Global Biodiversity Outlook 5

SUMMARY FOR POLICYMAKERS

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"Last year, United Nations Member States called for a decade of ambitious action to accelerate progress towards the achievement of the Sustainable Development Goals: 10 years to realize our shared vision to end poverty, rescue the planet and build a peaceful world for all people. Stepping up action to safeguard and restore biodiversity – the living fabric of our planet and the foundation of human life and prosperity – is an essential part of this collective effort."

António Guterres
Secretary-General, United Nations

"We know what needs to be done, what works and how we can achieve good results. If we build on what has already been achieved, and place biodiversity at the heart of all our policies and decisions – including in COVID-19 recovery packages – we can ensure a better future for our societies and the planet. This Outlook is an important tool in making this vision a reality."

Inger Andersen
United Nations Under-Secretary-General and Executive Director of the UN Environment Programme

"As we prepare for a new Global Biodiversity Framework to guide actions over the next decades, we must recommit to the Vision adopted in Nagoya in 2010, recognizing that it remains as valid as ever within the broader aspirations embodied in the Sustainable Development Goals. It also remains achievable, but only if we respond to the compelling evidence now available regarding the transformative change required."

Elizabeth Maruma Mrema
United Nations Assistant Secretary-General and Executive Secretary of the Convention on Biological Diversity

For the complete versions of the forewords please see the full version of the fifth edition of the Global Biodiversity Outlook

OVERVIEW

Humanity stands at a crossroads with regard to the legacy it leaves to future generations. Biodiversity is declining at an unprecedented rate, and the pressures driving this decline are intensifying. None of the Aichi Biodiversity Targets will be fully met, in turn threatening the achievement of the Sustainable Development Goals and undermining efforts to address climate change. The COVID-19 pandemic has further highlighted the importance of the relationship between people and nature, and it reminds us all of the profound consequences to our own well-being and survival that can result from continued biodiversity loss and the degradation of ecosystems.

Nevertheless, reports provided by the world's governments, as well as other sources of evidence, reveal examples of progress which, if scaled up, could support the transformative changes necessary to achieve the 2050 vision of living in harmony with nature. A number of transitions pointing the way to the type of changes required are already in evidence, albeit in limited areas of activity. Examining how such incipient transitions can be replicated and built on, will be critical to using the short window available to make the collective vision of living in harmony with nature a reality.

Options are available to the global community that could simultaneously halt and ultimately reverse biodiversity loss, limit climate change and improve the capacity to adapt to it and meet other goals such as improved food security.

These pathways to a sustainable future rely on recognizing that bold, interdependent actions are needed across a number of fronts, each of which is necessary and none of which is sufficient on its own. This mix of actions includes greatly stepping up efforts to conserve and restore biodiversity, addressing climate change in ways that limit global temperature rise without imposing unintended additional pressures on biodiversity, and transforming the way in which we produce, consume and trade goods and services, most particularly food, that rely on and have an impact on biodiversity.

Navigating the available pathways to the 2050 vision involves consideration of all the multiple aspects of our relationship with nature and the importance we attach to it. Solutions need to seek an integrated approach that simultaneously address the conservation of the planet's genetic diversity, species and ecosystems, the capacity of nature to deliver material benefits to human societies, and the less tangible but highly-valued connections with nature that help to define our identities, cultures and beliefs.

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INTRODUCTION

The strategy agreed in 2010 to guide global action during the United Nations Decade on Biodiversity 2011-2020 recognized the need to address the underlying drivers that influence the direct pressures on biodiversity. The failure to tackle these underlying causes of biodiversity loss had been spelled out in the third edition of the *Global Biodiversity Outlook* as one of the factors resulting in the missing of the first global biodiversity target in 2010. Building on this analysis, the Strategic Plan for Biodiversity 2011-2020 structured the 20 Aichi Biodiversity Targets around five Strategic Goals, setting benchmarks for improvements across drivers, pressures, the state of biodiversity, the benefits derived from it and the implementation of relevant policies and enabling conditions.

The Strategic Plan for Biodiversity, formally adopted by Governments through the Convention on Biological Diversity and endorsed by other biodiversity-related conventions, was intended as a global framework for all sections of society – and its success would depend on bringing about change among a wide range of sectors and stakeholders whose decisions and actions have an impact on biodiversity.

The mid-term review of the Strategic Plan for Biodiversity 2011-2020 carried out in the fourth edition of the *Global Biodiversity Outlook* in 2014 concluded that while progress was evident for the majority of the Aichi Biodiversity Targets, at that time, it was not sufficient for the achievement of the targets by 2020. The fourth edition of the Outlook outlined potential actions in each of the target areas that, if advanced, could still result in the achievement of the goals and targets of the Strategic Plan.

Biodiversity is critical to both the 2030 Agenda for Sustainable Development and the Paris Agreement under the United Nations Framework Convention on Climate Change, each adopted in 2015. For example, around one third of the net reductions in greenhouse gas emissions required to meet the Paris Agreement's goals could come from 'nature-based solutions'. The Aichi Biodiversity Targets are reflected directly in many of the targets within the Sustainable Development Goals (SDGs). Biodiversity is explicitly highlighted in SDGs 14 (Life Below Water) and 15 (Life on Land), but also underpins a much wider set of Goals. For example, it is a key factor for the achievement of food security and improved nutrition (SDG 2) and the provision of clean water (SDG 6). All food systems depend on biodiversity and a broad range of ecosystem services that support agricultural productivity, for example through pollination, pest control and soil fertility. Healthy ecosystems also underpin delivery of water supplies and water quality, and guard against water-related hazards and disasters. The conservation and sustainable use of biodiversity may therefore be regarded as foundational to the whole 2030 Agenda.

