Module 3: SDG 15 – Life on Land

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What is biodiversity? - Three levels of biodiversity

Species diversity
the variety of different species (plants, animals, fungi and micro-organisms) such as palm trees, elephants or bacteria;

Genetic diversity
the variety of genes contained in plants, animals, fungi and micro-organisms. It occurs within a species as well as between species;

Ecosystem diversity
all the different habitats - or places - that exist, like tropical or temperate forests, hot and cold deserts, wetlands, rivers, mountains, coral reefs, etc.





Ecosystem Services

Foundation for our life on Earth and wellbeing

Provisioning Services

- Food
- Water
- Wood and fiber
- Fuel

Supporting Services

- Nutrient cycling
- Soil formation
- Primary production
- Habitat provision

Cultural Services

- Spiritual
- Aesthetic
- Cultural
- Recreational

Regulating Services

- Climate regulation
- Flood regulation
- Water purification

No oxygen without plants and no fruits/nuts without pollinating insects !!

TECH & SCIENCE

CLIMATE CHANGE HAS ALREADY DEVASTATED THE GREAT BARRIER REEF

BY **SHAMINDER DULAI** ON 3/25/17 AT 10:10 AM

CLIMATE CHANGE KILLING GREAT BARRIER REEF

Scientists warn it may be too late to save the Great Barrier Reef, which experienced the worst dying off of coral ever recorded in 2016.

Source: Newsweek 2017

The Guardian

Last male northern white rhino's death highlights 'huge extinction crisis'

The tragic death of Sudan the rhino should act as a warning of the need to act to prevent mass extinctions around the world, say conservationists

Matthew Taylor *and* **Hannah Ellis-Petersen**

Tue 20 Mar 2018 16.25 GMT

Conservationists have warned that the death of the last male northern white rhinoceros in Kenya is a sign that unsustainable human activity is driving a new era of mass extinctions around the globe.

