IPBES Regional and Land Degradation and Restoration Assesments of Biodiversity and Ecosystem Services

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Chair IPBES




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UN environment

United Nations Educational, Scientific and Cultural Organization

Food and Agriculture Organization of the United Nations

UNDP empowered lives. Resilient nations.

Outline

1. What are the threats to development?

2. What is IPBES?

3. Examples of key findings from the Regional and Land Degradation and Restoration Summaries for Policy Makers
   - Africa
   - Asia Pacific
   - Americas
   - Land degradation and restoration

4. Human-induced climate change and the Paris agreement

5. Implications for the UN sustainable development goals

Climate change, the loss of biodiversity and land degradation threaten human well-being

- There is no doubt that human activities are changing the Earth's climate, destroying biodiversity and degrading ecosystems, and causing land degradation – these are all environmental, development, economic, social, security and ethical issues

- The impacts of climate change, loss of biodiversity and land degradation are harmful, especially in developing countries, and will undermine the ability of many countries to achieve many of the seventeen UN Sustainable Development Goals (SDGs)

- The current Paris Agreement Pledges are inadequate to limit climate change to 2^{o}C, let alone the aspirational target of 1.5^{o}C

- Most of the Aichi targets in most countries will not be met

- The time for action is now - all countries need to transition to a low-carbon economy to limit human-induced climate change, enact policies to conserve and sustainably use biodiversity, and halt and reverse land degradation

What is IPBES?

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Science and Policy
for People and Nature

The Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES)

- An independent intergovernmental body, established by Governments in 2012 – currently 126 Members.

- IPBES's Mission:

  To strengthen knowledge foundations for better policy through science, for the conservation and sustainable use of biodiversity, long-term human well-being and sustainable development.

- In response to requests from Governments, IPBES provides policymakers with objective scientific assessments about the state of knowledge regarding:

- IPBES does for biodiversity what the IPCC does for climate change

Chapter outline for regional assessments

Chapter 1: Setting the scene

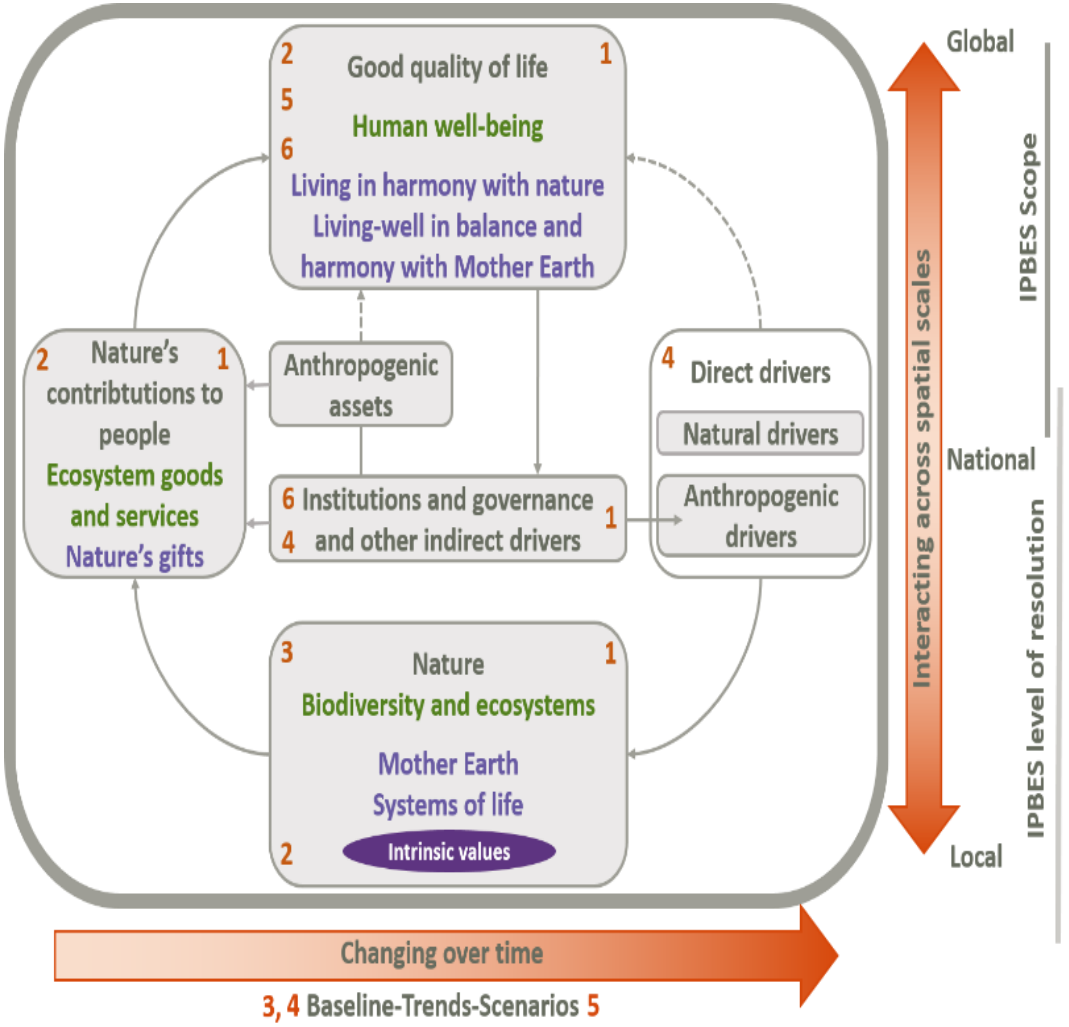
Chapter 2: Nature's contributions to people (NCP) and quality of life

Chapter 3: Status, trends and future dynamics of biodiversity and ecosystems underpinning nature's contributions to people nature's contributions to people

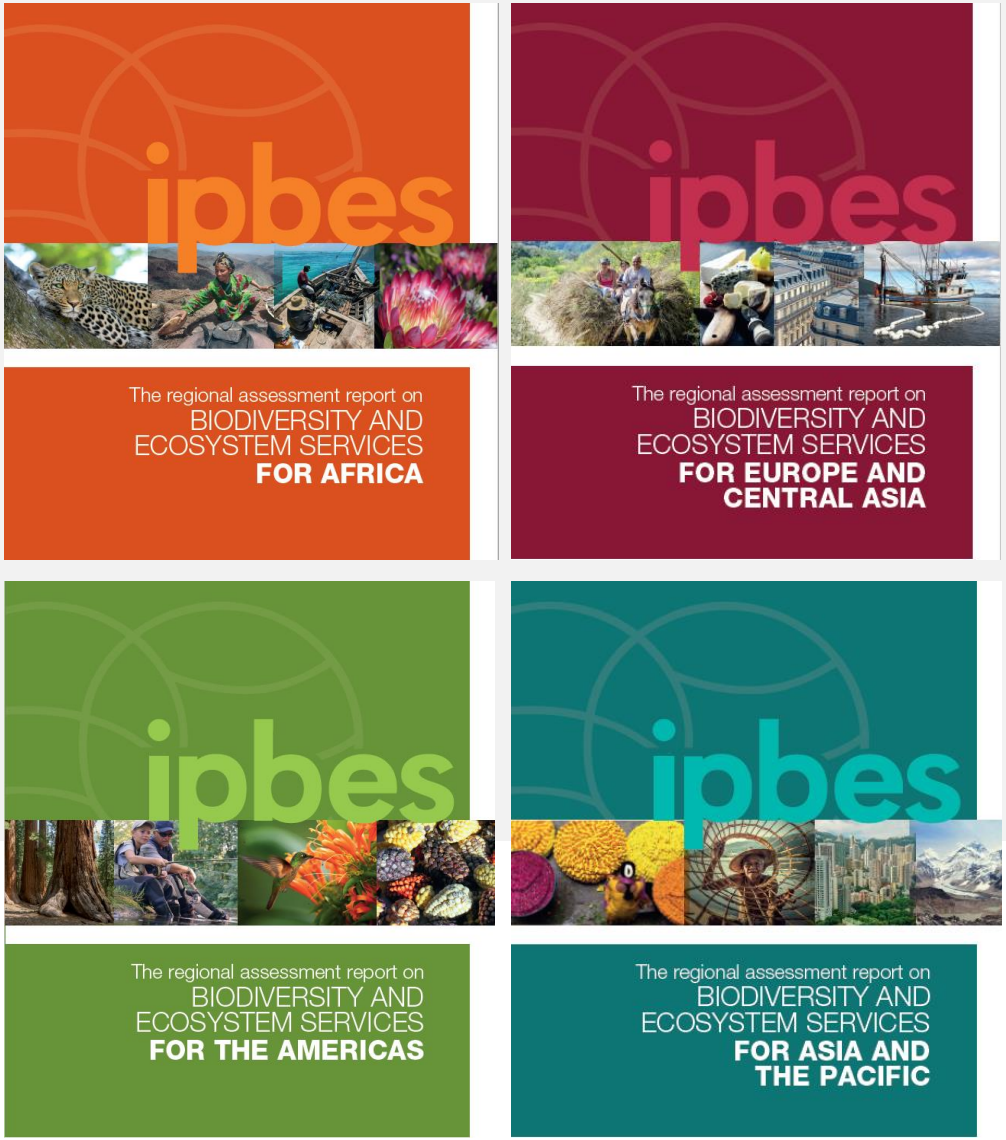
Chapter 4: Direct and indirect drivers of change in biodiversity and nature's contributions to people

Chapter 5: Plausible futures

Chapter 6: Options for governance and decision making



Examples of Key Findings from each of the Regional Assessments



Common Key Findings from the Four Regional Assessments (1)

While there are many common key findings among the four regions there are also modest differences between the regions and within the regions on the relative magnitudes of the trends in nature, nature's contributions to people, indirect and direct drivers, plausible futures and response options.

- Biodiversity and nature's contributions to people are essential for a good quality of life, and play a critical role in providing food, clean water and energy, regulating climate, air quality, pollination services, and are fundamental to social cohesion, mental well-being and sense of place – the benefits are unevenly distributed
- Biodiversity has significant economic (market and non-market) and non-economic (social/cultural) value that is context–specific and depends on ones world view
- Biodiversity (genes, species and ecosystems) continues to degrade in all parts of the world, with a corresponding loss of nature's contributions to people, hence on people's quality of life.
- Literally all terrestrial, freshwater and marine ecosystems, are degraded in all regions, with freshwater and marine systems particularly threatened
- The emphasis on producing material contributions to people, e.g., food, fiber and energy has resulted in a decrease in regulating contributions, e.g., pollination, climate, air quality, freshwater quantity and quality

Common Key Findings from the Four Regional Assessments (2)

- Two key indirect drivers, which are increasing in most parts of the world, are population and economic wealth leading to an increased demand for natural resources, which in turn result in fragmentation, conversion and overexploitation of ecosystems, accompanied by pollution, invasive alien species and climate change, therefore
  - there are synergistic effects among the drivers, e.g., climate change interacts with, and amplifies, all other direct drivers

- There are some bright spots, including an increase in the number and area of both terrestrial and marine protected areas and the restoration of some degraded areas. However, many of the most important areas of biodiversity are not being protected, and not all protected areas are effectively managed.