Conversely, the achievement of the Sustainable Development Goals contributes to the conservation and sustainable use of biodiversity. For example, some Goals address the drivers of biodiversity loss, such as climate change (SDG 13), pollution (SDGs 6, 12 and 14) and overexploitation (SDGs 6, 12, 14 and 15). Others address unsustainable production and consumption, the efficient use of natural resources and reducing food waste (SDG 12). The Goals also support the underlying conditions for addressing biodiversity loss, by helping to build the necessary institutions and human capital (SDGs 3, 4. 16), enhancing gender equity (Goal 5) and reducing inequalities (SDG 10). While some potential trade-offs exist between reaching the objectives of the Convention on Biological Diversity (CBD) and attaining some of the Sustainable Development Goals, these can be avoided or minimized through coherent and integrated decision making.

PROGRESS ACHIEVED IN IMPLEMENTING THE STRATEGIC PLAN FOR BIODIVERSITY 2011-2020

The global summary of progress towards the Aichi Biodiversity Targets is based on a range of indicators, research studies and assessments (in particular the IPBES Global Assessment on

Biodiversity and Ecosystem Services), as well as the national reports provided by countries on their implementation of the CBD. The national reports provide rich information about the steps taken in countries worldwide in support of biodiversity conservation, sustainable use, and the fair and equitable sharing of benefits. This body of information provides a wealth of information on the successes and challenges in implementing the Strategic Pan for Biodiversity 2011-2020 and in reaching the Aichi Biodiversity Targets.

At the global level none of the 20 targets have been fully achieved, though six targets have been partially achieved (Targets 9, 11, 16, 17, 19 and 20). Examining the 60 specific elements of the Aichi Biodiversity Targets, seven have been achieved and 38 show progress. Thirteen elements show no progress or indicate a move away from the target, and for two elements the level of progress is unknown. The table on the following pages provides an overview of the progress made towards each of the 20 Aichi Biodiversity Targets.

The overall picture from the national reports provided by countries is also one of progress, but again at levels generally insufficient to achieve the Aichi Biodiversity Targets. On average, countries report that more than a third of all national targets are on track to be met (34%) or exceeded (3%). For another half of the national targets (51%), progress is being made but not at a rate that will allow the targets to be met. Only 11% of national targets show no significant progress, and 1% are moving in the wrong direction. However national targets are generally poorly aligned with the Aichi Biodiversity Targets, in terms of scope and the level of ambition. Fewer than a quarter (23%) of the targets are well aligned with the Aichi Targets and only about a tenth of all national targets are both similar to the Aichi Biodiversity Targets, and on track to be met. Progress is reported to have been greatest towards the national targets related to Aichi Biodiversity Targets 1, 11, 16, 17 and 19. The information from the national reports therefore suggests that there have been gaps in both the level of ambition of the commitments of countries to address the Aichi Biodiversity Targets nationally, as well as in the actions to reach these commitments.

The information in the national reports is broadly consistent with an indicator-based analysis at global level. While indicators relating to policies and actions in support of biodiversity (responses) show overwhelmingly positive trends, those relating to the drivers of biodiversity loss, and to the current state of biodiversity itself, mostly show significantly worsening trends.

Despite the limited achievement globally of the Aichi Biodiversity Targets, this Outlook has documented important examples in which actions in support of the goals and targets of the Strategic Plan for Biodiversity 2011-2020 have generated successful outcomes. Ten areas showing particular progress in the past decade can be highlighted.

Relating to the underlying causes of biodiversity loss (Goal A):

- Almost 100 countries have incorporated biodiversity values into national accounting systems (Target 2).

Relating to the direct pressures on biodiversity (Goal B):

- The rate of deforestation has fallen globally by about a third compared to the previous decade (Target 5).
- Where good fisheries management policies have been introduced, involving stock assessments, catch limits, and enforcement, the abundance of marine fish stocks has been maintained or rebuilt (Target 6).
- There have been an increasing number of successful cases of eradication of invasive alien species from islands, and of the targeting of priority species and pathways to avoid future invasive species introductions (Target 9).

Relating to the status of biodiversity (Goal C):

- There has been significant expansion of the protected area estate, increasing over the 2000-2020 period from about 10% to at least 15% terrestrially, and from about 3% to at least 7% in marine areas. The protection of areas of particular

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importance for biodiversity (key biodiversity areas) has also increased from 29% to 44% over the same time period (Target 11).

- Recent conservation actions have reduced the number of extinctions through a range of measures, including protected areas, hunting restrictions, the control of invasive alien species, *ex situ* conservation and re-introduction. Without such actions, extinctions of birds and mammals in the past decade would likely have been two to four times higher (Target 12).

