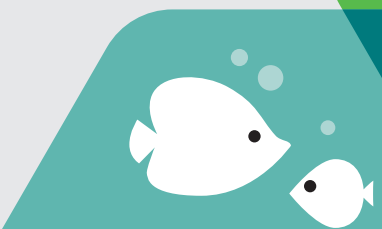


Nexus Brief, Nr. 9, February 2022

# Climate Change & Environment

# Biodiversity and Sustainable Development



## Key messages

Biodiversity and the multitude of essential services we receive from ecosystems are central to our economies, societies and well-being. Biodiversity is declining faster than at any time in human history and we are currently using these ecosystem services at a pace more than 1.6 times faster than the rate nature can sustainably provide. Given the estimate that more than half the world's gross domestic product is dependent on nature, the loss of ecosystems has already become a significant threat to the global economy and to the achievement of the Sustainable Development Goals.

Climate change is increasingly a driver of biodiversity loss and addressing the climate and biodiversity crises in a coordinated way – such as through ecosystem

restoration or agroforestry – contributes to climate change mitigation and adaptation and to the conservation of biodiversity at the same time. In addition to this coordinated, holistic approach, the scaling-up of nature-based solutions is essential in the effort to reverse the trend of environmental degradation.

Development cooperation can make a difference in this effort through the mainstreaming of biodiversity and ecosystem services into policies and plans, through targeted project activities and through the support of multilateral funding vehicles. A growing number of projects testify to the Swiss Agency for Development and Cooperation commitment to mainstream biodiversity and promote nature-based solutions.

## Context

### Why this nexus brief?

The world is facing an unprecedented environmental crisis on three fronts: biodiversity loss, climate change and pollution (UNEP 2021a). This nexus brief sheds light on key challenges and issues related to biodiversity, on the intrinsic linkages between ecosystems and sustainable development, and on the implications for development cooperation. The IUCN World Conservation Congress recently issued a strong call to halt degradation of nature, and the fifteenth meeting of the Conference of the Parties (COP-15) of the Convention on Biological Diversity (CBD) will be addressing new global biodiversity targets. This is a key moment in global decision-making on biodiversity.

### Biodiversity and ecosystem services

A healthy natural environment is critical to human health, well-being and prosperity, and underpins sustainable development. We depend on nature directly for the food we eat, the air we breathe and the water we drink. Nature provides essential inputs to the production of goods and services that form the

foundation of our economic system (Dasgupta 2021). More than 2 billion people rely on wood fuel to meet their primary energy needs; healthy oceans are central to the livelihoods of more than 3 billion people; an estimated 4 billion people rely primarily on natural medicines for their health care; and some 70 per cent of the drugs used for cancer are natural or are synthetic products inspired by nature (IPBES 2019a). According to the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (2019a), “More than 75 per cent of global food crops types, including fruits and vegetables and some of the most important cash crops, such as coffee, cocoa and almonds, rely on animal pollination.” Non-human life also has an important intrinsic value of its own.

The latest IUCN Red List (2021c) documents 38,543 species as threatened with extinction. Extrapolations suggest that the risk of extinction extends to nearly 1 million species. Human activity has caused the loss and deterioration of habitat, and many of the essential ecosystem services are eroding. Our growing population

**Biodiversity:** Biological diversity means the variability among living organisms from all sources including, inter alia, terrestrial, marine and other aquatic ecosystems and the ecological complexes of which they are part; this includes diversity within species, between species and of ecosystems (Source: <https://www.cbd.int/convention/articles/?a=cbd-02>)

**Ecosystem services:** The benefits people obtain from ecosystems. The Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES) uses the term ‘nature’s contributions to people’. Examples of nature’s contributions to people include food provision, water purification, flood control and artistic inspiration. (Source: <https://ipbes.net/glossary>)

and increasing consumption of natural resources drives up the demand for energy and materials and places enormous stresses on ecosystems. The great expansion in the production of food, feed, fibre and bioenergy has come at the cost of diminished contributions of nature to quality of life – the regulation of the climate and air and water quality and the provision of habitat are all compromised. (IPBES 2019a).

### Biodiversity, poverty reduction and sustainable development

Biodiversity loss is much more than an environmental problem – it is an urgent development challenge undermining the achievement of the UN Sustainable Development Goals and demanding an engaged response from the development community (IIED 2019). Biodiversity loss and environmental damage by human activity are among the top five perceived threats to humanity in the most recent Global Risks Reports (WEF 2021). Biodiversity loss already challenges development gains in many ways, such as through reduced nutritional security, poorer pollination and less productive and resilient agricultural systems, all of which jeopardise the challenge of reducing poverty. Losses in biodiversity can also cause declines in the availability of traditional medicines and in the opportunities for drug development. In addition, lost ecosystem services can affect gender-specific labour burdens, for example when women are required to walk further for fuel or clean water (IIED 2019).

As with climate change, ecosystem degradation is not felt by everyone equally: it disproportionately affects the poor and vulnerable, women and girls, indigenous communities and displaced people, among others. Because of their strong dependency on nature and its contributions for subsistence, livelihoods and health, many of these groups will be disproportionately hard-hit by negative changes in climate, biodiversity and ecosystem services (IPBES 2019a, UNEP 2021b). Biodiversity loss also has an important intergenerational equity dimension: if we do not respect planetary boundaries now, we are depleting the foundation on which today’s youth and future generations can build.