- Given most biodiversity is, and will always remain outside of protected areas, it is critical that biodiversity concerns are integrated into all socio-economic sectors, such as agriculture, water, energy, transportation, infrastructure, and cities

- Between now and 2050, business-as-usual scenarios are projected to result in a continued loss of biodiversity, with climate change becoming a dominant driver for most ecosystems. Scenarios optimized for economic growth tend to result in significant loss of biodiversity and nature's contributions to people, where-as some sustainability scenarios have much more positive outcomes and at least slow-down the loss of biodiversity

Common Key Findings from the Four Regional Assessments (3)

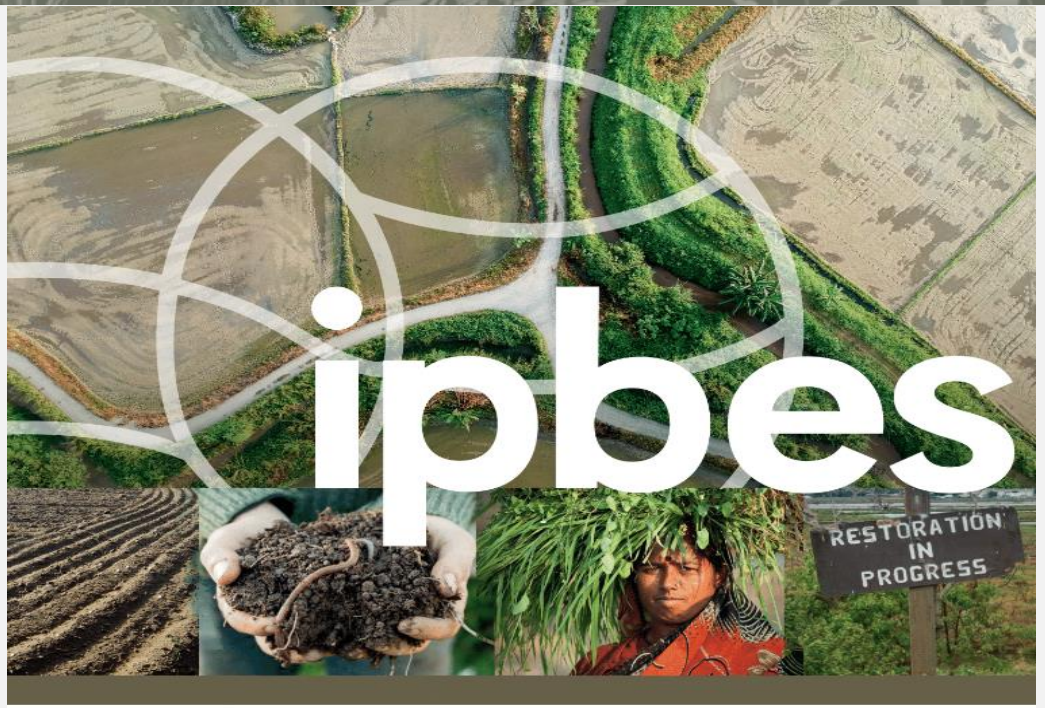
- Few of the Aichi targets will be met anywhere in the world, and a continued loss of biodiversity, especially when coupled with projected changes in climate, is likely to undermine achievement of many of the Sustainable Development Goals (SDGs) and many of the climate-related goals, especially impacting on poor people and developing countries.

- Biodiversity can be conserved and sustainably used with more holistic multi-sectoral policies, appropriate financing, use of appropriate technologies and behavior changes leading to sustainable production and consumption. Choice of healthy diets, coupled with a reduction in food and water waste, relieves pressures on biodiversity.

- More inclusive and participatory governance systems, at national, regional and global scales, involving governments, private sector, civil society and IPLCs, is likely to result in the development and ownership of more sustainable practices.

- While knowledge gaps were identified in each regional assessment, the general conclusion is that current knowledge is enough to manage biodiversity in a more sustainable manner.

- The bottom line is that while the loss of biodiversity is an important environmental issue, it is also an ethical, moral, social, economic and development issue. Human well-being depends on actions being taken now to address the loss of biodiversity and human-induced climate change. Decisions taken today by Governments, private sector and individuals will affect current and future generations, with poor people being the most vulnerable.



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LAND DEGRADATION AND RESTORATION

SUMMARY FOR POLICYMAKERS

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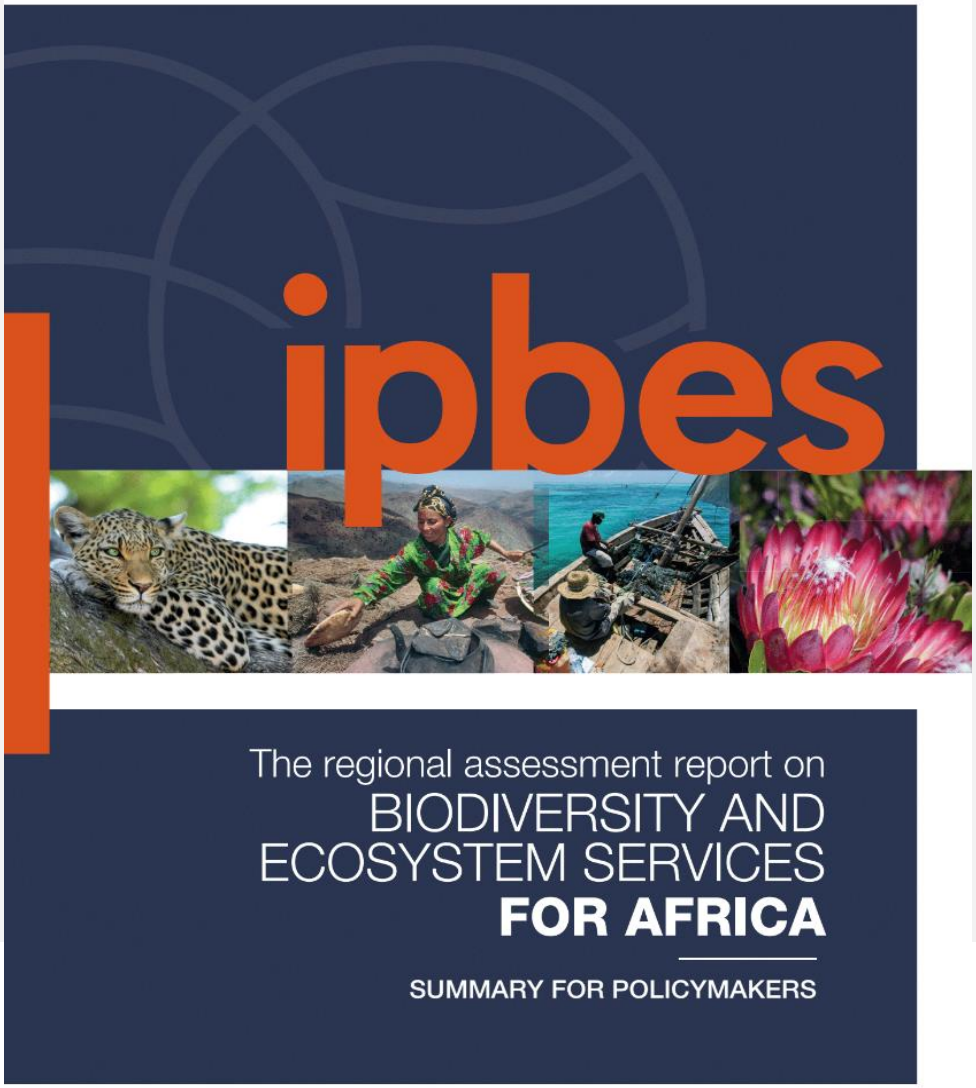
Key findings from the land degradation and restoration assessment