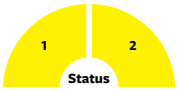
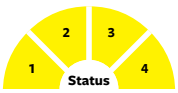
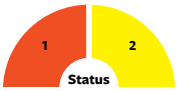
Relating to measures enabling implementation of the Strategic Plan for Biodiversity 2011-2020 (Goal E):

- The Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from their Utilization has come into force and is now fully operational in at least 87 countries and internationally (Target 16).
- National biodiversity strategies and action plans (NBSAPs) have been updated in line with the Strategic Plan for Biodiversity 2011-2020 by 170 countries, 85% of CBD Parties (Target 17).
- There has been a substantial increase in the data and information on biodiversity available to citizens, researchers and policy makers, including through the efforts of citizen science (Target 19).
- Financial resources available for biodiversity through international flows have doubled (Target 20).

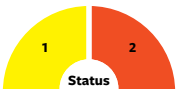
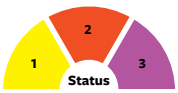
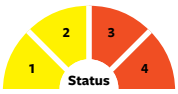
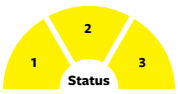
The experiences over the last decade of implementing the Strategic Plan for Biodiversity provide lessons relevant to the development of the post-2020 global biodiversity framework and in the implementation of the Convention more generally. They include:

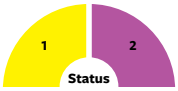
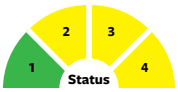
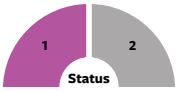
- The need for still greater efforts to address the direct and indirect drivers of biodiversity loss, including through integrated and holistic approaches to planning and implementation, and greater interaction among government ministries, economic sectors and society generally.
- The need to strengthen further the integration of gender, the role of indigenous peoples and local communities and the level of stakeholder engagement.
- The need to strengthen national biodiversity strategies and action plans, and associated planning processes, including their adoption as whole-of-government policy instruments.
- The need for well-designed goals and targets formulated with clear, and, simple language, and with quantitative elements (i.e. according to 'SMART' criteria).
- The need to reduce time lags in planning and implementation of biodiversity strategies and action plans, and to account for unavoidable time lags in implementation.
- The need for increased ambition of national commitments, and for the regular and effective review of national activities.
- The need for learning and adaptive management, including through greater efforts to facilitate technical and scientific cooperation, and to understand the reasons for the effectiveness or otherwise of policy measures.
- The need for greater attention to implementation, and sustained and targeted support to countries.

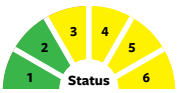
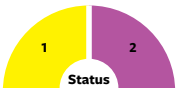
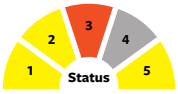
Assessment of progress towards the 20 Aichi Biodiversity Targets[1]

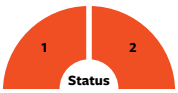
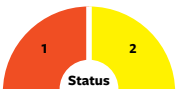
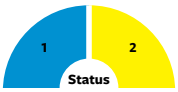
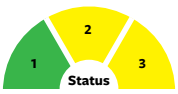
AICHI BIODIVERSITY TARGET	ASSESSMENT OF PROGRESS	SUMMARY OF PROGRESS
By 2020, at the latest, people are aware of the values of biodiversity (**1**) and the steps they can take to conserve and use it sustainably (**2**).		There has been an apparent increase in the past decade in the proportion of people who have heard of biodiversity and who understand the concept. Understanding of biodiversity appears to be increasing more rapidly among younger people. A recent survey suggested that more than one third of people in the most biodiverse countries have high awareness both of the values of biodiversity and the steps required for its conservation and sustainable use. ***The target has not been achieved*** (low confidence).
By 2020, at the latest, biodiversity values have been integrated into national and local development and poverty reduction strategies (**1**) and planning processes (**2**) and are being incorporated into national accounting (**3**), as appropriate, and reporting systems (**4**).		Many countries report examples of incorporating biodiversity into various planning and development processes. There has been a steady upward trend of countries incorporating biodiversity values into national accounting and reporting systems. At the same time, there is less evidence that biodiversity has been truly integrated into development and poverty reduction planning as required by the target. ***The target has not been achieved*** (medium confidence).
By 2020, at the latest, incentives, including subsidies, harmful to biodiversity are eliminated, phased out or reformed in order to minimize or avoid negative impacts (**1**), and positive incentives for the conservation and sustainable use of biodiversity are developed and applied (**2**), consistent and in harmony with the Convention and other relevant international obligations, taking into account national socio economic conditions.		Overall, little progress has been made over the past decade in eliminating, phasing out or reforming subsidies and other incentives potentially harmful to biodiversity, and in developing positive incentives for biodiversity conservation and sustainable use. Relatively few countries have taken steps even to identify incentives that harm biodiversity, and harmful subsidies far outweigh positive incentives in areas such as fisheries and the control of deforestation. ***The target has not been achieved*** (medium confidence).