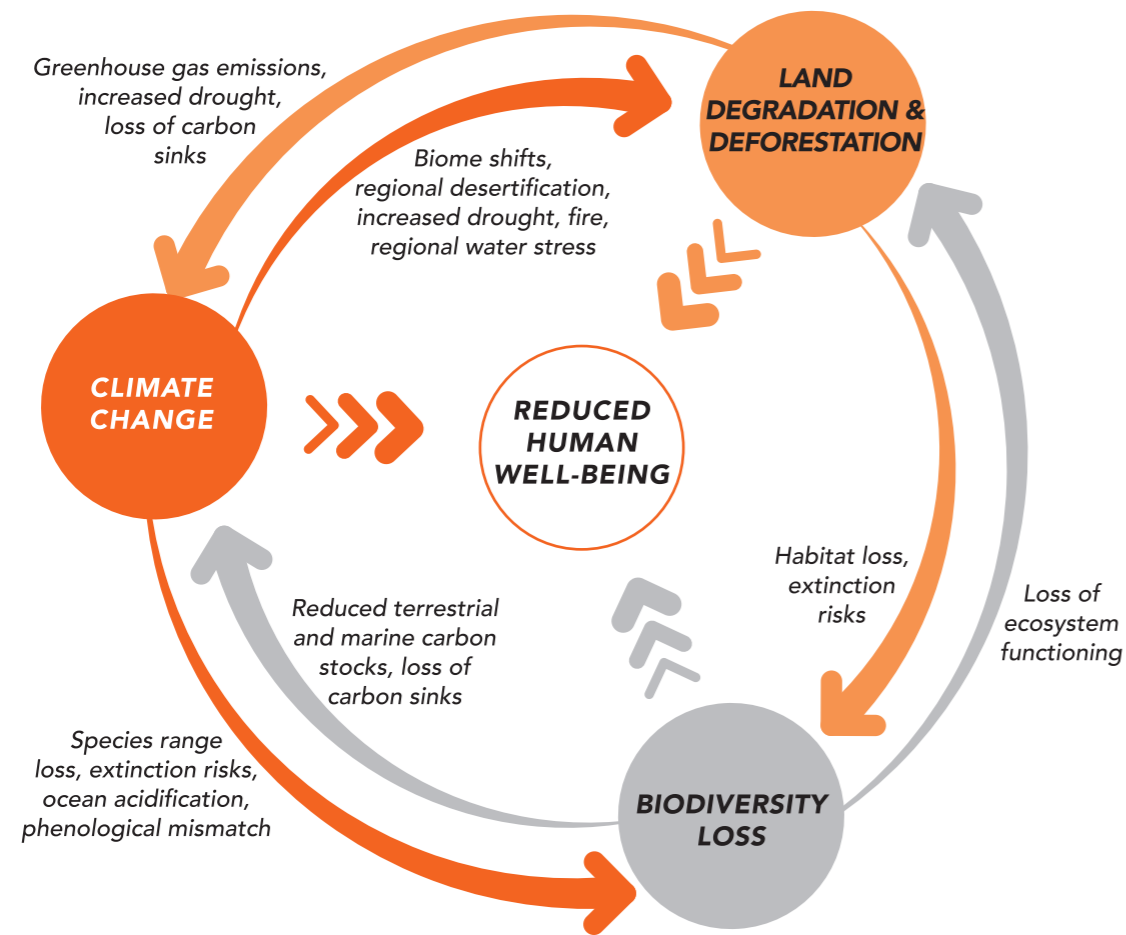
### Biodiversity and climate change

Sustainable use of nature is vital for adapting to and mitigating climate change (UNEP 2021a). Biodiversity loss and climate change are both driven by human economic activities and mutually reinforce each other. Neither will be successfully resolved unless both are tackled together (IPBES-IPCC 2021). Climate change impacts such as rising temperatures, changing precipitation patterns and extreme weather events all affect species as direct drivers of biodiversity loss (IPBES 2019a), but sustainable management of ecosystems contributes to climate adaptation. Healthy and diverse ecosystems increase climate resilience in many ways – by providing natural buffers against climate-related hazards such as cyclones, for example, and by providing the genetic pool for drought- and pest-resistant crop varieties for agriculture and food security.

Species-rich ecosystems are often carbon-rich ecosystems. Vegetation and soils are important contributors to mitigation through carbon sequestration, and without healthy ecosystems, reaching the Paris Agreement targets will be impossible. In addition to key terrestrial ecosystems – such as forests, wetlands and peatlands – marine ecosystems are an important, if lesser known, carbon sink. Blue carbon ecosystems – coastal and marine ecosystems such as mangroves, tidal marshes and seagrass meadows – sequester and store more carbon per unit area than terrestrial forests and are now being recognised for their role in mitigating climate change (IUCN 2021a).