Source: The Guardian, 2018

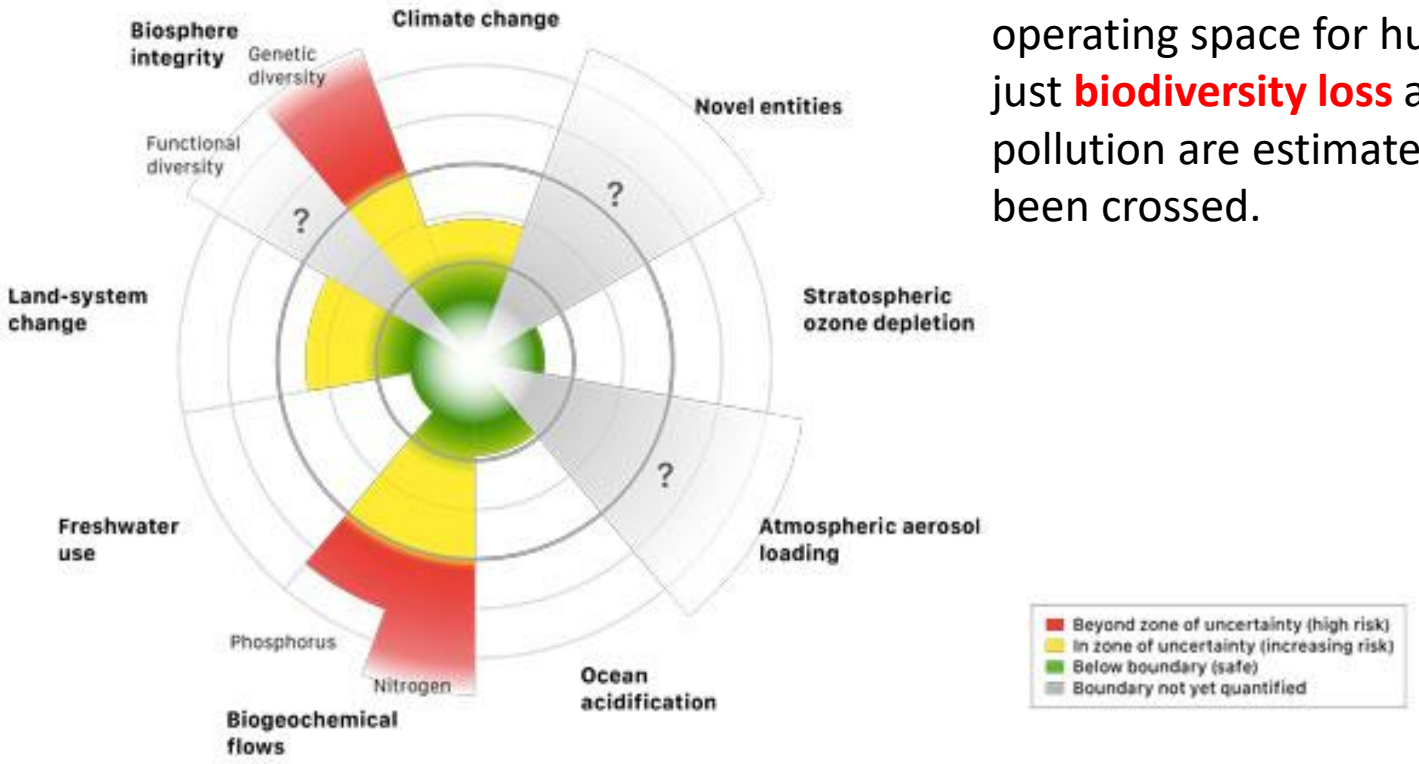
The Guardian

'The last place on Earth': how Sumatra's rainforest is being cleared for palm oil

Sumatra's Leuser ecosystem is the only place where orangutans, rhinos, tigers and elephants coexist. But palm oil companies continue to clear it, claims NGO

