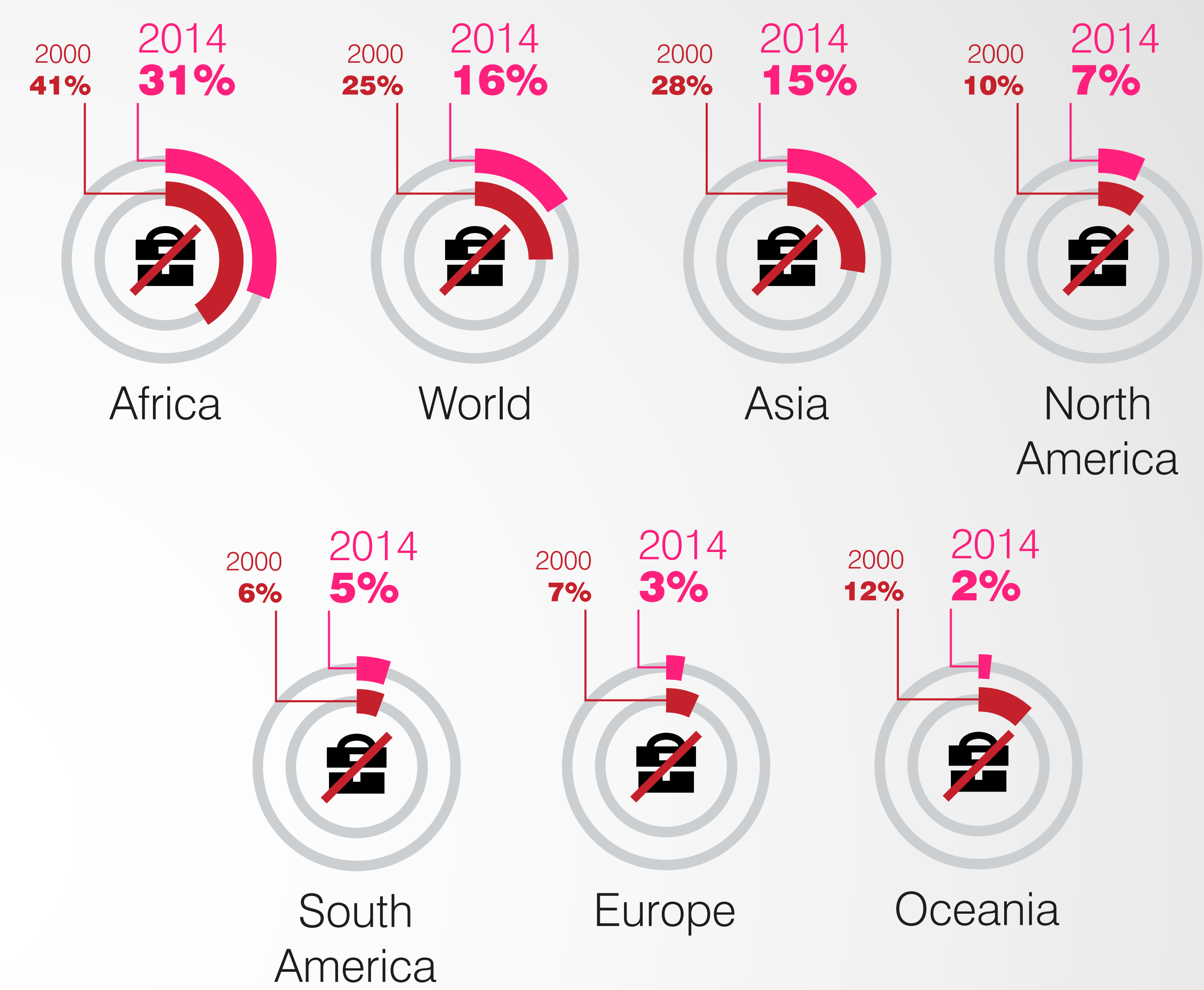
Quality education largely determines the economic and social well-being of individuals. Major progress has been made towards increasing access to education at all levels, particularly for women and girls, but inequality remains. From nursery school to higher education, social sciences are looking at educational policies, changes in the provision of schools (public and private), the way schools operate and the forms of educational inequality. The researchers also study individual and family factors of various kinds (social, demographic, economic, cultural, linguistic, religious and political) that influence academic practices, careers, successes and failures. The results, both quantitative and qualitative, can be used to enlighten the various actors involved in education when drawing up and monitoring policies aimed at improving education.

Number of pupils per teacher in primary schools



Source: UNESCO Institute for Statistics

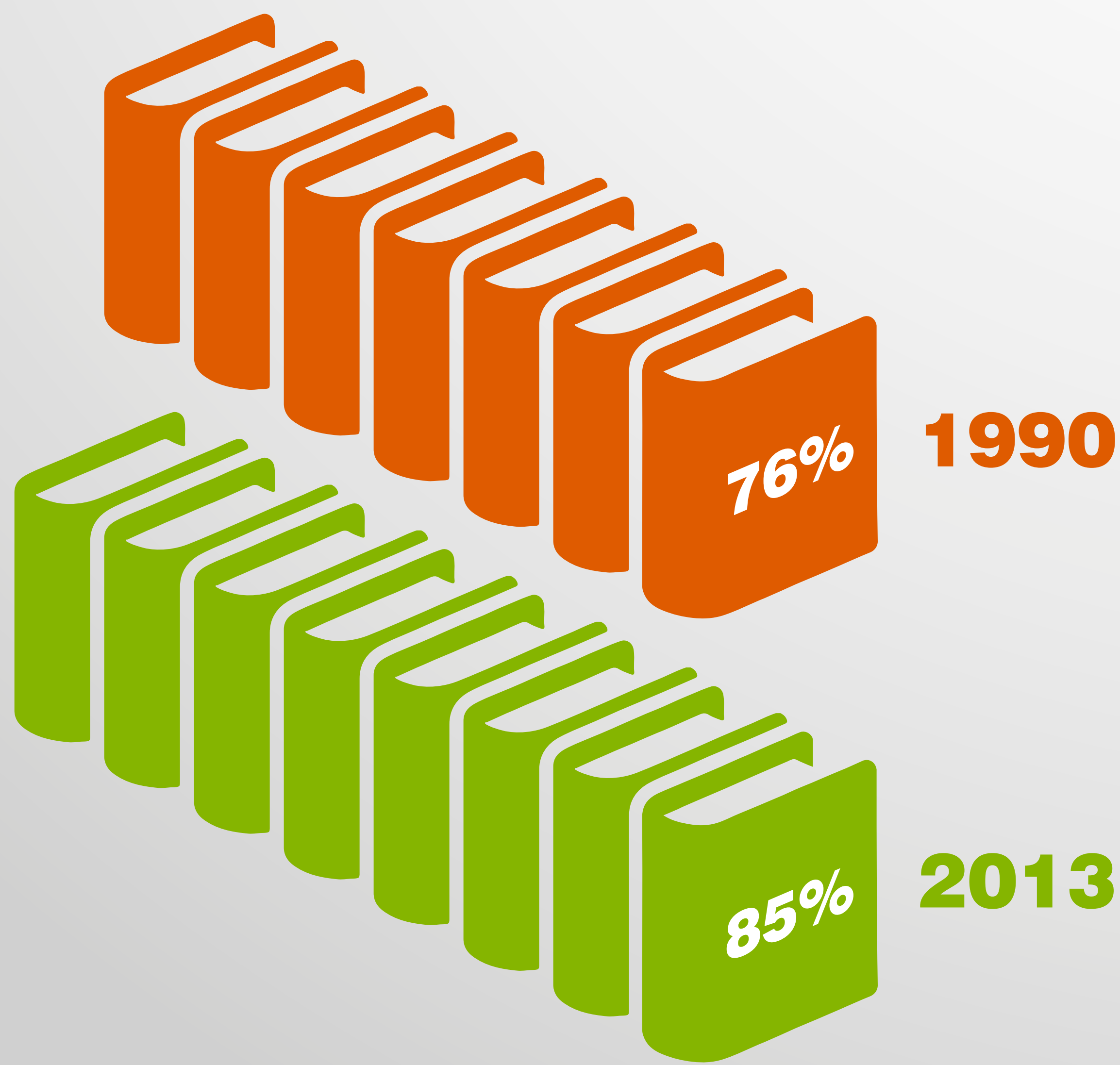
Teenagers not enrolled in secondary higher education



As a % of the total number of secondary school age children in the region

Source: UNESCO Institute for Statistics

Literacy

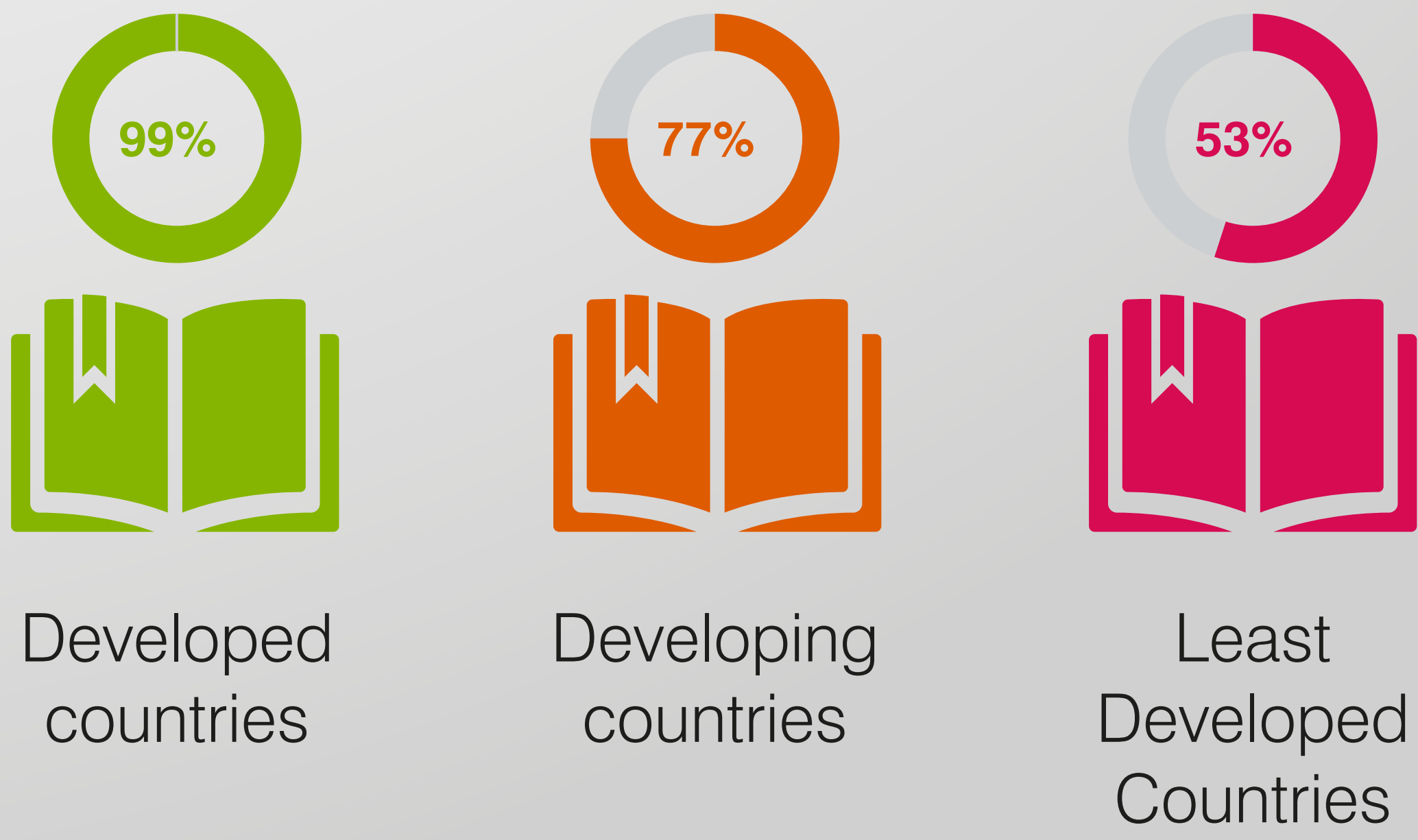


The literacy rate among adults has increased from 76% in 1990 to 85% in 2013.

Source: UN Women

However, women make up more than 60% of illiterate people in the world.

Literacy rate among women in 2013:



Urban inequalities

The ASPENO research programme highlights the substantial disparities in school provision between the various districts of Ouagadougou, the capital of Burkina Faso. The suburban areas, where the most vulnerable populations live, have considerably fewer public schools than in the city center. Private secular schools, which are generally of poorer quality than those in the central districts, partly make up for this shortfall.

GENDER EQUALITY



Throughout the world, women and girls continue to suffer discrimination and violence. Gender equality is not only a fundamental human right, but a necessary foundation for a peaceful, prosperous and sustainable world. With this in mind, researchers in social sciences study the inequalities between men and women in various areas: healthcare, work, education, family, politics, etc. They try hard to understand the social, economic and/or political factors that promote these inequalities. The results help to gain a clearer understanding of the way in which societies construct and reproduce the balance of power between the sexes and therefore contribute to identifying the conditions required for greater equality between men and women. This research provides essential data and analyses in improving the access of women and girls to education, healthcare, decent work and representation in public decision-making processes.

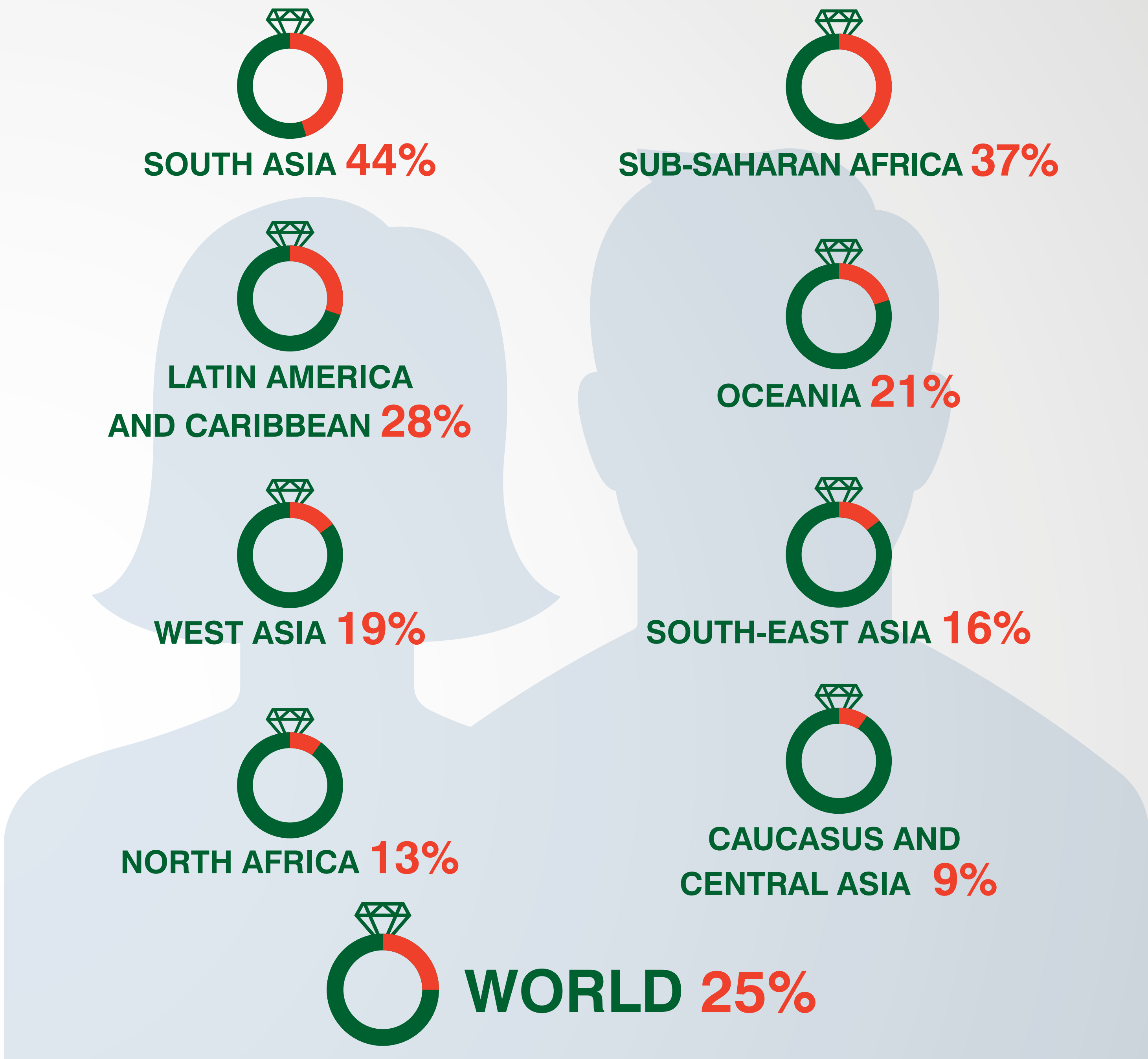
Female genital mutilation



37% of girls aged 15 to 19 offered mutilation of this kind in 2015, in 30 countries where practice is widespread.

Source: UN

Women aged 20 to 24 married or in couple before the age of 18

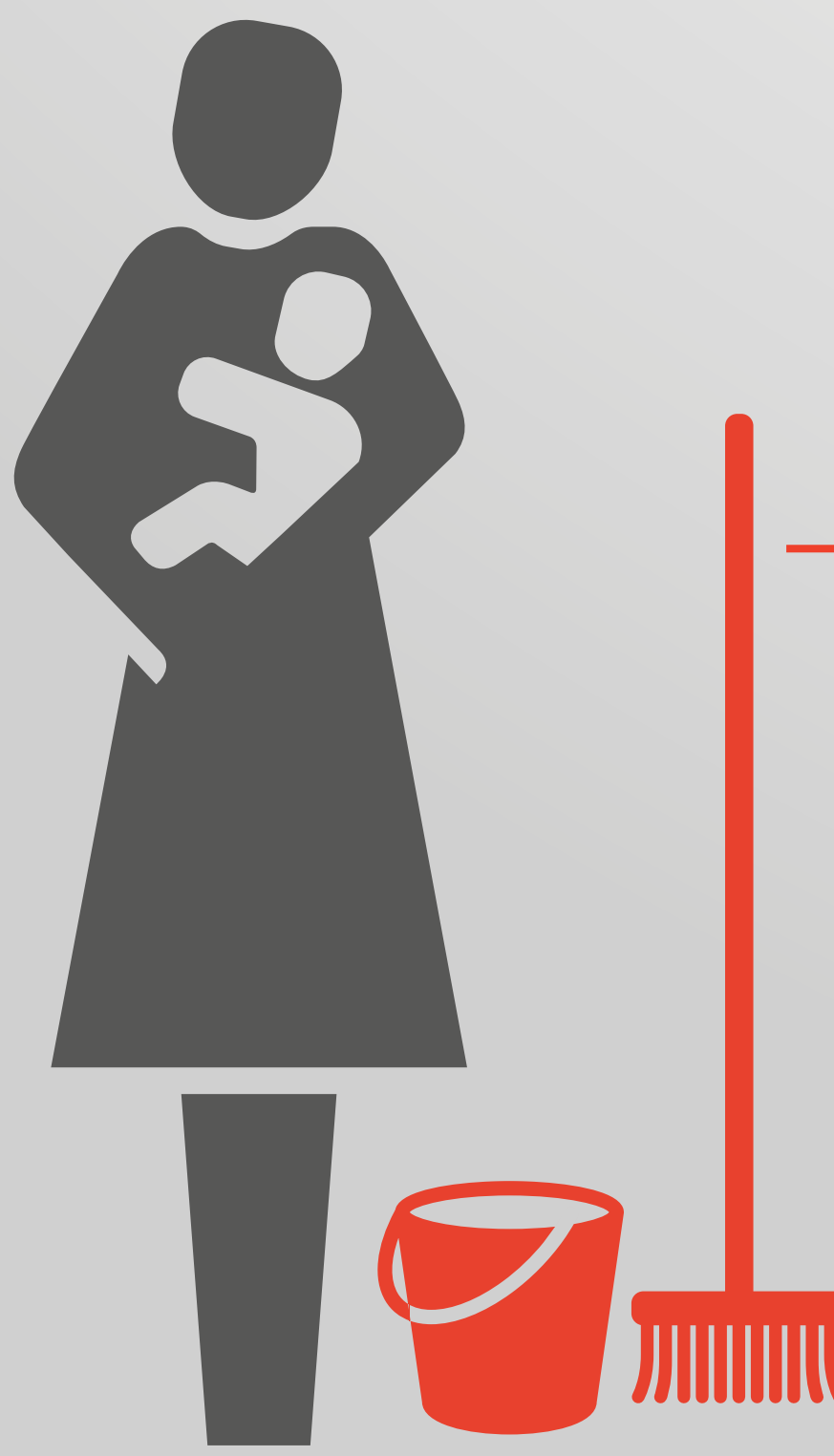


Source: UN

Insecure and unpaid work



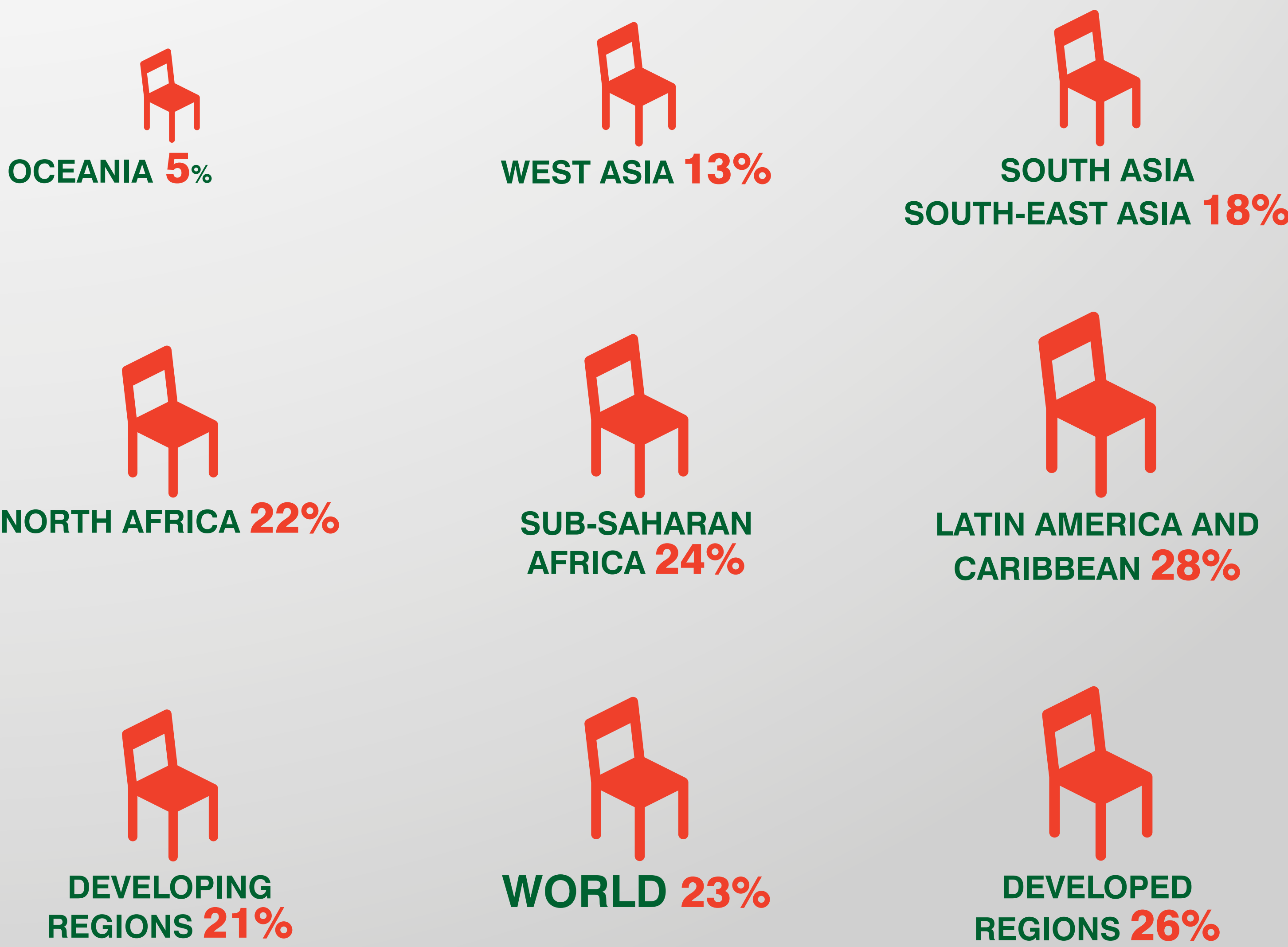
75% of women who work in developing countries occupy undeclared employment, with no social welfare.



Women spend, on average, 2.5 times as much time as men performing family task and unpaid domestic work.

Source: UN Women

Seats held by women in national parliaments in 2016



Source: UN

Job market

The FEGEAC programme has shown that in West African cities, such as Cotonou in Benin, almost 90% of women in the job market occupy undeclared employment, with no social welfare. Although they earn less, on average, than the minimum wage, they are significantly more involved in managing domestic expenses such as food, medical care, schooling and even rent and electricity, items usually managed by men.

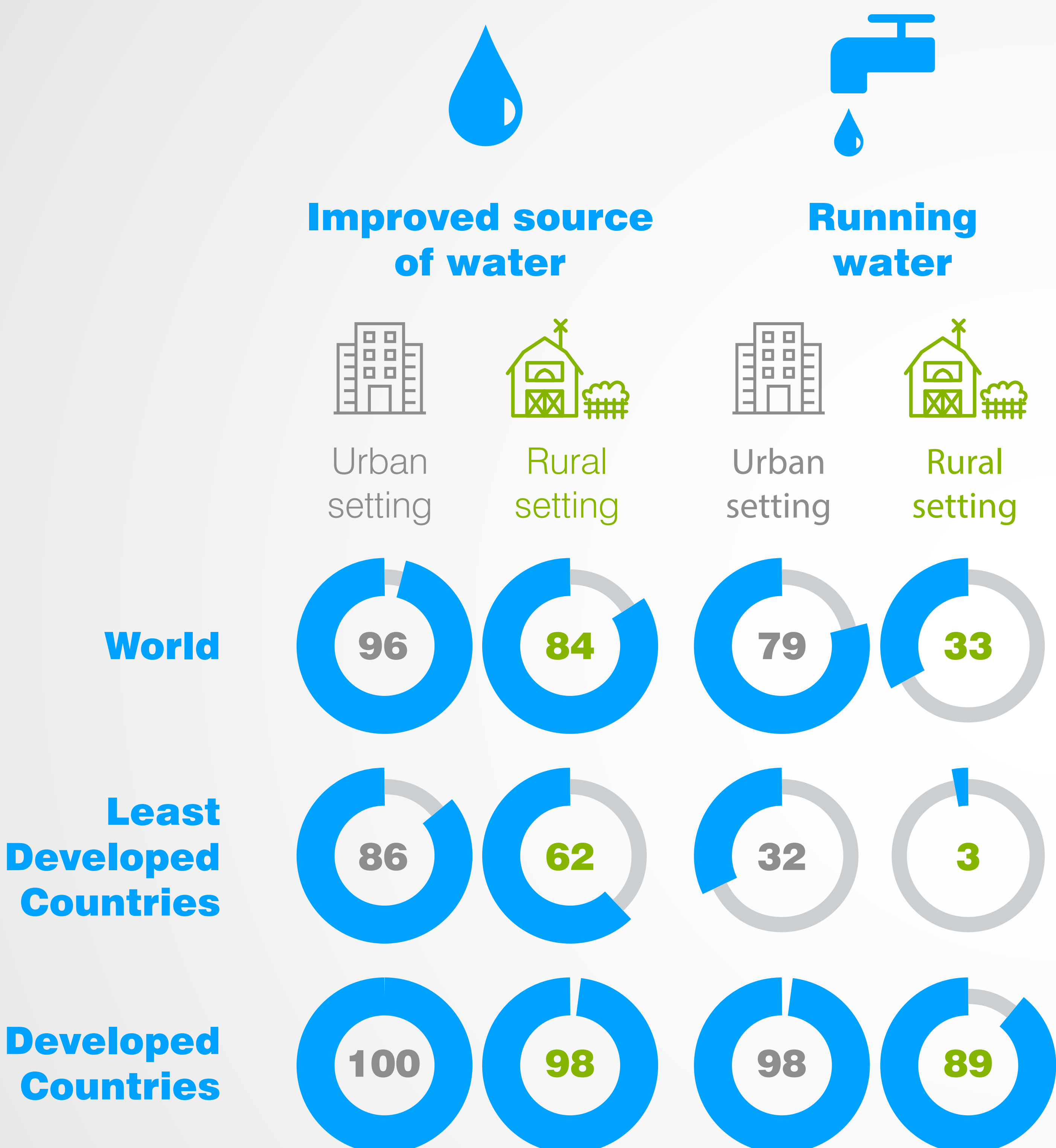




CLEAN WATER AND SANITATION

Universal access to clean water and sanitation is essential in order meet the challenges posed by sustainable development, in terms of agricultural and industrial production, environment and reducing poverty and social, economic and healthcare inequalities. Overall, the goal of «sanitation for all» is far from being reached. Access to water has improved, despite the significant disparities between the various regions and countries, between rural and urban areas and in informal settlements (shanty towns) in developing cities. Research involves various disciplines. Hydrologists quantify the resources available and take samples, chemists evaluate the quality of the water and develop techniques for treating waste water, geographers expose the spatial fragmentations, demographers analyse inequalities within populations, sociologists study water use and describe the on-the-ground reality experienced by local populations in order to support effective public action.