**Figure 1. Interactions between biodiversity, climate change and land use**

Source: UNEP (2021b)



**The biodiversity loss – infectious disease nexus**

The COVID-19 pandemic has brought renewed attention to the close relationship between human, animal and environmental health. The increased contact between humans, wildlife and livestock is increasing the risk of the emergence and spread of zoonotic diseases passed from animals to people (UNEP 2021b). Zoonosis comprise roughly 75 per cent of new infectious diseases in humans, while many complex existing diseases such as HIV and Ebola have roots in close human contact with animals and wilderness areas (WHO 2020). Biodiversity loss weakens the buffer zones the ecosystems provide in isolating zoonotic viruses from humans and can change the species composition of ecosystems to favour species that more frequently spread diseases to humans. While the origins of COVID-19 are not fully known, many researchers acknowledge the emerging risk of a zoonotic pandemic. For several years scientists have been drawing attention to the health risks posed

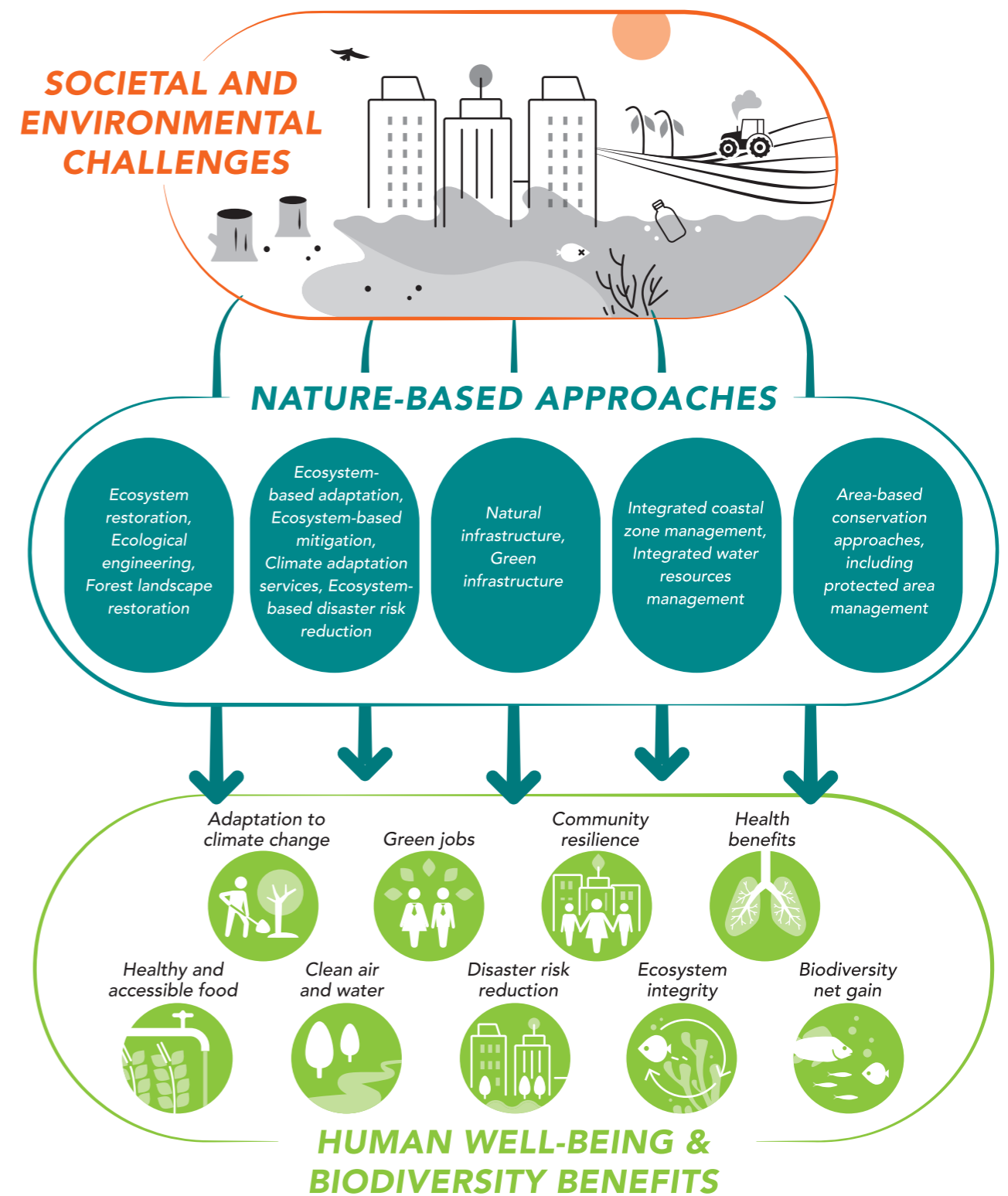
by the destruction of ecosystems, the wildlife trade and agricultural and urban expansion, all of which increase direct contact between humans and wildlife and in turn the chances of diseases passing from one species to another.

**Nature-based solutions**

Sustainably managed agroforestry systems contribute to food security, slope stability and the regulation of water, droughts and flooding while providing livelihoods and contributing to carbon sequestration. The expansion of green and blue spaces in and around cities reduces flood risks and the urban heat island effect, and provides recreational areas for growing urban populations. These are examples of the kind of nature-based solutions that are needed to simultaneously address global societal goals related to food, water, health, energy, job creation, climate change and many more (UNEP 2021b).