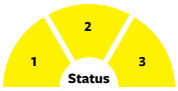
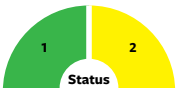
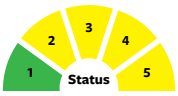
1. Assessment of progress towards the 20 Aichi Biodiversity Targets and the elements contained in their wording. The progress towards each element has been depicted graphically in the half circle icons in the table. Each segment represents an element, and the number of the segment corresponds to the number shown in parentheses in the wording of each target. Blue indicates that the element has been exceeded, green indicates the element has been or is likely to be achieved by 2020, yellow indicates that progress has been made towards the element but that it has not been achieved, red indicates no significant change in the element, and purple indicates that the trends are moving away from achieving the element. In cases where the element could not be assessed, the segment is grey. For an Aichi Target to be achieved overall, all of the segments would be blue or green. A target is assessed as partially achieved when at least one of its elements has been achieved. If none of the elements has been achieved, the Aichi Target is assessed as not achieved. The confidence levels are explained in endnotes referred to in each target summary in Part II of the full report.

AICHI BIODIVERSITY TARGET	ASSESSMENT OF PROGRESS	SUMMARY OF PROGRESS
By 2020, at the latest, Governments, business and stakeholders at all levels have taken steps to achieve or have implemented plans for sustainable production and consumption (**1**) and have kept the impacts of use of natural resources well within safe ecological limits (**2**).		While an increasing number of governments and businesses are developing plans for more sustainable production and consumption, these are not being implemented on a scale that eliminates the negative impact of unsustainable human activities on biodiversity. While natural resources are being used more efficiently, the aggregated demand for resources continues to increase, and therefore the impacts of their use remain well above safe ecological limits. ***The target has not been achieved*** (high confidence).
By 2020, the rate of loss of all natural habitats (**2**), including forests (**1**), is at least halved and where feasible brought close to zero, and degradation and fragmentation is significantly reduced (**3**).		The recent rate of deforestation is lower than that of the previous decade, but only by about one third, and deforestation may be accelerating again in some areas. Loss, degradation and fragmentation of habitats remains high in forest and other biomes, especially in the most biodiversity-rich ecosystems in tropical regions. Wilderness areas and global wetlands continue to decline. Fragmentation of rivers remains a critical threat to freshwater biodiversity. ***The target has not been achieved*** (high confidence).
By 2020 all fish and invertebrate stocks and aquatic plants are managed and harvested sustainably (**1**), legally and applying ecosystem based approaches, so that overfishing is avoided, recovery plans and measures are in place for all depleted species (**2**), fisheries have no significant adverse impacts on threatened species and vulnerable ecosystems (**3**) and the impacts of fisheries on stocks, species and ecosystems are within safe ecological limits (**4**).		While there has been substantial progress towards this target in some countries and regions, a third of marine fish stocks are overfished, a higher proportion than ten years ago. Many fisheries are still causing unsustainable levels of bycatch of non-target species and are damaging marine habitats. ***The target has not been achieved*** (high confidence).
By 2020 areas under agriculture (**1**), aquaculture (**2**) and forestry (**3**) are managed sustainably, ensuring conservation of biodiversity.		There has been a substantial expansion of efforts to promote sustainable agriculture, forestry and aquaculture over recent years, including through farmer-led agroecological approaches. The use of fertilizers and pesticides has stabilized globally, though at high levels. Despite such progress, biodiversity continues to decline in landscapes used to produce food and timber; and food and agricultural production remains among the main drivers of global biodiversity loss. ***The target has not been achieved*** (high confidence).

AICHI BIODIVERSITY TARGET	ASSESSMENT OF PROGRESS	SUMMARY OF PROGRESS
 By 2020, pollution (**1**), including from excess nutrients (**2**), has been brought to levels that are not detrimental to ecosystem function and biodiversity.		Pollution, including from excess nutrients, pesticides, plastics and other waste, continues to be a major driver of biodiversity loss. Despite increasing efforts to improve the use of fertilizers, nutrient levels continue to be detrimental to ecosystem function and biodiversity. Plastic pollution is accumulating in the oceans, with severe impacts on marine ecosystems, and in other ecosystems with still largely unknown implications. Actions taken in many countries to minimize plastic waste have not been sufficient to reduce this source of pollution. ***The target has not been achieved*** (medium confidence).
 By 2020, invasive alien species (**1**) and pathways (**2**) are identified and prioritized, priority species are controlled or eradicated (**3**) and measures are in place to manage pathways (**4**) to prevent their introduction and establishment.		Good progress has been made during the past decade on identifying and prioritizing invasive alien species in terms of the risk they present, as well as in the feasibility of managing them. Successful programmes to eradicate invasive alien species, especially invasive mammals on islands, have benefited native species. However, these successes represent only a small proportion of all occurrences of invasive species. There is no evidence of a slowing down in the number of new introductions of alien species. ***The target has been partially achieved*** (medium confidence).
 By 2015, the multiple anthropogenic pressures on coral reefs (**1**), and other vulnerable ecosystems (**2**) impacted by climate change or ocean acidification are minimized, so as to maintain their integrity and functioning.		Multiple threats continue to affect coral reefs and other vulnerable ecosystems impacted by climate change and ocean acidification. Overfishing, nutrient pollution and coastal development compound the effects of coral bleaching. Corals have shown the most rapid increase in extinction risk of all assessed groups. Hard coral cover has declined significantly in some regions, and there has been a shift towards coral species less able to support diverse reef habitats. Other ecosystems especially in mountains and polar regions have experienced significant impacts from climate change, compounded by other pressures. ***The target was missed by the stated date of 2015, and it has not been achieved by 2020*** (high confidence).