Improved access to source of water and running water



As a percentage of the population

So-called "improved" access to water techniques include domestic connection to the water supply network, a shared standpipe, a pump, a protected well, protected and treated surface water or a rainwater recovery system.

Source: UN-UNICEF 2015, UNDP 2006

Access to improved sanitation and open defecation

In 2015, **2.4 billion inhabitants** still had no access to an improved sanitation system.



As a percentage of the population

Sanitation is defined here as being toilets with evacuation systems in the dwelling, building or courtyard or at reasonable distance from the residence.

Source: UN-UNICEF 2015, Freeman et al. 2012

Diarrhea: healthcare impact of poor access to clean water, sanitation and hygiene

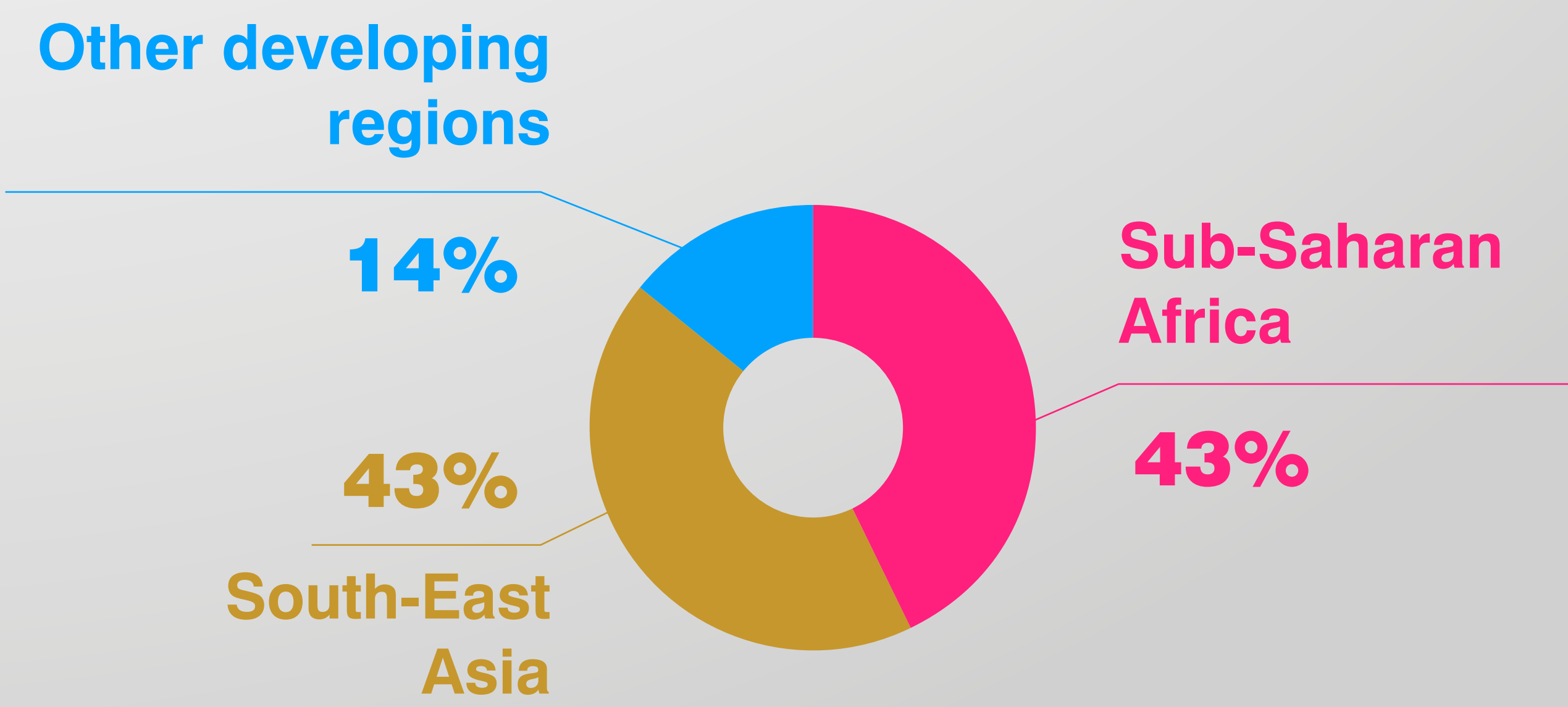
1.5 million deaths per year



3.6% of people ill around the world

Source: Pruss-Ustun et al. 2014

Deaths among children under five due to diarrhea



As a % of deaths among children under five in the regions

Source: Pruss-Ustun et al. 2014

Limited access

Researchers study the range of access to water issues: continuity of service, distance, collection times, cost, quantities available, etc. A family can have a tap but still suffer restricted access. This «locked» tap has more than just symbolic value: in Burkina Faso in particular, taps can be padlocked for part of the day by the person that pays for the water in the household, in order to limit consumption.

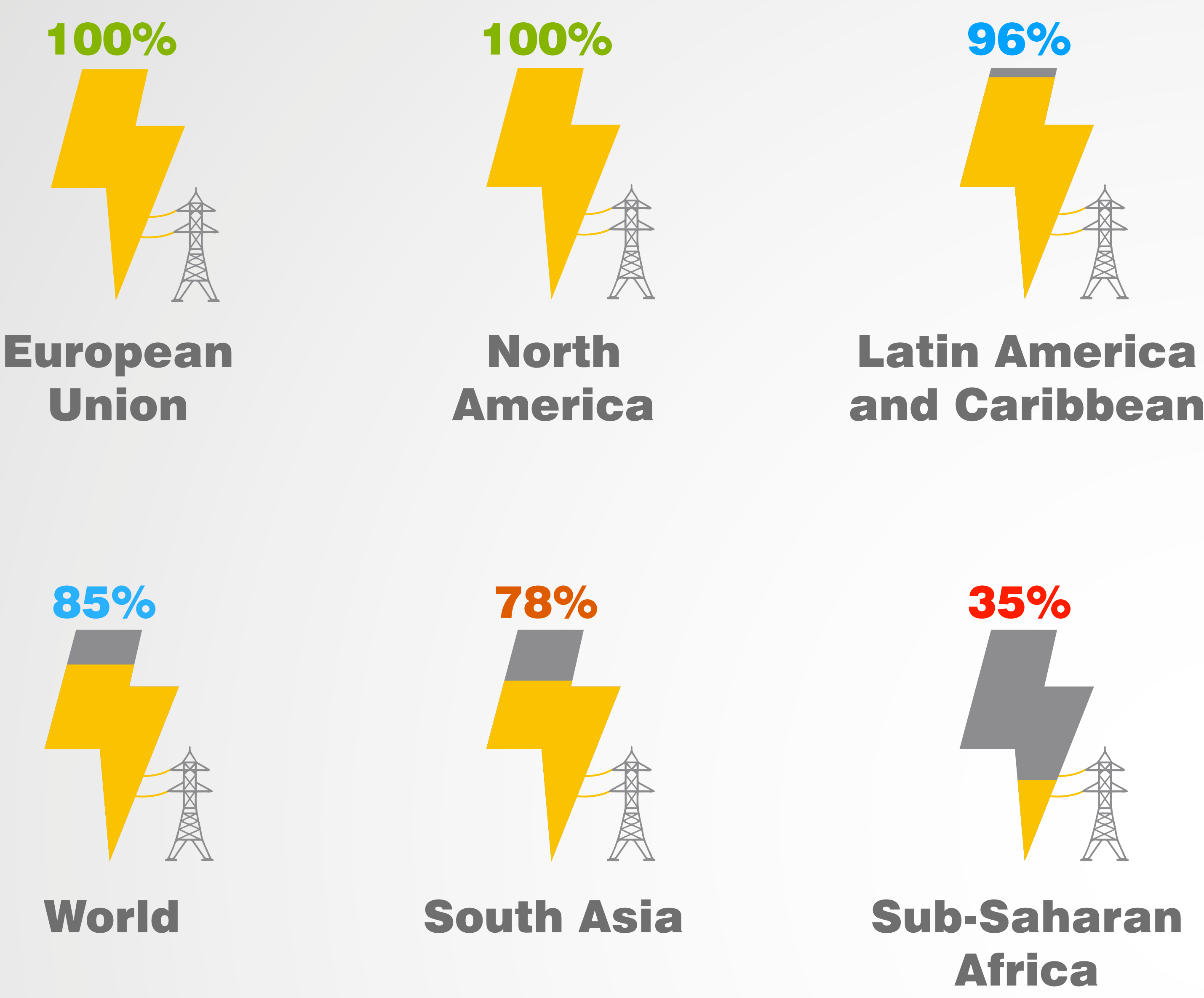




AFFORDABLE AND CLEAN ENERGY

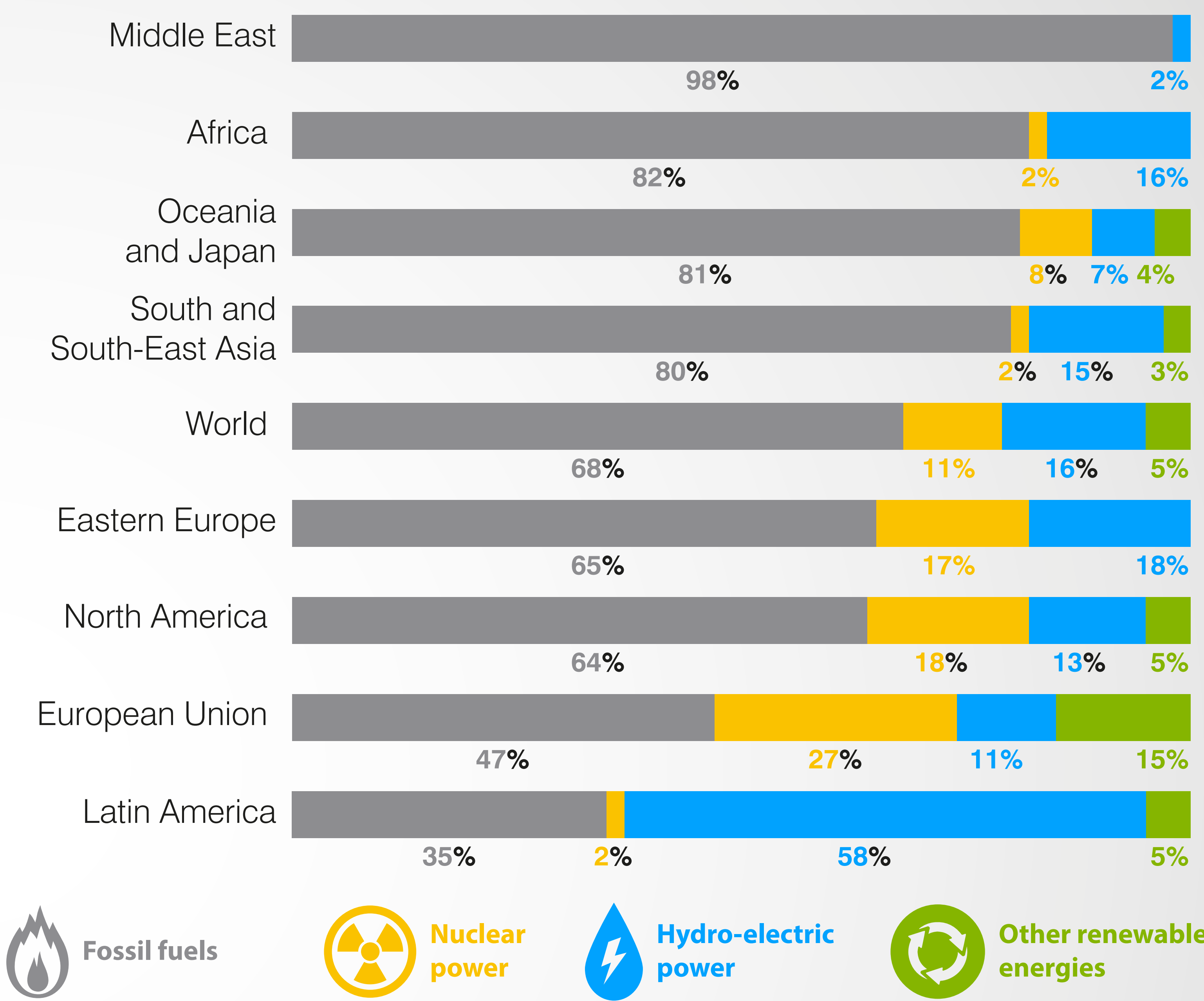
Economic development has been driven by the use of energy based on carbon-emitting, fossil fuels for the last 150 years. The reduction in fossil fuel stocks (coal, oil and gas) and climate change call us to change our practices, a major challenge at a time of rapid population growth in emerging economies. With Goal 7, the international community commits to ensure universal access to affordable, reliable and sustainable energy services. In this context, scientists develop knowledge required to: improve access to energy (electricity, biomass) in disadvantaged rural and urban areas, structure and diversify the renewable energies industries to reduce harmful greenhouse gas emissions and dependence on fossil fuels; improve technologies to boost the energy production efficiency; promote change in habits by favouring restraint when it comes to using energy.

Access to electricity in 2012



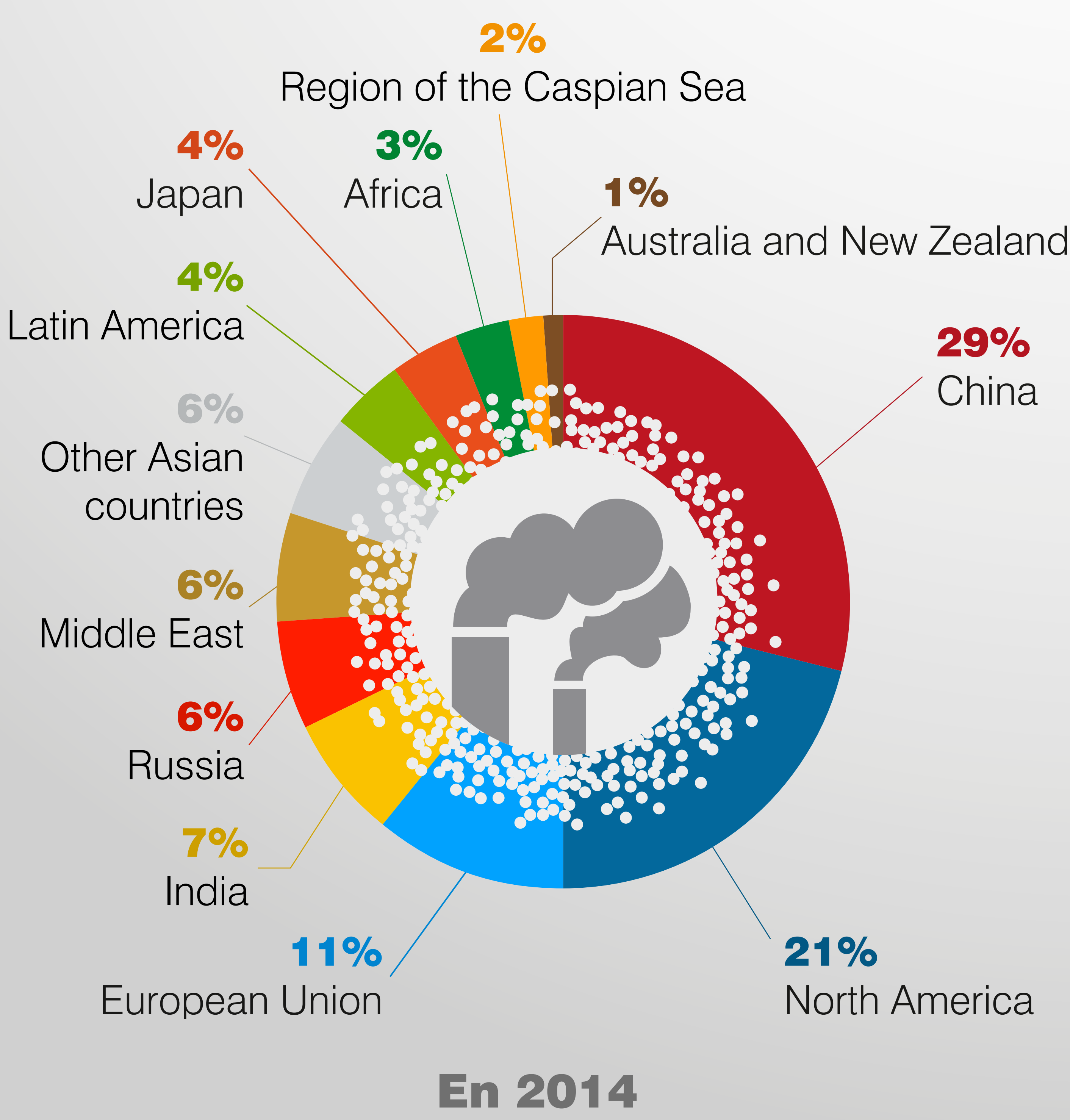
Source: IEA

Sources of electricity production



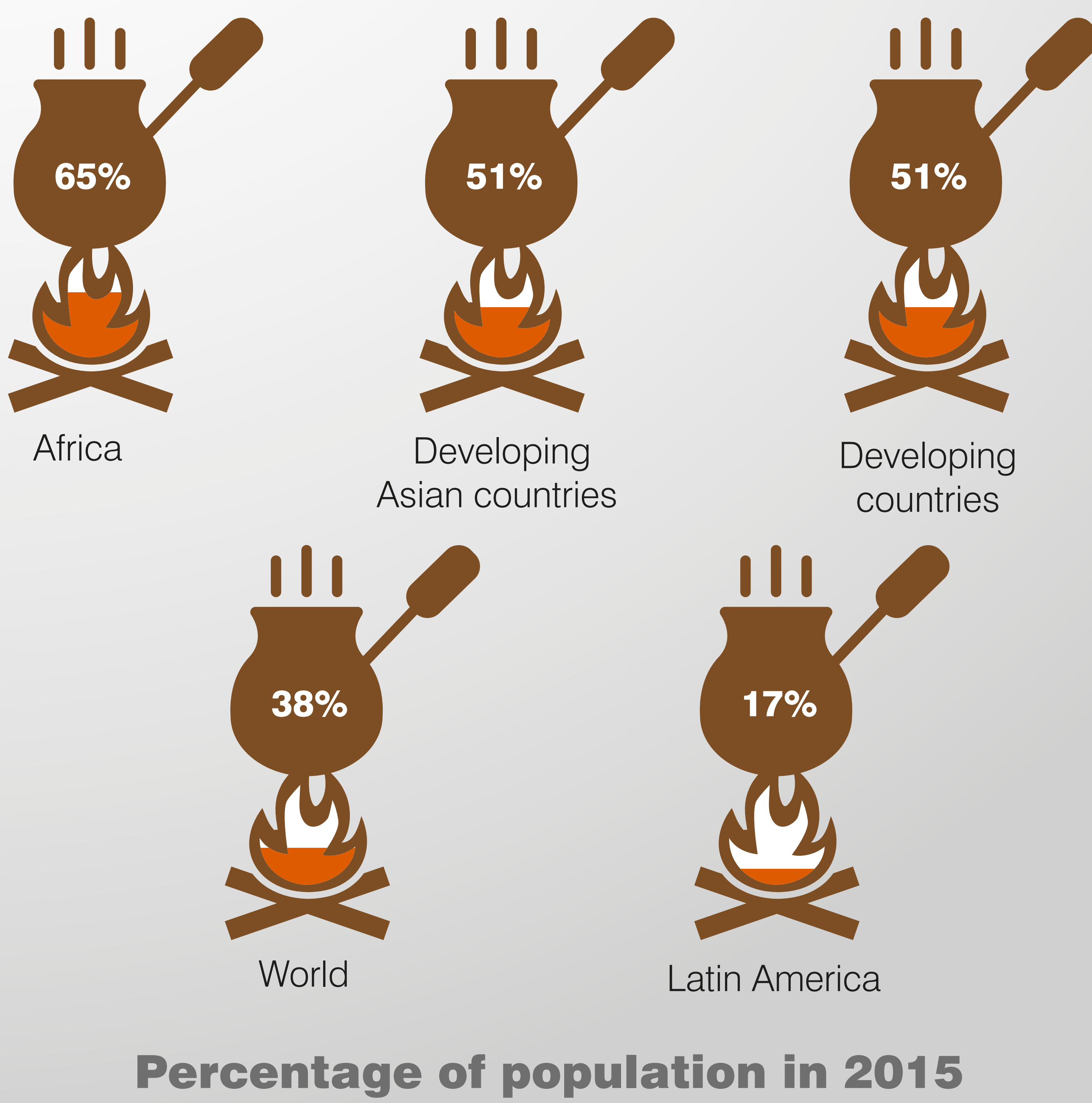
Source: IEA

CO₂ emissions linked to fossil fuels burning



Source: IEA

Use of firewood for cooking



Source: IEA

Geothermal energy

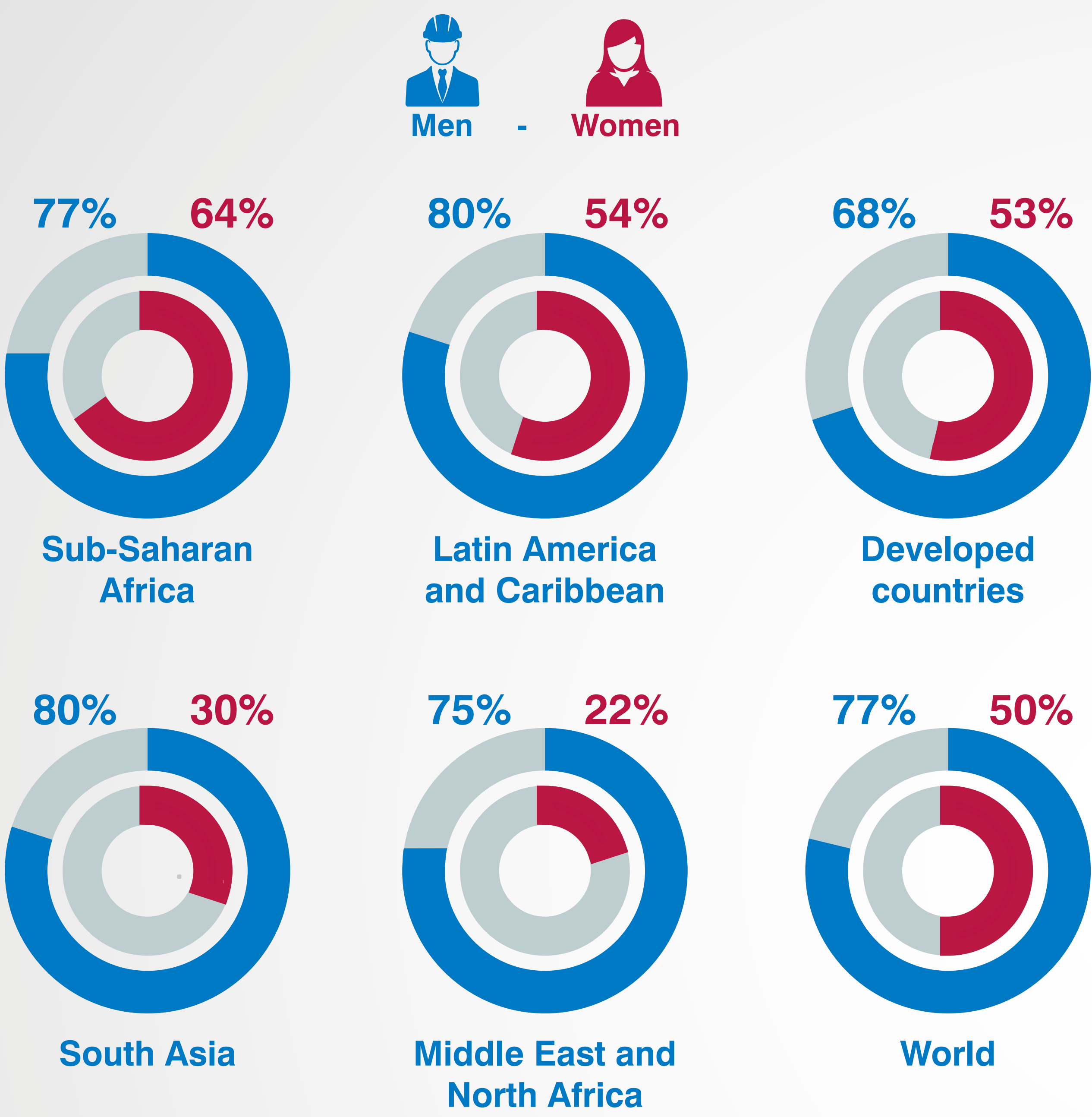
Geothermal energy makes use of the earth's internal heat for heating and electricity production. The East African Rift provides Kenya with huge geothermal fields because the earth's crust is thinner in this area, making it easier to reach the internal heat of the planet. The French Development Agency (AFD) is supporting Kenya in its aim to use 75% of this renewable resource by 2030.