**Figure 2. Nature-based Solutions**

Source: IUCN (2021b)



**NATURE-BASED SOLUTIONS**

= Actions to protect, sustainably manage, and restore natural or modified ecosystems, that address societal challenges effectively and adaptively, simultaneously providing human well-being and biodiversity benefits.

# Facts & Figures

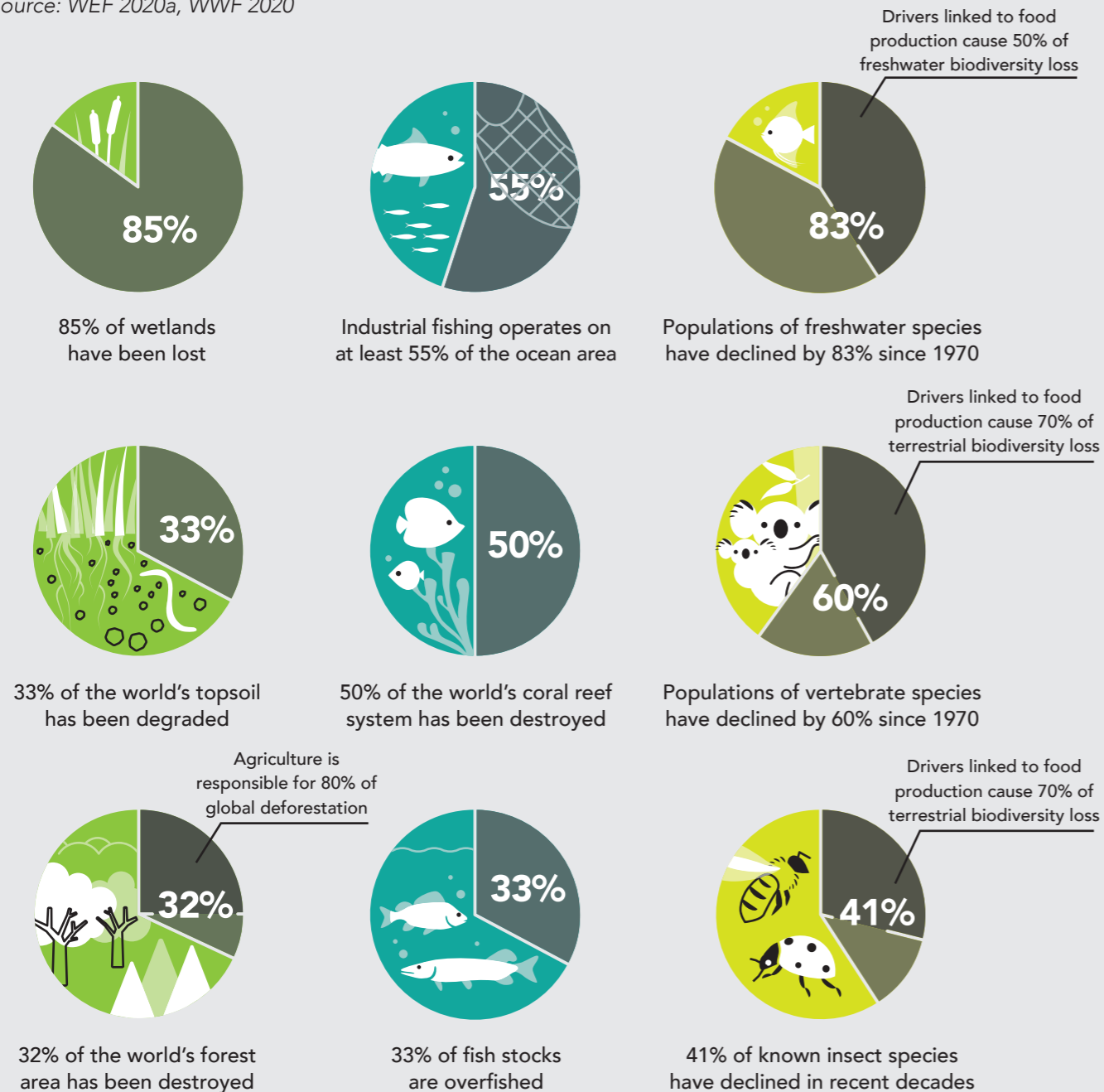
## Biodiversity in decline

Biodiversity is declining faster than at any time in human history and we are currently using ecosystem services at a pace more than 1.6 times faster than the rate nature can sustainably provide (UNEP 2021b). The degradation of forests, farmlands, freshwaters, savannahs and coasts is already affecting the well-

being of an estimated 3.2 billion people – 40 percent of the world's population (UNEP 2021b). More than a quarter of species assessed by the IUCN Red List are threatened with extinction, and the number of documented plant extinctions is twice that of mammals, birds and amphibians combined (WWF 2020).