AICHI BIODIVERSITY TARGET	ASSESSMENT OF PROGRESS	SUMMARY OF PROGRESS
 By 2020, at least 17 per cent of terrestrial and inland water areas (**1**) and 10 per cent of coastal and marine areas (**2**), especially areas of particular importance for biodiversity and ecosystem services (**3**), are conserved through effectively and equitably managed (**4**), ecologically representative (**5**) and well-connected systems of protected areas and other effective area-based conservation measures, and integrated into the wider landscape and seascape (**6**)		The proportion of the planet's land and oceans designated as protected areas is likely to reach the targets for 2020 and may be exceeded when other effective area-based conservation measures and future national commitments are taken into account. However, progress has been more modest in ensuring that protected areas safeguard the most important areas for biodiversity, are ecologically representative, connected to one another as well as to the wider landscape and seascape and are equitably and effectively managed. ***The target has been partially achieved*** (high confidence).
 By 2020 the extinction of known threatened species has been prevented (**1**) and their conservation status, particularly of those most in decline, has been improved and sustained (**2**).		Species continue to move, on average, closer to extinction. However, the number of extinctions of birds and mammals would likely have been at least two to four times higher without conservation actions over the past decade. Among well-assessed taxonomic groups, nearly one quarter (23.7%) of species are threatened with extinction unless the drivers of biodiversity loss are drastically reduced, with an estimated total of one million threatened species across all groups. Wild animal populations have fallen by more than two-thirds since 1970, and have continued to decline since 2010. ***The target has not been achieved*** (high confidence).
 By 2020, the genetic diversity of cultivated plants (**1**) and farmed and domesticated animals (**2**) and of wild relatives (**3**), including other socio-economically as well as culturally valuable species (**4**), is maintained, and strategies have been developed and implemented for minimizing genetic erosion and safeguarding their genetic diversity (**5**).		Genetic diversity of cultivated plants, farmed and domesticated animals, and wild relatives, continues to be eroded. The wild relatives of important food crops are poorly represented in *ex situ* seed banks that help guarantee their conservation, important for future food security. The proportion of livestock breeds that are at risk or extinct is increasing, although at a slower rate than in earlier years, suggesting some progress in preventing the decline of traditional breeds. Wild relatives of farmed birds and mammals are moving closer to extinction. ***The target has not been achieved*** (medium confidence).

AICHI BIODIVERSITY TARGET	ASSESSMENT OF PROGRESS	SUMMARY OF PROGRESS
 By 2020, ecosystems that provide essential services, including services related to water, and contribute to health, livelihoods and well-being, are restored and safeguarded (**1**), taking into account the needs of women, indigenous and local communities, and the poor and vulnerable. (**2**)		The capacity of ecosystems to provide the essential services on which societies depend continues to decline, and consequently, most ecosystem services (nature's contributions to people) are in decline. In general, poor and vulnerable communities, as well as women, are disproportionately affected by this decline. Mammal and bird species responsible for pollination are on average moving closer to extinction, as are species used for food and medicine. ***The target has not been achieved*** (medium confidence).
 By 2020, ecosystem resilience and the contribution of biodiversity to carbon stocks has been enhanced, through conservation and restoration (**1**), including restoration of at least 15 per cent of degraded ecosystems (**2**), thereby contributing to climate change mitigation and adaptation and to combatting desertification.		Progress towards the target of restoring 15 per cent of degraded ecosystems by 2020 is limited. Nevertheless, ambitious restoration programmes are under way or proposed in many regions, with the potential to deliver significant gains in ecosystem resilience and preservation of carbon stocks. ***The target has not been achieved*** (medium confidence).
 By 2015, the Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from their Utilization is in force (**1**) and operational, consistent with national legislation (**2**).		The Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from their Utilization entered into force on 12 October 2014. As of July 2020, 126 Parties to the CBD have ratified the Protocol and 87 of them have put in place national access and benefit sharing measures, as well as establishing competent national authorities. The Protocol can be considered operational. ***The target has been partially achieved*** (high confidence)
 By 2015 each Party has developed (**1**), adopted as a policy instrument (**2**), and has commenced implementing (**3**) an effective, participatory and updated national biodiversity strategy and action plan.		By the December 2015 deadline established in this target, 69 Parties had submitted an NBSAP prepared, revised or updated after the adoption of the Strategic Plan. An additional 101 Parties have since submitted their NBSAP, so that by July 2020, 170 Parties had developed NBSAPs in line with the Strategic Plan. This represents 85% of the Parties to the Convention. However, the extent to which these NBSAPs have been adopted as policy instruments and are being implemented in an effective and participatory manner, is variable. ***The target has been partially achieved*** (high confidence).