- Land degradation is occurring in virtually every ecosystem type and country in the world
- The severity and consequences depend on the social and ecological context, and when the degradation took place
- The problem is ongoing and worsening, rather than improving, as the demands we place on land increase and its capacity to satisfy them is progressively and persistently weakened
- The primary causes of land degradation include over-consumption of ecosystem-derived goods (e.g., food), de-coupling of consumption and productions systems (telecoupling), failure to perceive land degradation is a key issue, fragmented policy responses and climate change
- Land degradation negatively impacts the well-being of 3.2 billion people, is among the main factors contributing to loss of biodiversity, results in a loss of about 10% of annual GDP through lost ecosystem services, and is a major contributor to climate change
- Present efforts to address the problem have demonstrated that it is possible to make a difference, but the current level of effort is far below that required
- Investing in restoration makes economic sense, where the benefits of restoration exceed the costs by an average margin of 10:1, increases employment, promotes gender equity, decreases violent conflict
- Successfully addressing the SDGs requires halting and reversing land degradation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ECOSYSTEM SERVICES
FOR AFRICA
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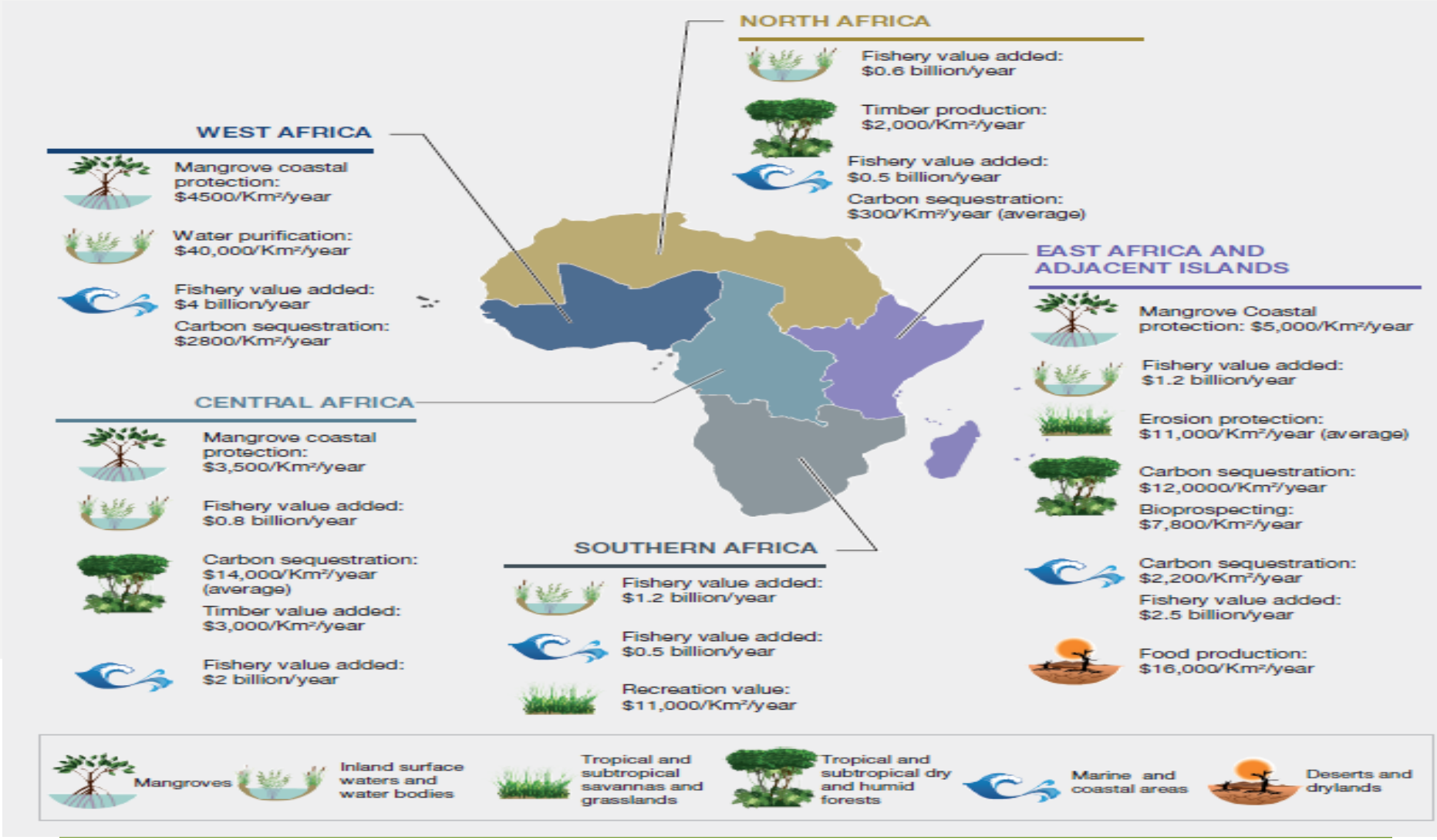
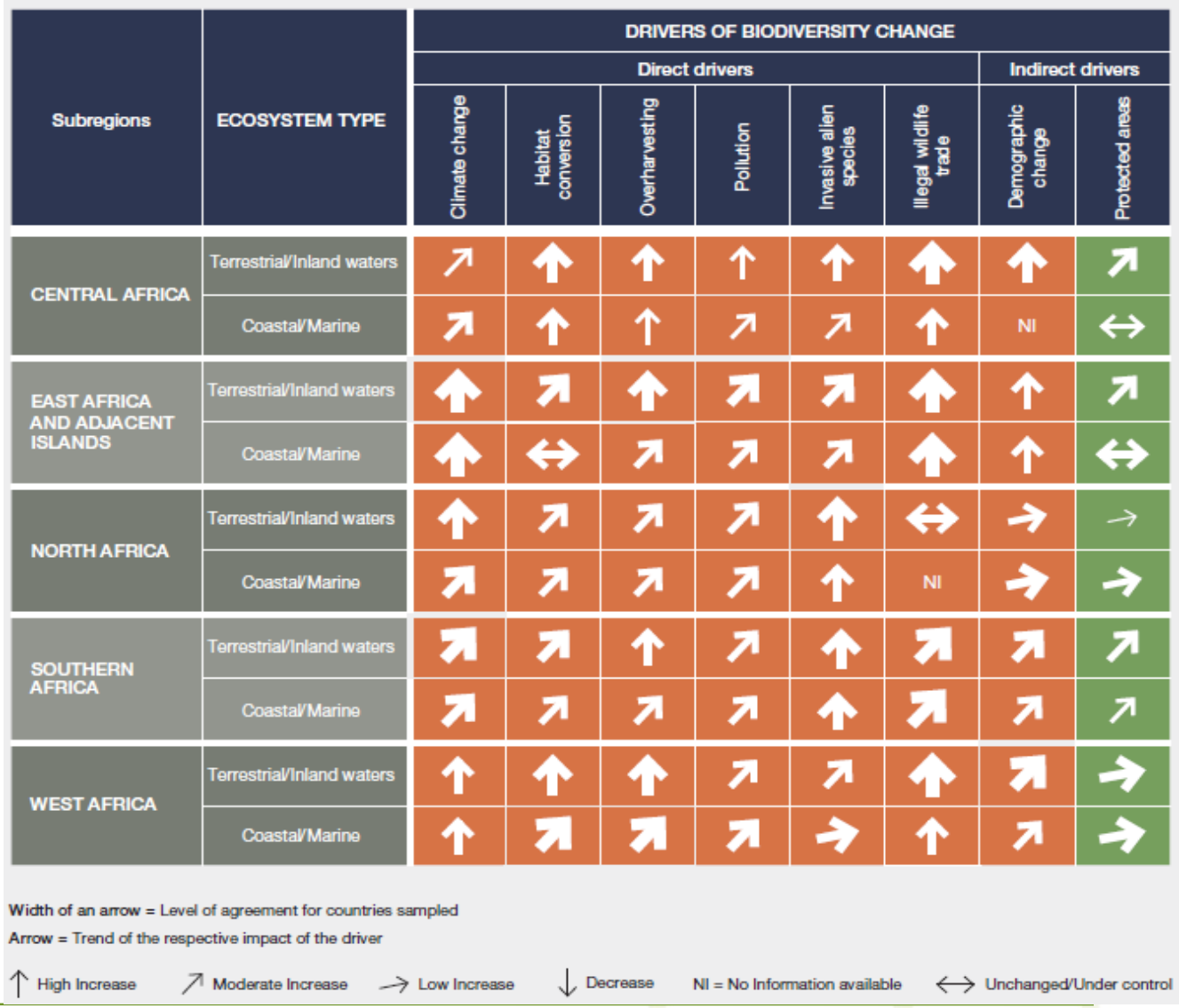
Africa's natural assets are unique