**Figure 3. Impact of human activities on nature**

Source: WEF 2020a, WWF 2020



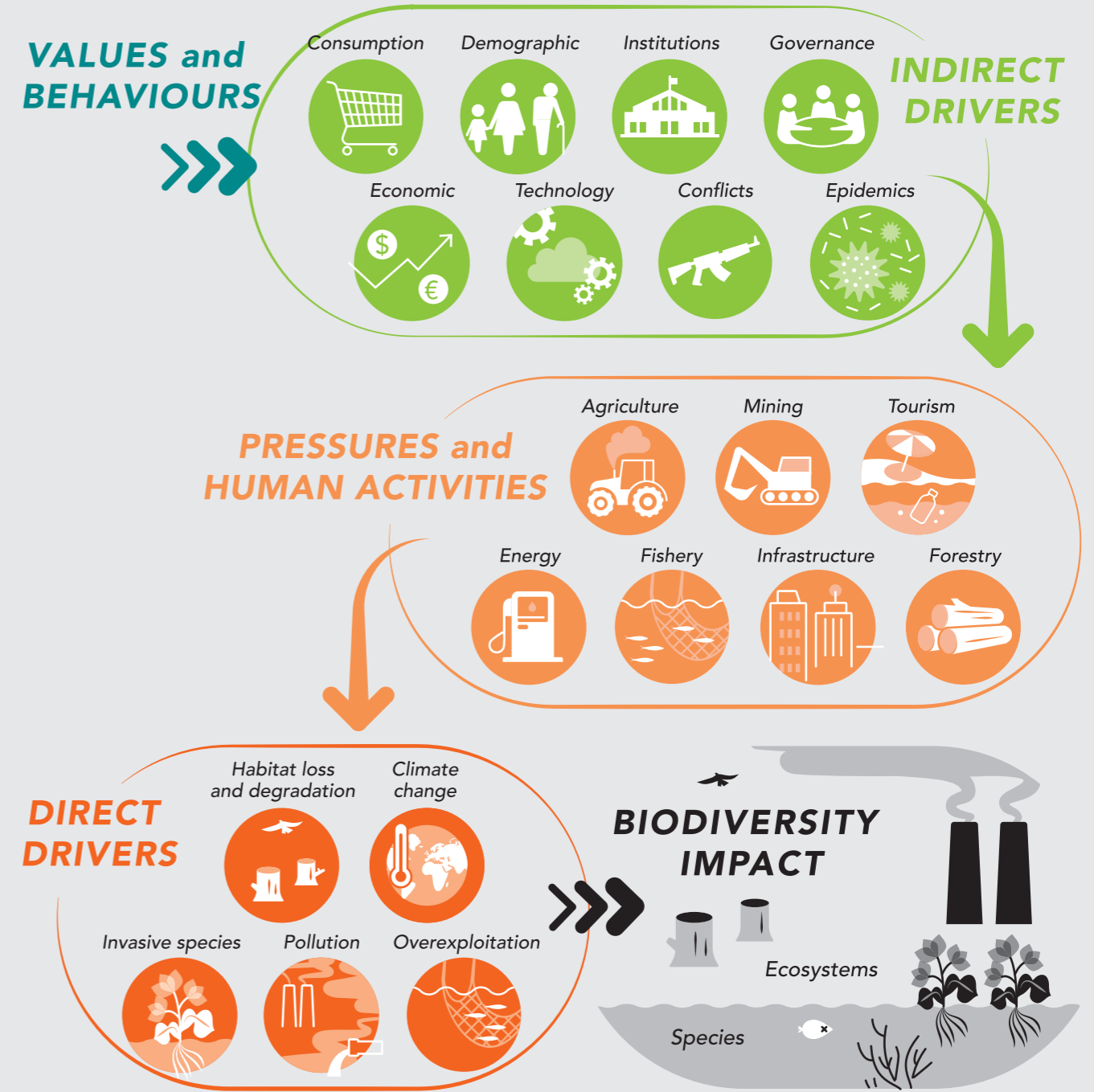
## Human activities and biodiversity loss

Human activities have significantly altered 75 per cent of land-based environments and 66 per cent of marine environments (IPBES 2019b), and threaten more species with global extinction now than ever before. The majority of ecosystem and biodiversity indicators are showing rapid declines. Land and

sea use changes, overexploitation, climate change, pollution and the introduction of invasive alien species are the direct drivers of biodiversity loss (IPBES 2019b). The rapid growth in global trade, consumption and human population is leading to the decline in ecosystem services (WWF 2020).

**Figure 4: Threats to nature and the drivers and pressures behind them**

Source: WWF (2020)



Values underpin changes in societies, which lead to the way human activities are undertaken defining the direct drivers on nature. Habitat loss and degradation is the major direct driver on land and overexploitation the major one in the oceans

About one-third of the global land surface is already used for agricultural purposes. Biodiversity is crucial to food production through crop and breed varieties, pollination and soil organisms. Many key components of this diversity are declining rapidly while agri-food production systems – and the land-use change and pollution they imply – remain among the biggest human-caused threats to biodiversity and ecosystems (FAO 2019, WWF 2020).