AICHI BIODIVERSITY TARGET	ASSESSMENT OF PROGRESS	SUMMARY OF PROGRESS
 By 2020, the traditional knowledge, innovations and practices of indigenous and local communities relevant for the conservation and sustainable use of biodiversity, and their customary use of biological resources, are respected (**1**), subject to national legislation and relevant international obligations, and fully integrated (**2**) and reflected in the implementation of the Convention with the full and effective participation (**3**) of indigenous and local communities, at all relevant levels.		There has been an increase in the recognition of the value of traditional knowledge and customary sustainable use, both in global policy fora and in the scientific community. However, despite progress in some countries, there is limited information indicating that traditional knowledge and customary sustainable use have been widely respected and/or reflected in national legislation related to the implementation of the Convention, or on the extent to which indigenous peoples and local communities are effectively participating in associated processes. ***The target has not been achieved*** (low confidence).
 By 2020, knowledge, the science base and technologies relating to biodiversity, its values, functioning, status and trends, and the consequences of its loss, are improved (**1**), widely shared and transferred, and applied (**2**).		Significant progress has been made since 2010 in the generation, sharing and assessment of knowledge and data on biodiversity, with big-data aggregation, advances in modelling and artificial intelligence opening up new opportunities for improved understanding of the biosphere. However, major imbalances remain in the location and taxonomic focus of studies and monitoring. Information gaps remain in the consequences of biodiversity loss for people, and the application of biodiversity knowledge in decision making is limited. ***The target has been partially achieved*** (medium confidence).
 By 2020, at the latest, the mobilization of financial resources for effectively implementing the Strategic Plan for Biodiversity 2011–2020 from all sources, and in accordance with the consolidated and agreed process in the Strategy for Resource Mobilization, should increase substantially from the current levels. (Specific targets: (**1**) to double international financial flows to developing countries; (**2**) to include biodiversity in national priorities or development plans; (**3**) to report on domestic spending, needs, gaps, priorities; (**4**) to prepare national finance plans and assess the multiple values of biodiversity; and (**5**) to mobilize domestic financial resources.)		There have been increases in domestic resources for biodiversity in some countries, with resources remaining broadly constant for others over the past decade. Financial resources available for biodiversity through international flows and official development assistance have roughly doubled. However, when all sources of biodiversity finance are taken into account, the increase in biodiversity financing would not appear to be sufficient in relation to needs. Moreover, these resources are swamped by support for activities harmful to biodiversity (see Aichi Target 3). Progress on identifying funding needs, gaps and priorities and the development of national financial plans and assessments of biodiversity values has been limited to relatively few countries (see Aichi Target 2). ***The target has been partially achieved*** (high confidence).

FUTURE OUTLOOK

On our current trajectory, biodiversity, and the services it provides, will continue to decline, jeopardizing the achievement of the Sustainable Development Goals. In 'business as usual' scenarios, this trend is projected to continue until 2050 and beyond, due to the increasing impacts of land and sea use change, overexploitation, climate change, pollution and invasive alien species. These pressures are in turn being driven by currently unsustainable patterns of production and consumption, population growth and technological developments. The projected decline in biodiversity will affect all people, but it will have a particularly detrimental effect on indigenous peoples and local communities, and the world's poor and vulnerable, given their reliance on biodiversity for their wellbeing.

Scenarios and pathways to 2050

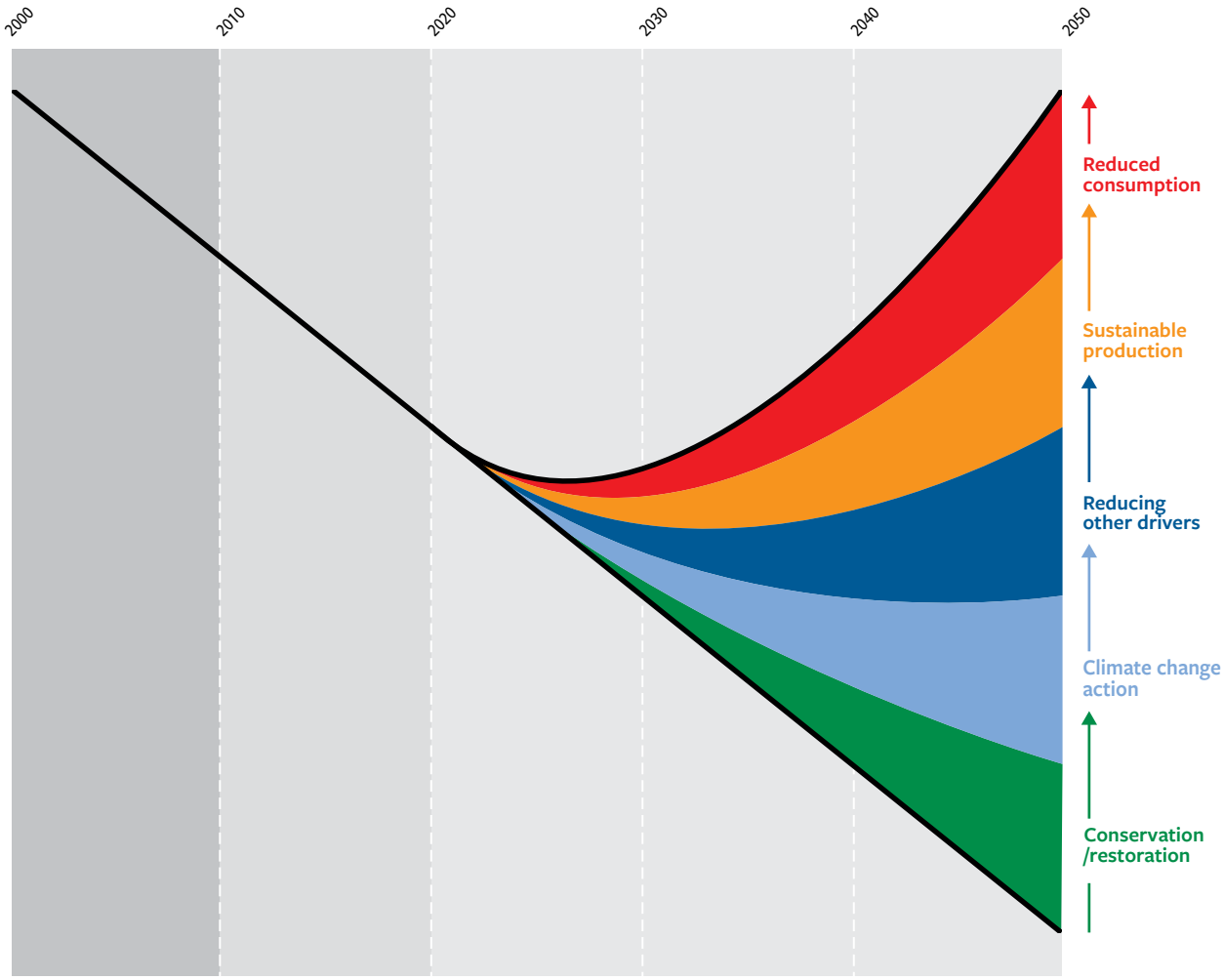
Available evidence suggests that despite the failure to meet the goals of the Strategic Plan for Biodiversity 2011-2020, it is not too late to slow, halt and eventually reverse current trends in the decline of biodiversity. Moreover, the actions required to achieve this turnaround (or 'bending the curve' of biodiversity decline, as it has been termed), are fully consistent with, and indeed crucial components of, the goals and targets set out under the 2030 Agenda for Sustainable Development and the Paris Climate Change Agreement.