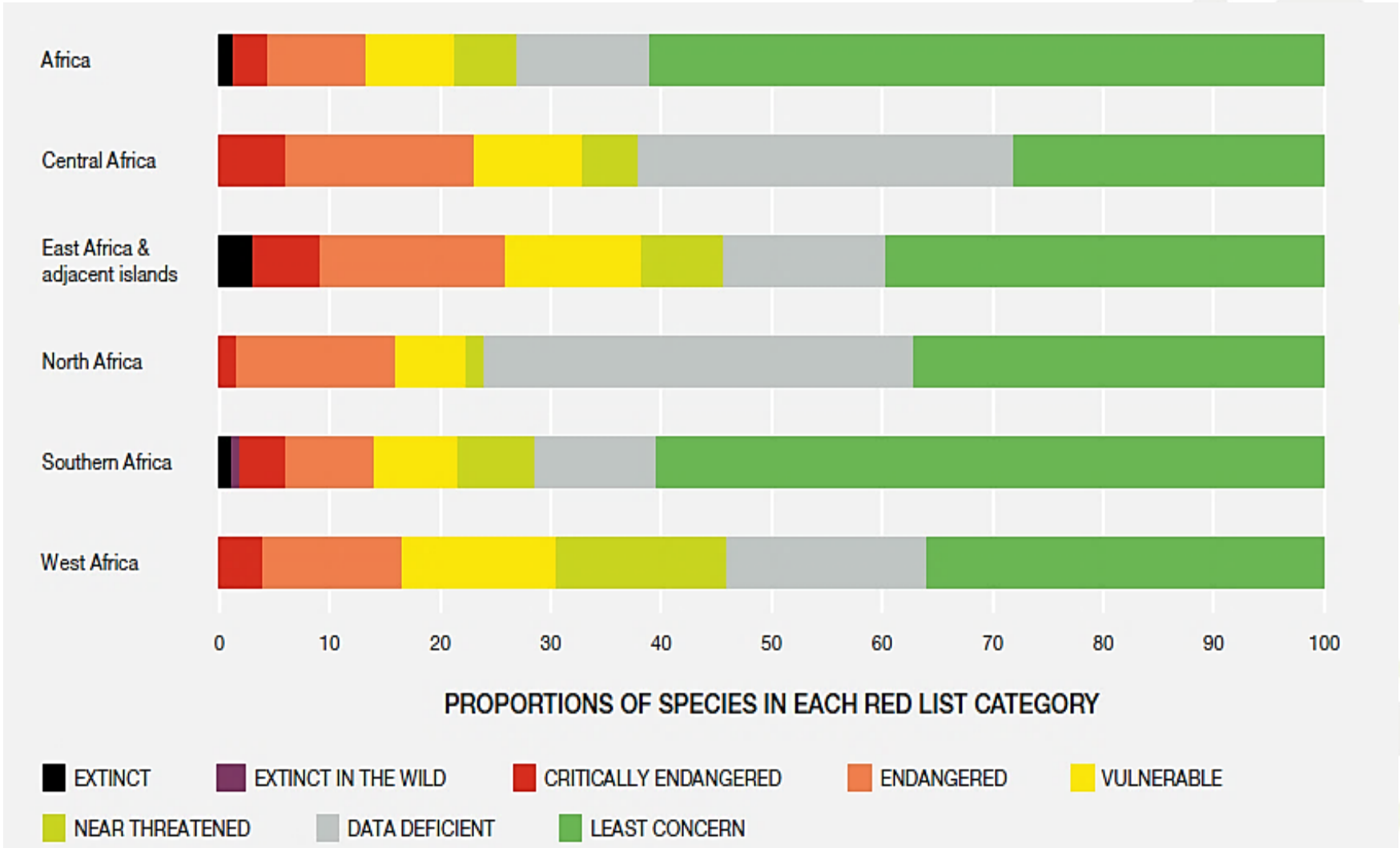


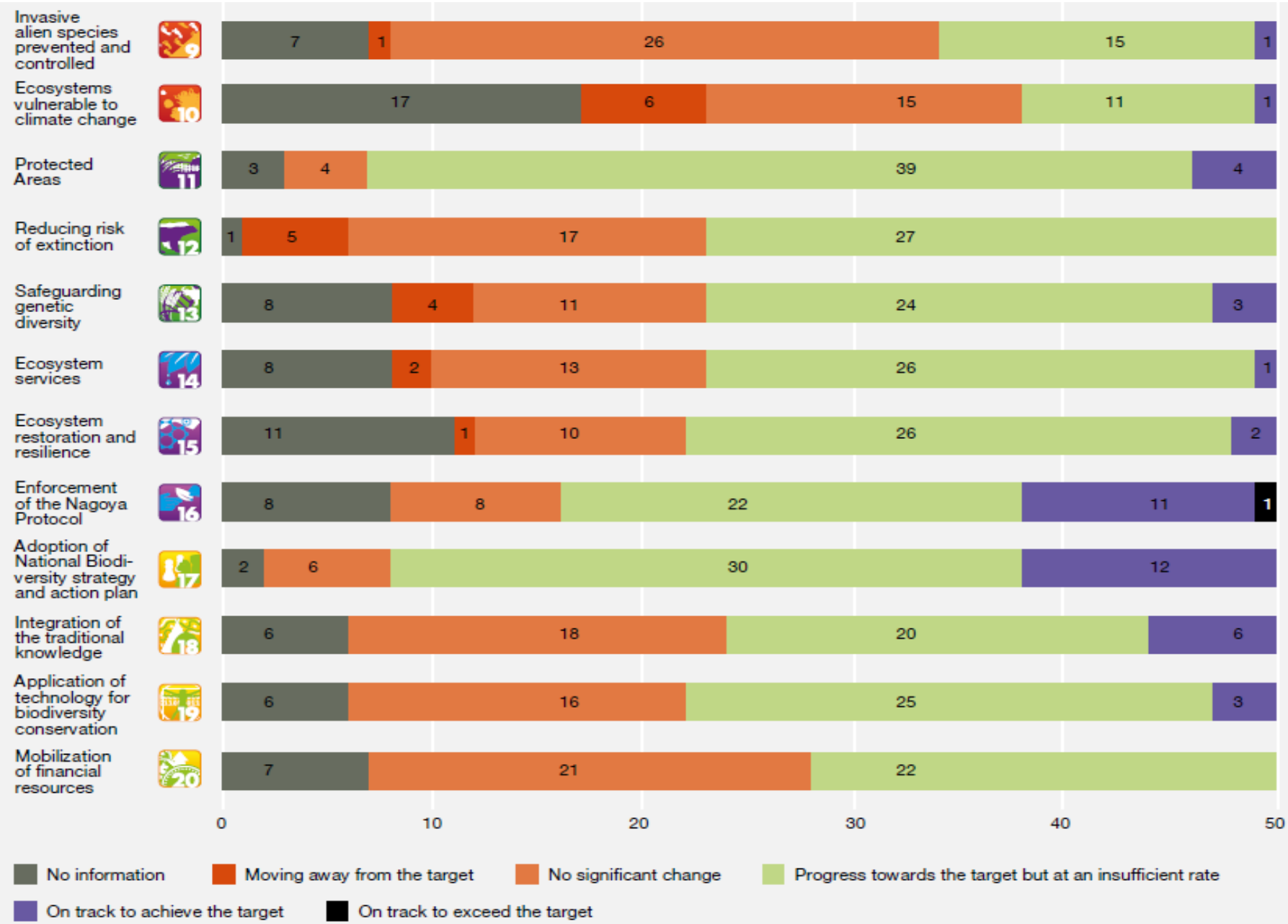
Africa is under pressure

- The last place on earth with a wide range of large mammals
- YET today, more African plants, fish, amphibians, reptiles, bird and large mammals threatened than ever before
- **20–30% expected decline in productivity of lakes by 2100**
- Africa is extremely vulnerable to the impacts of climate change

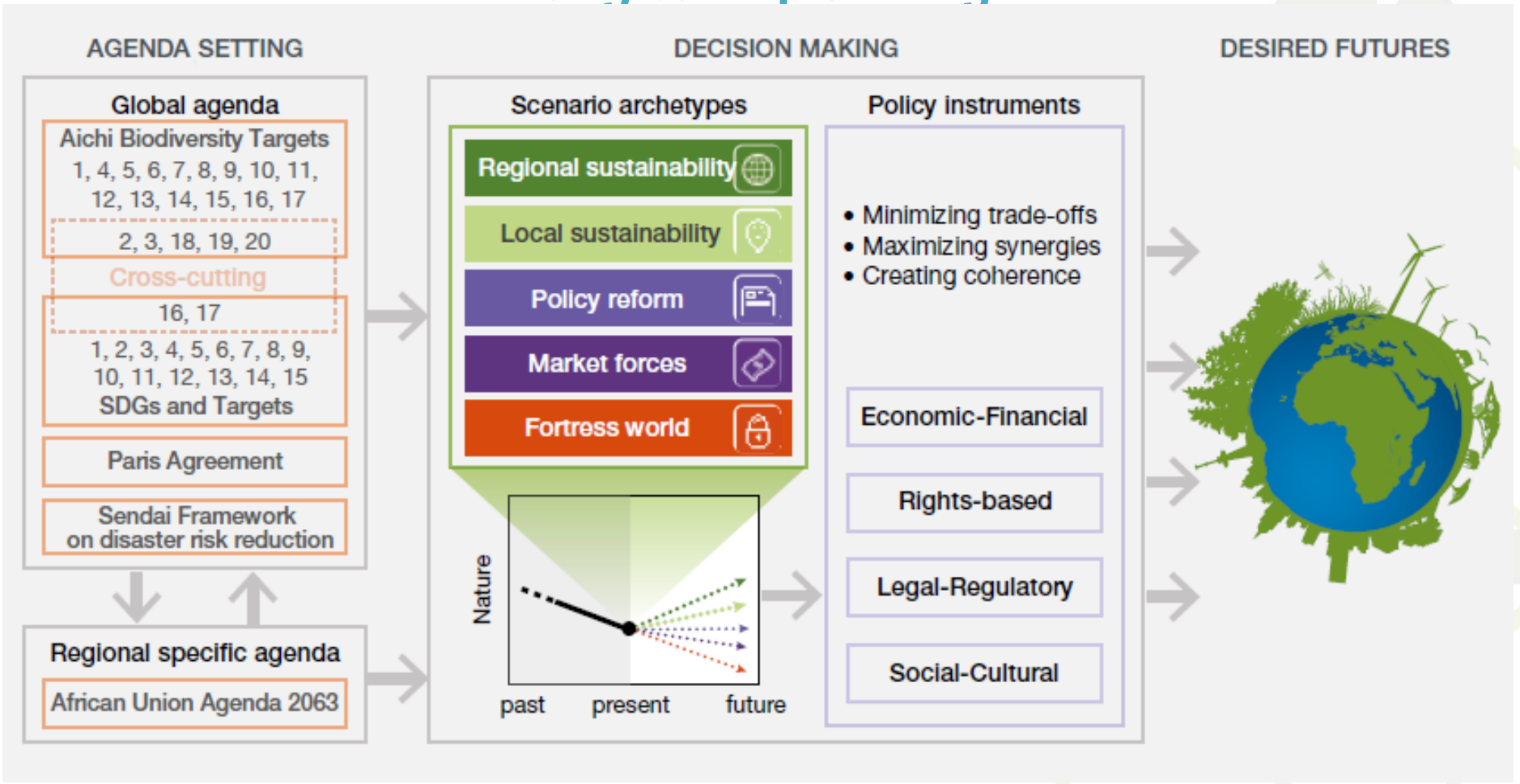


Some 20 per cent of Africa's land surface (6.6 million km^2) is estimated to be degraded because of soil erosion, salinization, pollution and loss of vegetation or soil fertility.


Africa
Central Africa
East Africa & adjacent islands
North Africa
Southern Africa
West Africa
0
10
20
30
40
50
60
70
80
90
100
PROPORTIONS OF SPECIES IN EACH RED LIST CATEGORY
EXTINCT
EXTINCT IN THE WILD
CRITICALLY ENDANGERED
ENDANGERED
VULNERABLE
NEAR THREATENED
DATA DEFICIENT
LEAST CONCERN


Invasive alien species prevented and controlled
7
1
26
15
1
Ecosystems vulnerable to climate change
17
6
15
11
1
Protected Areas
3
4
39
4
Reducing risk of extinction
1
5
17
27
Safeguarding genetic diversity
8
4
11
24
3
Ecosystem services
8
2
13
26
1
Ecosystem restoration and resilience
11
1
10
26
2
Enforcement of the Nagoya Protocol
8
8
22
11
1
Adoption of National Biodiversity strategy and action plan
2
6
30
12
Integration of the traditional knowledge
6
18
20
6
Application of technology for biodiversity conservation
6
16
25
3
Mobilization of financial resources
7
21
22
0
10
20
30
40
50
No information
Moving away from the target
No significant change
Progress towards the target but at an insufficient rate
On track to achieve the target
On track to exceed the target

Identification and selection of feasible options needs to be facilitated by considering a range of plausible futures using scenarios and by providing an enabling environment for long-term planning



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SUMMARY FOR POLICYMAKERS

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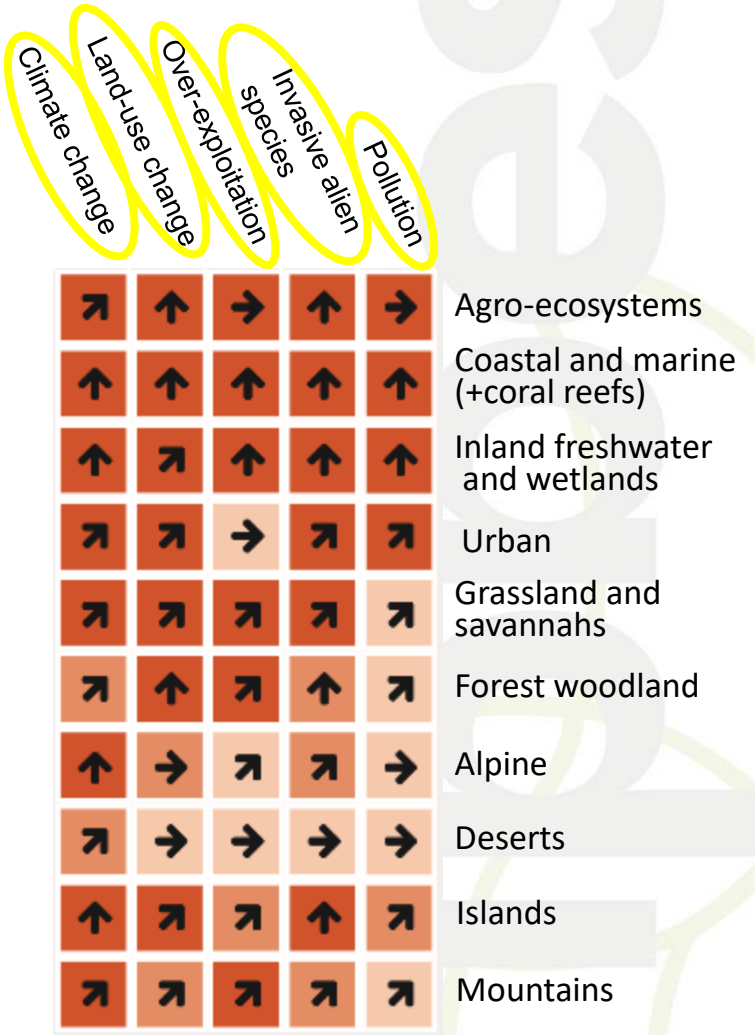
Nature has benefitted the Asia-Pacific region, but with consequences

- Contrasting trends in the status of biodiversity and ecosystem services
  - All major ecosystems are threatened and habitats fragmented/degraded
  - Steep decline in key emblematic wildlife
  - Declining Crop Genetic Resources
  - Growing number and abundance of Invasive Alien Species
  - Increase in forest cover (South Asia and North-East Asia) but impact on biodiversity unclear, decrease in forest cover elsewhere
  - Increase in both terrestrial and marine protected areas, but most key biodiversity areas still remain unprotected