DECENT WORK AND ECONOMIC GROWTH

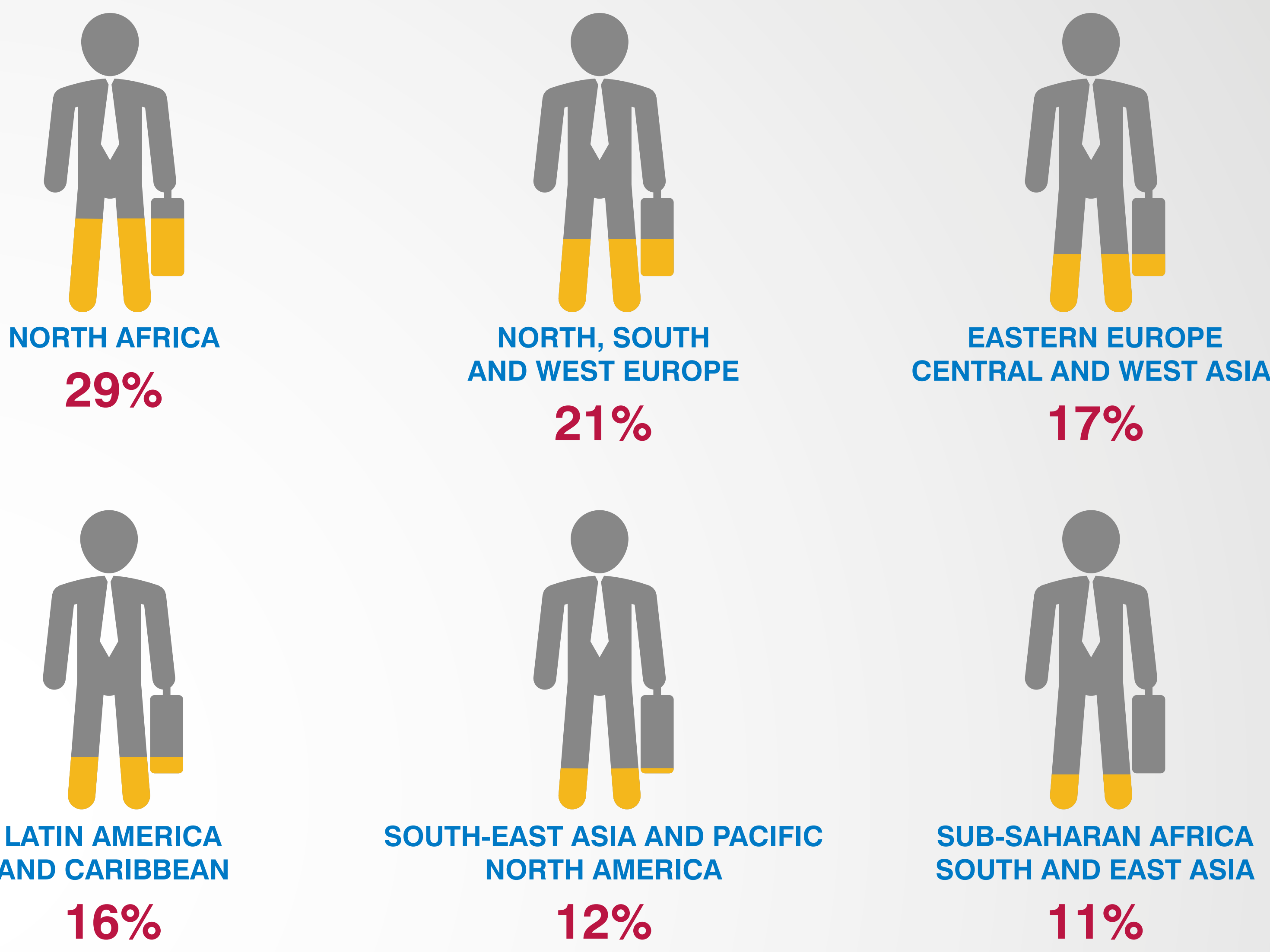
Economic growth should enable everyone to have a job. Jobs must also secure a minimum wage, be stable and exercised in decent working conditions. This goal aims to ensure decent working conditions (stable employment, fair wages, security, social welfare and labour relations) for all: employees, entrepreneurs and the self-employed. It also aims to eradicate all forms of forced labour (especially child labour). Research shows that economic growth, when not accompanied by social welfare policy, creates inequalities and does not create sufficient jobs, or creates ones that are unstable and with poorer working conditions. Research unable us to understand the effects of economic growth on the job market, to determine the conditions required for improving work productivity and how social policies may help achieve this SDG8.

Active population



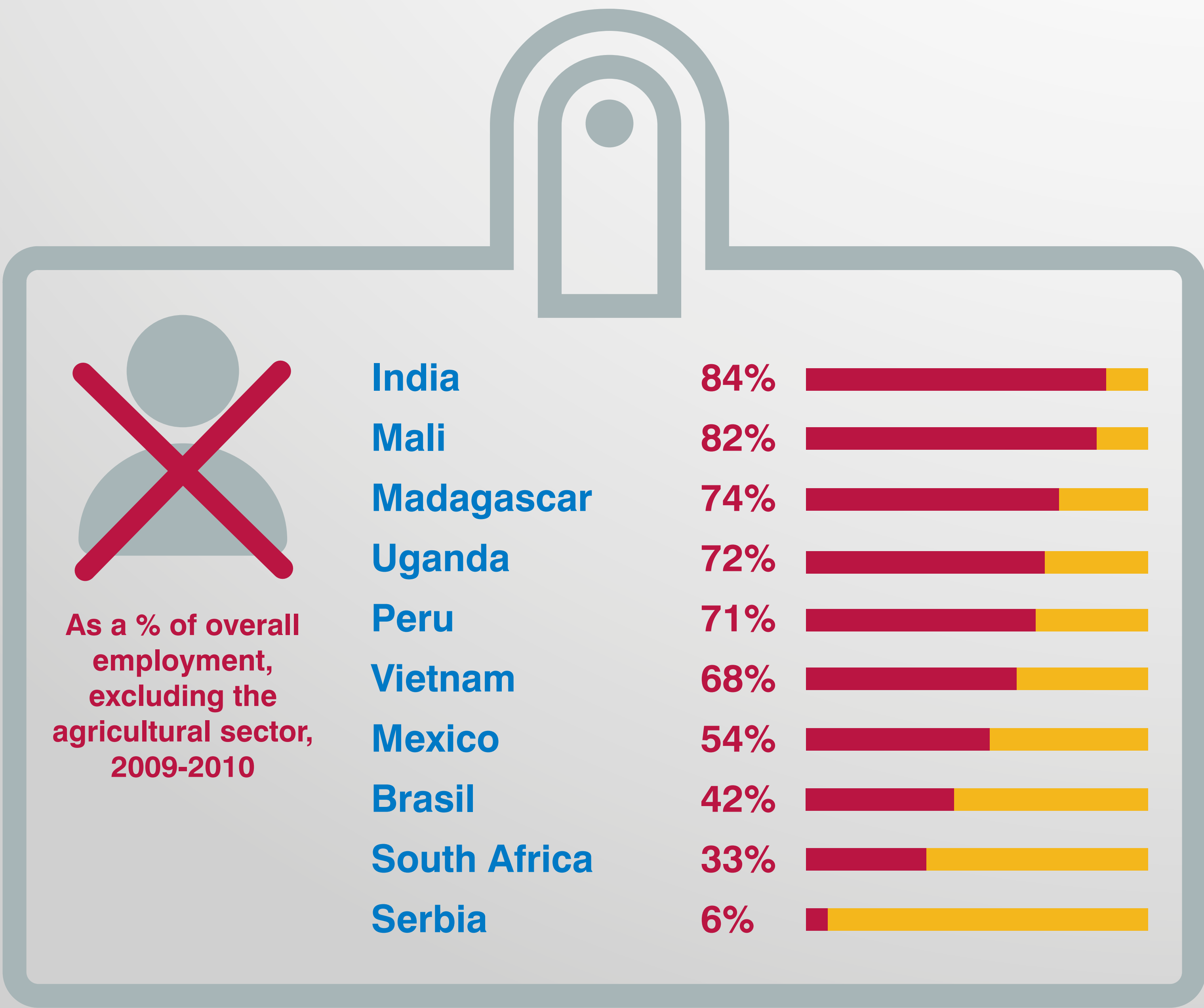
Population over 15 years old, 2013
Active population: any person of working age and available for work, either in work or looking for a job
Source: ILO

Unemployment among 15-24 year-olds



WORLD 13,1%
Source: ILO

Informal workers



Informal worker: person without social welfare coverage,whose job is not declared (self-employment, family company employment or insecure work).
Source: ILO, WIEGO

Unworthy working conditions

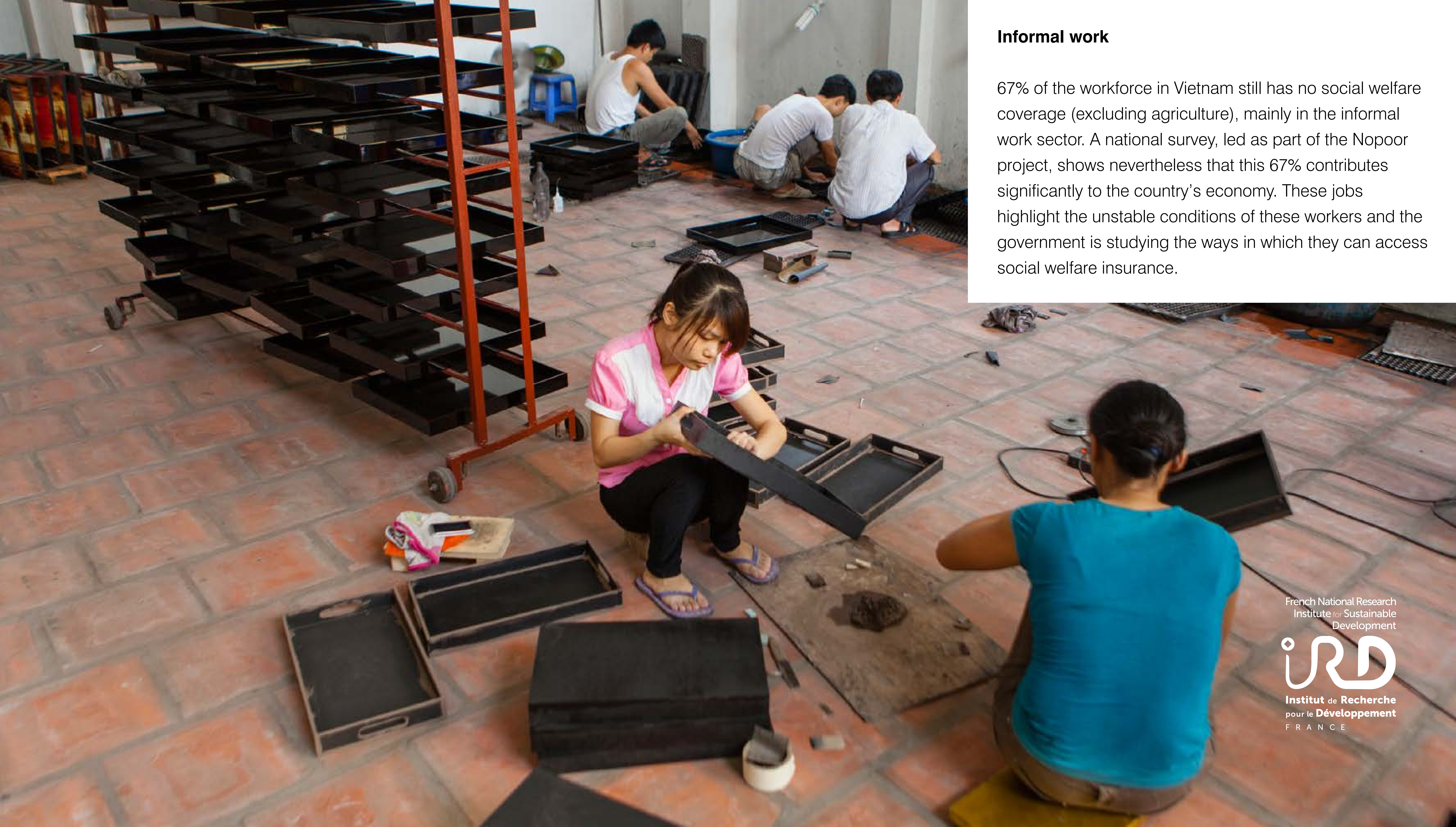
FORCED LABOUR (SLAVERY)
3 people in 1,000 in the world
21 million people
55% are women and children

2012
Source: ILO



2015

Source: UNICEF



Informal work

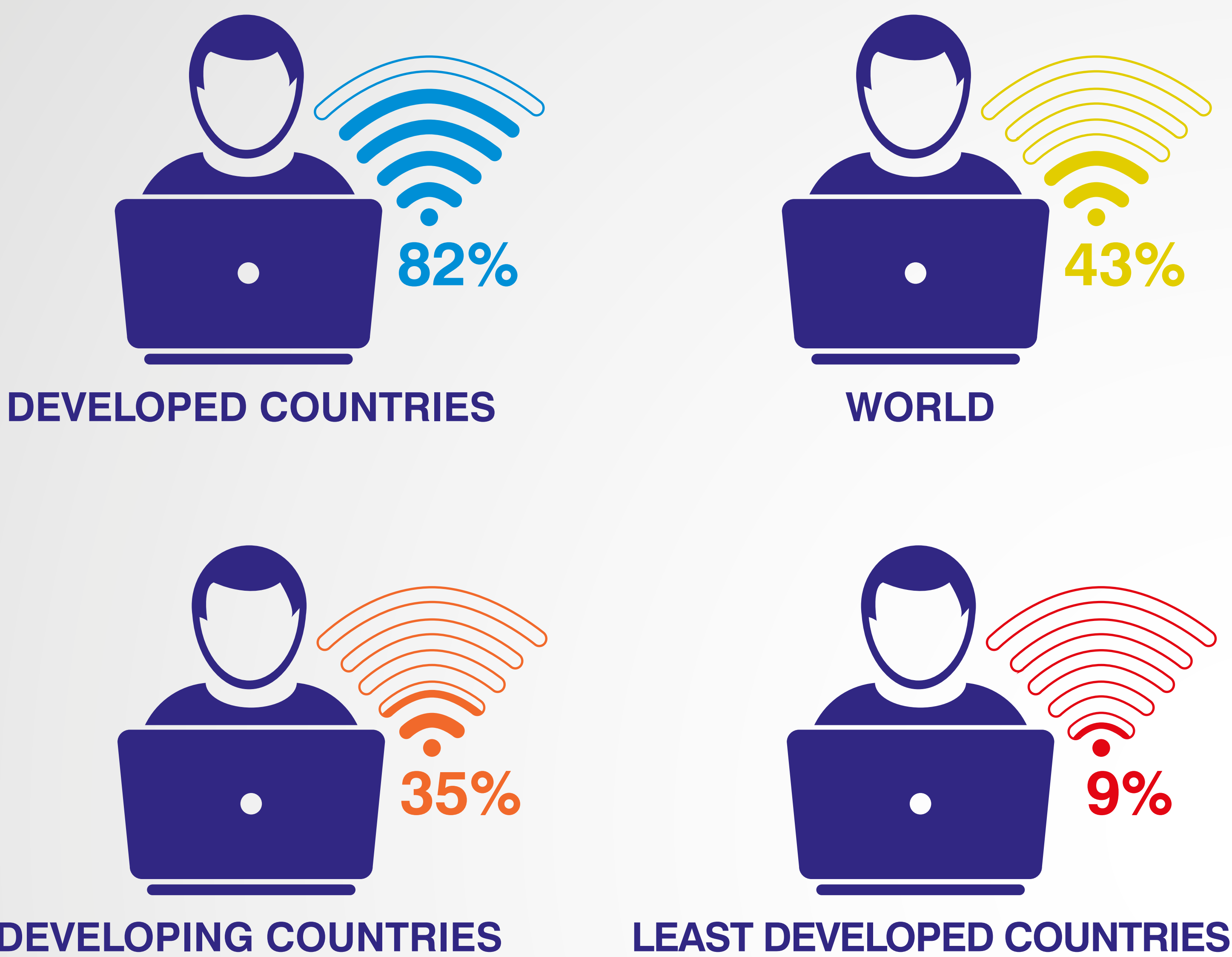
67% of the workforce in Vietnam still has no social welfare coverage (excluding agriculture), mainly in the informal work sector. A national survey, led as part of the Nopoor project, shows nevertheless that this 67% contributes significantly to the country's economy. These jobs highlight the unstable conditions of these workers and the government is studying the ways in which they can access social welfare insurance.



INDUSTRY, INNOVATION AND INFRASTRUCTURE

Meeting this Sustainable Development Goals requires us to reduce our impact on society and the environment, which imply a profound transformation in our lifestyles. There are therefore two ways forward. The first way would be to impose huge restrictions on production and consumption, which seems incompatible with demographic growth and the legitimate aspirations of billions of people to live in decent conditions, be able to travel, benefit from heating and lighting. The second way would be to live and produce in a more efficient and cleaner manner, by respecting humans and ecosystems. To do this, innovation – drawing on scientific research – will help make infrastructure and industries more resilient and sustainable, save resources and invent, using new information and communications technologies, new solutions to tackle the challenges of poverty and exclusion.

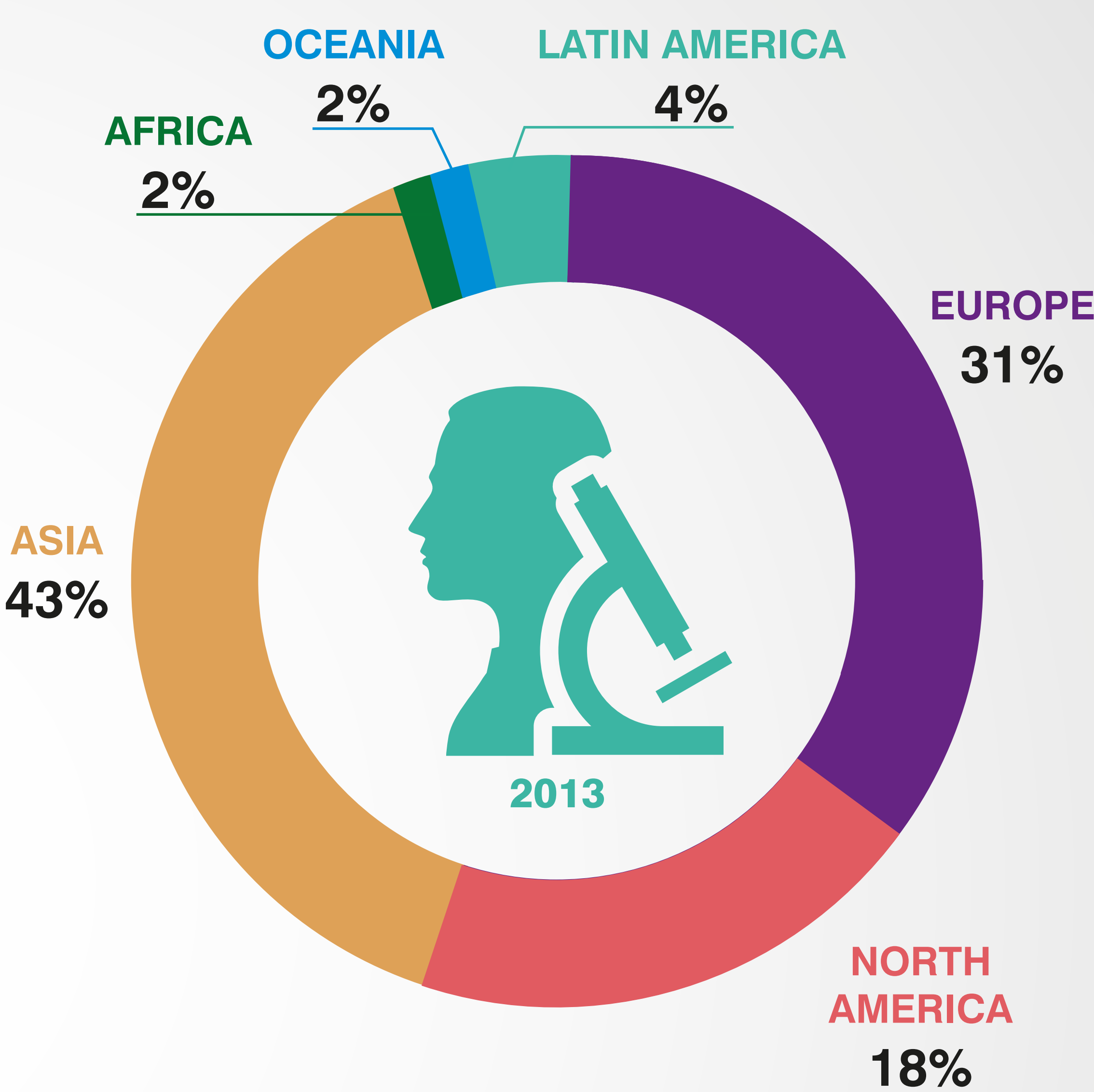
Internet use



More than four billion people still have no access to the Internet, 90% of whom live in developing countries.

Source: Committed to connecting the world

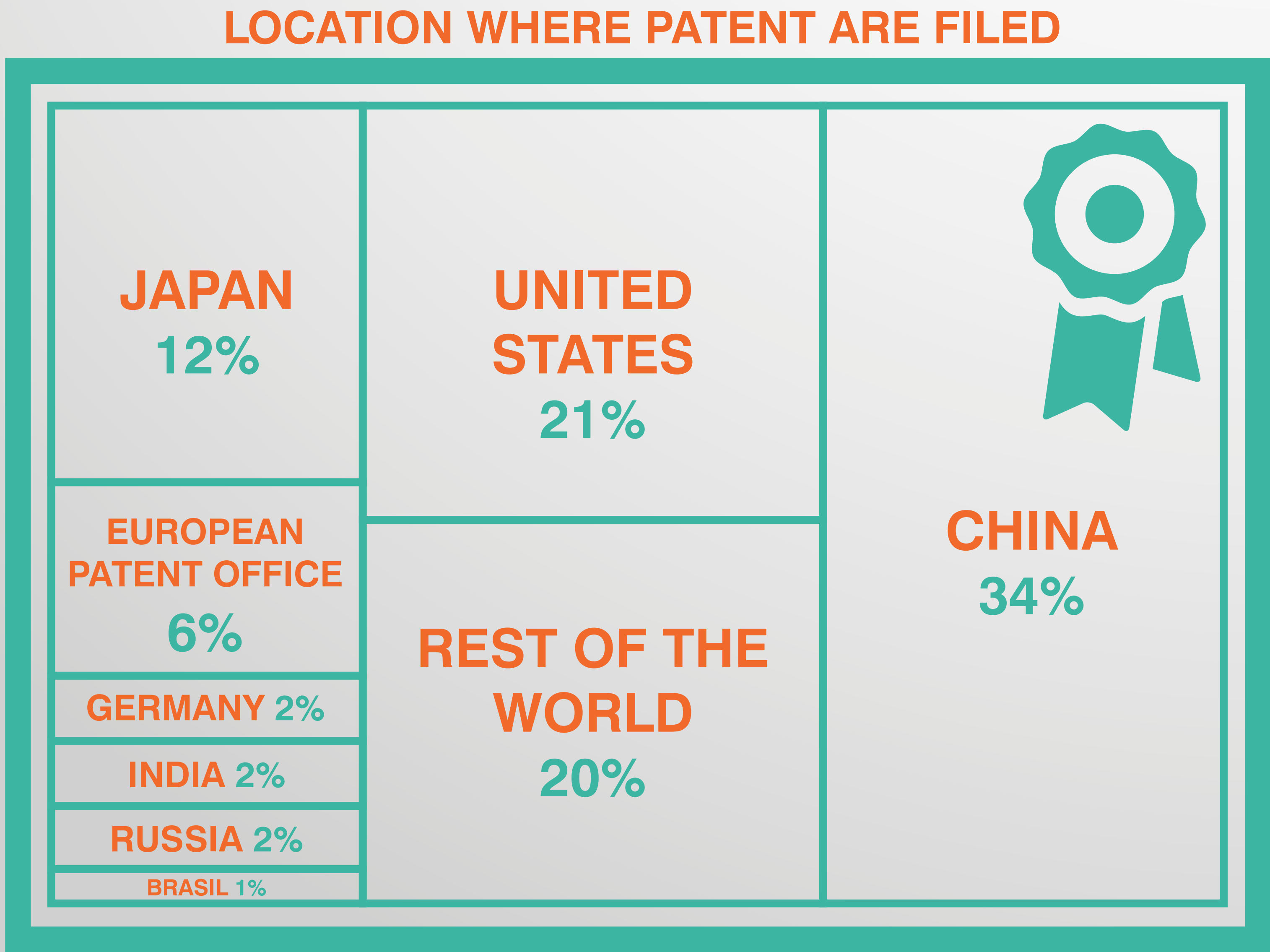
Scientific research: innovation driver



Proportion of researchers by continent

Source : UNESCO

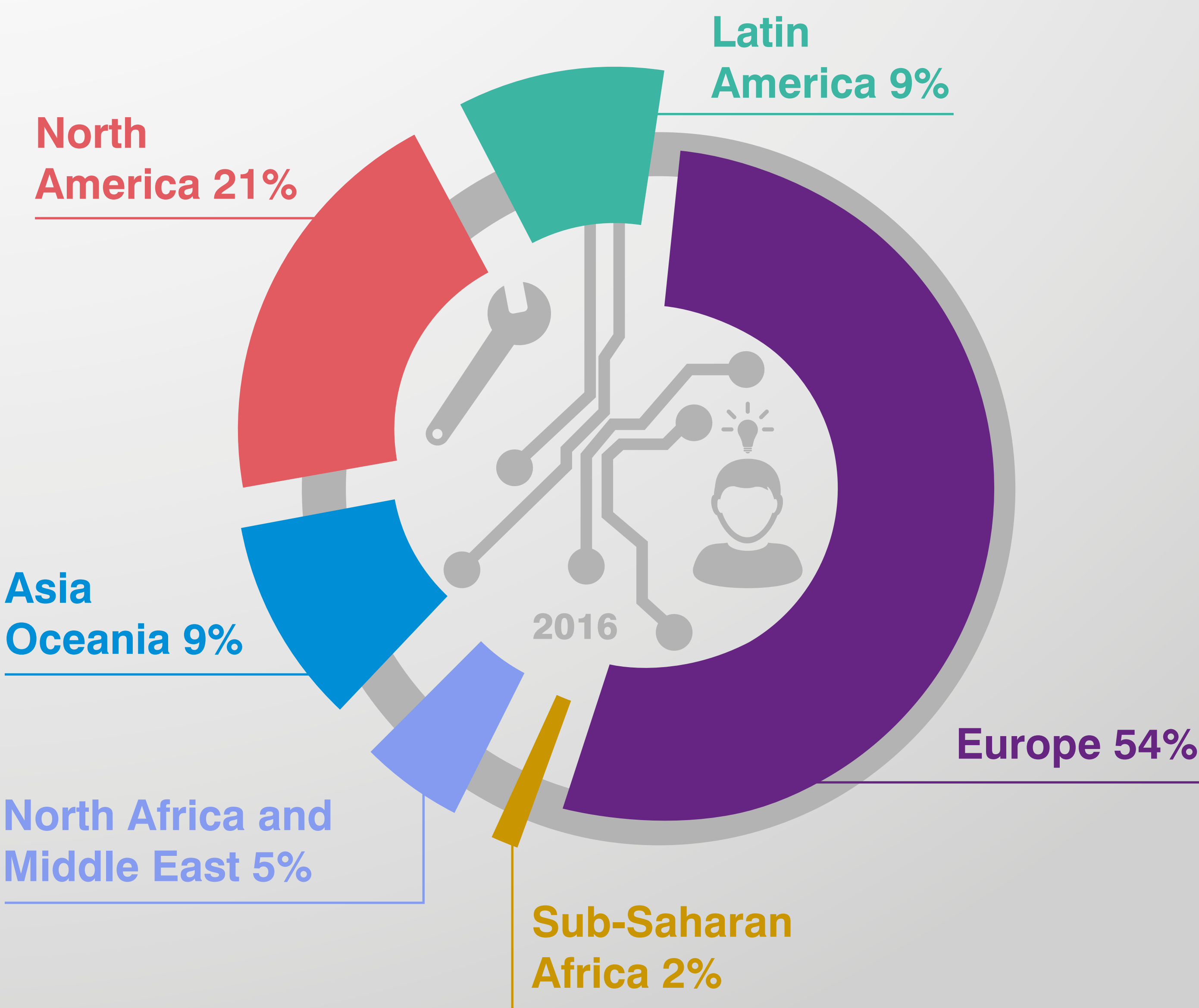
Patents around the world



2.7 million patents were filed around the world in 2014.