In summary, realizing the 2050 Vision for Biodiversity depends on a portfolio of actions in the following areas, each of which is necessary but none on its own sufficient:

- Efforts to conserve and restore biodiversity need to be scaled up at all levels using approaches that will depend on local context. These need to combine major increases in the extent and effectiveness of well-connected protected areas and other effective area-based conservation measures, large-scale restoration of degraded habitats, and improvements in the condition of nature across farmed and urban landscapes as well as inland water bodies, coasts and oceans;
- Efforts to keep climate change well below 2 degrees C and close to 1.5 degrees C above pre-industrial levels are needed to prevent climate impacts from overwhelming all other actions in support of biodiversity. The conservation and restoration of ecosystems can play a substantial role in this. Such 'nature-based solutions' can also be an important part of adaptation to climate change;
- Effective steps need to be taken to address all remaining pressures driving biodiversity loss, including invasive alien species, pollution and the unsustainable exploitation of biodiversity especially in marine and inland water ecosystems;
- Transformations need to be achieved in the production of goods and services, especially food. This will include adopting agricultural methods that can meet growing global demand while imposing fewer negative impacts on the environment, and reducing the pressure to convert more land to production;
- Transformations are similarly needed to limit the demand for increased food production by adopting healthier diets and reducing food waste, and also in limiting the consumption of other material goods and services affecting biodiversity, for example in forestry, energy and provision of fresh water.

Each of these areas of action relies on very substantial changes and innovations, implemented on a short timescale and involving a wide range of actors at all scales and across all sectors of society (see transitions described below). However, even the most intensive efforts in each of these areas will not succeed in 'bending the curve' of biodiversity loss, unless tackled together with the other areas. For example, the most ambitious measures to conserve and restore ecosystems will fail to address biodiversity loss and food security unless equally ambitious steps are taken to sustainably increase agricultural productivity and adopt more sustainable diets. On the other hand, combining actions across all areas will make each of them easier to achieve, due to the connections and synergies between them.

A portfolio of actions to reduce loss and restore biodiversity



Trends in biodiversity (various metrics, left axis) have been declining and are projected to continue to do so under business as usual scenarios (trend line). Various areas of action could reduce the rate of biodiversity decline, and the full portfolio of actions, in combination, could halt and reverse the decline (bend the curve), potentially leading to net biodiversity gains after 2030. These are, from bottom to top: (1) Enhanced conservation and restoration of ecosystems; (2) climate change mitigation; (3) action on pollution, invasive alien species and overexploitation; (4) more sustainable production of goods and services, especially food; and (5) reduced consumption and waste. However, none of the areas of action alone, nor in partial combinations, can bend the curve of biodiversity loss. Moreover, the effectiveness of each area of action is enhanced by the other areas (see Part III of the full report for discussion).

There is no single, 'ideal' pathway towards the 2050 Vision on Biodiversity that applies equally to all regions and all circumstances. Within the essential areas of change outlined above, there are many alternative approaches which will reflect local conditions and priorities. For example, ambitious conservation measures focussed on the protection of large areas of land exclusively for nature may have the greatest impact on the survival of terrestrial species, while equally ambitious approaches that prioritize greener landscapes within farmed and urban environments may result in greater improvements in some of nature's contributions to people. The framework adopted by the global community should be flexible enough to accommodate a variety of conditions and values, while recognizing the consequences of different approaches in terms of outcomes for biodiversity and human societies.