### The growing effects of climate change

Climate change contributes significantly to the rapid negative changes in the natural world (IPBES 2019b). The effects of climate change on species include direct physiological stress, loss of suitable habitat and disruptions in timing of migrations and reproduction. Climate change puts up to one-fifth of wild species at risk of extinction this century alone (WWF 2020), and the distributions of close to half of land-based mammals and almost a quarter of threatened bird species may already have been negatively affected by climate change (IPBES 2019b).

Climate change is projected to become increasingly important as direct driver of biodiversity loss in the coming decades, and is exacerbating the impact of other drivers on ecosystems and human well-being. With global warming of 1.5 °C to 2 °C, the ranges of the majority of terrestrial species are projected to shrink dramatically. Coral reefs are particularly vulnerable to climate change and are projected to decline to a mere 10 per cent to 30 per cent of former cover at 1.5 °C warming and to less than 1 per cent of former cover at 2 °C warming (IPBES 2019a).

### The economic costs of biodiversity loss

The World Economic Forum (2020a) has estimated that over half the world's gross domestic product (GDP) is dependent on nature. The loss of natural spaces such as forests has become a systemic risk for the global economy, and unless urgent action is taken, the world could face an estimated loss of close to USD 10 trillion in GDP by 2050 (WWF 2020, UNEP 2021c). The loss of pollinators threatens annual global crop output worth between USD 235 billion and USD 577 billion (IPBES 2019a). The loss of coastal habitats and coral reefs reduces coastal protection and increases the flood and hurricane risks to life and property for the 100 million to 300 million people living within coastal 100-year flood zones (IPBES 2019a).

### Conserving biodiversity pays off

Every dollar invested in ecosystem restoration creates up to 30 dollars in economic benefits (UNEP 2021b) through, for example, improved ecosystem services from previously degraded forests or agricultural lands. In addition, restoring productive ecosystems is essential to supporting food security. Restoration through agroforestry alone has the potential to increase food security for 1.3 billion people. Restoring the populations of marine fish to deliver a maximum sustainable yield could increase fisheries production by 16.5 million tonnes, an annual value of USD 32 billion (UNEP 2021b). Green economy approaches could generate up to USD 10.1 trillion in annual business value and create 395 million jobs by 2030 (WEF 2020b).

## Policy responses and recommendations

Integrated and co-beneficial policies on biodiversity, the environment, climate change and sustainable development are necessary to support multiple objectives and to avoid negative consequences on one area when addressing another (IPBES-IPCC 2021). This approach supports the core principle of the Sustainable Development Goals (SDGs) whereby development does not occur in isolation. Successful implementation of the biodiversity SDGs (#14 Life below Water and #15 Life on Land) requires governments to take an integrated approach to policymaking and to understand the interlinkages between biodiversity and the SDGs. The United Nations system plays a catalyst role in addressing the biodiversity crisis in a holistic way and has already started this integration especially under the three Rio Conventions – the Convention on Biological Diversity, the United Nations Framework Convention on Climate Change and the United Nations Convention to Combat Desertification. The Ramsar Convention on Wetlands, the Sendai Framework for Disaster Risk Reduction and the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) also address the multiple facets of biodiversity and its relevance for development.

### Critical time for policy responses

Building on the growing concern and understanding of the environmental peril of the planet, 2021 marked the beginning of the UN Decade on Ecosystem Restoration 2021–2030, and the expiration of the 2011–2020 Strategic Framework for Biodiversity. The Aichi Biodiversity Targets of the past Strategic Framework were largely unachieved, and a commitment to new ambitious targets in the post-2020 Global Biodiversity

Framework is crucial at the CBD COP-15 final session in 2022. The new framework needs to support the SDGs, the Paris Agreement and a green COVID-19 recovery. The global environmental community also voiced calls for stronger action in the IUCN World Conservation Congress in 2021.

Adopting a global goal for nature, with commitments for halting and reversing the loss of nature, and achieving by 2030 a nature-positive world where biodiversity indicators are on clear path of recovery (Locke et al. 2021) is widely considered an overarching guide for multilateral environmental agreements, in particular the three Rio Conventions. That coordination among the conventions should be further enhanced is equally recognised.<sup>1</sup> Some have even suggested that the biodiversity and climate COPs should be combined in order to create more coherent policy frameworks across the nexus of biodiversity, health, food, water and climate change (Turney et al 2020). The COP-26 Climate Conference discussed coordination with the biodiversity COP, and indicated a strong will for progress in nature-based solutions that consider the interlinkages between climate and biodiversity.<sup>2</sup>

Although developing and developed countries are already incorporating aspects of biodiversity into national policy instruments,<sup>3</sup> they are too often developed in isolation from one another. The integration of ambitious biodiversity action in national policies needs stronger coordination, and the inclusion of biodiversity and nature-based solutions in national and local policy planning needs to be a priority in all sectors and across all policy levels.