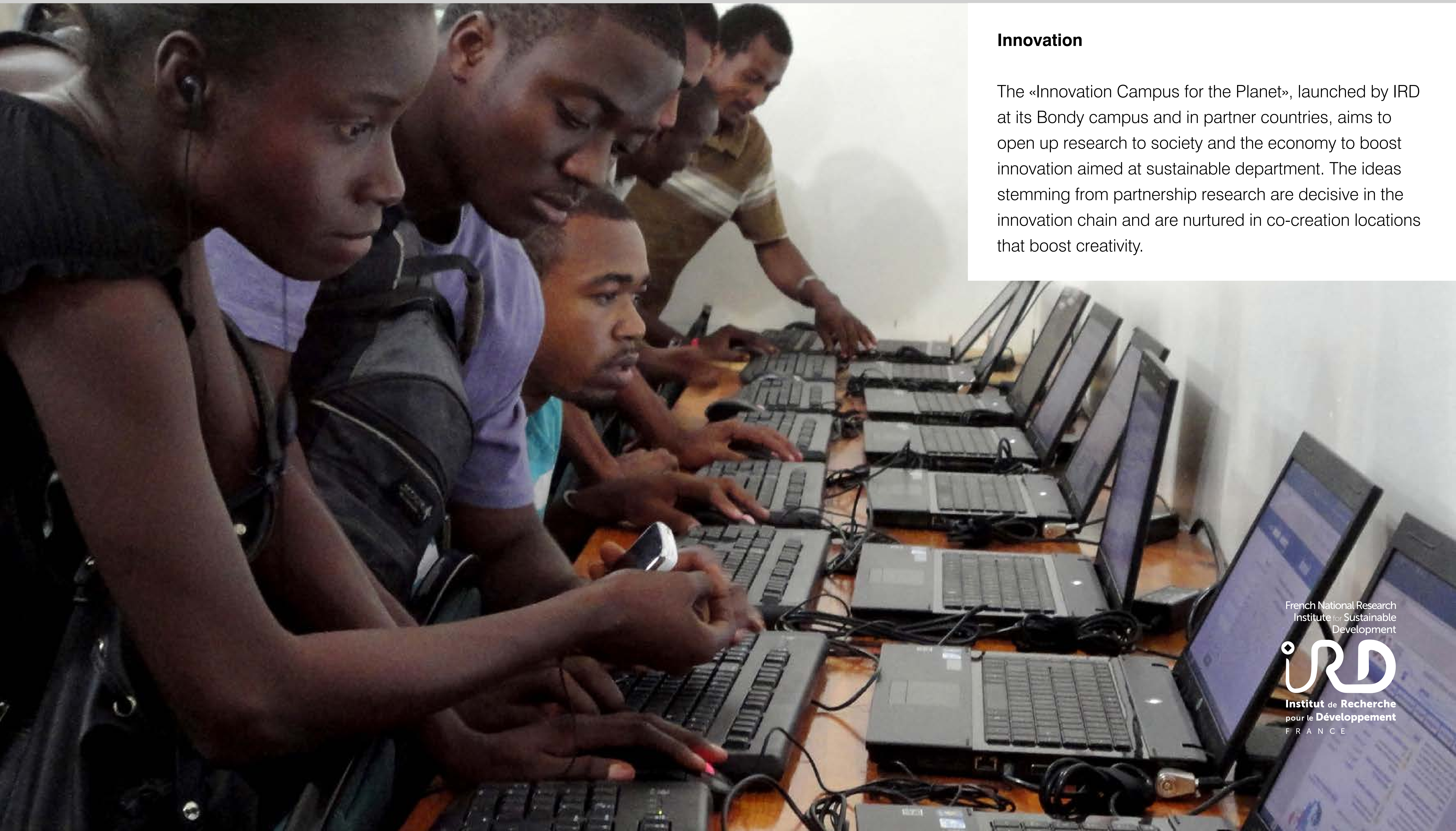
Source: WIPO

Distribution of Fab labs in the world



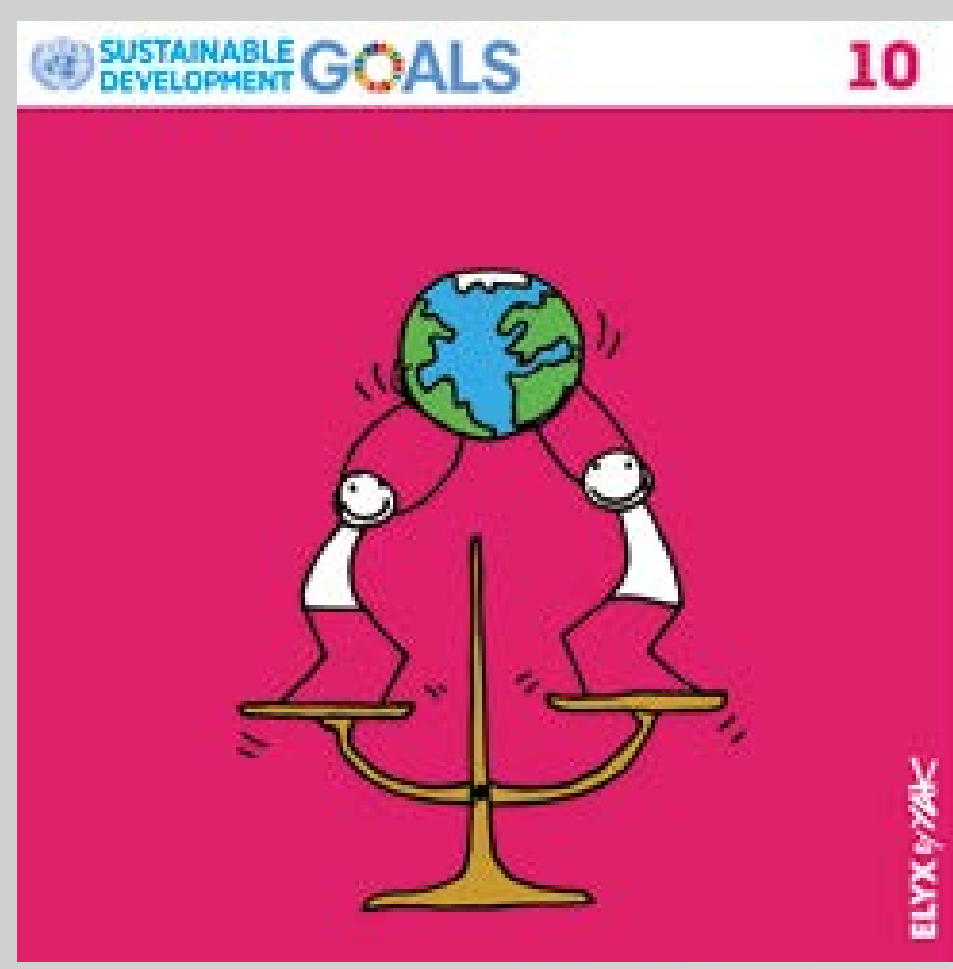
Fab lab: local laboratories, which boost inventiveness by providing access to digital production tools.

Source: Fab Foundation



Innovation

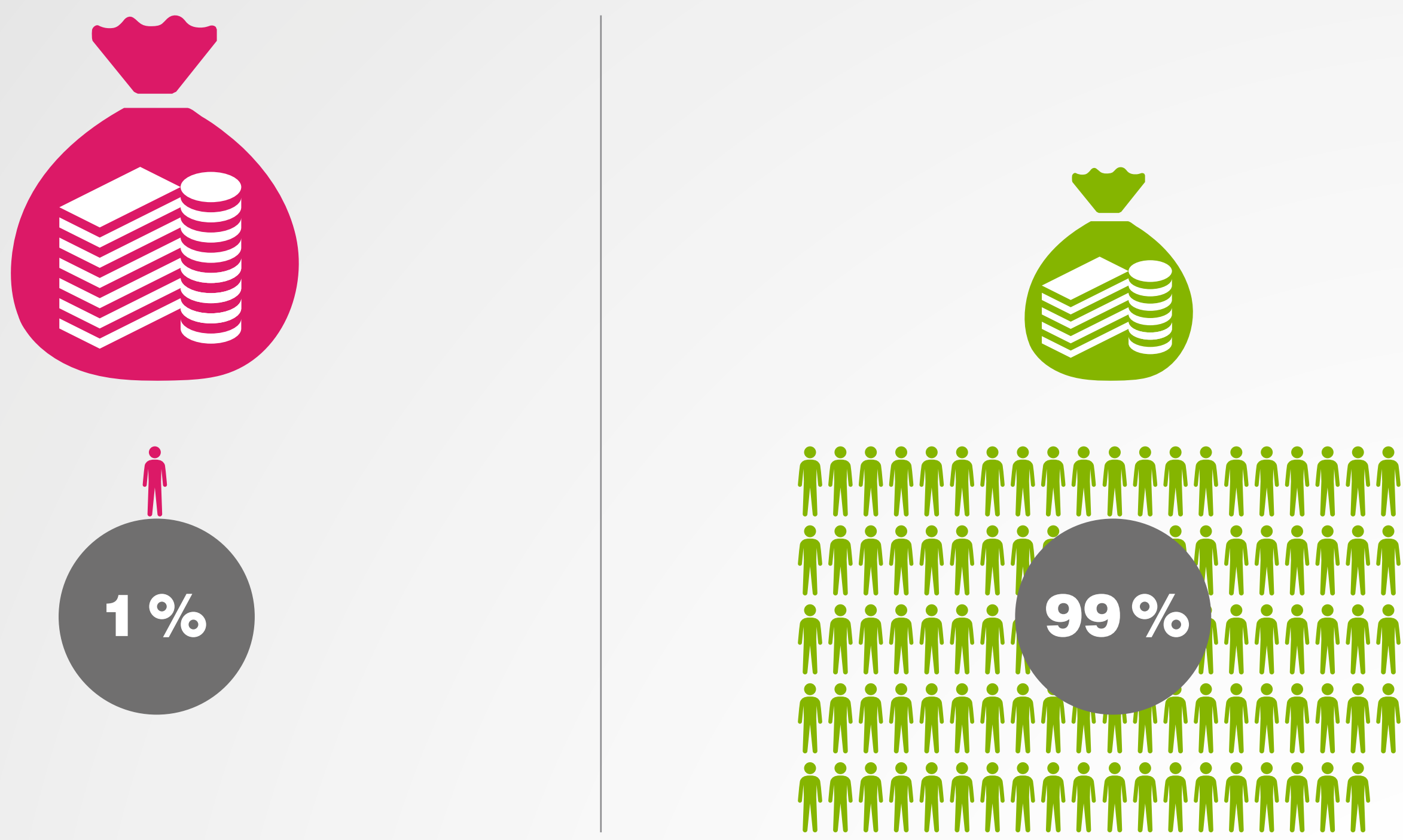
The «Innovation Campus for the Planet», launched by IRD at its Bondy campus and in partner countries, aims to open up research to society and the economy to boost innovation aimed at sustainable development. The ideas stemming from partnership research are decisive in the innovation chain and are nurtured in co-creation locations that boost creativity.



REDUCED INEQUALITIES

At global level, significant steps have been made to reduce poverty. However, substantial inequalities within and between countries remain. These concern living conditions and income, but also access to services, healthcare and education, etc. Research contributes to developing the tools needed to measure, monitor changes and analyse the causes of inequalities, as well as their consequences. Scientists emphasize on how reducing inequalities helps to ensure that economic growth leads to significant drop in poverty. They have equally identified that the inequality of opportunity (race, ethnic group, origin, sex, etc.) is likely to affect certain population due to the discrimination that they suffer from. More recently, research has also focused on inequality within families.

Wealth inequality



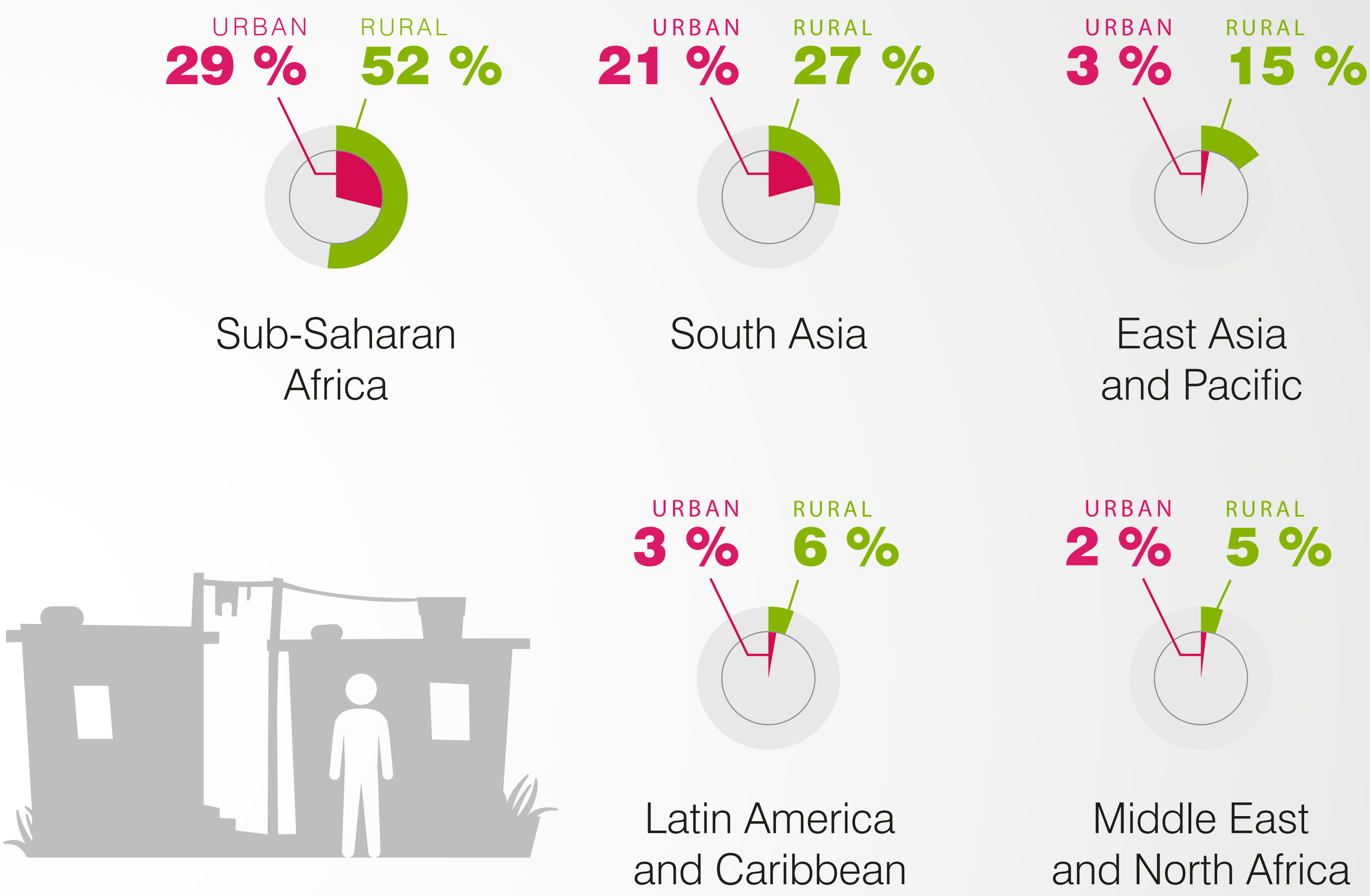
In 2015, the richest 1% in the world have more wealth than the other 99% put together.

62 people in the world have more assets than the **poorest half of the world population.**

Source: Oxfam

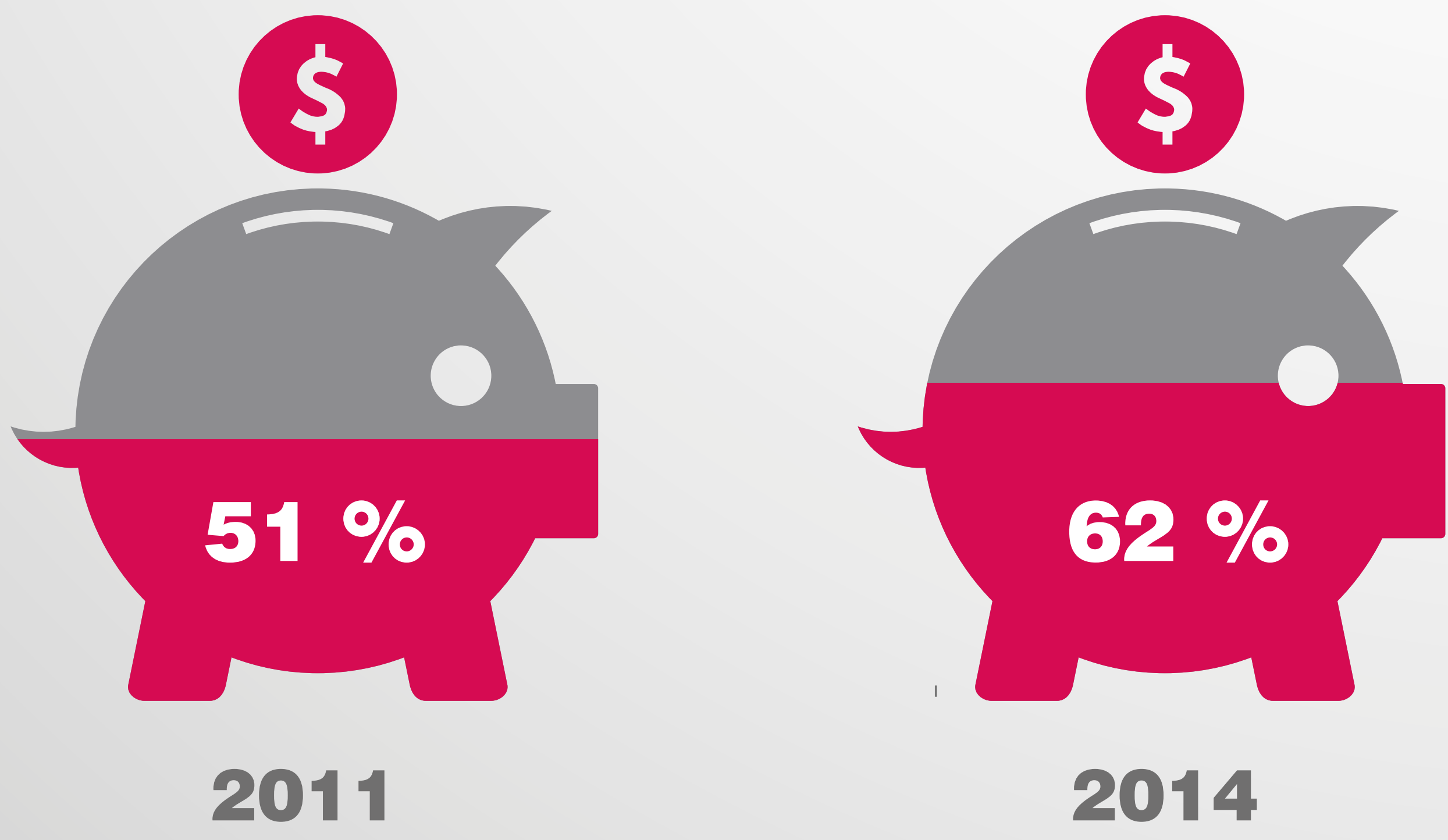
Inequality between rural and urban areas

Portion of the population living in extreme poverty (less than \$1.9 per day) in rural and urban areas in developing countries



Source: World Bank

Population with a bank account

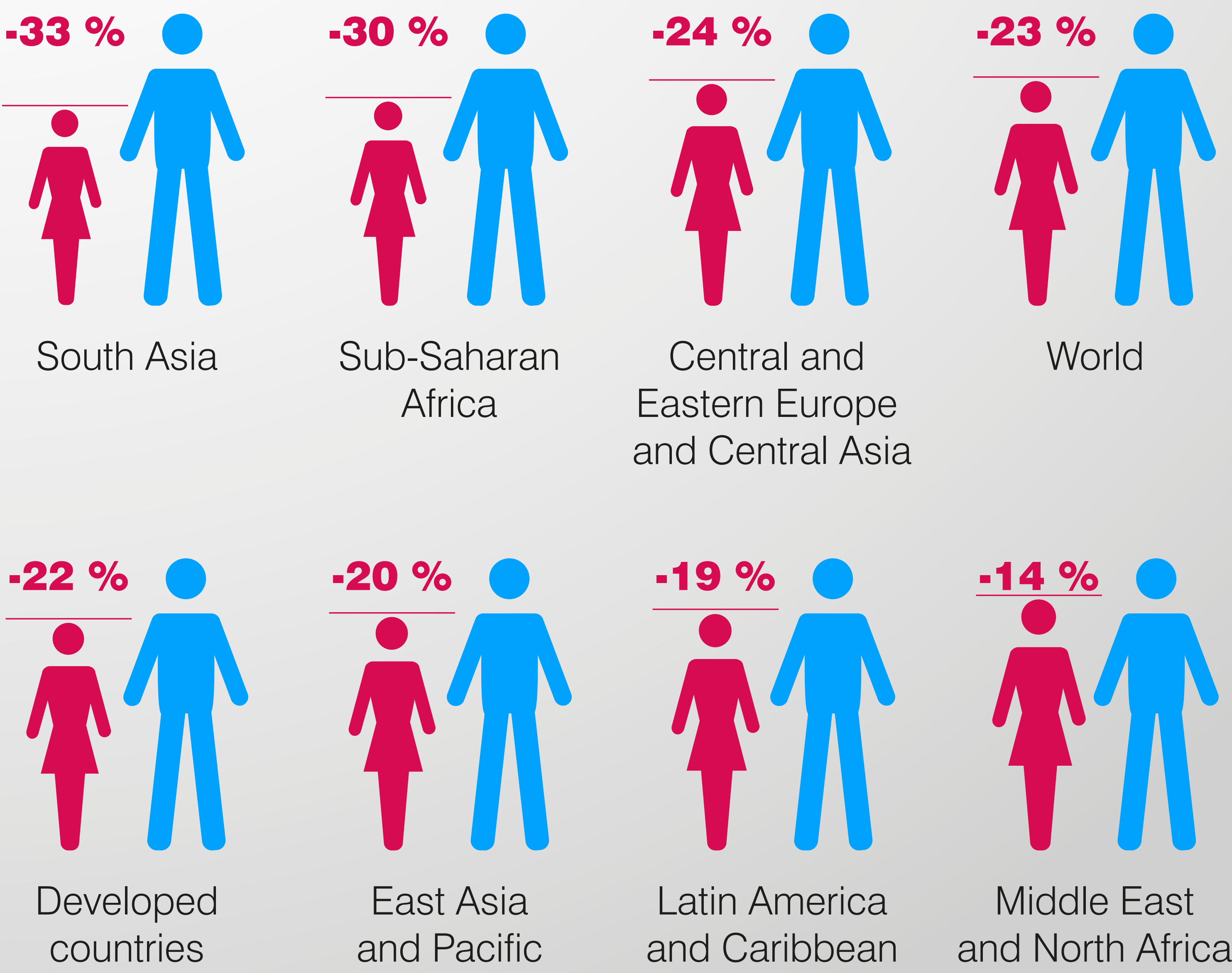


Worldwide population with a bank account has increased from 51% in 2011 to 62% in 2014.

Progress is substantial but two billion people still have no access to banking services.

Source: UN, 2016 Sustainable Development Goals report

Wage inequality



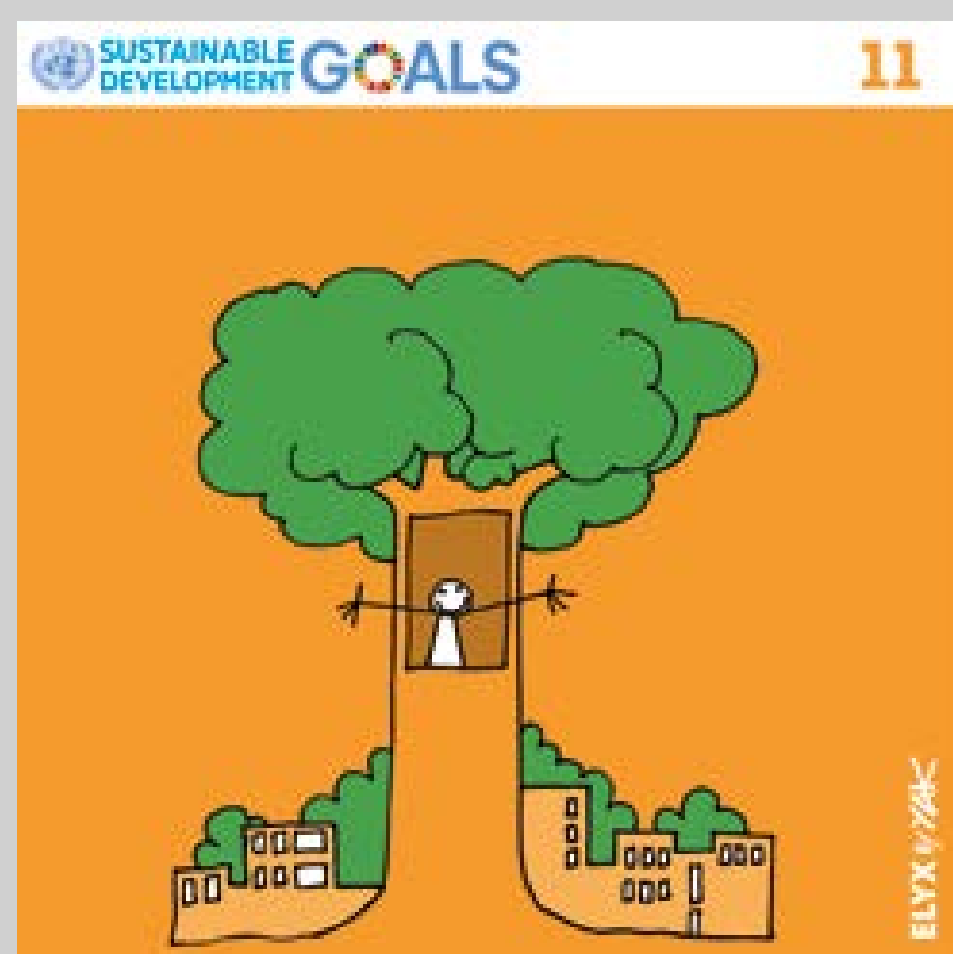
Wage gap between men and women in 2014

Source: ILO

Gender inequality

Wage inequality between men and women is massive in urban job markets in French-speaking Africa. According to researchers, this is largely explained by inequalities in levels of education. Furthermore, substantial fertility rates among women may also hamper access to productive employment.