Source: The Guardian, 2017

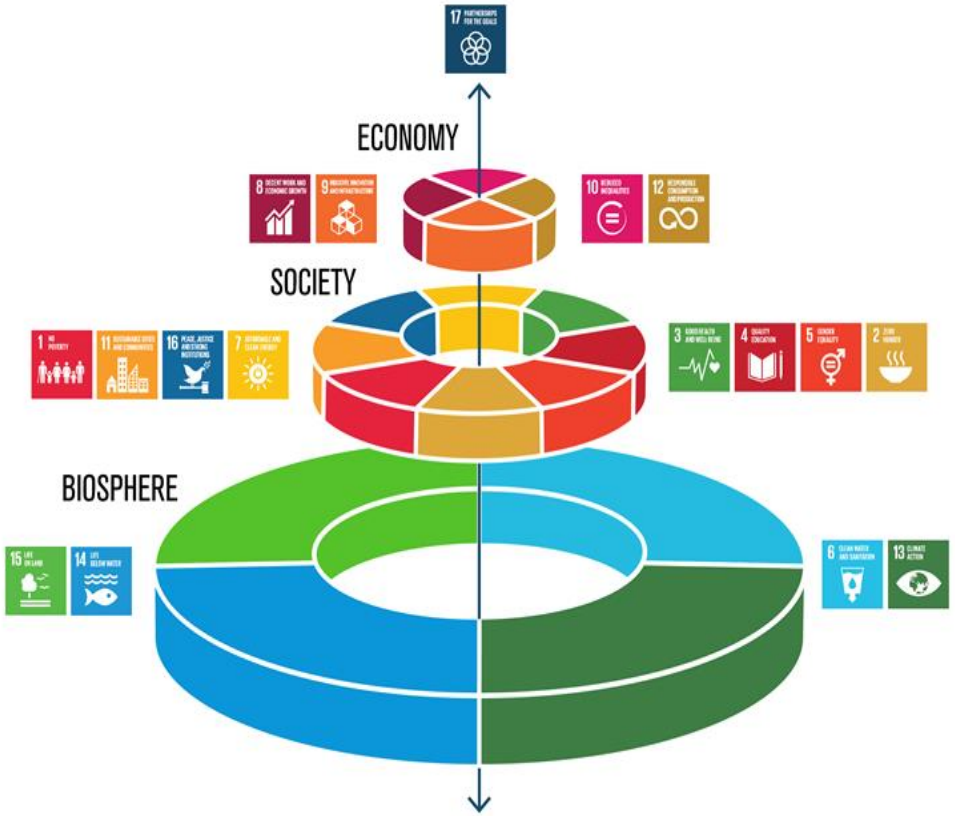
Planetary Boundaries



Of the 9 thresholds in Earth systems that define a “safe operating space for humanity”, just **biodiversity loss** and nitrogen pollution are estimated to have been crossed.

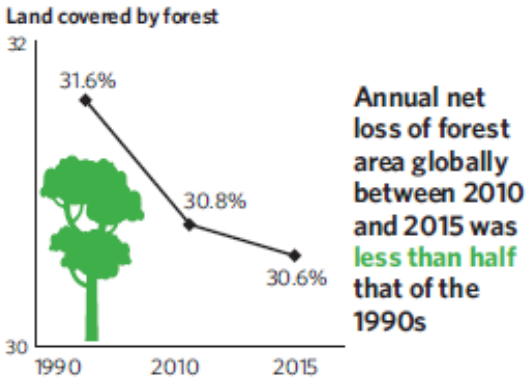
“Planetary boundaries” presented by Johan Rockström

Biodiversity is the basis for human wellbeing

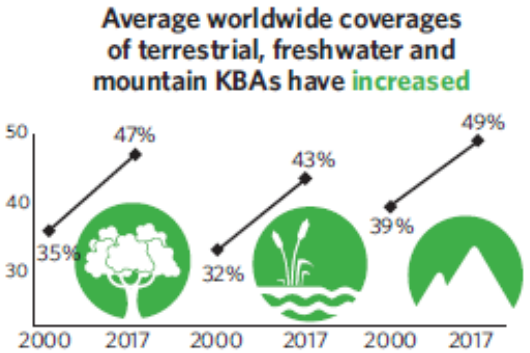


SDGs "wedding cake" illustration presented by Johan Rockström and Pavan Sukhdev

Goal 15: Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss



Annual net loss of forest area globally between 2010 and 2015 was less than half that of the 1990s



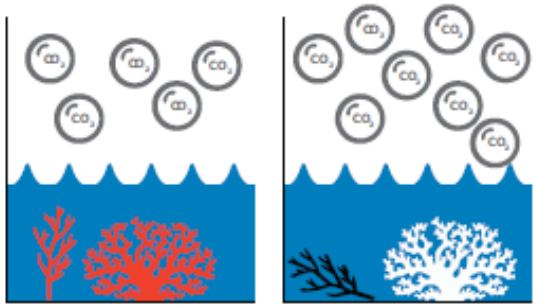
Protected and restored ecosystems and the biodiversity they support can help mitigate climate change and provide increased resilience in the face of mounting human pressures and natural disasters. Healthy ecosystems also produce multiple benefits for communities that rely on them. Goal 15 focuses on preserving and sustainably using the Earth's terrestrial species and ecosystems.

- From 2010 to 2015, the annual net loss of forest area globally was less than half that of the 1990s. The proportion of land area covered by forest decreased from 31.6 per cent in 1990 to 30.8 per cent in 2010 and 30.6 per cent in 2015.
- From 2000 to 2017, average worldwide coverage of terrestrial, freshwater and mountain KBAs by protected areas increased from 35 per cent to 47 per cent, from 32 per cent to 43 per cent, and from 39 per cent to 49 per cent, respectively.
- Biodiversity loss, however, continues at an alarming rate. Corals, amphibians and cycads are in serious decline due to distinct and worsening threats. Bleaching, driven by climate change and local impacts, has affected the health of coral reefs worldwide, which could disappear completely by 2050. Amphibians also face a high risk of extinction, with 41 per cent already threatened.
- Illicit poaching and trafficking of wildlife continues to thwart conservation efforts, with nearly 7,000 species of animals and plants reported in illegal trade involving 120 countries. In 2013, elephant ivory, rosewood, rhinoceros horn and reptiles comprised 70 per cent of total wildlife seizures.