1 See also <https://www.naturepositive.org>

2 See also IUCN position paper for the UNFCCC COP-26. [https://www.iucn.org/sites/dev/files/content/documents/iucn\\_position\\_paper\\_for\\_unfccc\\_cop26\\_-\\_final.pdf](https://www.iucn.org/sites/dev/files/content/documents/iucn_position_paper_for_unfccc_cop26_-_final.pdf)

3 e.g., in Nationally Appropriate Mitigation Actions, national REDD+ strategies, EU policy frameworks for sustainable development, Nationally Determined Contributions (NDCs), Land Degradation Neutrality targets, or National Biodiversity Strategies and Action Plans

## Key issues

### Biodiversity for life

Only recently has the biodiversity crisis been recognised as equal to the climate crisis. Biodiversity has an all-encompassing dimension influencing all areas of our lives. Our economies, livelihoods, food security, health and quality of life worldwide are under threat as we exploit nature faster than it can replenish itself. Neglecting to address the biodiversity challenge in a comprehensive manner will jeopardise the basis of our lives.

### Transformative change

The IPBES Global Assessment Report on Biodiversity and Ecosystem Services (2019a) shows clearly that the current global response to the biodiversity crisis is insufficient. A transformative change – fundamental, system-wide reorganisation across technological, economic and social factors – is needed so that nature can still be conserved, restored and used sustainably. Transformative change means both innovations and the adaptation and scaling-up of existing approaches, such as nature-based solutions. Additionally, it requires the reform of education systems to integrate the role of nature and changing the global financial system so that it supports nature.

Another transformational change is needed to elevate biodiversity protection on the multiple kinds of lands that fall outside of legally defined protected areas, while taking into account the needs of local communities. The dichotomy between protection and use or, more broadly, between nature and people, can no longer serve as an adequate framework for conservation action. In order to substantially scale up area-based conservation, protected area management needs to be better linked with the realities of the surrounding areas (Grumbine 2021). Achieving successful and transformative ecosystem conservation and restoration depends on the full involvement of local and indigenous communities – who are custodians of vast areas of land that they have managed sustainably for centuries – in the design and management of interventions. This is fundamental for sustainable development and for leaving no one behind.

### Reaching the goals of the Paris Agreement

If managed wisely, forests, peatlands, wetlands, grasslands and coastal ecosystems such as mangroves, salt marshes, kelp forests and seagrass meadows could provide up to 37 per cent of the climate change mitigation needed to meet the goal of keeping climate warming well below 2 °C (IPBES 2019a).

In the Reduced Emissions from Deforestation and Forest Degradation (REDD+) and other carbon sink and sequestration activities, adequate safeguards are necessary in order to avoid deforestation in one location getting shifted to another forest, thereby cancelling the emission reduction effect. Care is also needed to avoid negative impacts on larger ecosystems from monocultures such as oil palm or eucalyptus plantations. Overall, choosing measures that address both biodiversity and climate change mitigation and adaptation – ecosystem restoration, or agroforestry, for example, – will deliver multiple benefits for human well-being (IPBES-IPCC 2021).

### Measuring economic success

When a country exploits its fish stocks or degrades its water resources, it is depleting its wealth. This important information is, however, not captured in GDP, which measures only income (WB 2018). This oversight is especially relevant in developing countries that are highly dependent on their natural assets (WB 2018). Support is growing for the idea that our economic and financial decision-making should account for the goods and services we derive from nature and for nature's intrinsic value (Dasgupta 2021). Methods for calculating the value of ecosystem services are well established, but countries are not routinely including the systematic accounting of ecosystem services in their national economic reporting. Changing the way we measure economic success to account fully for the impact of our interactions with nature is essential to our ability to rebalance our demand with nature's supply.

### Leveraging investments

Transformation into greener economies both in the public and the private sectors is key to addressing the global environmental crisis. Investments in nature-based solutions support economic and social development by creating jobs and improving climate

resilience while protecting the environment and accelerating decarbonisation (UNEP 2021c). For the world to meet its climate change, biodiversity and land degradation targets, investments in nature-based solutions need to at least triple in real terms by 2030 and to increase four-fold by 2050 (UNEP 2021c).

The current COVID-19 recovery phase presents an opportunity to address the biodiversity and climate crises through green recovery initiatives, but only 2.5 per cent of the announced fiscal spending of the world's 50 largest economies was directed towards green initiatives in 2020 (UNEP 2021d).

## Relevance for development cooperation

Development partners are key in leveraging finance and technical capacity to support biodiversity conservation and sustainable development. On the one hand, development cooperation can support biodiversity by direct activities such as agroforestry or protected area projects. Such activities protect biodiversity while simultaneously reducing poverty (by creating new job potential) and very often mitigate climate change. Development activities can also reduce drivers of biodiversity loss by supporting organic agriculture or agroecological approaches that reduce pesticide and nutrient pollution. On the other hand, development cooperation can support biodiversity mainstreaming in policy frameworks and in specific sector policies, plans and projects, and can support enforcement of policies and laws at the national level (OECD 2018). On a project level, systematic screening can help realise biodiversity co-benefits, or at a minimum identify and mitigate potential risks to biodiversity in development projects and programmes (OECD 2018). The Swiss Agency for Development and Cooperation (SDC) recognises the importance of addressing the biodiversity crisis and has a longstanding trajectory of both supporting direct activities and stepping up biodiversity mainstreaming.