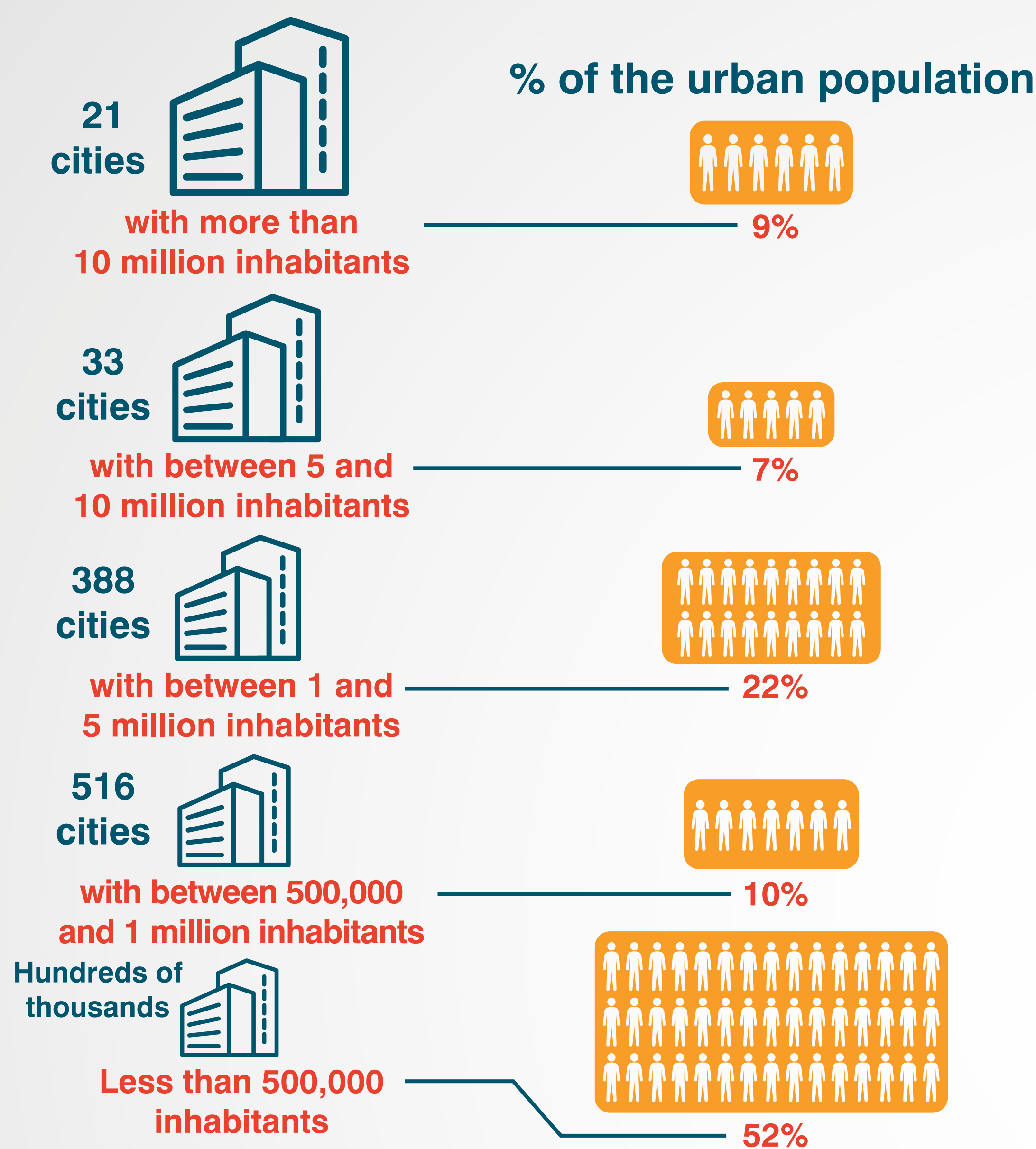


Sustainable Cities and Communities

Today, more than half of humanity lives in cities and 95% of city dwellers live in developing countries in large African, Latin American and Asian cities. By 2050, this proportion is expected to reach two thirds of the world’s population. Not only do they represent drivers of economic growth and innovation, cities are also places with significant levels of insecurity and vulnerability, social instability and inequality, environmental pollution, etc.

To design the cities of 2050 to make them inclusive, safe, resilient and sustainable, we have to, from now on, look at the inequalities, failures and transformations that are currently occurring. There are many challenges ahead. These include controlled over urban development, risk and disaster management, access to housing, work, transport, etc. Scientists document, describe and analyse urban development in developing countries. They provide their expertise to the designers and «builders» of the city of the future.

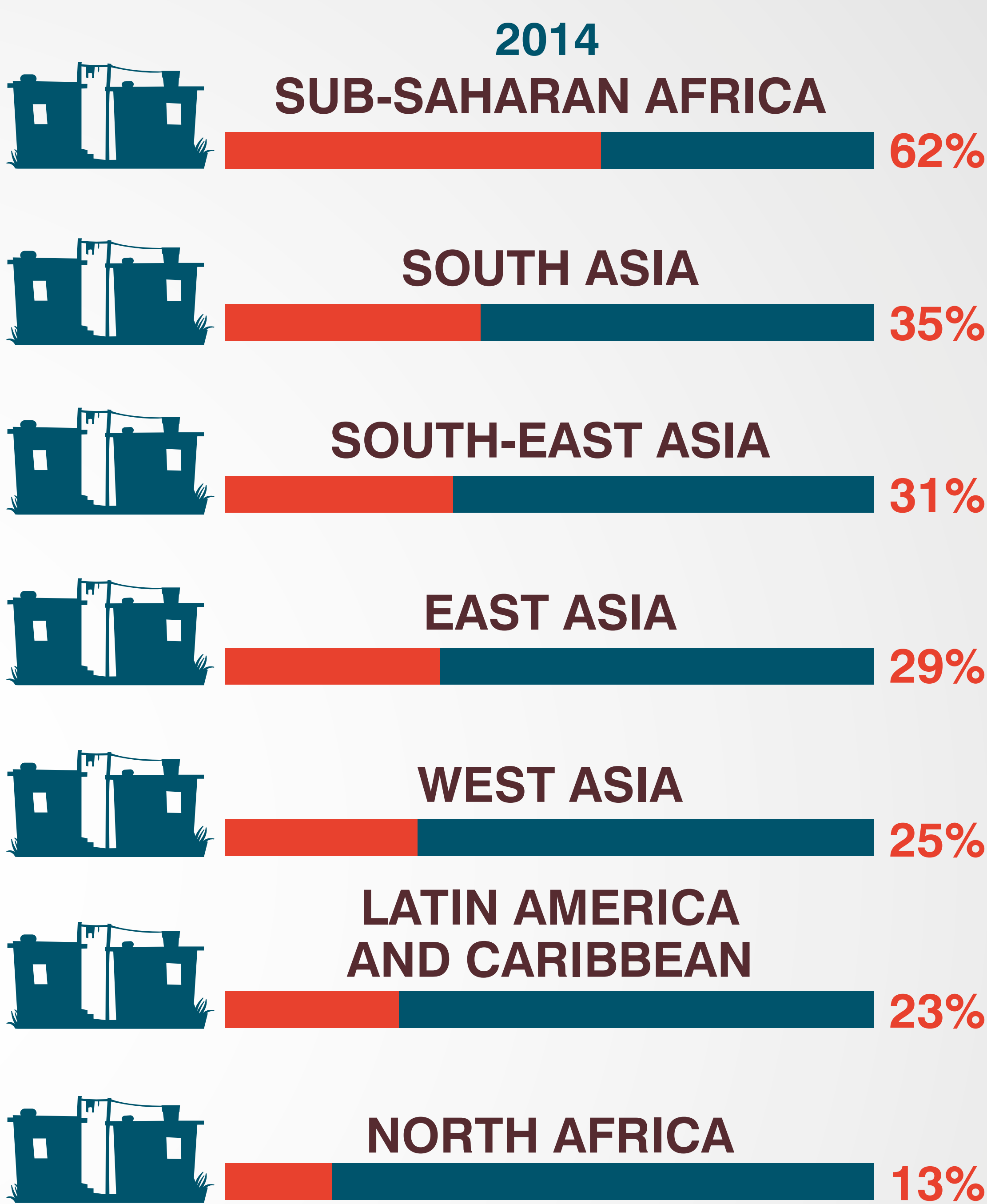
Cities around the world



TOTAL URBAN INHABITANTS: 3,488 MILLION INHABITANTS
i.e. just over half of the global population in 2010

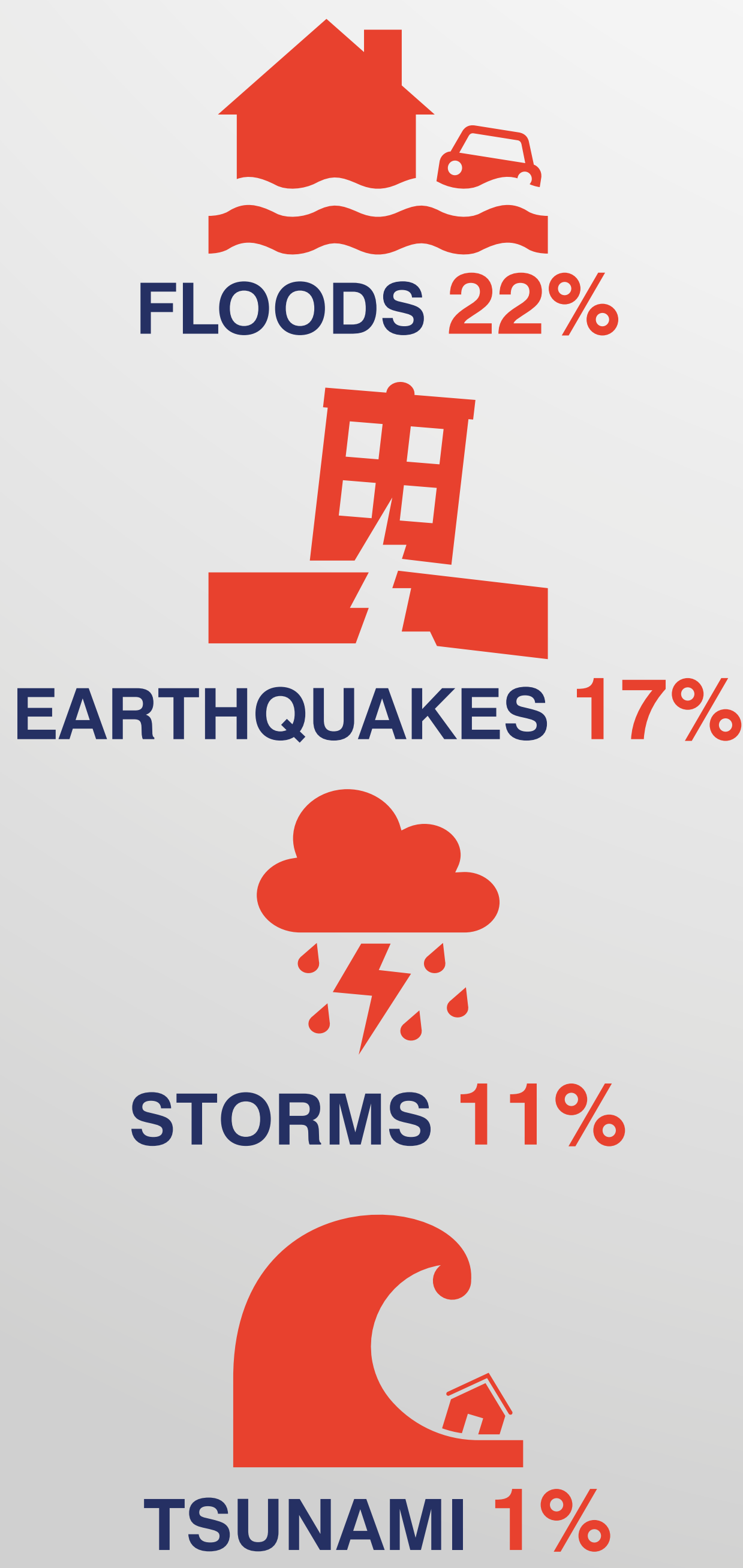
Source: UN Habitat and World Bank

Urban population in shanty towns



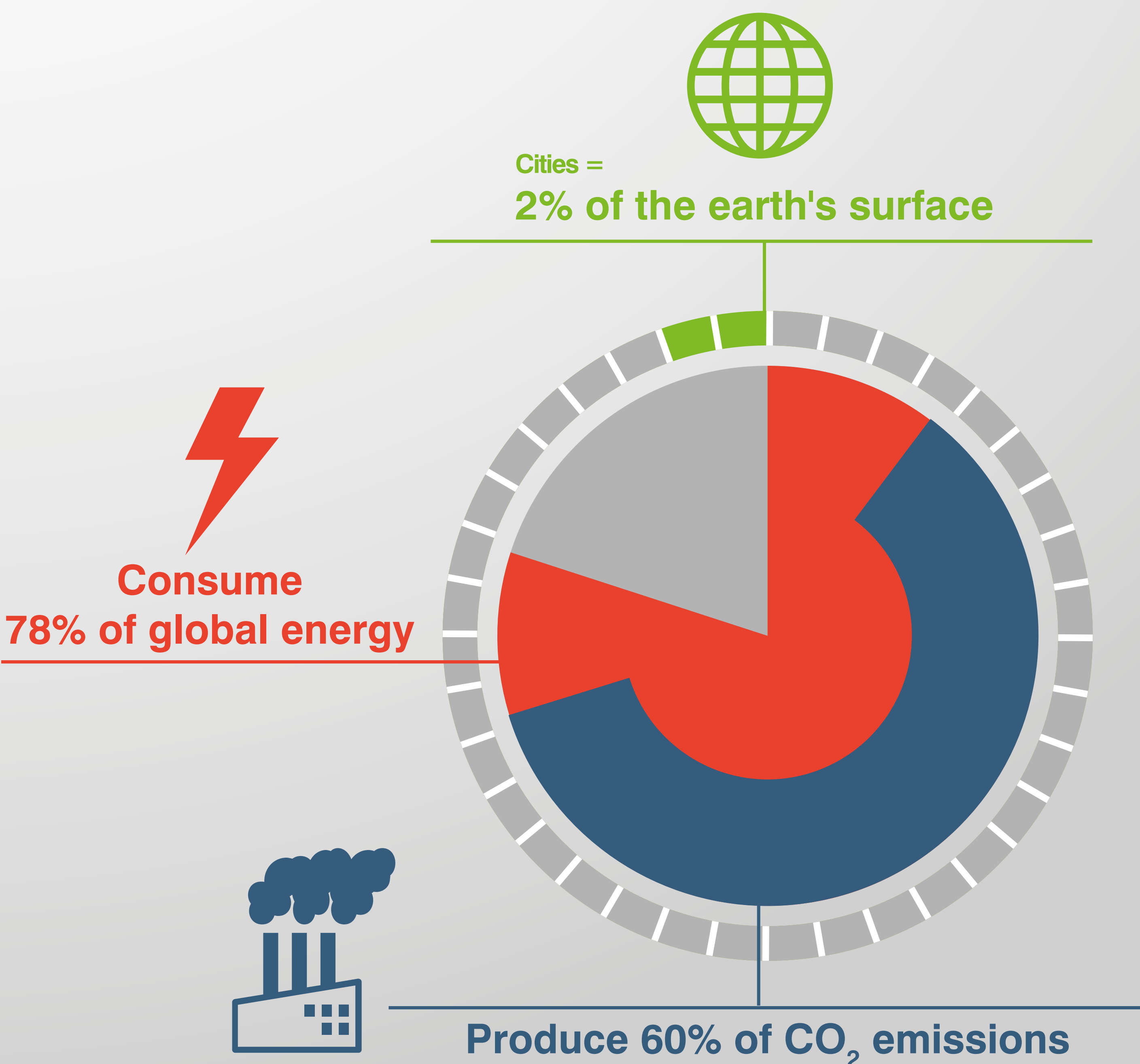
Source: UN

Urban population likely to be affected by natural disasters



Source: Swiss Re

Consumption and CO₂ emissions by cities



Source: UN Habitat

Vulnerability

The PACIVUR programme team strives to identify and understand what leads to vulnerability in certain large cities in Latin America. The results will help decision makers anticipate and mitigate the consequences of a natural disaster, such as a major eruption of the Cotopaxi volcano, located near Quito in Ecuador.

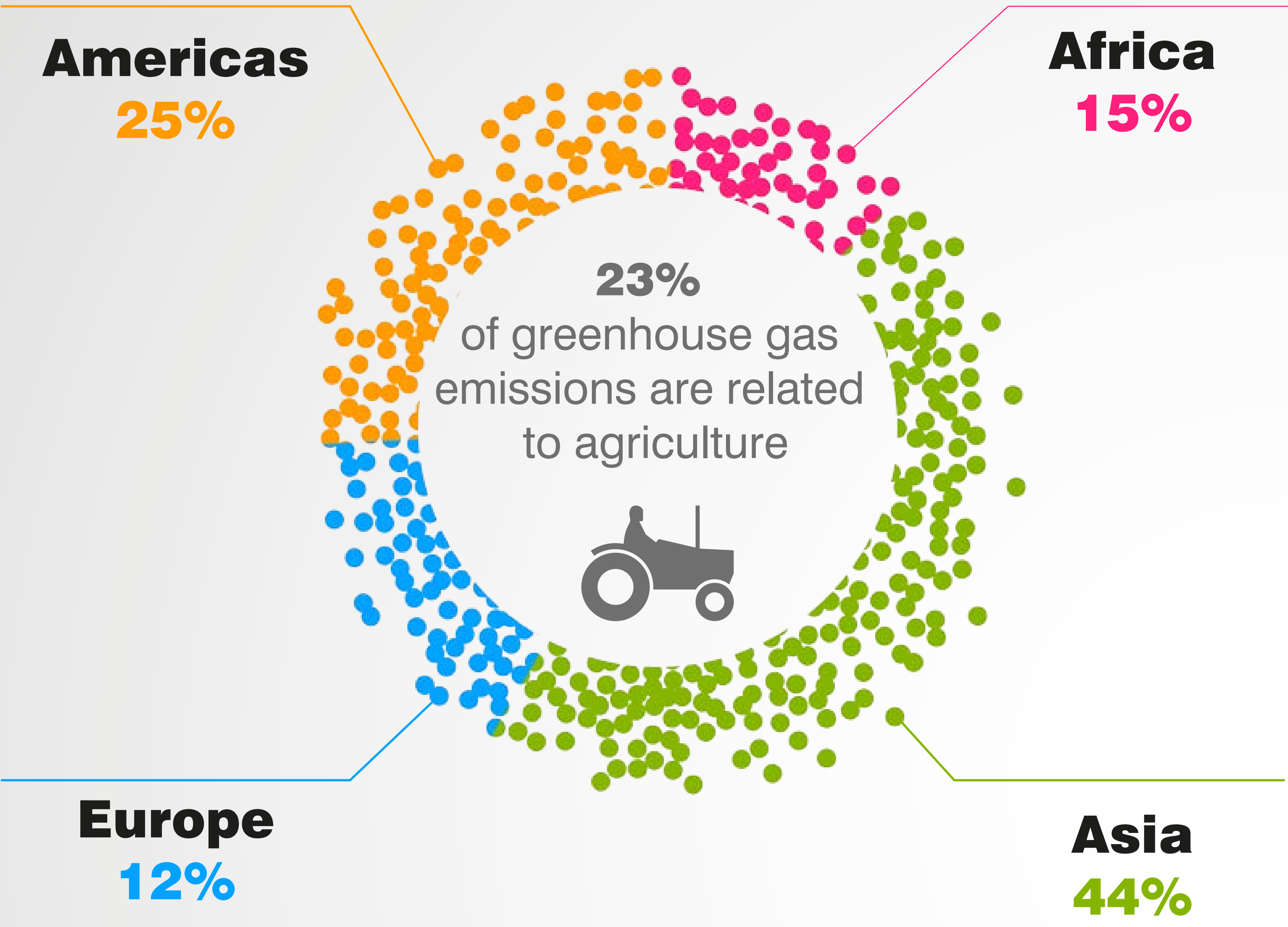




RESPONSIBLE CONSUMPTION AND PRODUCTION

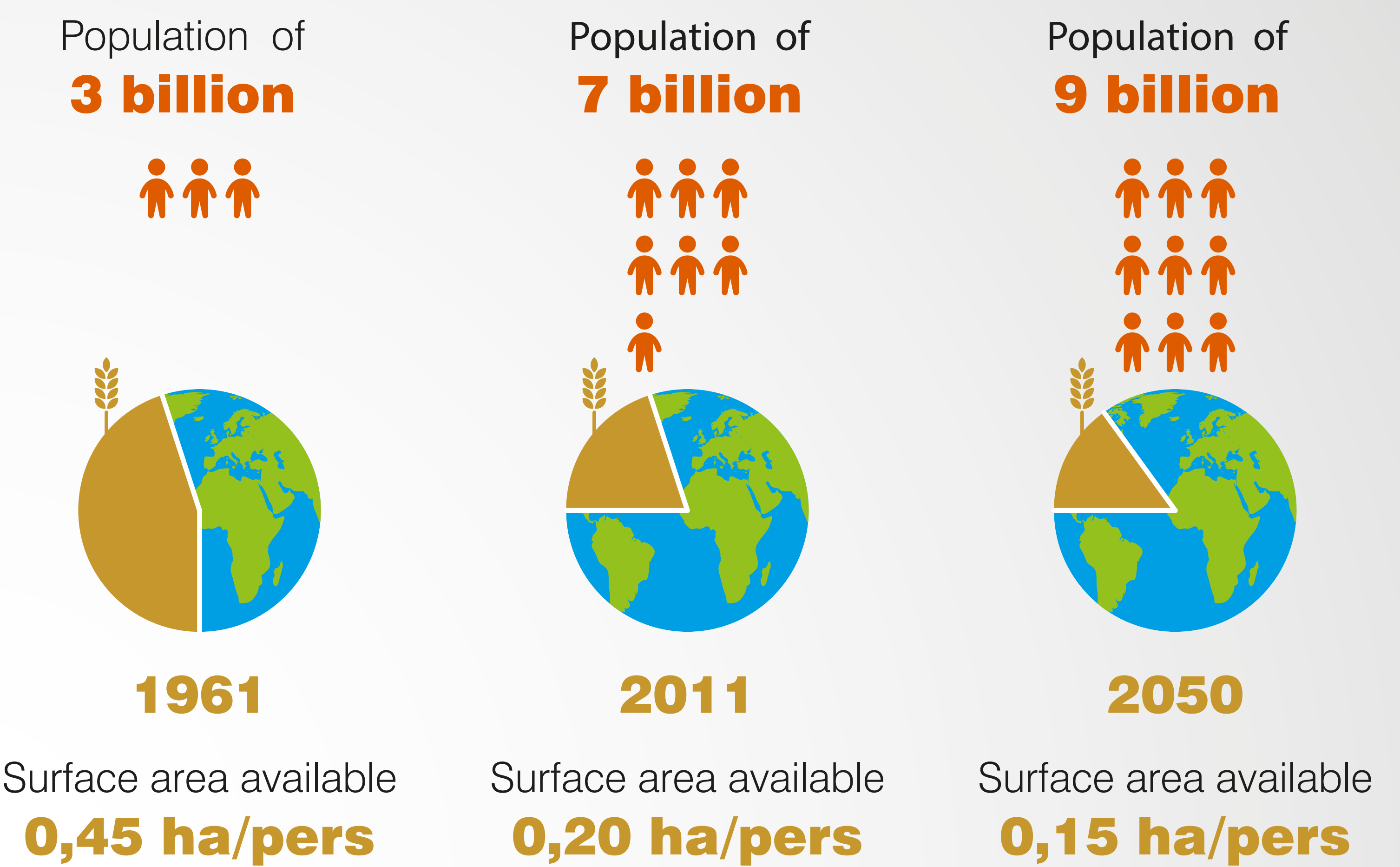
This goal recommends reducing or improving the use of natural resources, especially soil and water. This requires a reduction in food waste and losses throughout production, from the fields to the plate, in order to reduce land and ocean degradation. With this in mind, researchers propose the streamlining of water withdrawal by studying hydrology reserves and adapted irrigation, deploying means for increasing agricultural yields without the use of additional fertilisers, with new (or old!) varieties of plants and techniques promoting sustainable management of agrosystems. This is an essential challenge that must be met if we are to feed close to nine billion people in the future, whilst preserving the environment!

Greenhouse gas emissions related to agriculture by continent



Source: UNCCD 2014

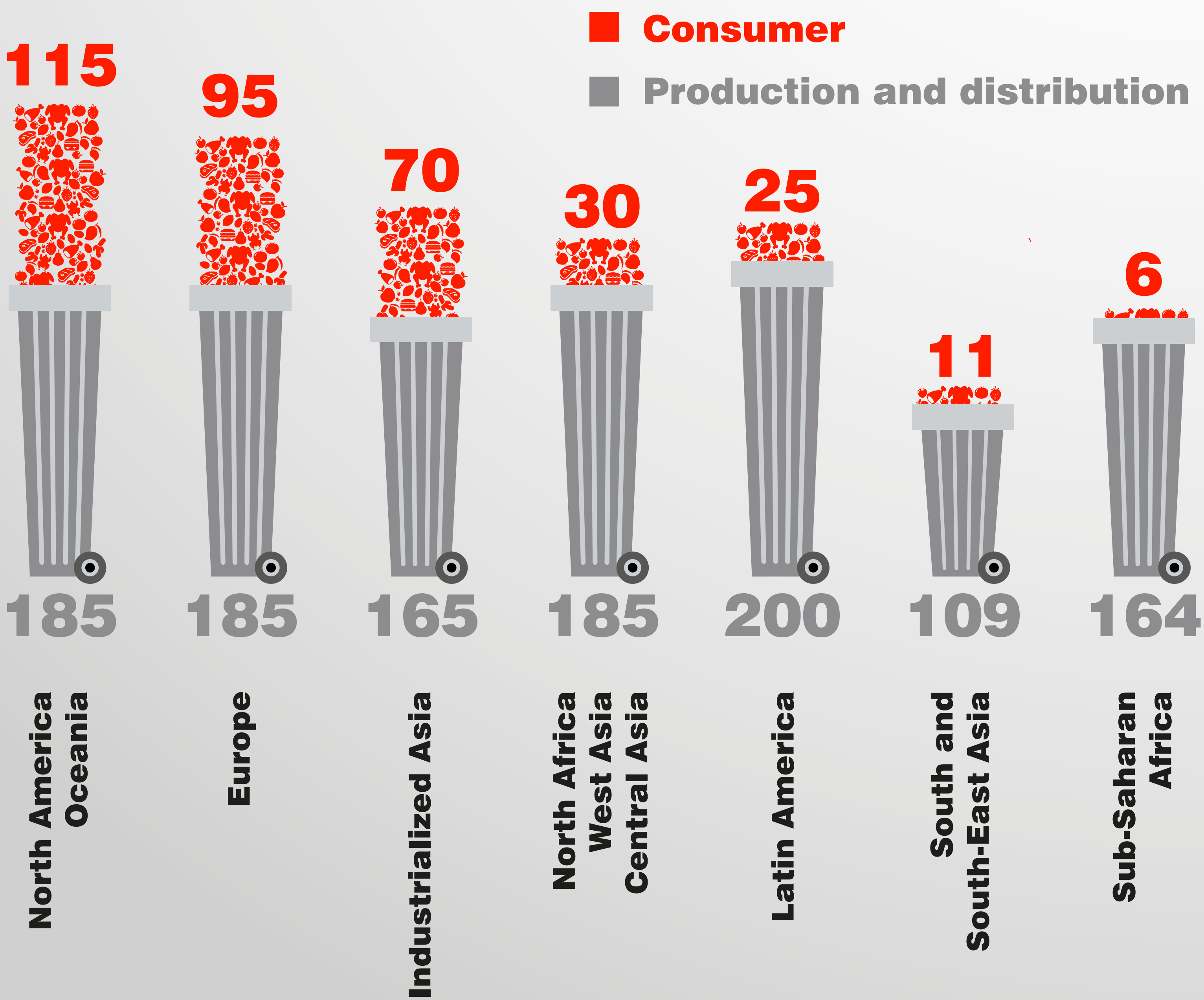
Surface area of agricultural land available to feed an individual



To feed the projected population in 2050, agricultural production will have to increase by approximately 70% worldwide and by 100% in Global South countries.