Goal 14: Conserve and sustainably use the oceans, seas and marine resources for sustainable development

31 per cent of marine fish stocks were overfished in 2013

As atmospheric CO_2 levels increase, estimates indicate that oceans could be nearly 150 per cent more acidic by 2100



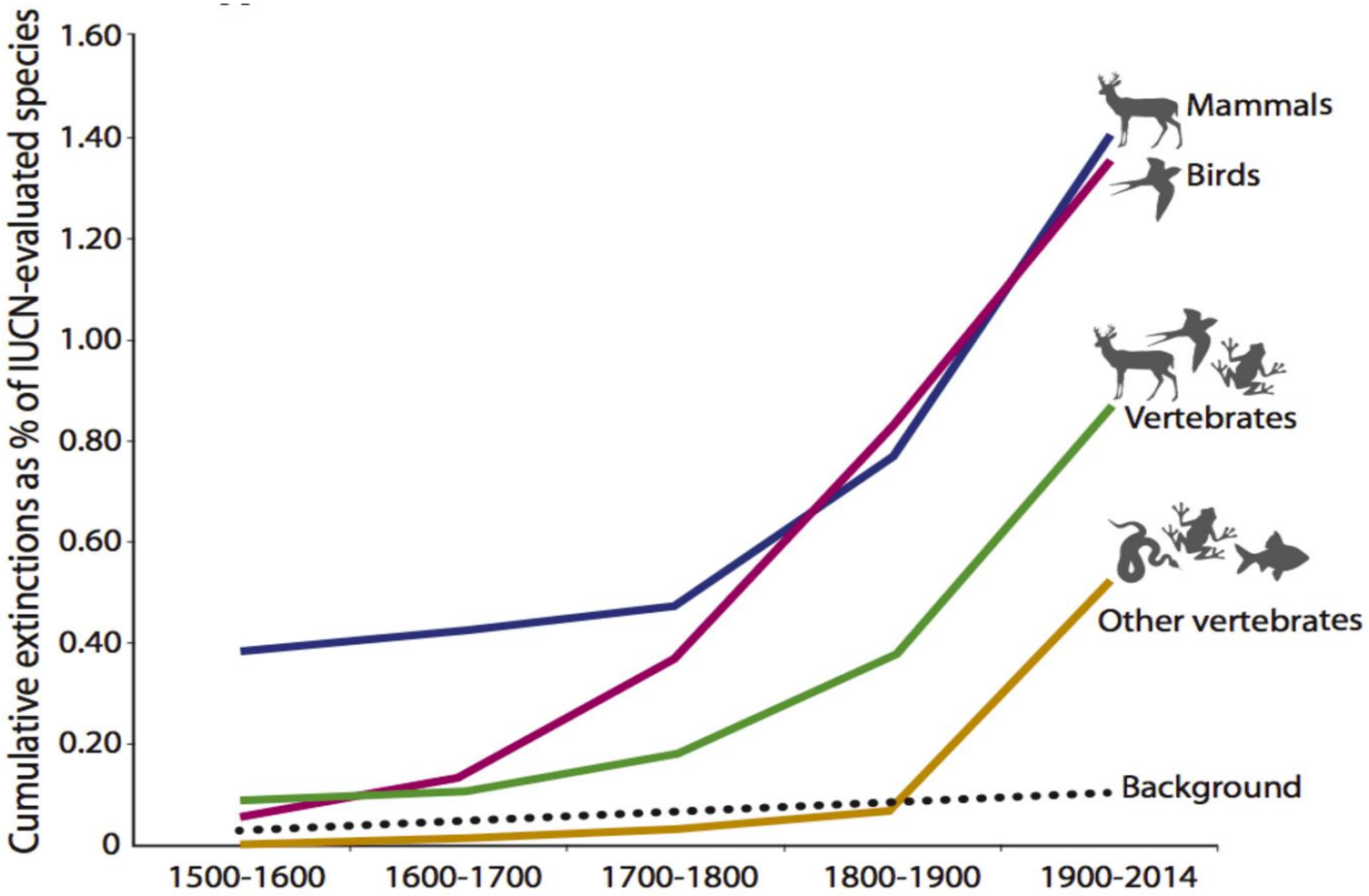
Oceans cover almost three quarters of the planet, comprising the largest ecosystem on Earth. The increasingly adverse impacts of climate change (including ocean acidification), overfishing and marine pollution are jeopardizing recent gains in protecting portions of the world's oceans.