### SDC engagement

The Swiss government provides funding to various environment-related financing mechanisms for developing countries – the Global Environment Facility, the Green Climate Fund, the Least Developed Countries Fund, the Special Climate Change Fund and the Adaptation Fund – and provides core contributions to WWF and to an IUCN programme on the integration of healthy ecosystems into the SDGs. Switzerland's seat on the board or committees of IUCN, WWF, and the Ramsar and CITES conventions provide opportunities to influence biodiversity mainstreaming at national policy levels.

On the project or programme level, the SDC has integrated biodiversity as a cross-cutting issue in the framework of natural resource management in some cooperation strategies and programmes and in Global Programmes. The SDC focuses on agrobiodiversity in agriculture and food security, and on nature-based solutions such as ecosystem-based adaptation, eco-DRR<sup>4</sup> and sustainable forest management in water, forestry, mountain ecosystems and disaster risk reduction. In recent years, the SDC has also recognised nature-based solutions as an innovative approach that can complement grey infrastructure, combining public and private funding and offering a cost-effective response to challenges relating to water security and biodiversity.

<sup>4</sup> Eco-DRR is the sustainable management, conservation and restoration of ecosystems to reduce disaster risk, with the aim to achieve sustainable and resilient development. <https://www.iucn.org/commissions/commission-ecosystem-management/our-work/cems-the-matic-groups/disaster-risk-reduction>

### Support for the development of sustainable and resilient organic agriculture in the context of climate change in Tunisia (BIOREST)

The SDC Office in Tunis is consolidating the Tunisian government's efforts to be resilient to climate change by supporting the development and implementation of organic farming systems that apply the principles of climate-smart agriculture. Organic farming techniques are ecologically sustainable, protect biodiversity and contribute to the adaptation and mitigation of climate change. These techniques play a part in improving soil structure and fertility and in promoting biological diversity. According to an Agroscope study (Wittwer et al. 2021), organically farmed fields have 2.3 times the species diversity of conventionally farmed fields. This project is expected to lead to the sustainable development of climate change resilient agricultural systems and thus to a dynamic local and national economy, job creation and food security for Tunisian citizens.

### Enabling development through landmine clearance in the Sengwe Wildlife Corridor, Zimbabwe

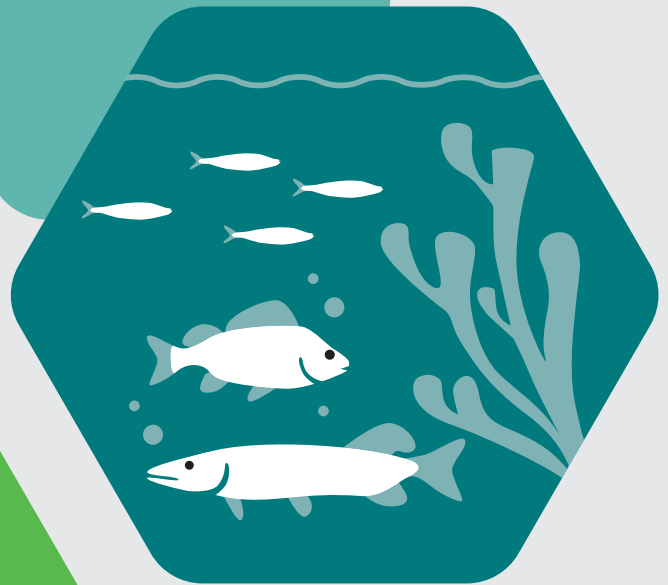
In 2020, the SDC Office in Harare initiated support for the Swiss foundation APOPO to clear and release about 1.5km<sup>2</sup> of a contaminated landmine area in the Sengwe Wildlife Corridor, which connects the Limpopo (Mozambique), Kruger (South Africa) and Gonarezhou (Zimbabwe) national parks. This project is helping Zimbabwe meet its 2025 landmine-free deadline, and the addition to usable agricultural land improves food security of local communities. The ability of people and animals to move freely also fosters socioeconomic development through tourism and wildlife conservation activities, and allows animals to mix gene pools – an important element in the long-term well-being of species. As a preventive measure, APOPO will provide mine risk education in high-risk communities.

### Gulf of Mottama project, Myanmar (final phase)

From the beginning of 2022 to end of 2025, the SDC Office in Yangon will work to strengthen institutions and alliances in the Gulf of Mottama region, primarily at the local village level and with non-governmental partners. The SDC and its implementing partners, aim to enable a sustainable bottom-up management of the Gulf's natural resources and thus seek to empower the coastal communities through an institutionalised, community-based system focused on the needs of the community. A main pillar of this bottom-up system is the creation of a new Gulf of Mottama Ramsar Association formed of community-based organisations that advocate for sustainable management of the Gulf. With the support of local industries and direct humanitarian aid, the project is expected to produce effective natural resource governance, secure and diversified livelihoods and adoption of the wise use of natural resources in the coastal communities in the Gulf of Mottama, and thereby preserve the biodiversity of this area for future generations.

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## Contributors

Authors: Madeleine Guyer (INFRAS), Myriam Steinemann (INFRAS), Nina Saalimaa (Zoï Environment Network)

Review and inputs by: Patrick Sieber (SDC), Philippe Brunet (SDC), Simon Dünnenberger (SDC), Henning Nohr (IUCN)

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