Nature has benefitted the Asia-Pacific region, but with consequences

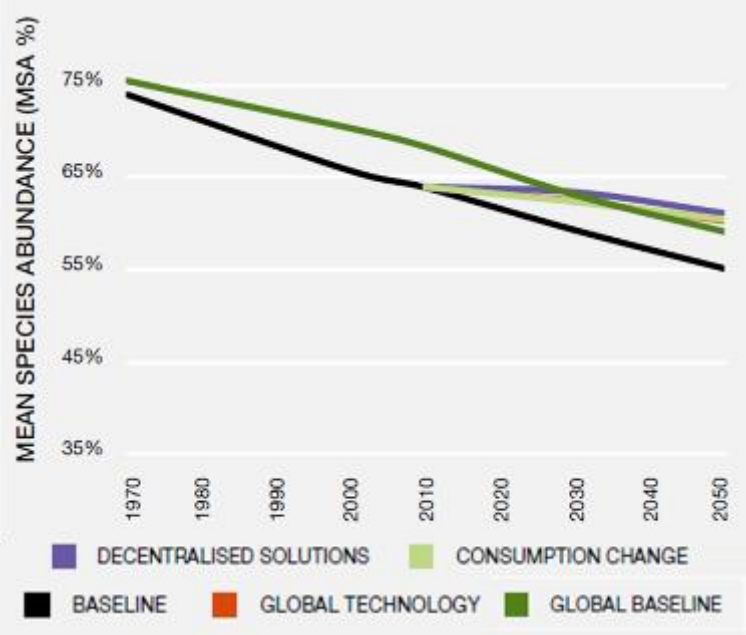
- Major ecosystems are directly threatened by a combination of drivers
  - Climate change: sea level and temperature rise, glacier melting
  - Land-use change: conversion of forest cover to agriculture and urban areas
  - Overfishing: capture fisheries declining from 70 to 40% of the region total fisheries
  - Invasive alien species: Increase due to international trade, transportation, cross-border migration, causing $33.5 billion economic loss in South-East Asia
  - Wastes and pollution: threat to marine, freshwater, and human health



Projections to 2050 and implications for SDGs and Aichi targets

- Increases in protected area coverage support the Aichi Targets and the SDGs, but biodiversity loss continues

- If business continues as usual, by 2050:
  - 45 % anticipated loss of habitats and species
  - Up to 90% severely degraded corals
  - 24% and 29% of mammal and bird species likely to go extinct in lowland forests of Sundaland in South-East Asia in coming decades;
  - Rapid decline in fish stocks



Biodiversity loss in the Asia-Pacific region under different **scenarios**

Key Policy Options

- Ensure meaningful participation of local communities in biodiversity conservation

- Integrate biodiversity conservation into key development sectors
  - Can help meet Strategic Goal A of the Aichi Biodiversity Targets, and the Sustainable Development Goals
  - Enhance participation from different sectors and multiple stakeholders
  - Ensure policy coherence and synergy
  - Proper accounting of nature's contributions to socio-economic development can support this integration

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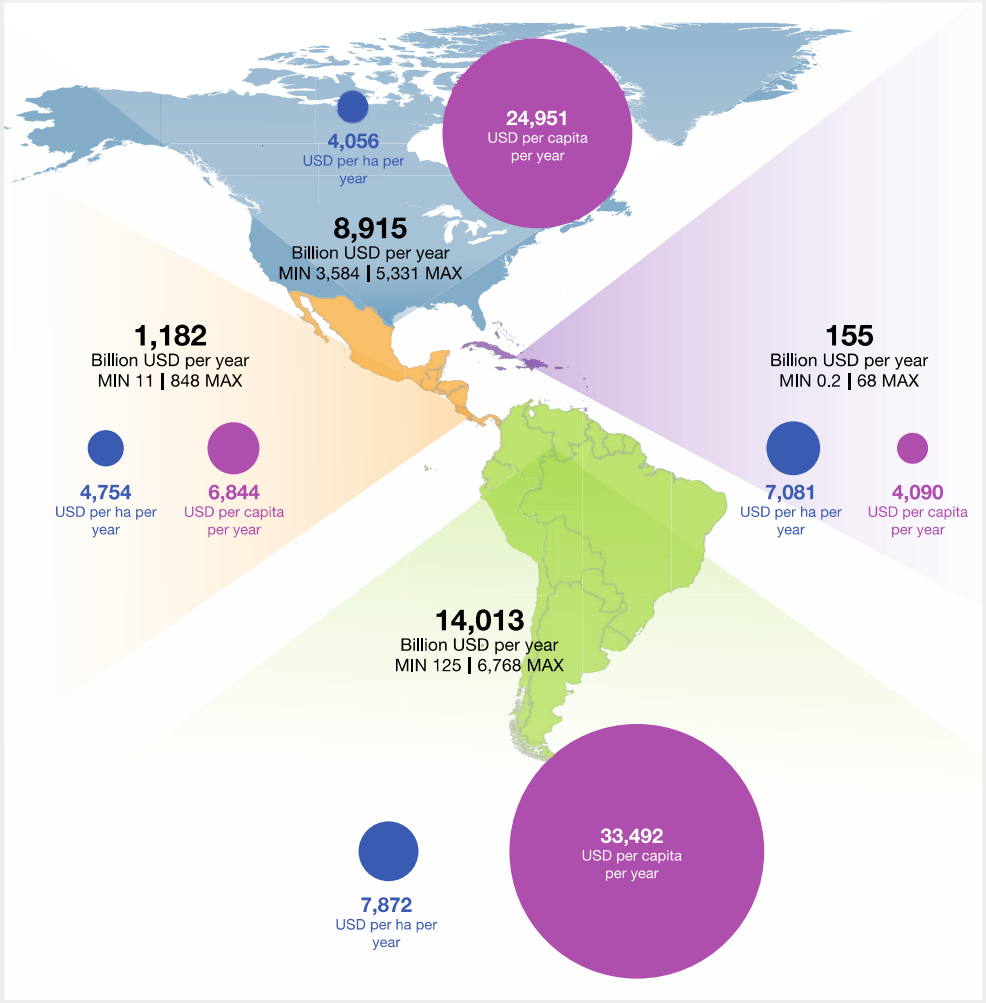
Nature's Contributions to People (NCP) in the Americas

SPM 6 **Estimated economic values of ecosystem services in the Americas.**



Source: Based on 2011 values f[rom] anza *et al.*, 2014 and Kubiszewski *et al.*, 2017.[18] Prepared by IPBES Technical Su[pport] on Values

Trends in biodiversity

Percentage of transformation of some ecosystems in the Americas (compared to pre-European settlement):

- 95 % of tall-grass prairie in North America.
- 72 % and 66 % of tropical dry forest in Mesoamerica and the Caribbean, respectively.
- 88 % of the South American Atlantic tropical forest.
- 50 % of the tropical savanna.
- 17 % of the Amazon forest.

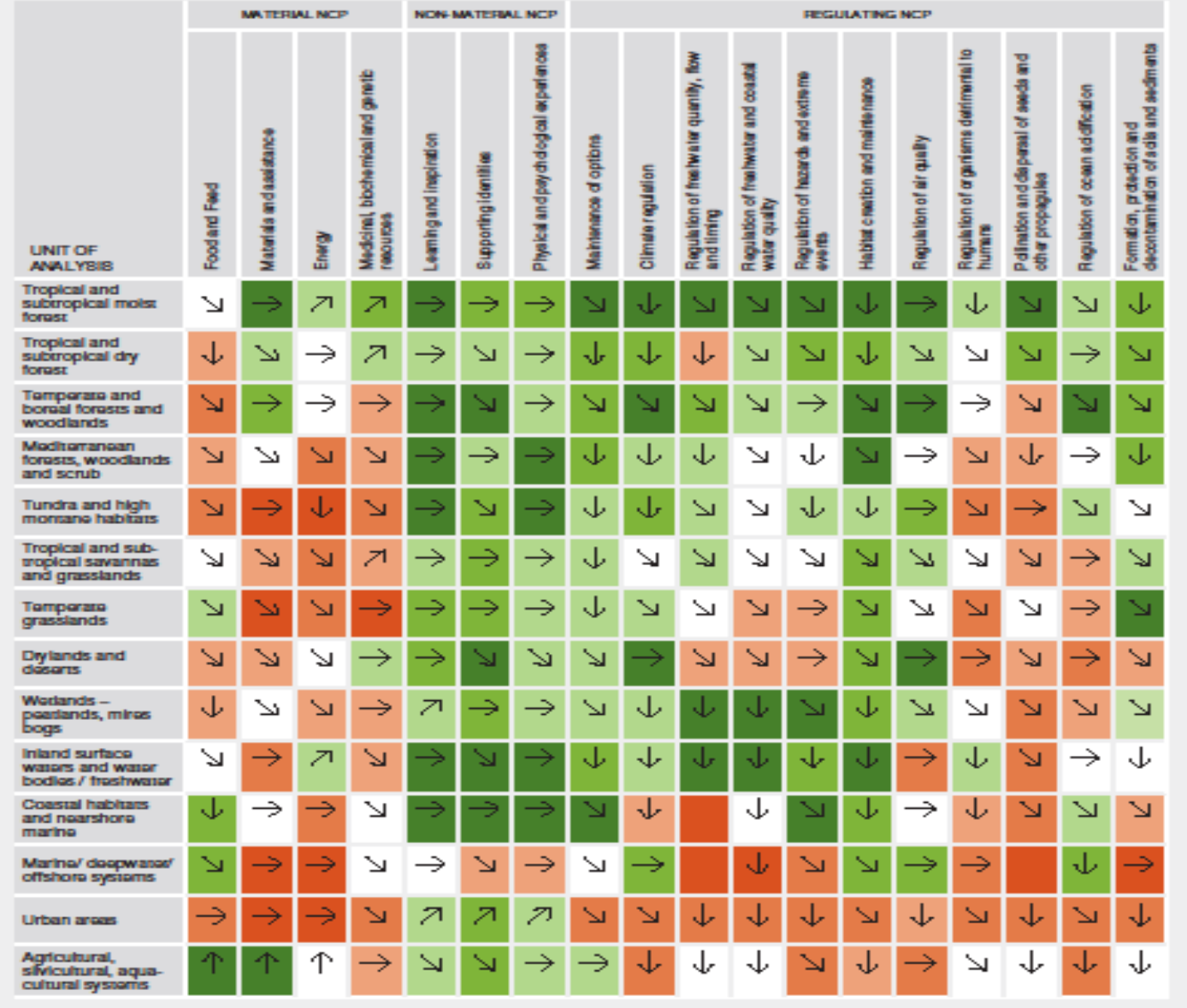
Current Trends

- Coral reefs had declined by more than 50% by the 1970s, and only 10% remained by 2003, followed by widespread coral bleaching in 2005.
- 9.5% of forest area in South America and 25% in Mesoamerica have been lost while net gains occurred in North America (0.4%) and the Caribbean (43.4%) since 1990.
- 15–60% of North American drylands habitat was lost between 2000 and 2009.
- It is estimated that approximately 30% of the mean species abundance in the Americas were lost by 2010.

Main direct drivers of changes in nature, nature's contributions to people and quality of life

- Habitat conversion and fragmentation:
  - Land conversion (Approx. 1.5 million hectares of Great Plains grassland were lost from 2014 to 2015); wetlands are highly transformed in large tracts of the Americas, (between 1976 and 2008 the Pantanal wetlands lost around 12 per cent of their area).
- Overexploitation/overharvesting:
  - Marine fish harvests have peaked and are decreasing as stocks decline or management reduces harvest rates (20 to 70 % of stocks have been reduced by past overfishing).
  - Aquaculture grew from 3 % of total fish production in 1990 to 17 % in 2014. Not all production is from sustainable practices.
- Climate change:
  - Changes in weather and local climate have caused changes in species distributions and interactions and in ecosystem boundaries: the retreat of mountain glaciers, and melting of permafrost and ice fields in the tundra.