- In 2017, protected areas cover 13.2 per cent of the marine environment under national jurisdiction, 0.25 per cent of the marine environment beyond national jurisdiction, and 5.3 per cent of the total global ocean area. The average coverage of marine key biodiversity areas (KBAs) by protected areas has risen from 32 per cent in 2000 to 45 per cent in 2017.
- The proportion of marine fish stocks worldwide that have been overfished—that is, are at biologically unsustainable levels—increased from 10 per cent in 1974 to 31 per cent in 2013.
- Oceans absorb up to 30 per cent of the annual emissions of CO_2 generated by human activity. However, the absorbed CO_2 also leads to an increase in the acidity of seawater, which weakens the shells and skeletons of many marine species, such as corals. As atmospheric CO_2 levels rise, estimates indicate that oceans could be nearly 150 per cent more acidic by 2100.
- Of the 63 large marine ecosystems evaluated under the Transboundary Waters Assessment Programme, 16 per cent are in the "high" or "highest" risk categories for coastal eutrophication. By 2050, it is estimated that coastal eutrophication will increase in 21 per cent of these large ecosystems.

What are the problems?

- Loss of species at a rate that is 100 to 1000 times faster than the natural extinction rate. Biodiversity loss is at least as serious as climate change.
- 70% of the world's poor live in rural areas and depend directly on biological diversity for their livelihoods.
- Decision making in the government and business still based on short-term economic benefits rather than long-term environmental benefits. Economic growth is pursued at the expense of natural environment.
- Although biodiversity relates to many of the SDGs, such as food, agriculture, water, climate change and natural disasters, policy makers lack awareness on the interlinkages and lack integrated perspectives to find synergistic solutions.
- Most governments are failing to achieve the Aichi Targets although the number of conservation areas has increased.
- Awareness among consumers and businesses on biodiversity loss is still low.

Cumulative vertebrate species recorded as extinct or extinct in the wild by the IUCN (2012)



Global instruments on biodiversity

1971	Ramsar Convention adopted
1973	Washington Convention adopted
1992	Convention on Biological Diversity (CBD) adopted
2002	2010 Biodiversity Target set
2003	Cartagena Protocol on Biosafety came into effect
2010	Aichi Targets adopted at COP 10
2014	Nagoya Protocol on Genetic Resources came into effect