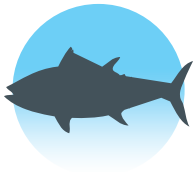
TRANSITIONS TO SUSTAINABLE PATHWAYS

Each of the measures necessary to achieve the 2050 Vision for Biodiversity requires a significant shift away from 'business as usual' across a broad range of human activities. The shape and nature of such transformative change can already be identified through a series of transitions under way to a limited extent in key areas. This Outlook examines the promise, progress and prospects for the following interdependent transitions, that collectively can move societies into a more sustainable co-existence with nature.

Each of these transition areas involves recognizing the value of biodiversity, and enhancing or restoring the functionality of the ecosystems on which all aspects of human activity depend, and at the same time recognizing and reducing the negative impacts of human activity on biodiversity; thus enabling a virtuous cycle – reducing the loss and degradation of biodiversity and enhancing human well-being. The transitions will play out at a range of scales and are interdependent. The transitions are:

The ***land and forests*** transition: conserving intact ecosystems, restoring ecosystems, combatting and reversing degradation, and employing landscape level spatial planning to avoid, reduce and mitigate land-use change. This transition recognizes the essential value of well-conserved habitats for the maintenance of biodiversity and the provision of ecosystem services for the benefit of people, and the need to move to a situation in which maintaining and improving food security no longer involves the large-scale conversion of forests and other ecosystems.

The sustainable ***freshwater*** transition: an integrated approach guaranteeing the water flows required by nature and people, improving water quality, protecting critical habitats, controlling invasive species and safeguarding connectivity to allow the recovery of freshwater systems from mountains to coasts. This transition recognizes the importance of biodiversity in maintaining the multiple roles of freshwater ecosystems to support human societies and natural processes, including linkages with terrestrial, coastal and marine environments.



The sustainable ***fisheries and oceans*** transition: protecting and restoring marine and coastal ecosystems, rebuilding fisheries and managing aquaculture and other uses of the oceans to ensure sustainability, and to enhance food security and livelihoods. This transition recognizes the long-term dependency of marine food supplies and other benefits from the oceans on healthy ecosystems.

The ***sustainable agriculture*** transition: redesigning agricultural systems through agroecological and other innovative approaches to enhance productivity while minimizing negative impacts on biodiversity. This transition recognizes the role of biodiversity, including pollinators, pest and disease control organisms, soil biodiversity and genetic diversity, as well as diversity in the landscape, for productive and resilient agriculture that makes efficient use of land, water and other resources.

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The sustainable ***food systems*** transition: enabling sustainable and healthy diets with a greater emphasis on a diversity of foods, mostly plant-based, and more moderate consumption of meat and fish, as well as dramatic cuts in the waste involved in food supply and consumption. This transition recognizes the potential nutritional benefits from diverse foods and food systems, and the need to reduce demand-driven pressures globally while ensuring food security in all its dimensions.

The ***cities and infrastructure*** transition: deploying 'green infrastructure' and making space for nature within built landscapes to improve the health and quality of life for citizens and to reduce the environmental footprint of cities and infrastructure. This transition recognizes the dependency of urban communities on well-functioning ecosystems to sustain the human population, the majority of which is living in cities, the teleconnections between cities and nearby and distant ecosystems, and the importance of spatial planning to reduce the negative impacts on biodiversity of urban expansion, roads and other infrastructure.

The sustainable ***climate action*** transition: employing nature-based solutions, alongside a rapid phase-out of fossil fuel use, to reduce the scale and impacts of climate change, while providing positive benefits for biodiversity and other sustainable development goals. This transition recognizes the role of biodiversity in sustaining the capacity of the biosphere to mitigate climate change through carbon storage and sequestration and in enabling adaptation through resilient ecosystems, as well as the need to promote renewable energy while avoiding negative impacts on biodiversity.

The biodiversity-inclusive ***One Health*** transition: managing ecosystems, including agricultural and urban ecosystems, as well as the use of wildlife, through an integrated approach, to promote healthy ecosystems and healthy people. This transition recognizes the full range of linkages between biodiversity and all aspects of human health, and addresses the common drivers of biodiversity loss, disease risk and ill-health.

Already there are a number of incipient examples of such transitions, which, if scaled up, replicated, and supported by economy-wide measures, could support the transformative changes necessary to achieve the vision of living in harmony with nature by 2050.

A broader approach to sustainability involves better understanding the common factors that can influence fundamental changes in institutions, governance, values and behaviour, essential to bringing about the transitions described in this Outlook. The IPBES Global Assessment has identified eight priority points for intervention, or leverage points (described in detail in Part III of the full report), with five associated 'levers' – incentives and capacity building, coordination across sectors and jurisdictions, pre-emptive action, adaptive decision-making and environmental law and implementation – that may be targeted by leaders in government, business, civil society and academia to spark transformative changes towards a more just and sustainable world.

Finding solutions that address all the varying values we attach to nature is challenging, but the potential rewards are great. As nations evaluate options on how to recover from the COVID-19 pandemic, there is a unique opportunity to initiate the transformative changes needed to achieve the 2050 Vision of living in harmony with nature. Such actions would put biodiversity on a path to recovery, reduce the risk of future pandemics, and produce multiple additional benefits for people.

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