Trends in nature's Contributions to people



Future trends in biodiversity and nature's contributions to people

- Key drivers of trends in biodiversity and nature's contributions to people are expected to intensify into the future, increasing the need for improved policy and governance effectiveness.
  - By 2050 the population of the Americas is projected to increase by 20% to 1.2 billion and the gross domestic product to nearly double, with concomitant increases in consumption.
  - Unsustainable agricultural practices and climate change are projected to be major drivers of further degradation of most terrestrial ecosystems.
  - Multiple drivers are projected to intensify and interact, often in synergistic ways, further increasing biodiversity loss, reducing ecosystems' resilience and the provision of present levels of nature's contributions to people.
  - Drivers of biodiversity loss and reduced nature's contributions to people are projected to increase in intensity if existing patterns of consumption and the policies underlying them continue.

Future trends in biodiversity and nature's contributions to people

- It is likely that few of the Aichi Targets will be met by the 2020 deadline for most countries in the Americas, in part because of policy choices and trade-offs with negative impacts on aspects of biodiversity.

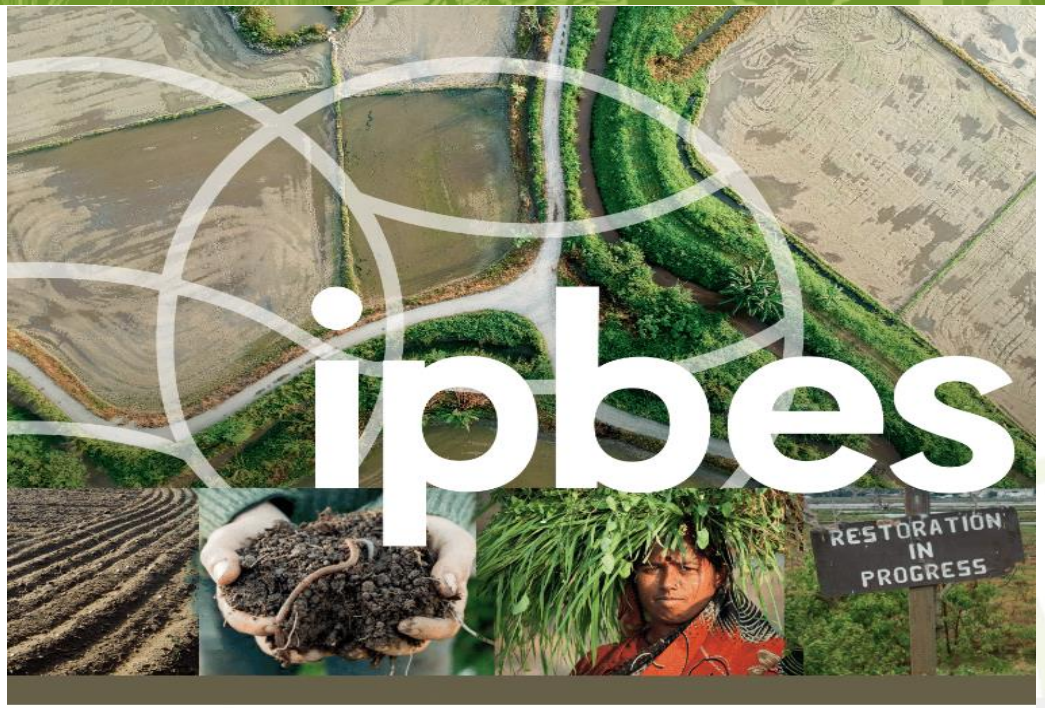
- Continued loss of biodiversity could undermine achievement of some of the SGD's, as well as some international climate-related goals, targets and aspirations.

- Despite reported reductions in the rate of degradation in some units of analysis, loss is projected to continue through 2050 and beyond, with land use change and climate change the dominant drivers compared to other drivers such as forestry and urbanization.

- Projections of further loss of biodiversity pose significant risks to society, because future ecosystems will be less resilient.

Response options available for progress

- Take into account short and long-term trade-offs, telecoupling and leakage and spillover effects on many scales.
- Mainstreaming the environment into economic and social development sectors.
- No single governance approach including mixed governance systems.
- Behavioural change, individual – corporate – community – State.
- Policy Options: Regulatory mechanisms.
  - Area based: protected areas; indigenous and community conserved areas.
  - Limits: to technology (pollution control); to access (tourism, fisheries).
  - Management: ecosystem restoration; ecosystem-based approaches; control of invasive-alien species.
- Policy Options: Incentive mechanisms:
  - PES.
  - Offsets.
  - Eco-certification.
- Policy Options: Rights-based approaches:
  - Rights of Mother Earth.
  - Access and benefit sharing.



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LAND DEGRADATION AND RESTORATION

SUMMARY FOR POLICYMAKERS

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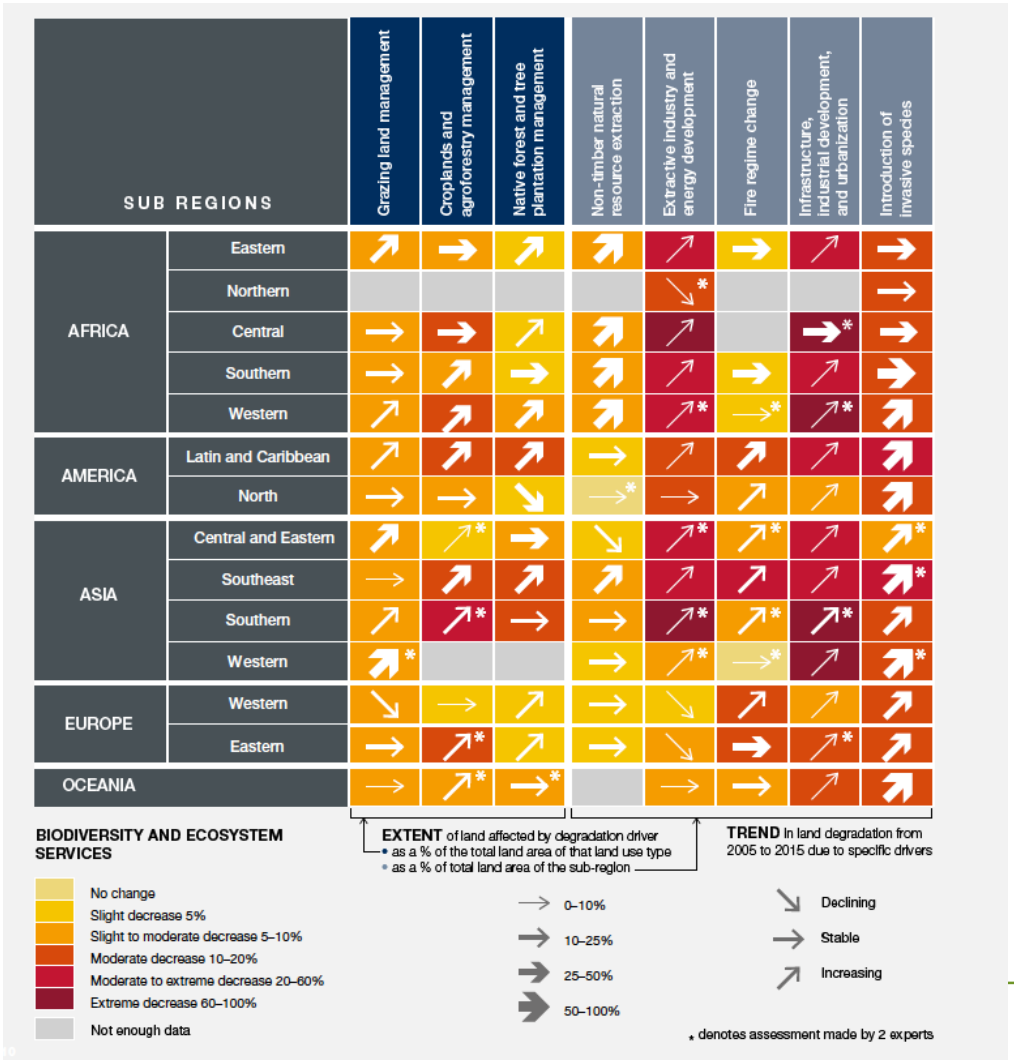
Land degradation is a pervasive, systemic issue

- Only 25% of the Earth's land surface is substantively free of human alteration
- Cropland, managed forest, grazing lands, habitation and infrastructure occupy the other 75%.
- By 2050, less than 10% will remain free of human impact
- Degradation of the Earth's land surface through human activities is among the main factors contributing to biodiversity loss
- By 2010, 34% of global biodiversity had been lost with a projected increase to 38-46% by 2050

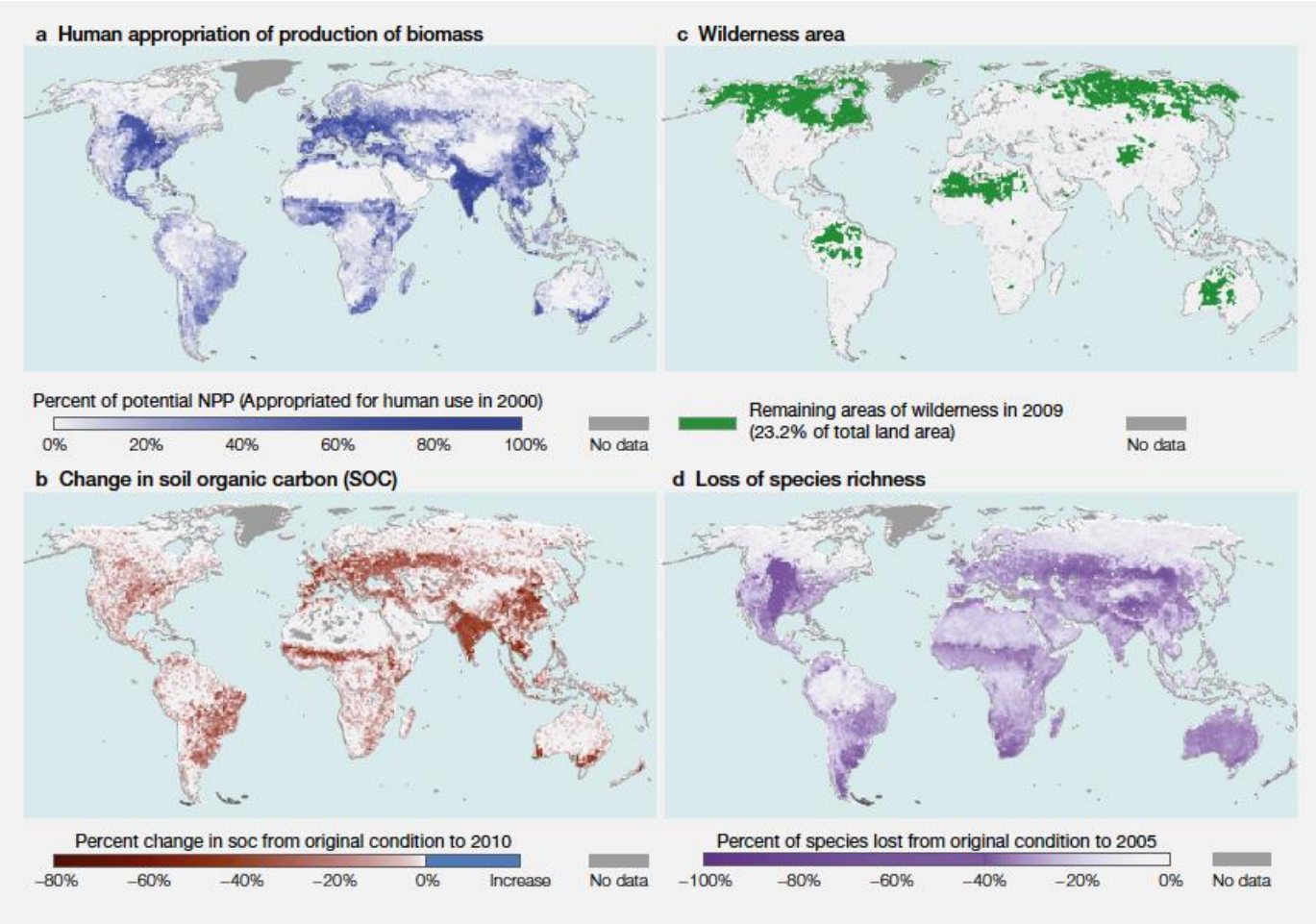
Land degradation is a major contributor to climate change. Climate change can exacerbate the effects of land degradation.