Source: UNCCD 2014

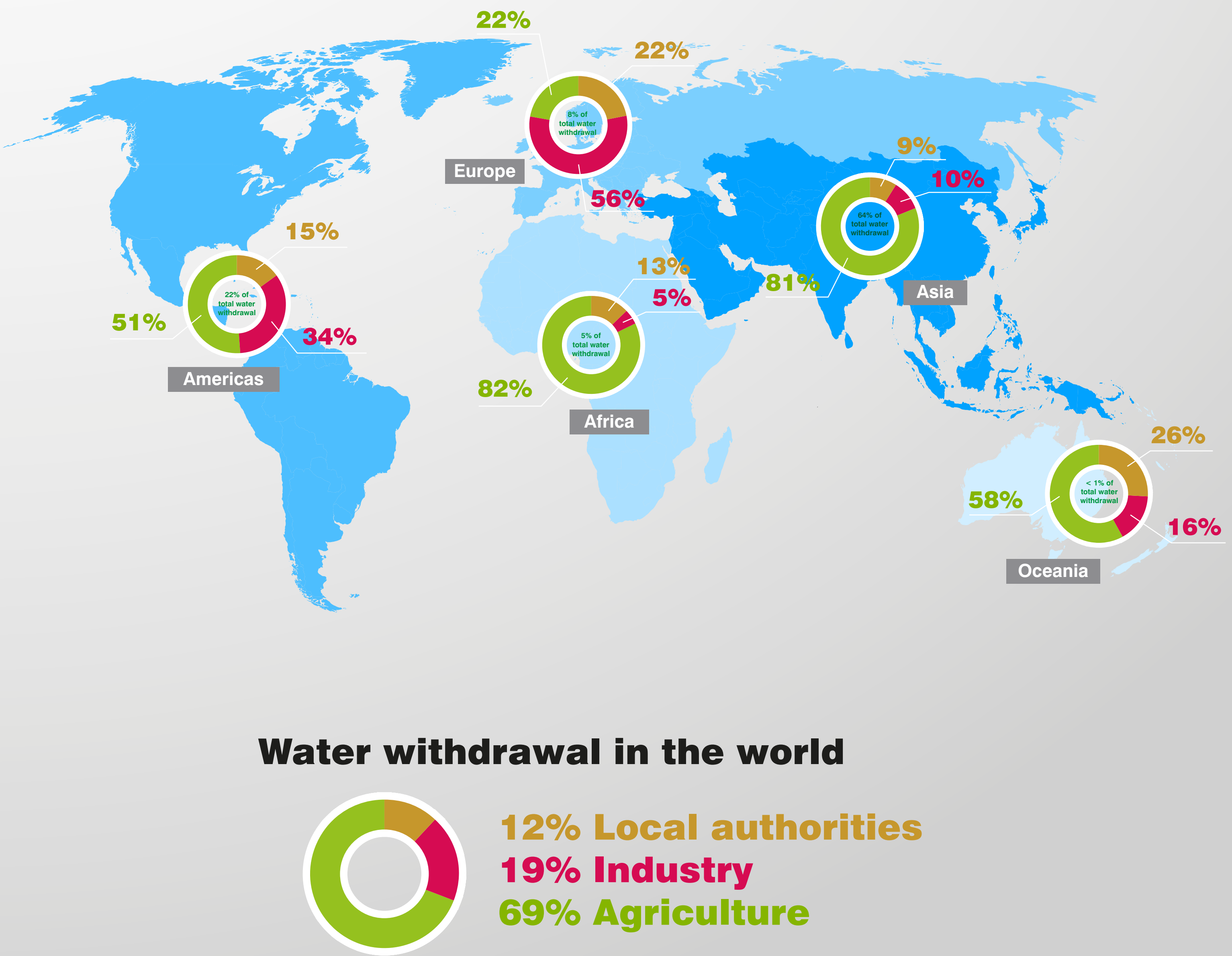
Food waste in kilograms by inhabitant and year



In the world, approximately a third of all food intended for human consumption is lost or wasted, equivalent to 1.3 billion tons per year.

Source: FAO 2012

Water consumption by sector and continent

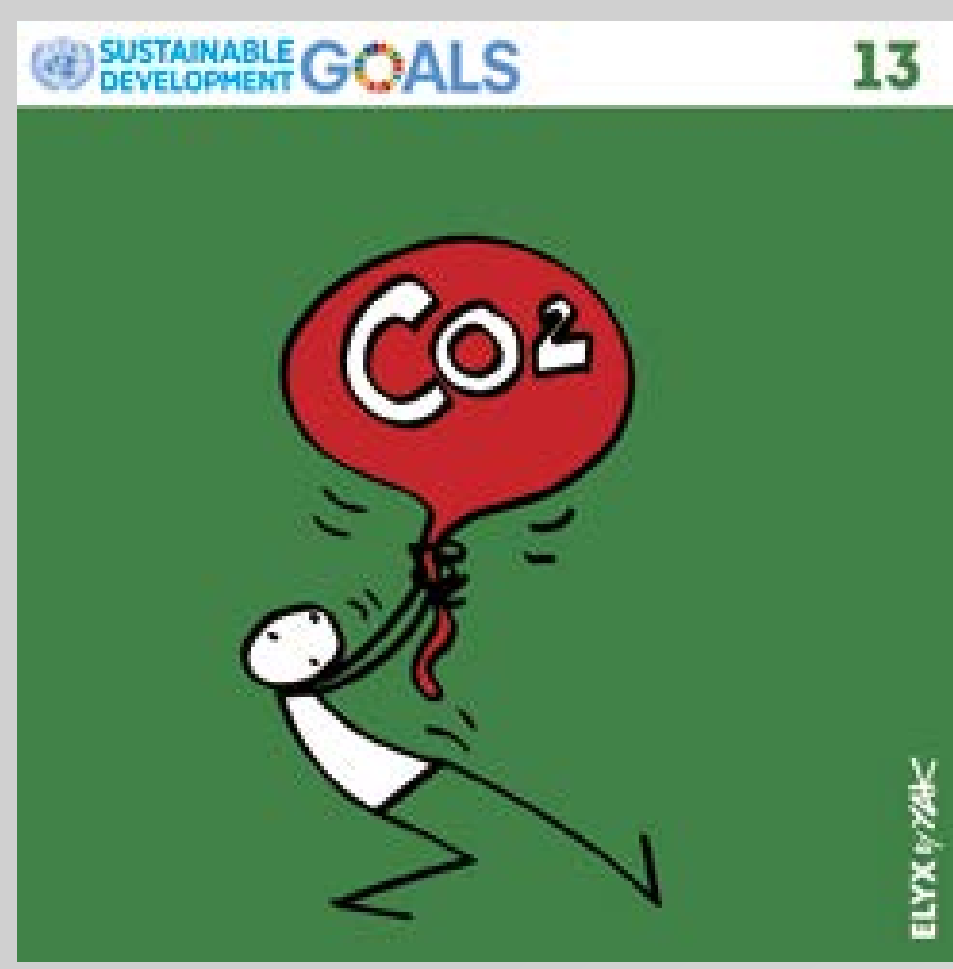


Source: FAO Aqustat 2014



Agroecology

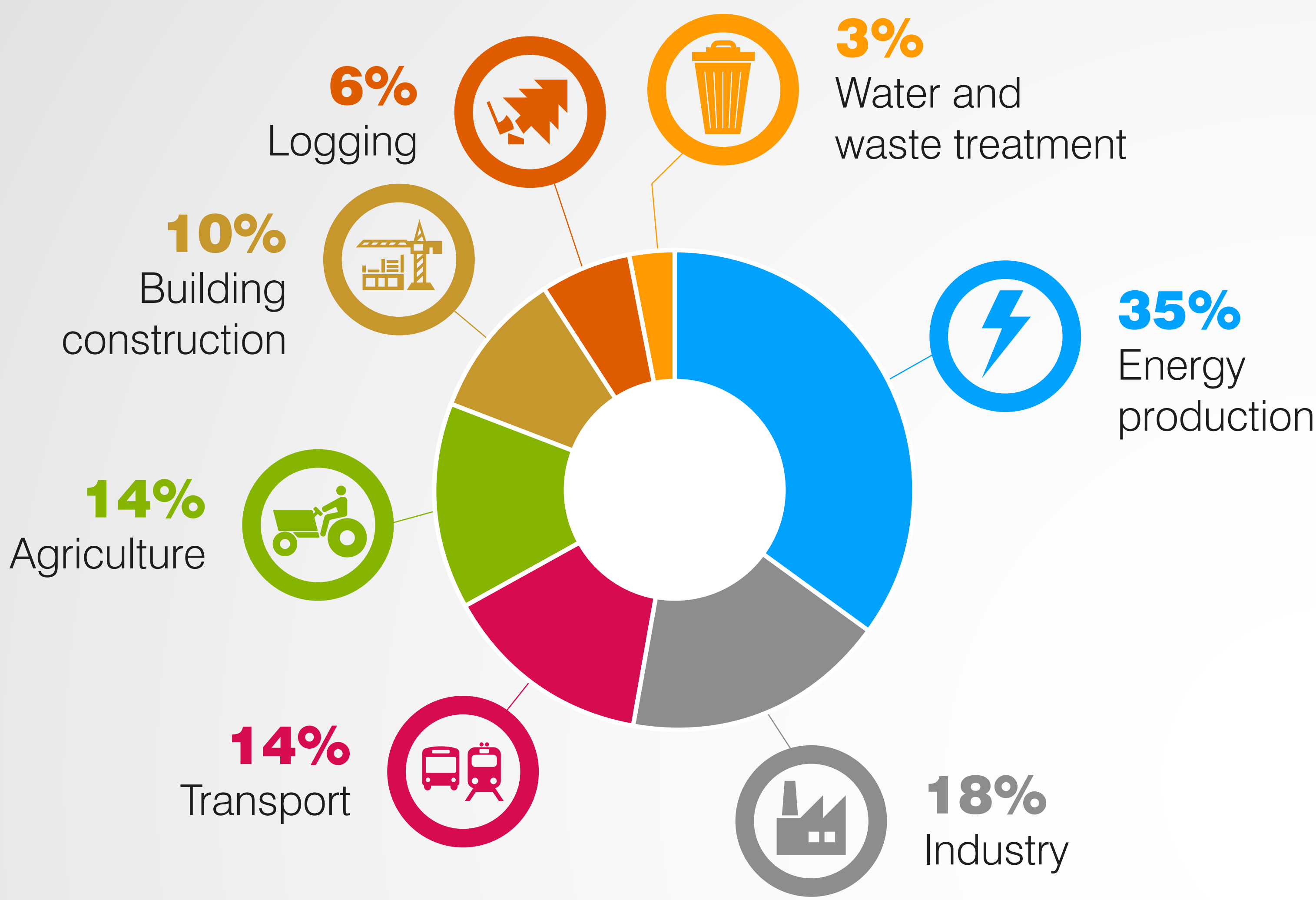
In Northern Togo, new stone barriers are being built. Strengthened by plantations, in this case by an herbaceous plant, the vetiver, the low walls help the soil to preserve its resources and store carbon. This programme, ran in conjunction with AVSF (Agronomists and Veterinarians without Borders), promotes ways of adapting to climate change.



CLIMATE ACTION

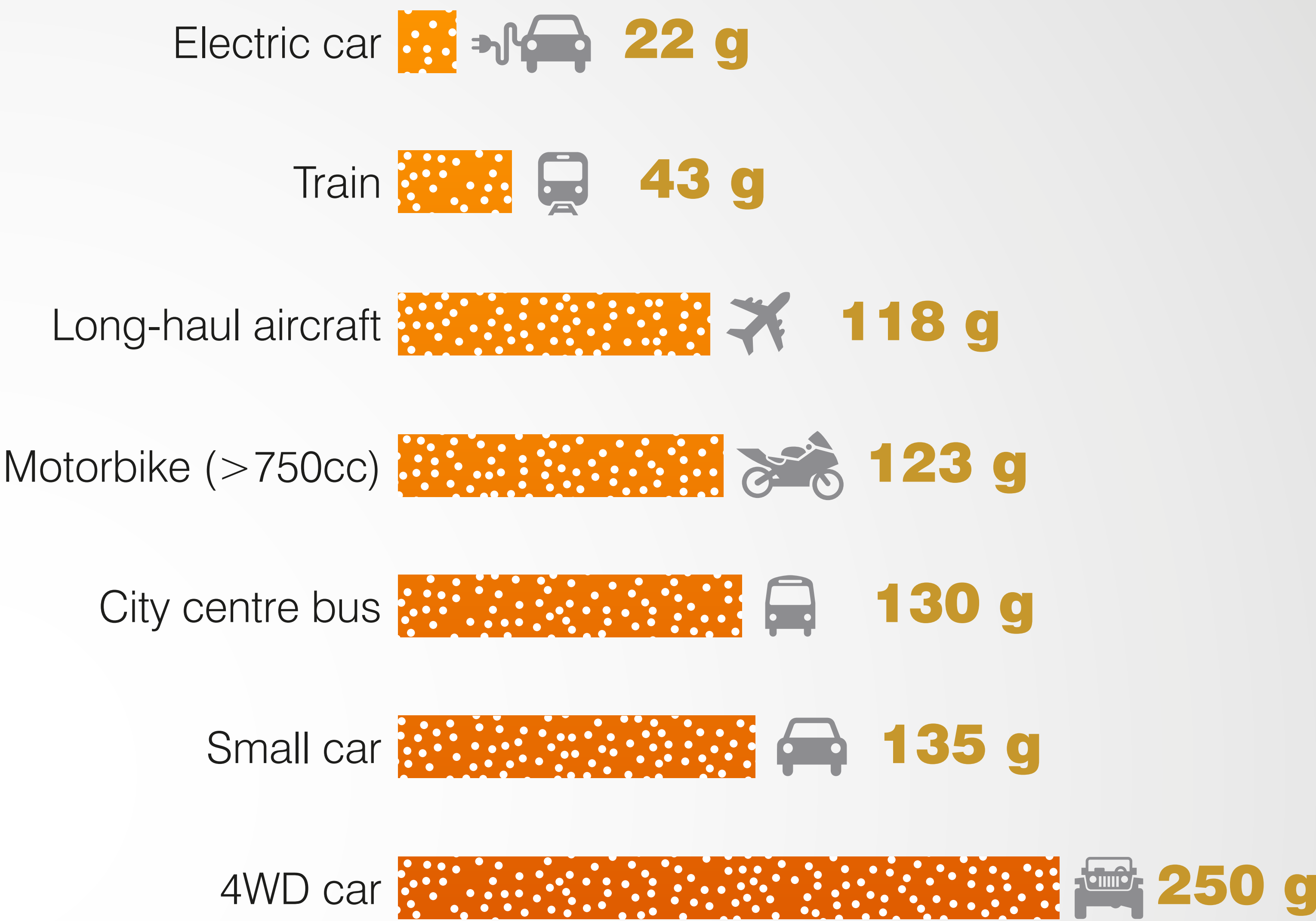
Since 1880, the average temperature of the Earth has increased by 0.85°C. If greenhouse gas emissions are not reduced, the increase in temperature will be 2 to 4.5°C by 2050. It is still possible, however, thanks to an arsenal of technological measures and changes in habits, to limit the increase in temperature to 2°C. To understand these changes and provide appropriate solutions, scientists are studying the physical and chemical conditions of the ocean environment and the atmosphere, their interactions, and the absorption of CO2 by land and the oceans. There are many different effects of climate change. To understand them, researchers are studying the impact of human activities in relationship with the environmental disruption induced by climate change.

Portion of activities contributing to climate change



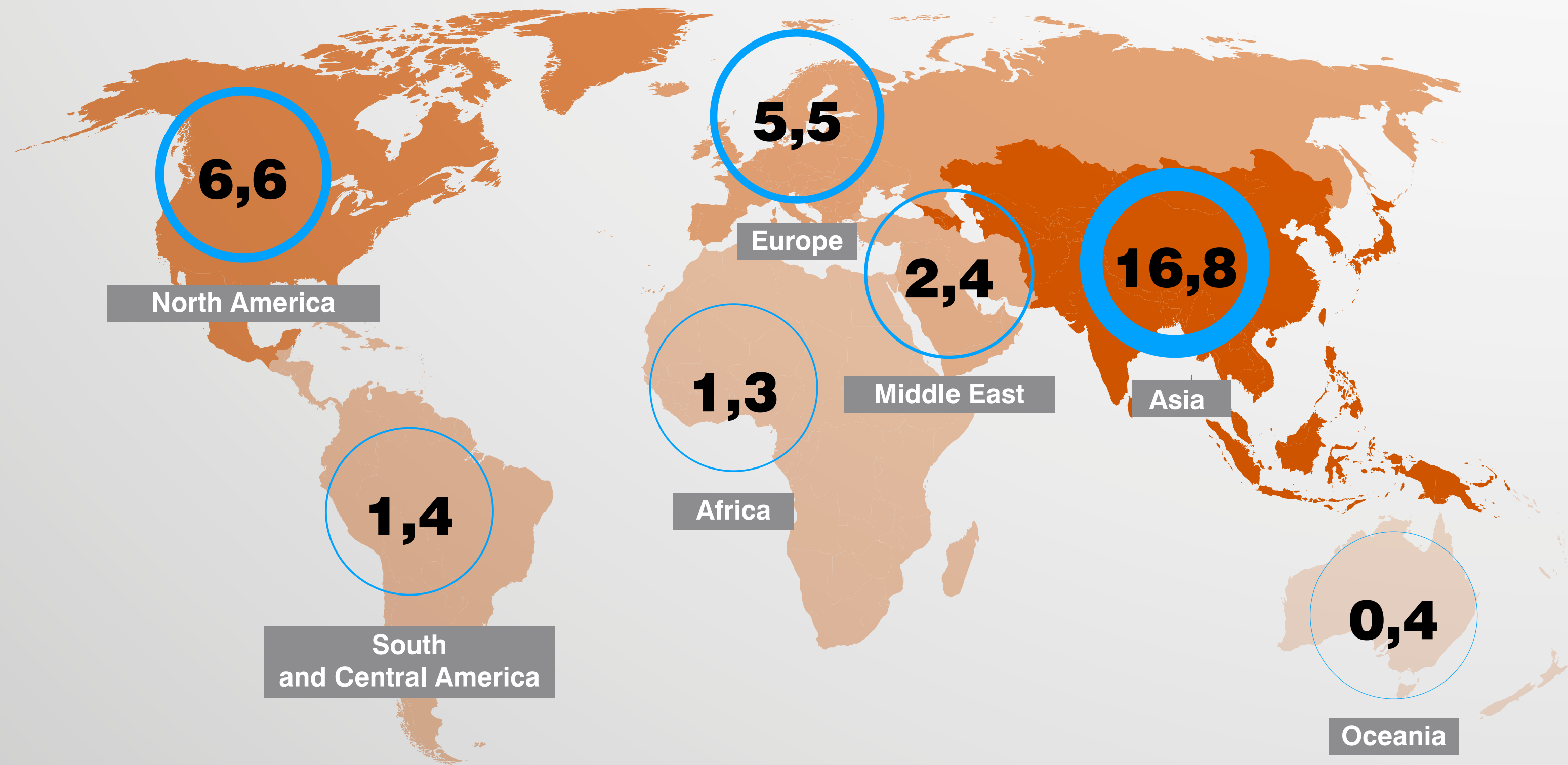
Source: GIEC 2014

CO₂ emissions of transport modes by passenger and by kilometre



Source: Ademe

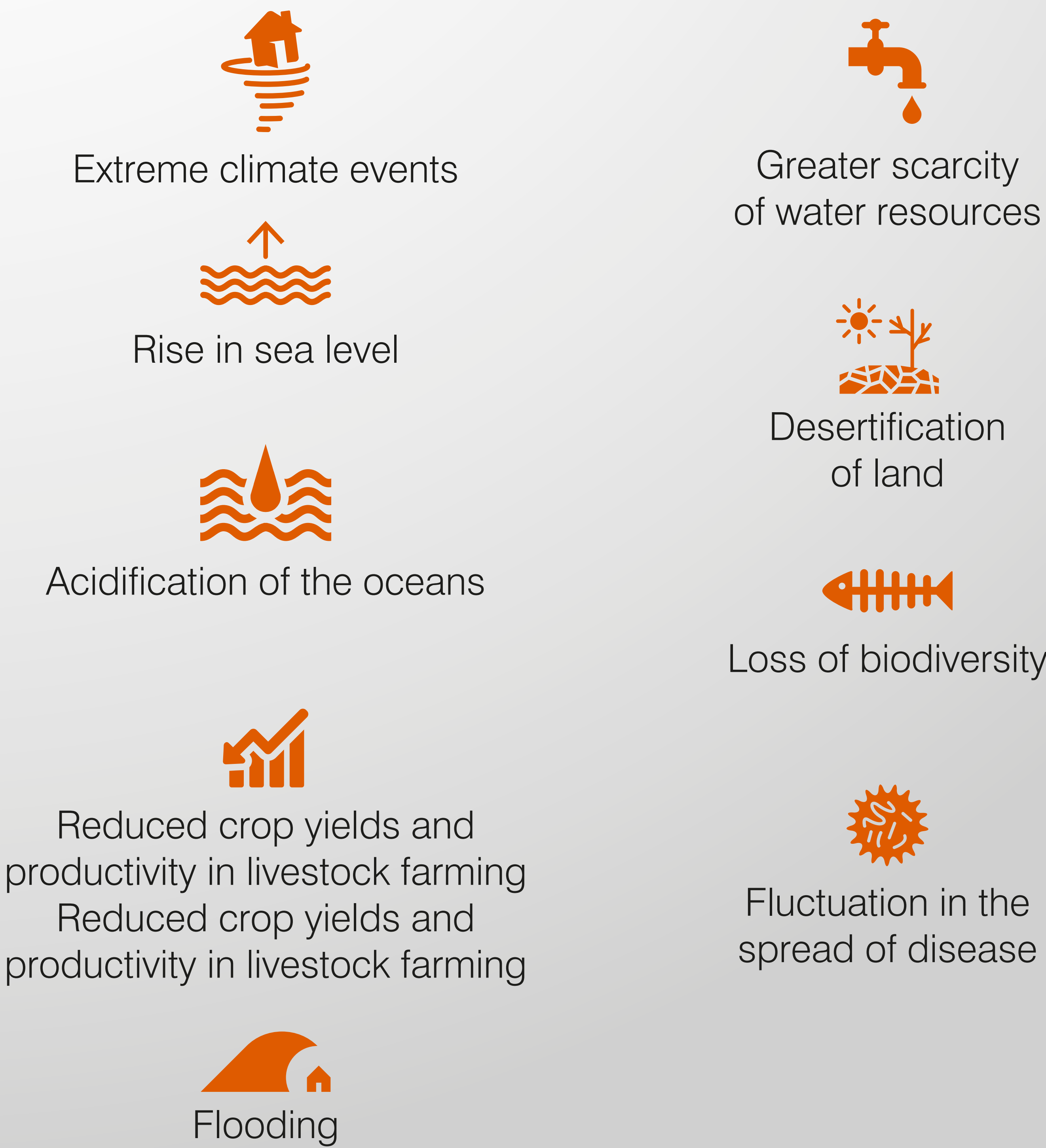
CO₂ emissions in 2014 (billions of tons)



Worldwide: 34.4 million tonnes per year

Source: Global carbon atlas

Main risks related to climate change



Under intense scrutiny

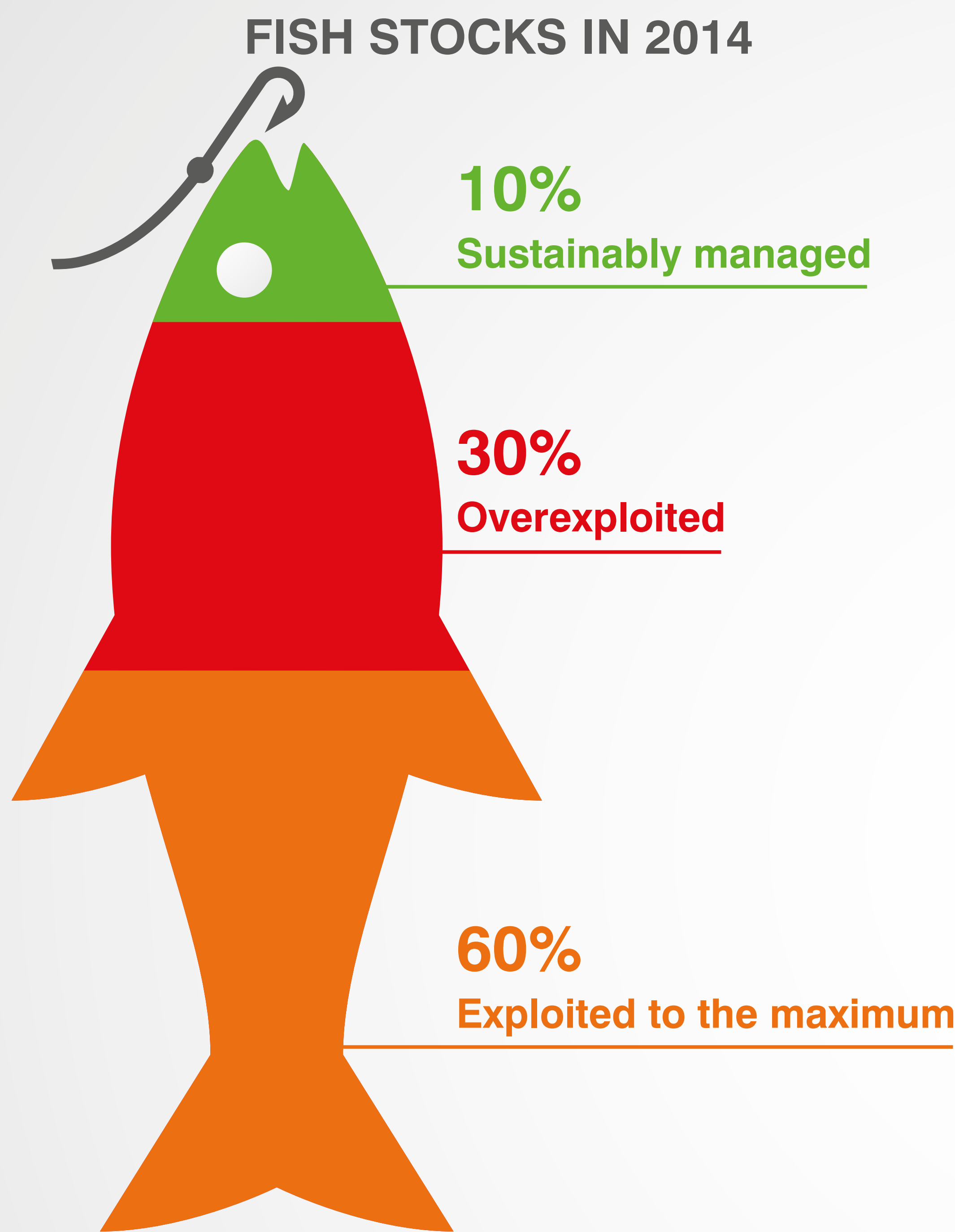
6,400 metres above sea level, opposite Mount Everest in Nepal, scientists have set up a weather station that measures temperature, wind speed, absorption of radiation by the snow, etc. They are therefore determining the variations in conditions of several benchmark glaciers, spread throughout the entire world. Glaciers, which play a crucial role in controlling water resources, have been significantly affected by climate change.