- Between 2000-2009, land degradation was responsible for annual global emissions of up to 4.4 billion tonnes of CO_2
- Deforestation alone = 10% of all human-induced greenhouse gas emissions.
- Halting and reversing land degradation can provide more than 1/3 of the most cost-effective greenhouse gas mitigation activities to keep global warming under 2°C
- The combination of land degradation and climate change projected to reduce global crop yields by 10% (up to 50% in some regions) by 2050, forcing up to 700 million people to migrate

Status, trend and extent of direct drivers of land degradation across subregions globally



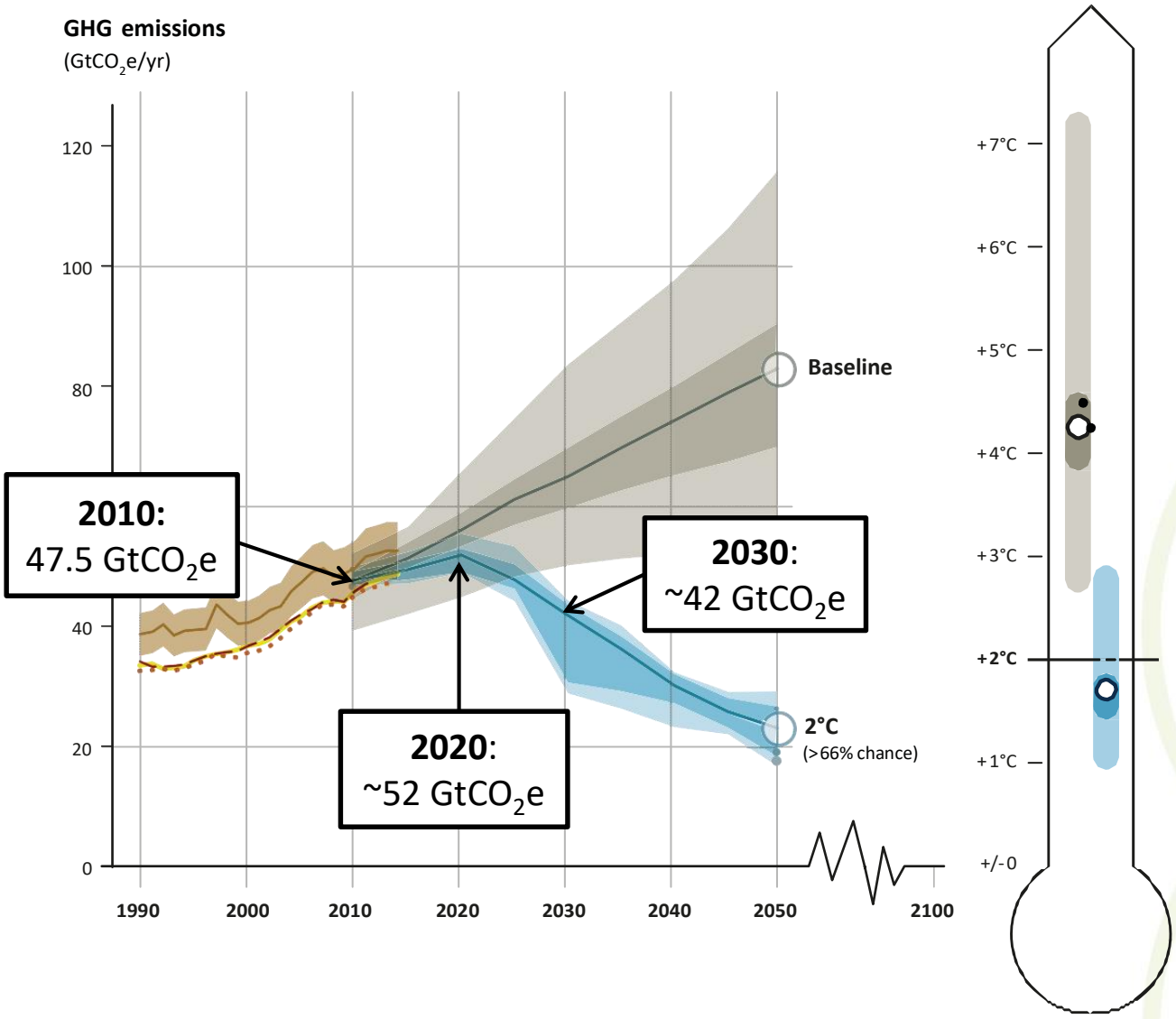
Human activity has changed the surface of the planet in profound and far-reaching ways.



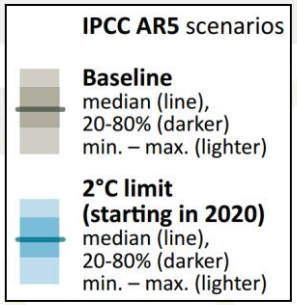
Human-induced climate change and the Paris agreement

Climate change is an ever-increasing threat to biodiversity, ecosystems and nature's contributions to people, and along with loss of biodiversity undermines the SDGs

Staying within the 2ºC target

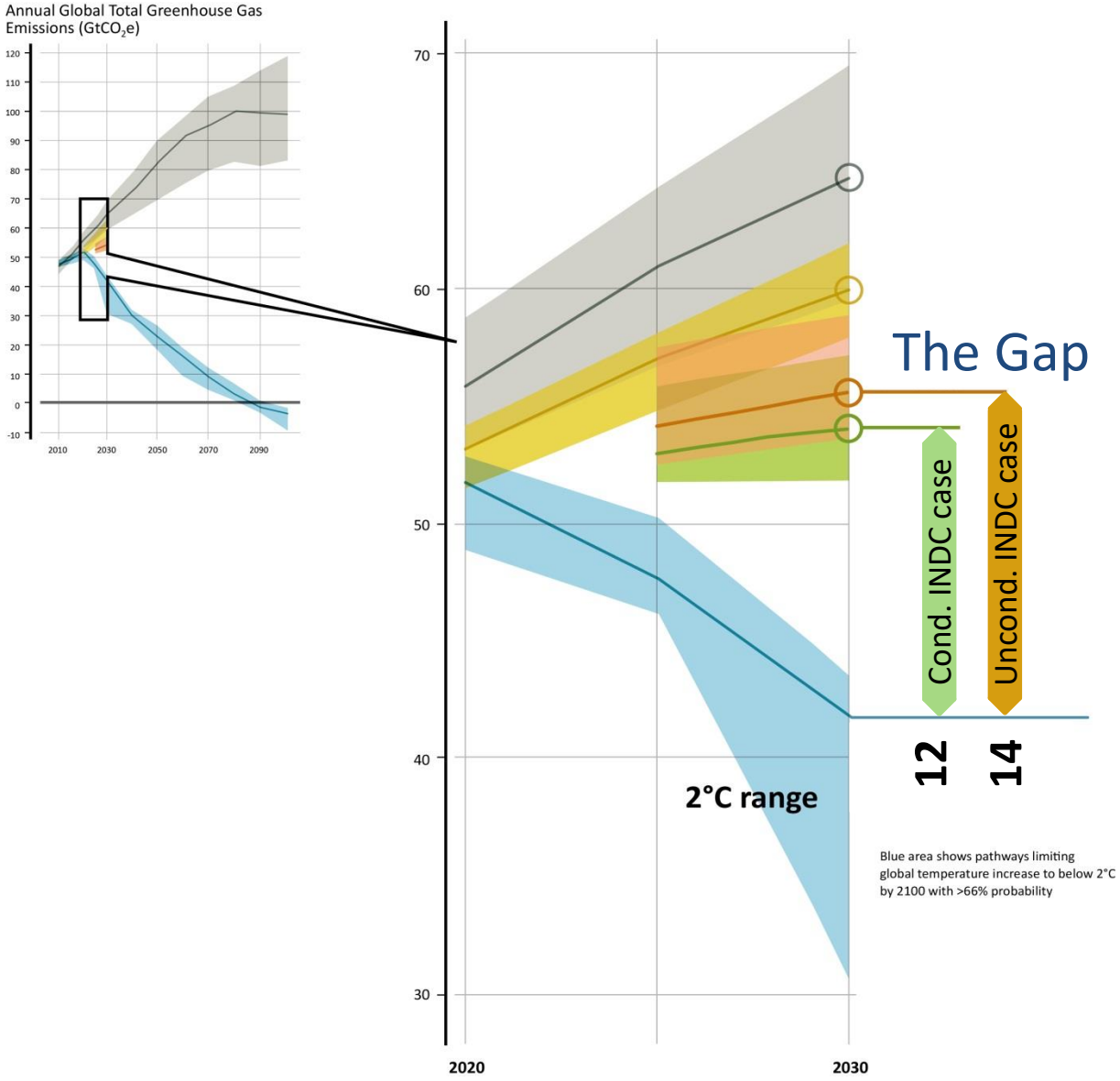


Estimated global warming by 2100 (°C rel. 1850-1900)



Credit: UNEP, 2015 https://www.dropbox.com/sh/vk018yr6h5xulnc/AAB-ISJFv_Xv7BFF4uBKIUVWa?dl=0

INDC contributions and the emissions gap



Unconditional INDC case
Gap= 14 $GtCO_2e$

Conditional INDC case
Gap= 12 $GtCO_2e$

The INDCs present a real increase in the ambition level compared to a projection of current policies.

The emissions gap in both 2025 and 2030 will be very significant and ambitions will need to be enhanced urgently.