LIFE BELOW WATER

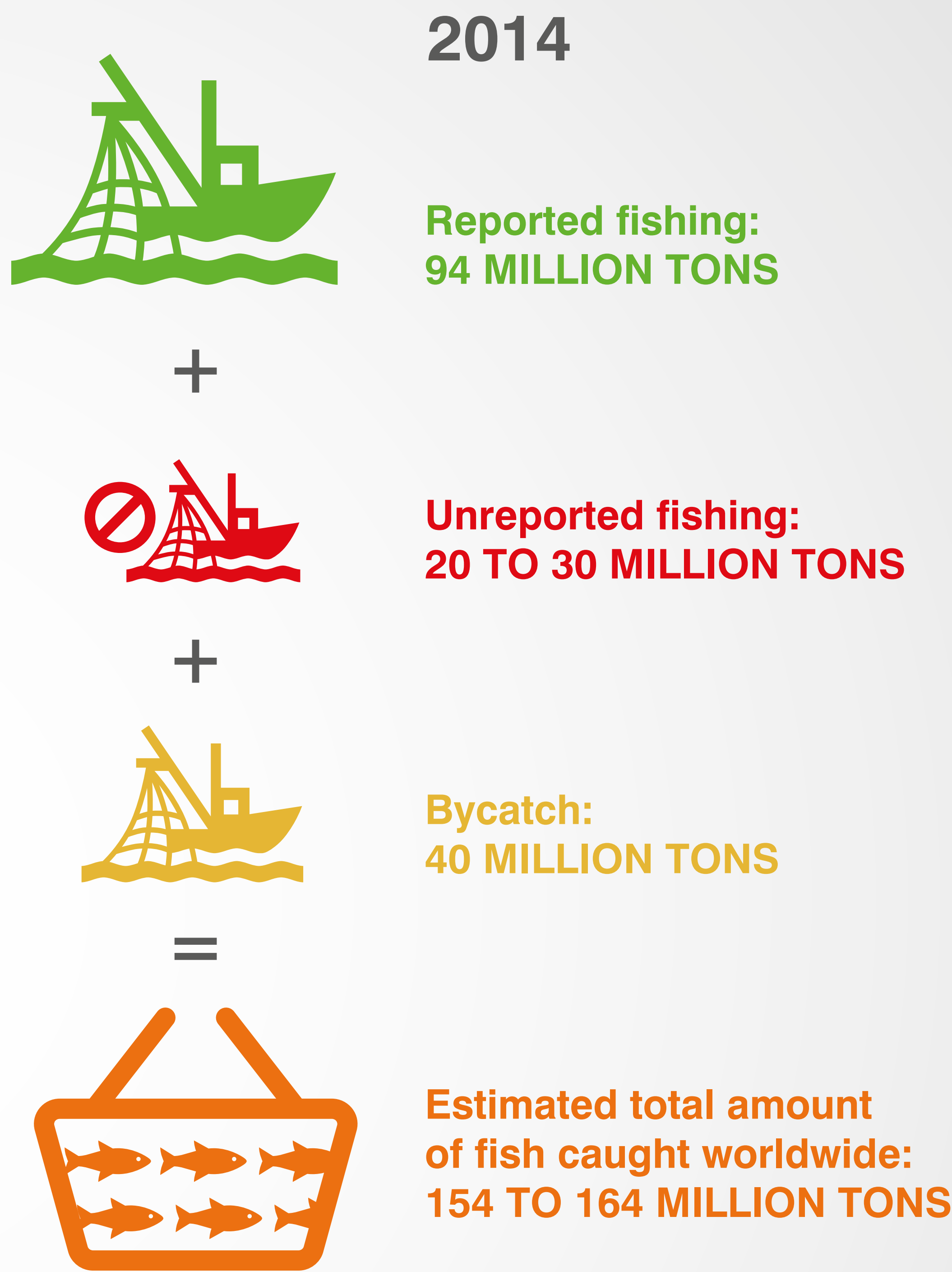
Faced with the deterioration of the marine environment and the increasing scarcity of its resources, it is becoming critical to take steps. More than 100 species of sea fish are now at risk and some local populations have already been wiped out. Climate change is now considered along with destructive fishing practices as one of the main factors in causing major disruption to natural marine resources. This threatens food safety, especially in developing countries, which are the most vulnerable. Research is focused on measuring the level of damage done to the oceans and determining the origin (acidification, pollution, etc.), understanding the dynamics of marine species and providing decision-makers with knowledge to manage fishing, offer marine and coastal ecosystems long-term protection, particularly by setting up marine protected areas, within which human activities are controlled.

Sea fishing



Source: FAO

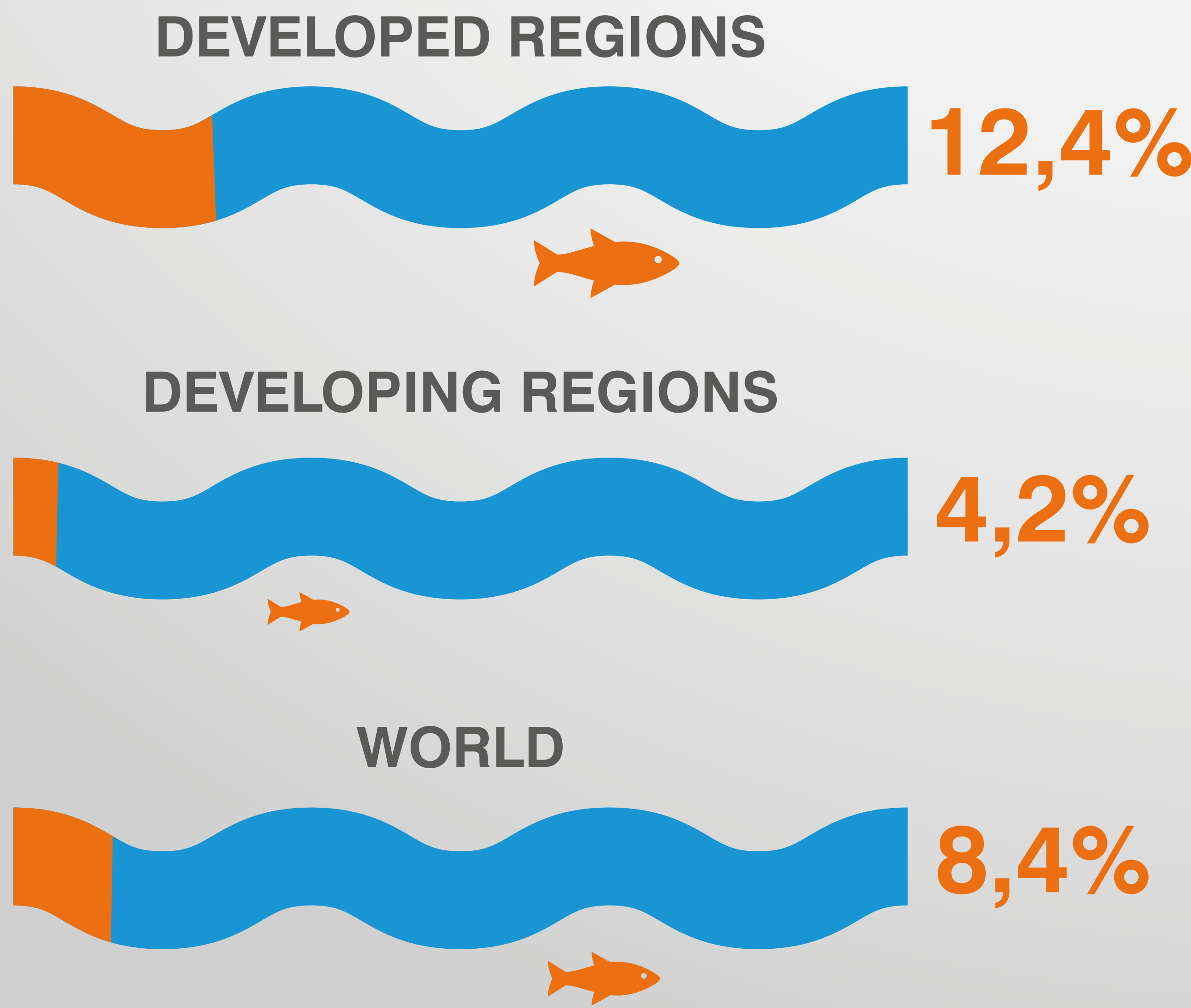
Bycatch and illegal and unreported fishing



Bycatch: species caught unintentionally that either have little or no commercial value

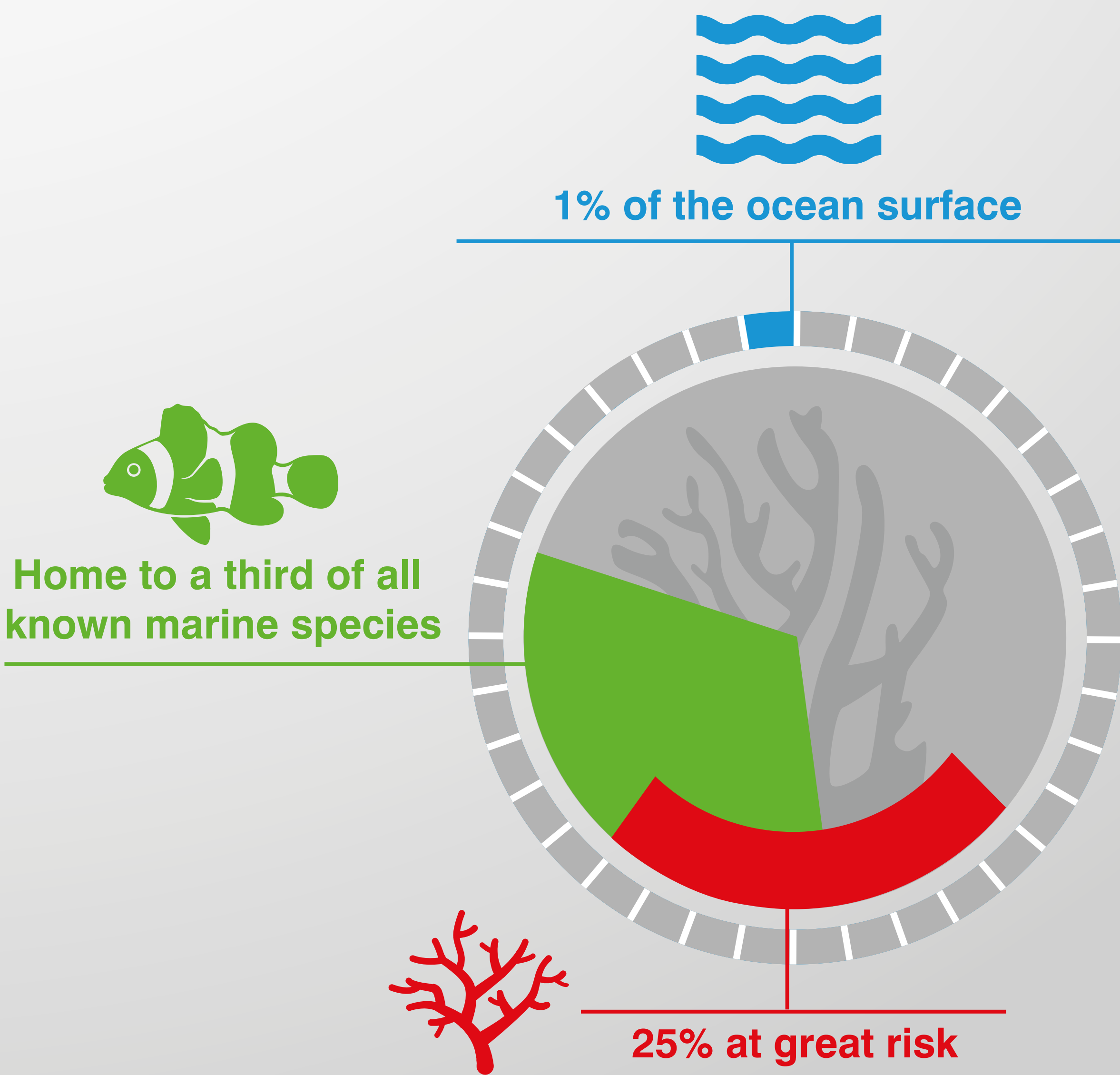
Source: FAO

Proportion of protected coastal areas



Source: FAO

Coral reefs at risk



If nothing is done, half of the world's coral reefs will be at risk by 2050

Source: UN

Proliferation

Since the turn of the century, jellyfish have engulfed several seas such as the Sea of Japan, the Black Sea and the Mediterranean Sea, as well as along the coast of Namibia. Researchers have shown that the overfishing of sardines, herrings and anchovies – jellyfishes' main competitors for food – is the main culprit, in conjunction with climate change. The disappearance of these fishes frees up ecological niches, in which the jellyfish prosper.

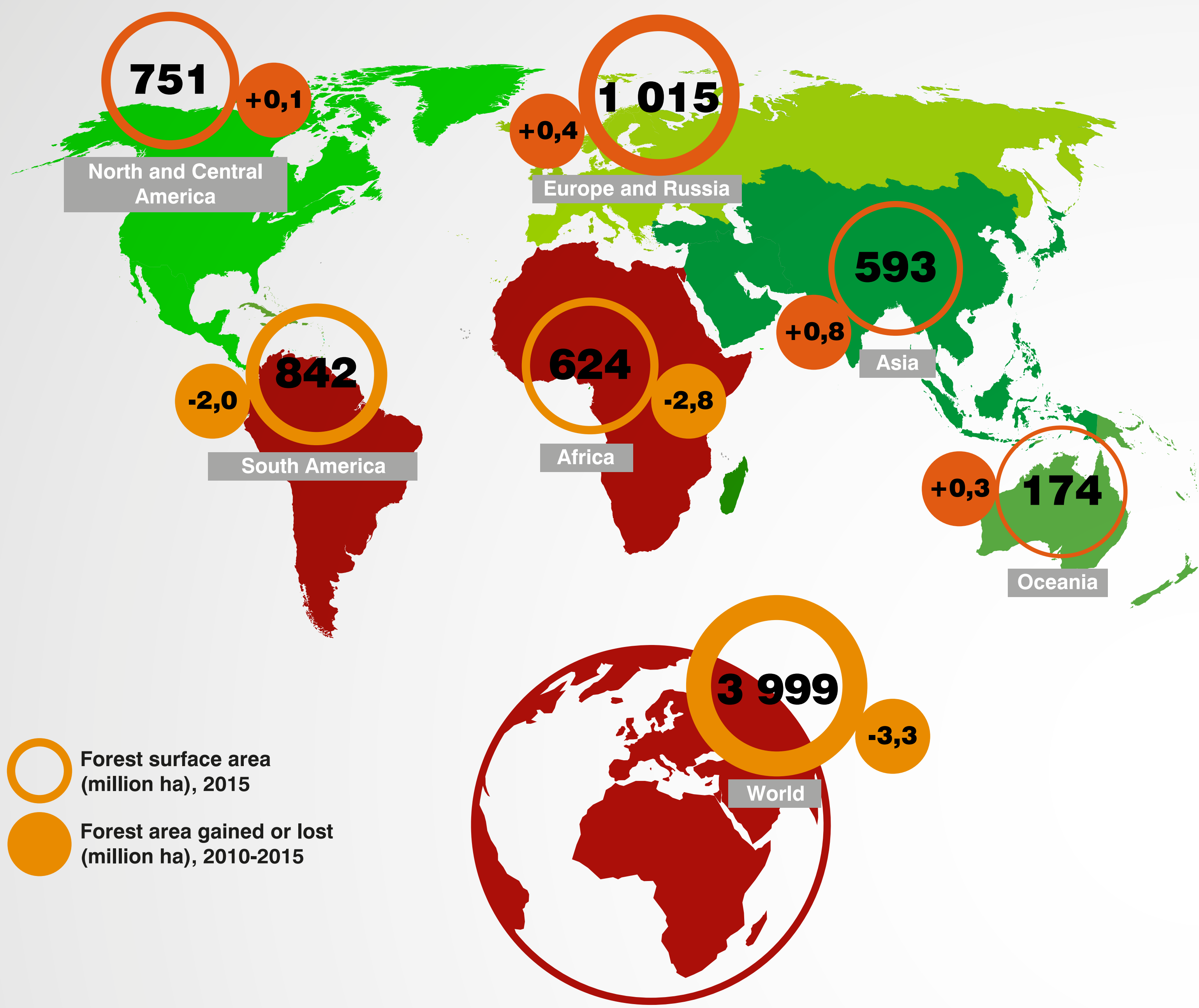


LIFE ON LAND

Life in natural environments is precious but fragile. Forests cover 30% of the Earth’s surface and are home to 80% of the planet’s species of animals, plants and insects. More than 1.6 billion people depend on them for their livelihood. 52% of the land used for agriculture has been moderately or severely affected by soil degradation, with a risk of desertification. Protecting all of the land ecosystems threatened by substantial environmental changes and the development of human activities lies at the heart of this goal. Researchers analyse and measure the impact of these changes on the most vulnerable ecosystems: forests, mountains, wetlands and arid areas. Specifically, they propose solutions to minimise the impact, based on sustainable farming techniques, which are focused in particular on carbon sequestration in soils, limiting soil degradation and mitigating climate change and its effects.



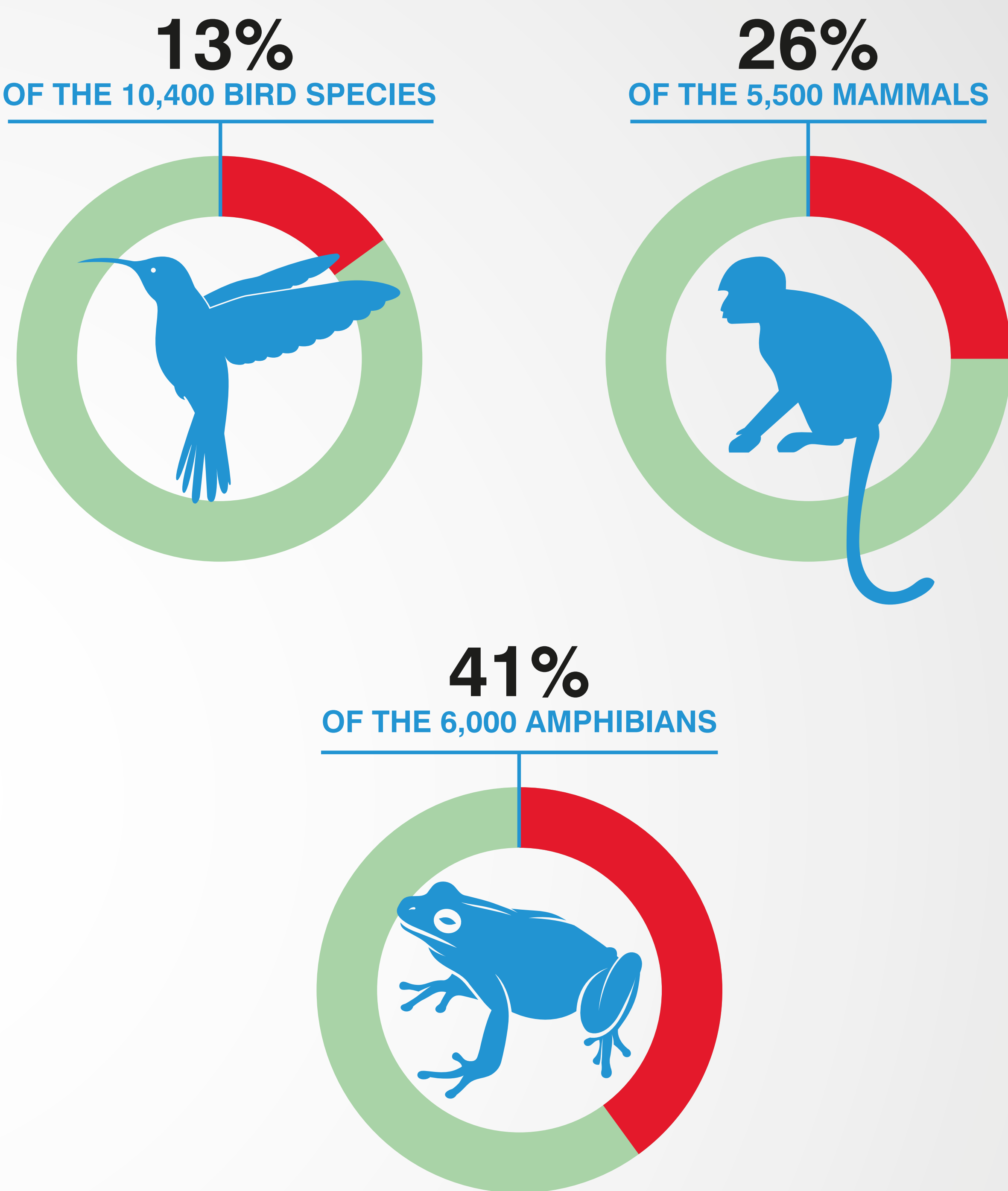
Forest and deforestation surface area



Agriculture is responsible for 80% of deforestation, ahead of urban development and logging for firewood or construction.

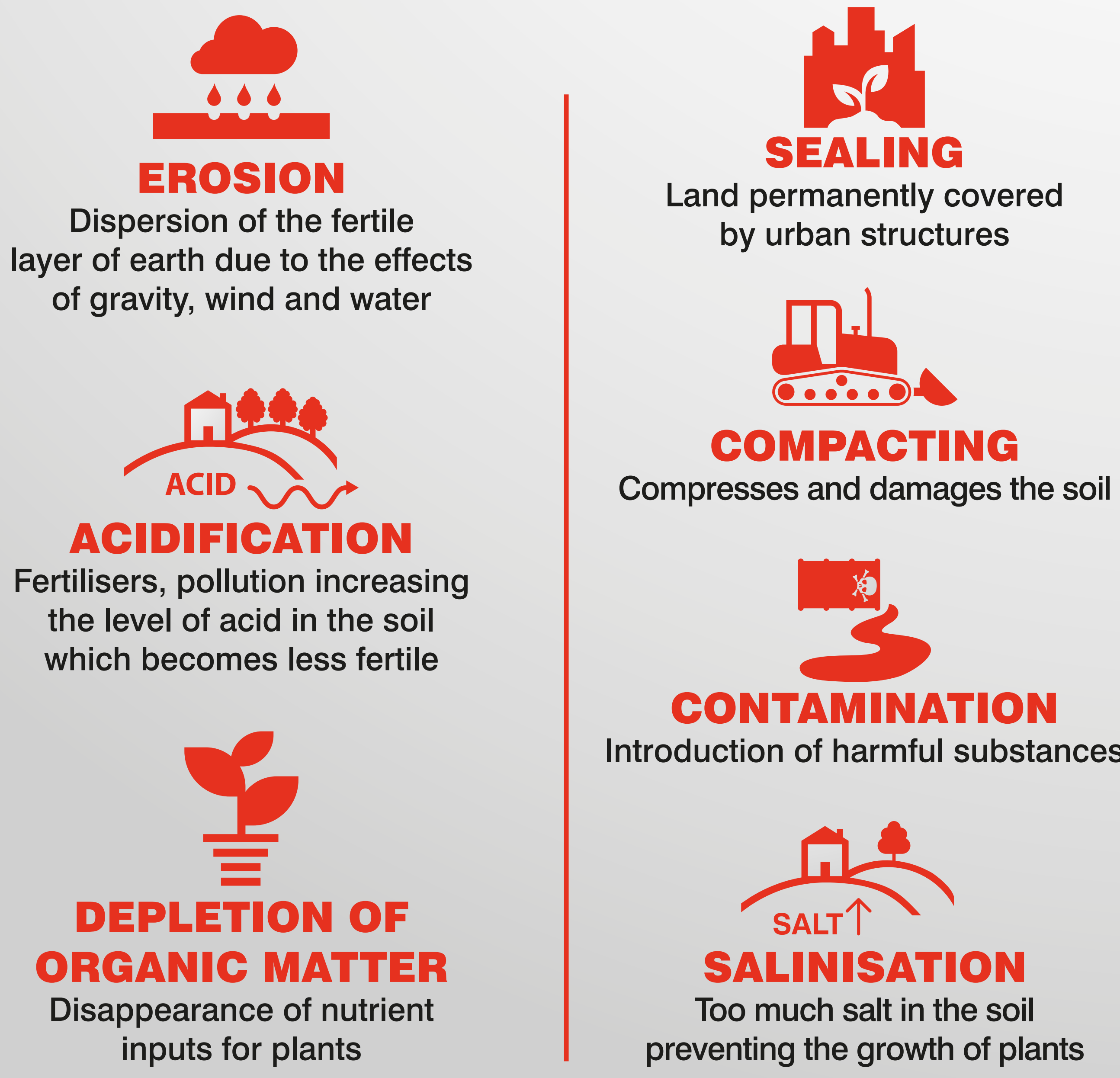
Source: FAO 2016

Biodiversity threatened with extinction



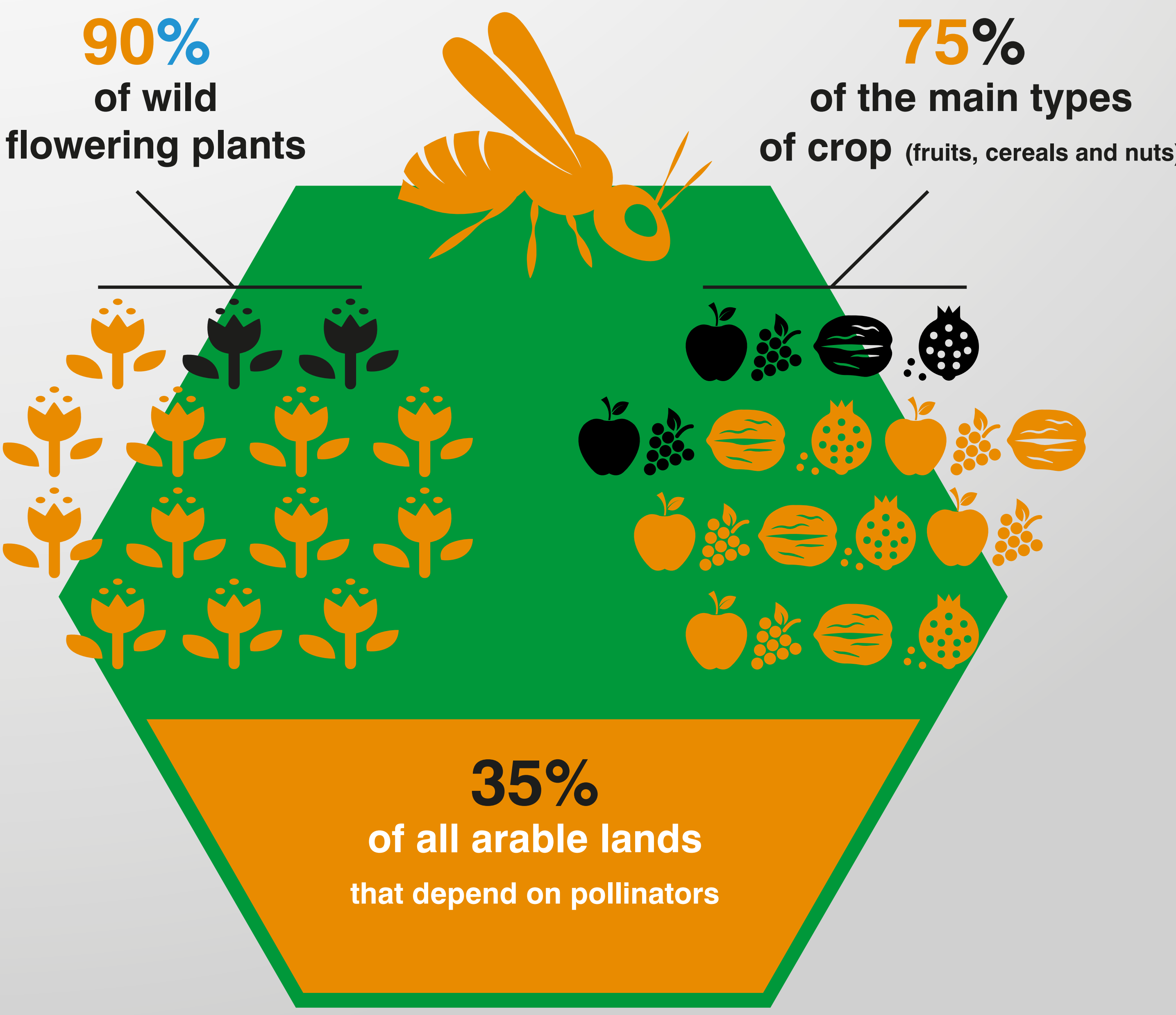
Source: UN

Causes and consequences of soil degradation



Source: FAO

Plants that depend on pollinators, which are under threat



Source: IPBES

Carbon sequestration

The 4 per 1,000 initiative, for food safety and the climate, aims to increase by 4‰ per year the quantity of organic carbon stored in soils in order to offset the increase in CO₂ emissions in the atmosphere. Research shows that agroforests and combined crops help to store carbon in the soil, unlike single-crop farming. Here, sugar cane is combined with varieties of cassava in the Brazilian Amazon.



PEACE, JUSTICE AND STRONG INSTITUTIONS

Peace, justice and the establishment of democratic, effective and accountable institutions lie at the heart of this goal. Major obstacles lie in the way of achieving this goal in developing countries: the proliferation of weapons, the rise in violence, terrorism, conflicts and illegal immigration, the growth of displaced populations and refugees. Reaching the balance between security and freedom is becoming increasingly difficult. Questioning the power of States over societies has strengthened the impact of these phenomena and has weakened the foundations of representative democracy. The establishment of a new, fairer world order may support the construction of political citizenship in developing countries. For many years, research has focused on the changes in progress: democratisation, civil society, social movements, reform of legal systems, refugees, corruption, conflicts, etc.

Forced displacement of populations



In 2015, 65 million people were forced to leave their countries due to conflicts, persecution and human rights violations.

Source: UNHCR 2015

Bribes paid by users of public services

75 million people in Sub-Saharan Africa, i.e. 22% of the population



50 million people in the Middle East and North Africa i.e. 33% of the population

Source: Transparency international

Financial offences slow development



Corruption, fraud, theft and tax evasion cost some US \$1.26 trillion for developing countries per year. This amount of money could be used to help those who are living in extreme poverty for at least six years.

Source: Transparency international

Firearms in the world



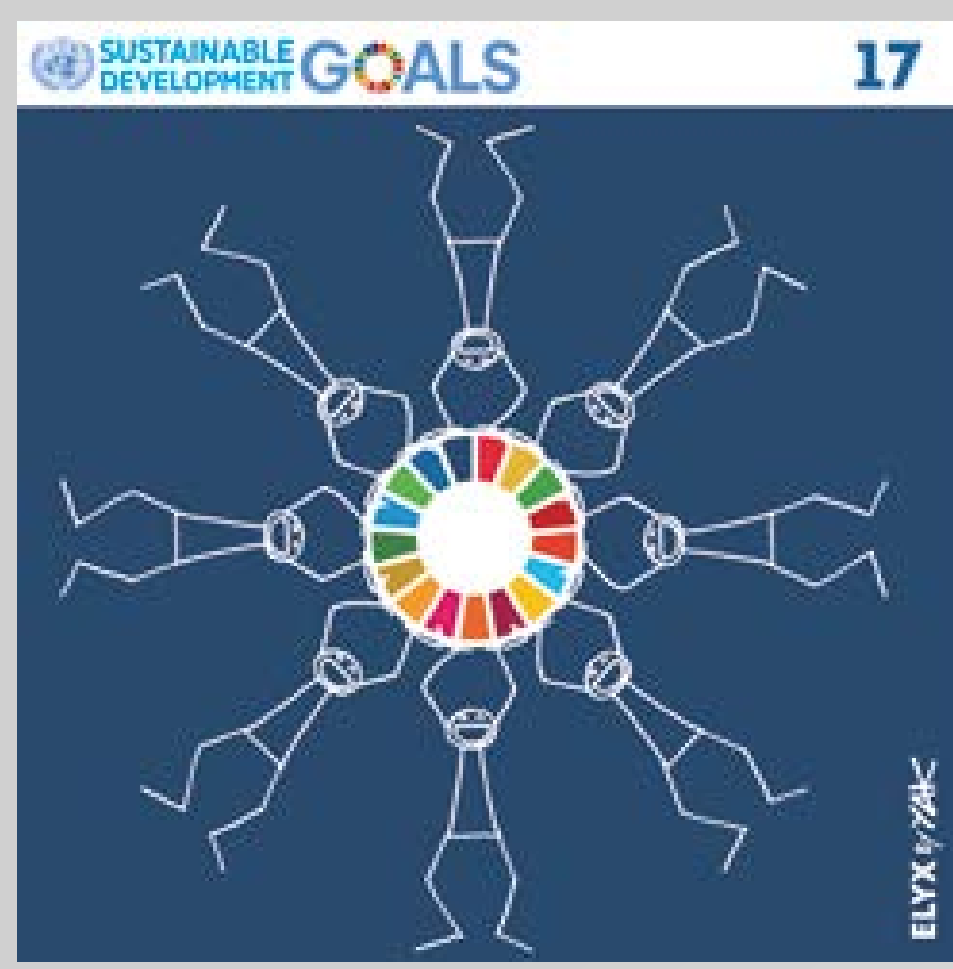
875 million light weapons were in circulation in the world in 2013, equivalent to one weapon per eight people.

Source: United Nations Office of Disarmament Affairs.



Expertise

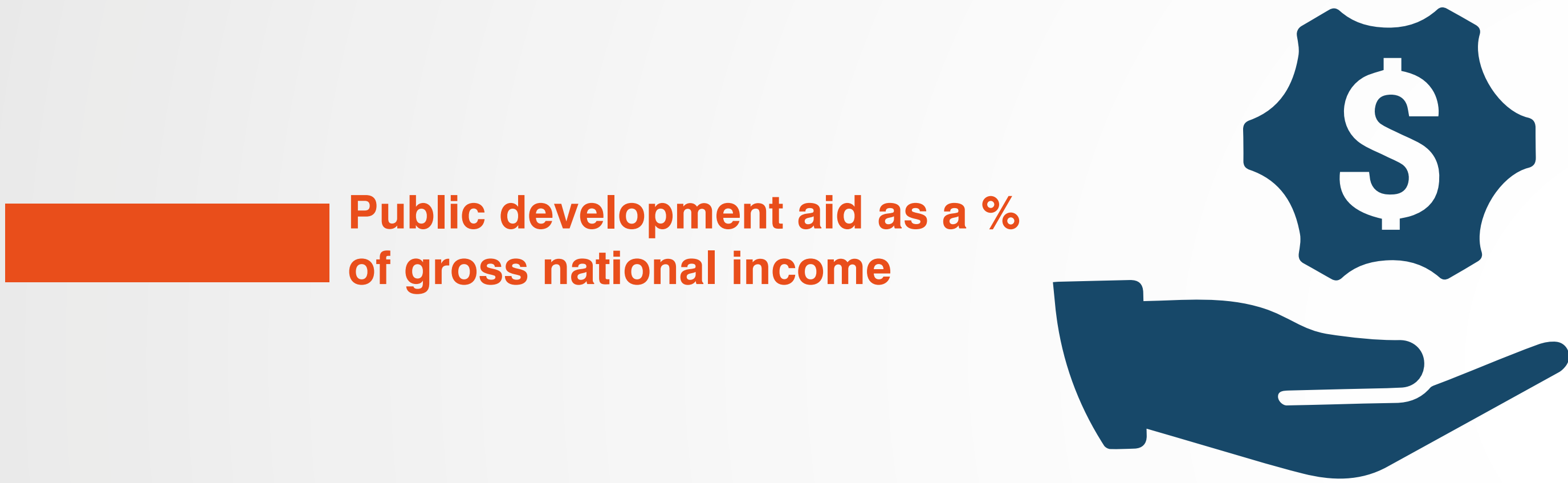
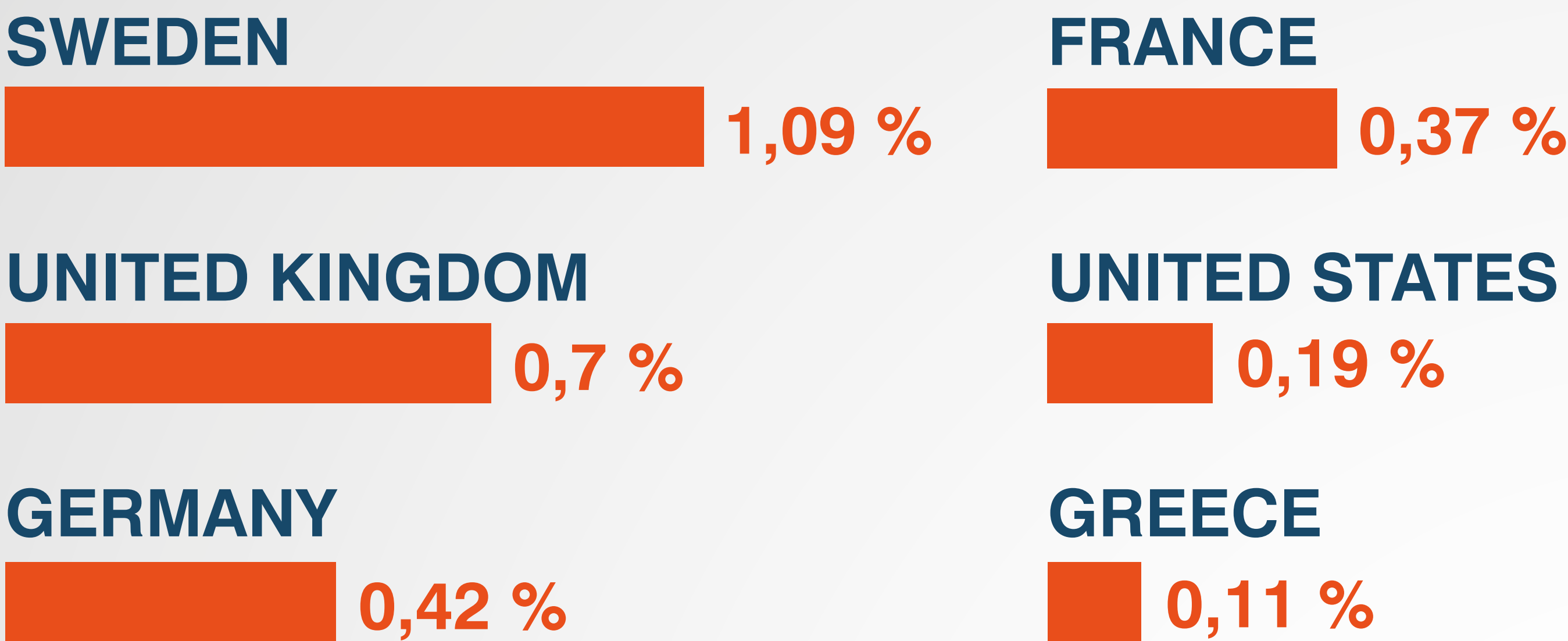
Egypt's Court of Cassation was no longer able to comply with the right to a trial within a reasonable time. The President wished to have the scientific and technical knowledge available to improve the situation. An international group, made up of magistrates and researchers, provided its recommendations on the procedure, work organisation and appropriate issuing of judgements.



PARTNERSHIPS FOR THE GOALS

In order to achieve all of the Sustainable Development Goals, it is necessary to mobilise and coordinate financial, institutional, technological and scientific resources. Research plays a key role in informing appropriate political decision making, developing suitable technologies, coming up with responsible innovations and supporting the efficiency of the institutions. It is also essential to ensure ownership of development issues and the emergence of adequate solutions. Science occupies a central place, alongside investment from the private sector and public aid in developing countries. However, substantial inequalities remain between research systems in various countries. Higher education and research play a critical role in the development process and need to be strengthened, empowered and internationally acknowledged if we want to achieve the 2030 agenda.

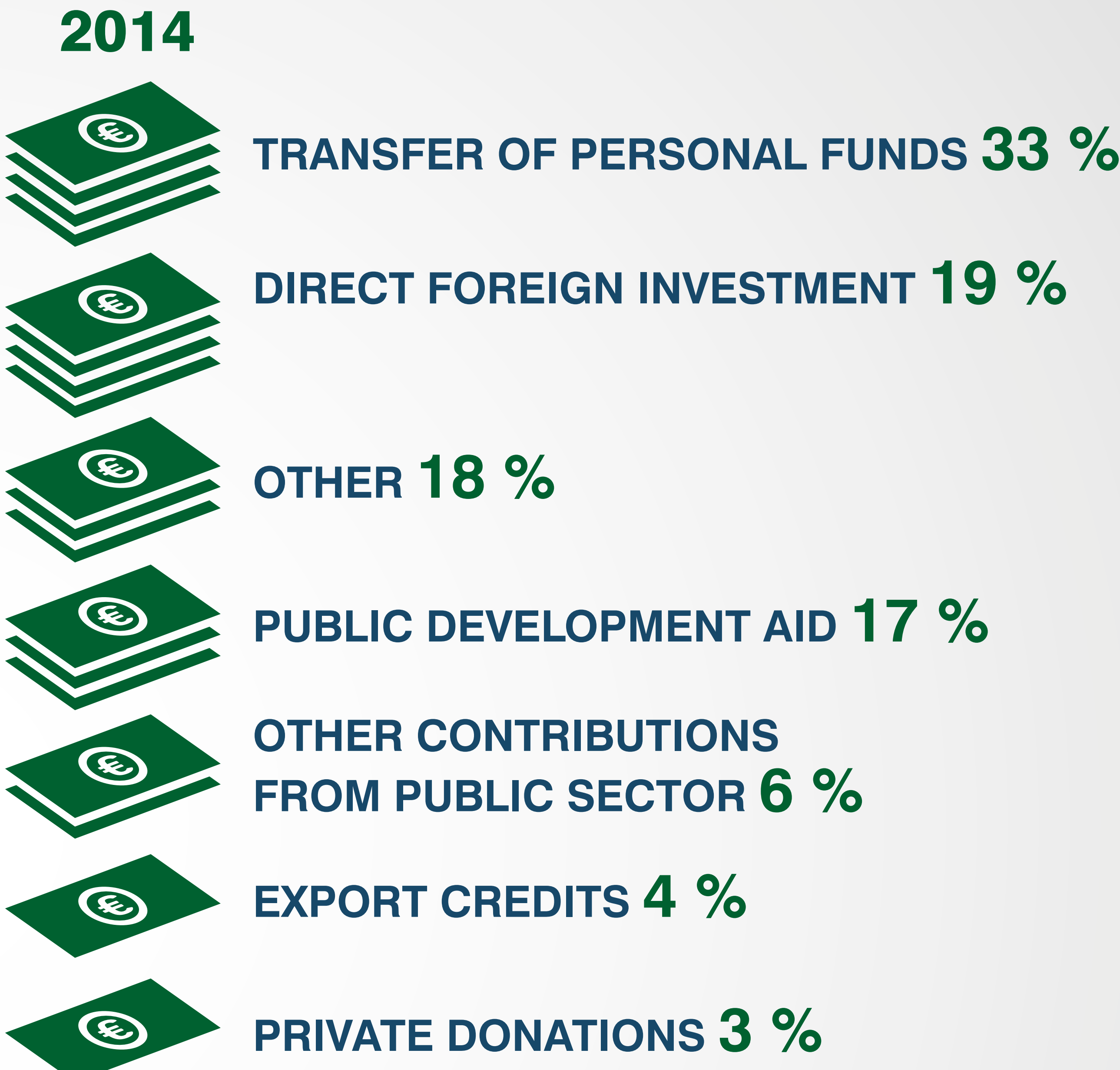
Aid for developing countries



Developed countries have committed to devoting 0.7% of their gross national income to aid for developing countries

Source: OECD

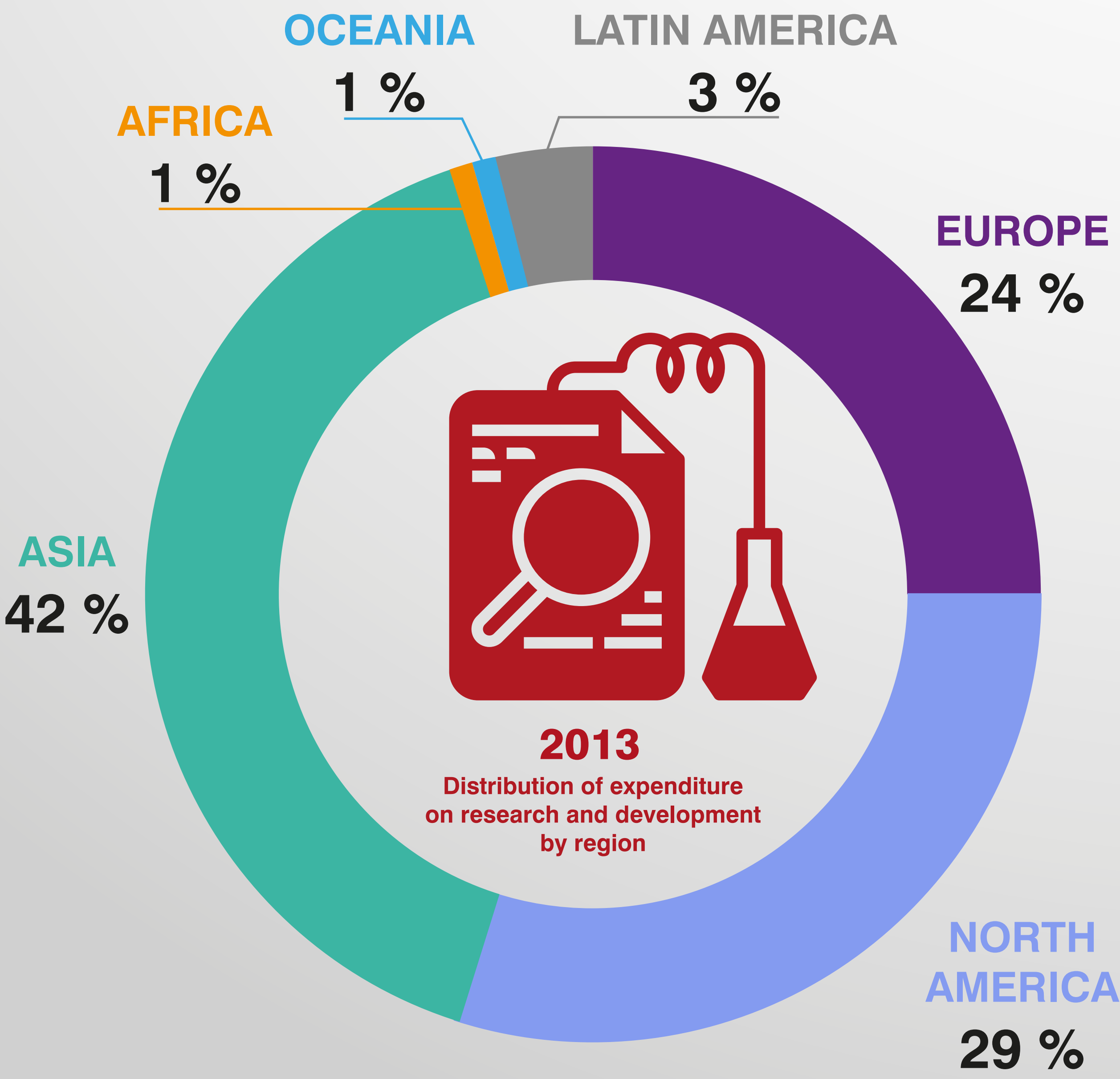
Financial flows to developing countries



Constant 2012 prices

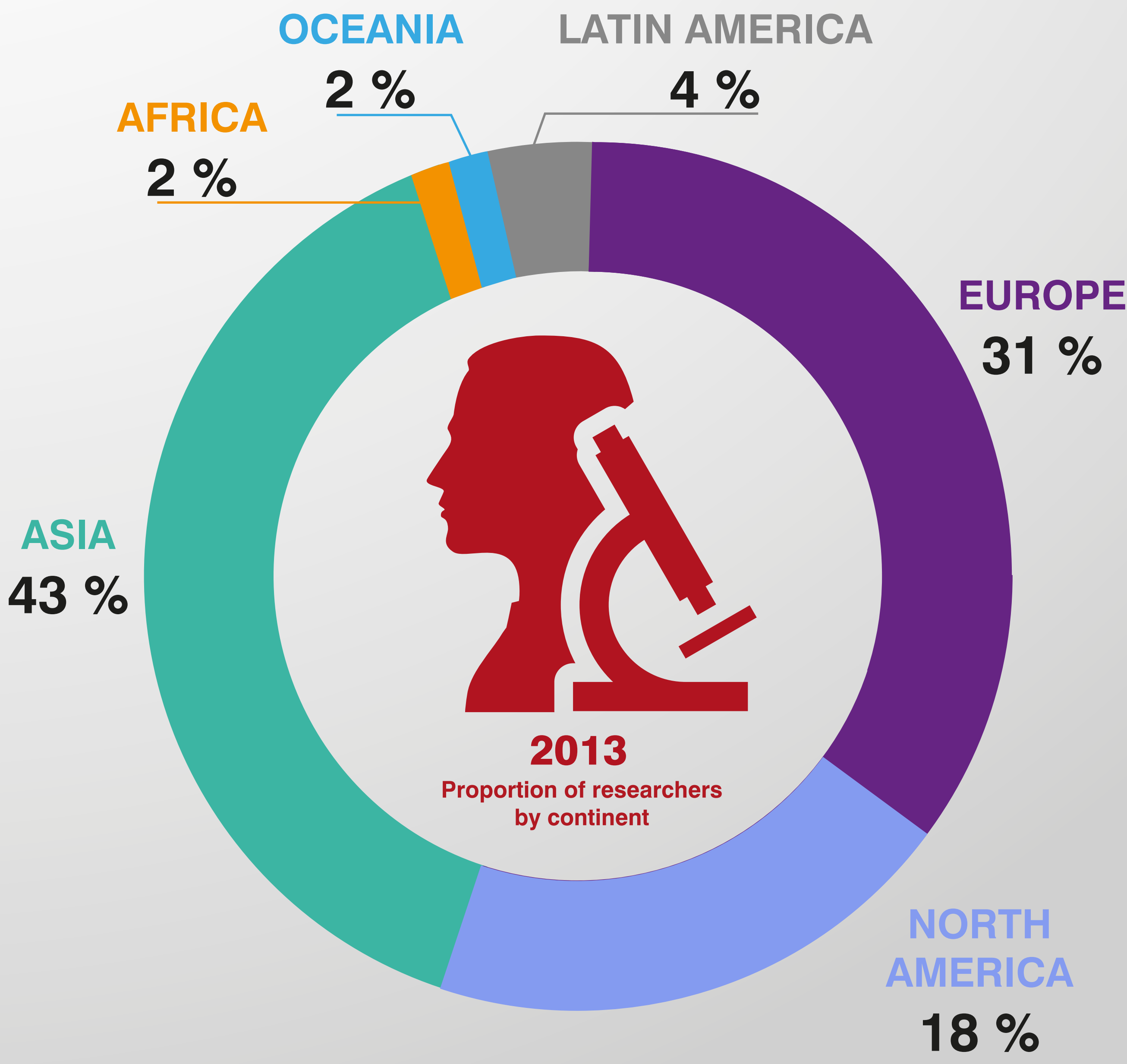
Source: OECD 2015

Overall expenditure on research and development



Source: UNESCO

Researchers and publications



Scientific publications with European authors: + 13.8% between 2008 and 2014
Scientific publications with African authors: + 60.1% between 2008 and 2014

Source: UNESCO



Exodus

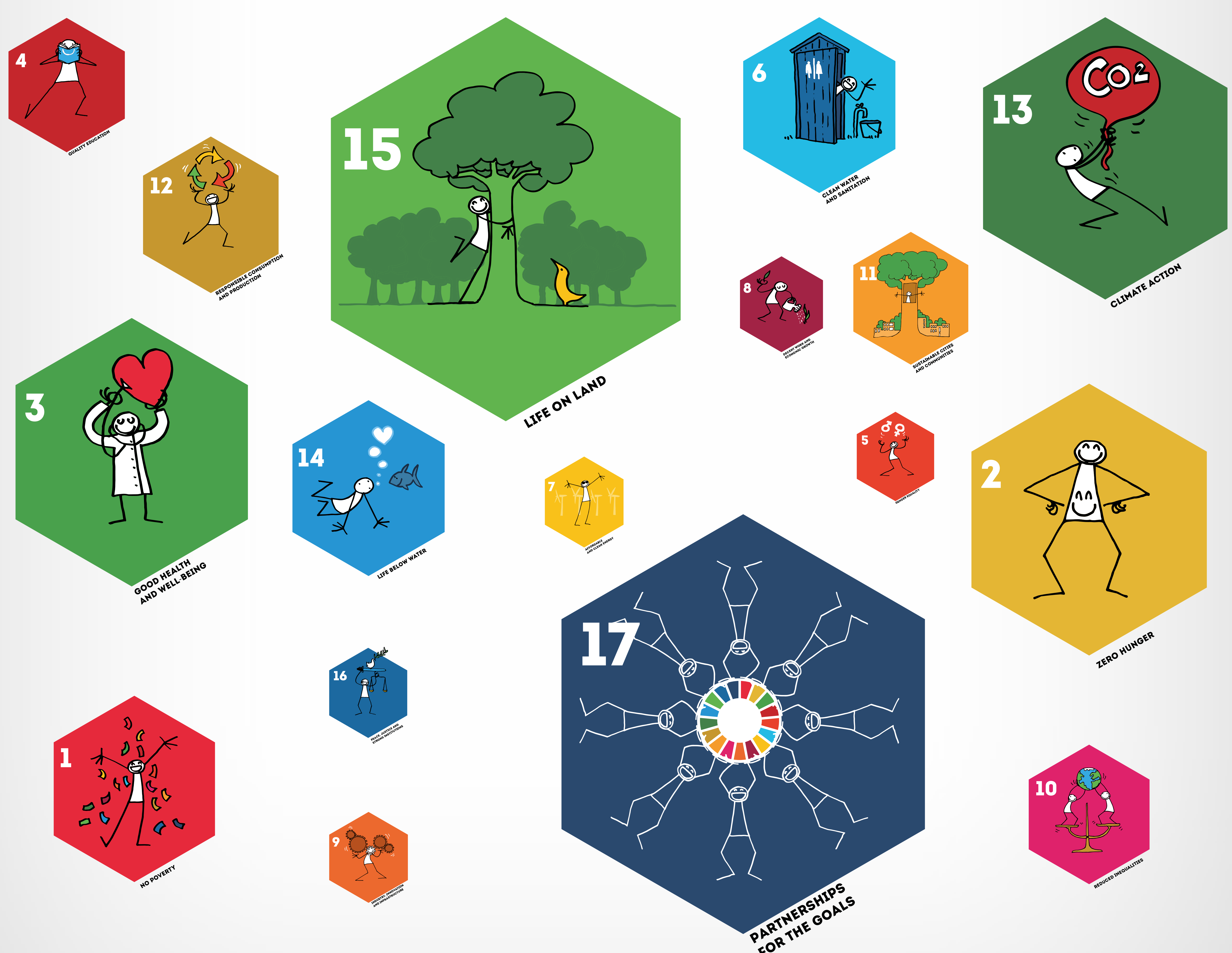
In Latin America, the exodus of skilled individuals is a recurring problem in development policies. Conversely, the scattered networks of highly-qualified people now seem to be a form of human capital that can be at the benefit of the home country. The CIDESAL project shows how by using networks, it is possible to convert this exodus into positive mobility.

IRD: A KEY PLAYER IN THE SUSTAINABLE DEVELOPMENT GOALS IN DEVELOPING COUNTRIES

The IRD, in conjunction with its partners and drawing on international scientific networks, supports and strengthens the involvement of research, especially in the Global South, in achieving and monitoring the Sustainable Development Goals.

IRD contributes to achieving the Sustainable Development Goals through:

- Its unique research **experience** acquired in **partnership with partner countries** over more than 70 years.
- A **multi-disciplinary scientific approach** to development in partner countries.
- **Promoting knowledge**, especially to support public policies in developing countries.
- **A network of representatives** in around **fifty countries** who are able to identify priority research requirements and optimise IRD actions in these countries.
- A rich community of **7,000 people**, including over 800 researchers and a thousand IRD engineers and technicians, 35% of agents working outside mainland France, 56 joint research units and almost 4,000 publications per year.
- **Four main scientific tools aimed at supporting international scientific cooperation:** the JEAJ (young teams affiliated with the IRD), Observatories, International Laboratories and International Joint Research Units.





RESEARCH FOR SUSTAINABLE DEVELOPMENT

17 GOALS TO TRANSFORM OUR WORLD

November 2016

A SCIENCE COMMITTED TO A SUSTAINABLE FUTURE AN INSTITUTE WORKING FOR DEVELOPMENT

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