Credit: UNEP, 2015

Projected Impacts of Climate Change

The magnitude of the impacts increases with increasing warming, i.e., the impacts at 1.5°C, are less than 2°C, which are lower than 3-4°C

- Higher temperatures and more variable precipitation (resulting in an increase in floods and droughts), coupled with an increase in extreme events adversely impacts agriculture and water resources (quantity and quality)

- Human health is adversely affected through an increase in vector borne diseases (e.g., malaria and dengue), water borne diseases (e.g., cholera), heat stress, malnutrition (due to reduced food supplies in many developing countries) and extreme weather events (e.g., hurricanes) and flooding

- An increase in heavy precipitation events, increases soil erosion with the potential of increase siltation of reservoirs and landslides

- Sea level rise impacts coastal infrastructure and local communities, including salt water intrusion impacting water quality and agriculture

- Warmer sea surface temperatures, coupled with ocean acidification and pollution adversely impacts fisheries and coral reefs

- Warmer temperatures, extreme weather events, and more variable precipitation adversely impacts biodiversity and ecosystems

The Truth about the Paris Agreement

While the Paris Agreement is an important step to limit human-induced climate change, the pledges by 189 nations are inadequate to achieve the 2°C target - what is needed is a doubling or tripling of the current emission reduction pledges

Global temperatures have already increased by about 1°C (0.8-1.2°C) since the pre-industrial era, and are currently increasing by about 0.2°C (0.1-0.3°C) per decade

Global Temperature Could Reach the 1.5°C aspirational target by the mid 2030s (IPCC 1.5°C report says and the 2°C Threshold by 2050-2060

Without significant additional actions in the near future to reduce greenhouse gas emissions we are on pathway to over 3°C

Is it Feasible to achieve either the 1.5°C or 2°CParis targets?

- Technically yes, but highly unlikely given the lack of political will, *ala* US and Australia, and that many countries are finding it difficult to achieve their current pledges
- The rates of decrease in global greenhouse gas emissions needed to achieve the Paris targets, especially carbon dioxide, are much higher than ever achieved before on the scale required, even in developed countries (confirmed by the IPCC 1.5°C report)
- Recent models (and the IPCC 1.5°C report) have shown that global emissions of GHGs would have to peak within a decade to achieve the 1.5°C target
- Global emissions of carbon dioxide increased significantly in 2017 compared to 2016 (>2%), and initial indications are that emissions in 2018 are even higher
- Most, but not all, models require negative emissions after 2050 to achieve the 1.5°C target , i.e., they overshoot the target and then return to it at a later date by employing large-scale bioenergy coupled with carbon capture and storage (BECCS) – an unproven technology at scale
- A high reliance of BECCS potentially threatens food and water security, biodiversity and ecosystems

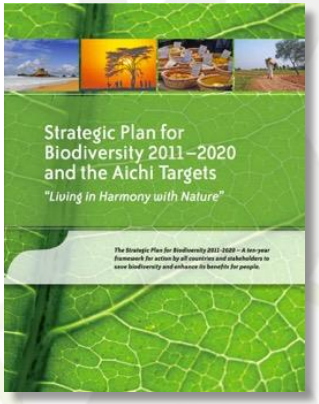
The bottom line, in my opinion, is that all evidence suggests that neither the 1.5°C or 2°C targets will be met, threatening biodiversity and achieving the SDGs

Implications for the UN Sustainable Development Goals

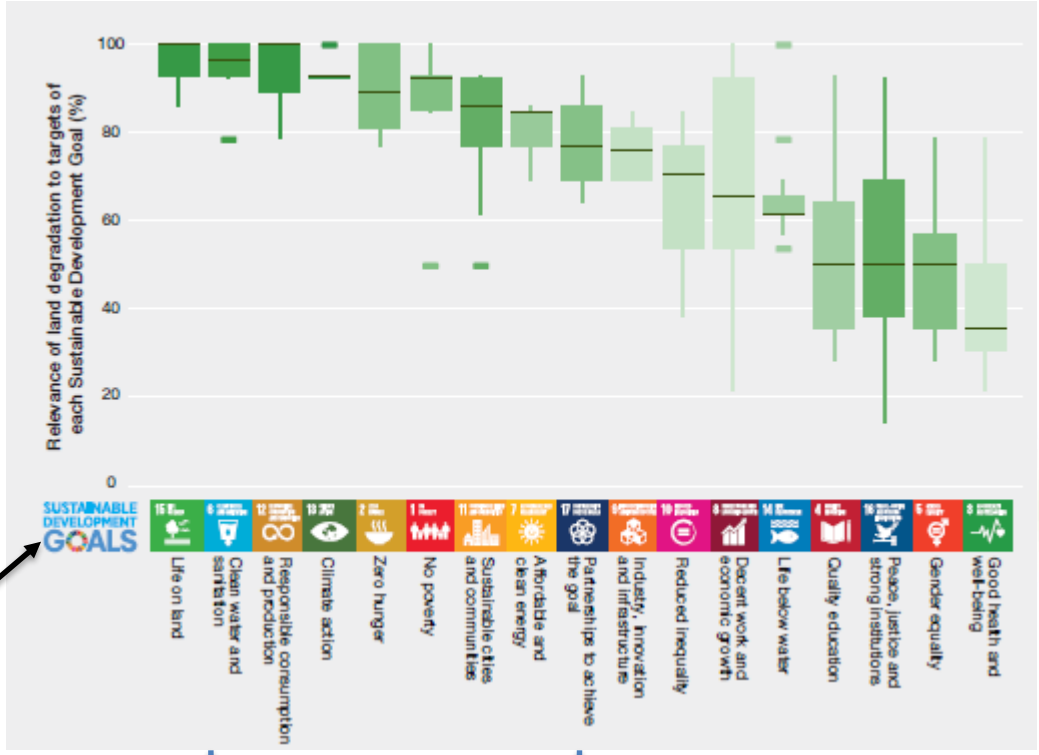
UN sustainable development goals affected by loss of biodiversity, land degradation and climate change

- End poverty in all its forms everywhere
- End hunger, achieve food security and promote sustainable agriculture
- Ensure healthy lives and promote well-being for all at all ages
- ensure availability and sustainable management of water and sanitation for all
- Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation
- Reduce inequality within and among countries
- Make cities and human settlements inclusive, safe, resilient and sustainable
- Take urgent action to combat climate change and its impacts
- Conserve and sustainably use the oceans, seas and marine resources for sustainable development
- Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss
- Promote peaceful and inclusive societies for sustainable development, provide access to justice for all and build effective, accountable and inclusive institutions at all levels

Implications for policy: Aichi targets and SDGs in Europe and Central Asia

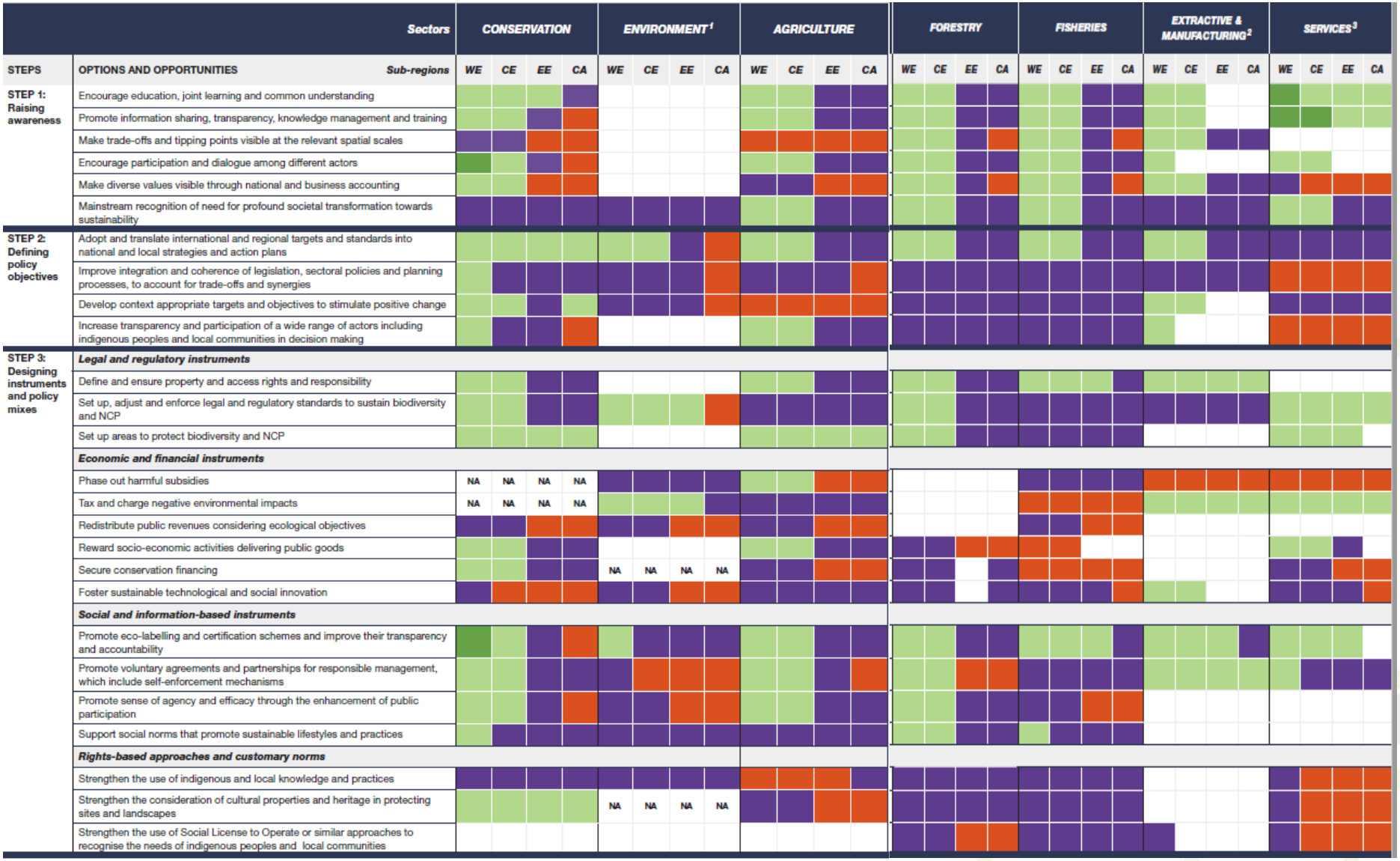


Successfully addressing the Sustainable Development Goals requires simultaneously halting and reversing land degradation.



Goal 15

But also, to a huge degree, goals on **water, consumption, climate, hunger, poverty and cities**



1. Include the following policy areas: Marine and freshwater quality and quantity, flood management, air and wider environmental pollution (including eutrophication and acidification), waste management, mitigation of and adaptation to climate change, soil management and land degradation. Options and opportunities in rows left blank have been covered by the other sectors, also in relation to their environmental outcomes.

WE – WESTERN EUROPE **CE** – CENTRAL EUROPE **EE** – EASTERN EUROPE **CA** – CENTRAL ASIA

EFFECTIVELY IMPLEMENTED
IMPLEMENTED WITH SCOPE FOR IMPROVEMENT
UNDER DEVELOPMENT OR STARTED
NOT YET INITIATED
NOT ASSESSED
NA – NOT APPLICABLE

Table: Policy options and opportunities for mainstreaming biodiversity

Thank you!

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