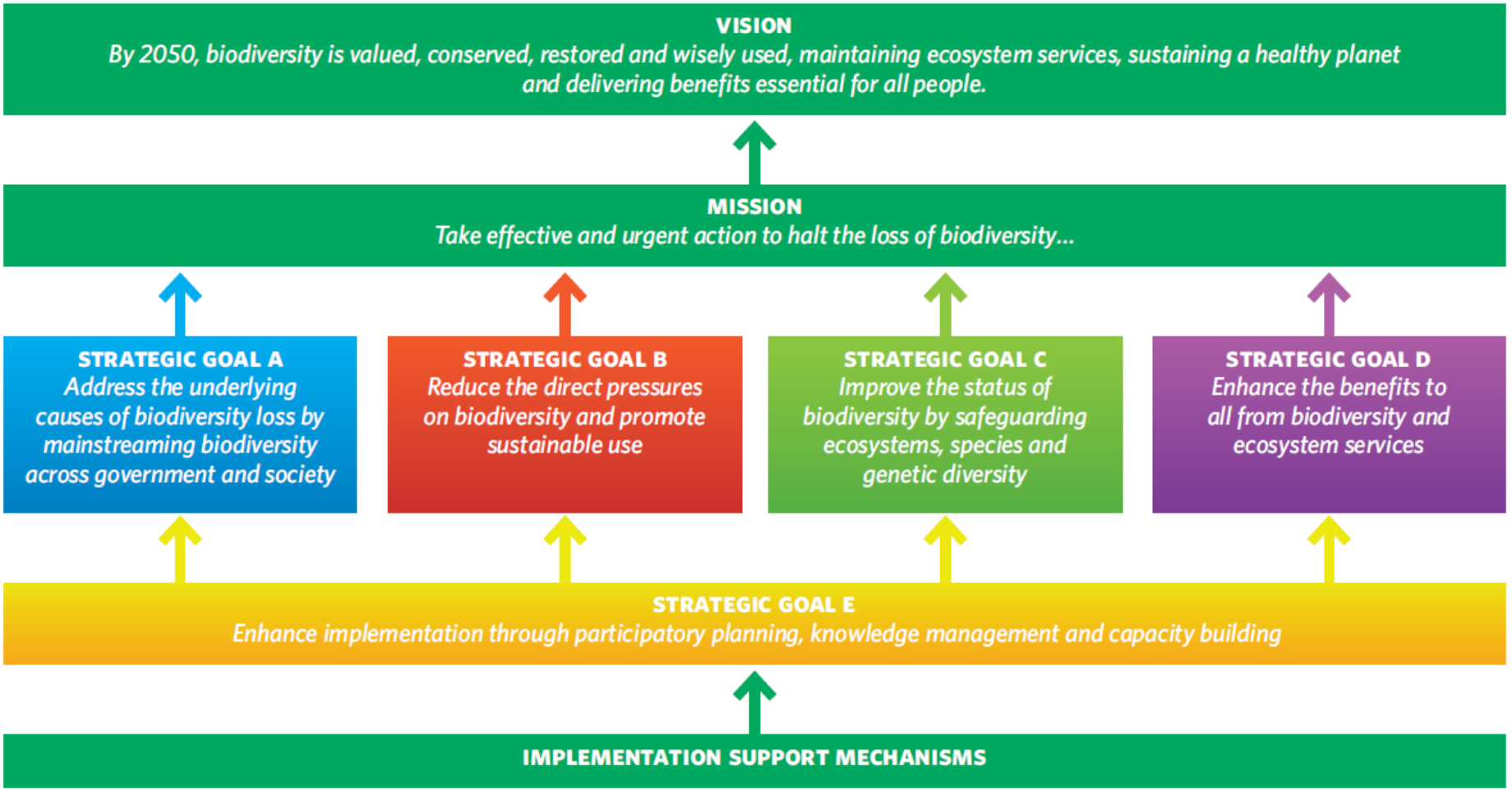
Convention on Biological Diversity (CBD)

- An international legally-binding treaty adopted at the Rio Summit in 1992.
- To date, 196 Parties (all UN members except the United States).
- Goals: 1) Conservation of biodiversity; 2) Sustainable use of biodiversity; 3) Fair and equitable sharing of the benefits arising from the use of genetic resource
- The Conference of the Parties (COP) meets every two years to review progress, set priorities and commit to work plans.
- Subsidiary agreements to the CBD;
    1. The Cartagena Protocol on Biosafety
    2. The Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from their Utilization

Strategic Plan for Biodiversity 2011-2020 (Aichi Targets)

- Adopted at the COP10 in 2010 in Nagoya, Japan for the 2011-2020 period as the preceding 2010 Biodiversity Target couldn't stop biodiversity loss.
- Parties agreed to translate this overarching international framework into revised and updated **National Biodiversity Strategies and Action Plans (NBSAPs)** within two years.
- **190 of 196 (97%) Parties have developed NBSAPs** in line with Article 6.

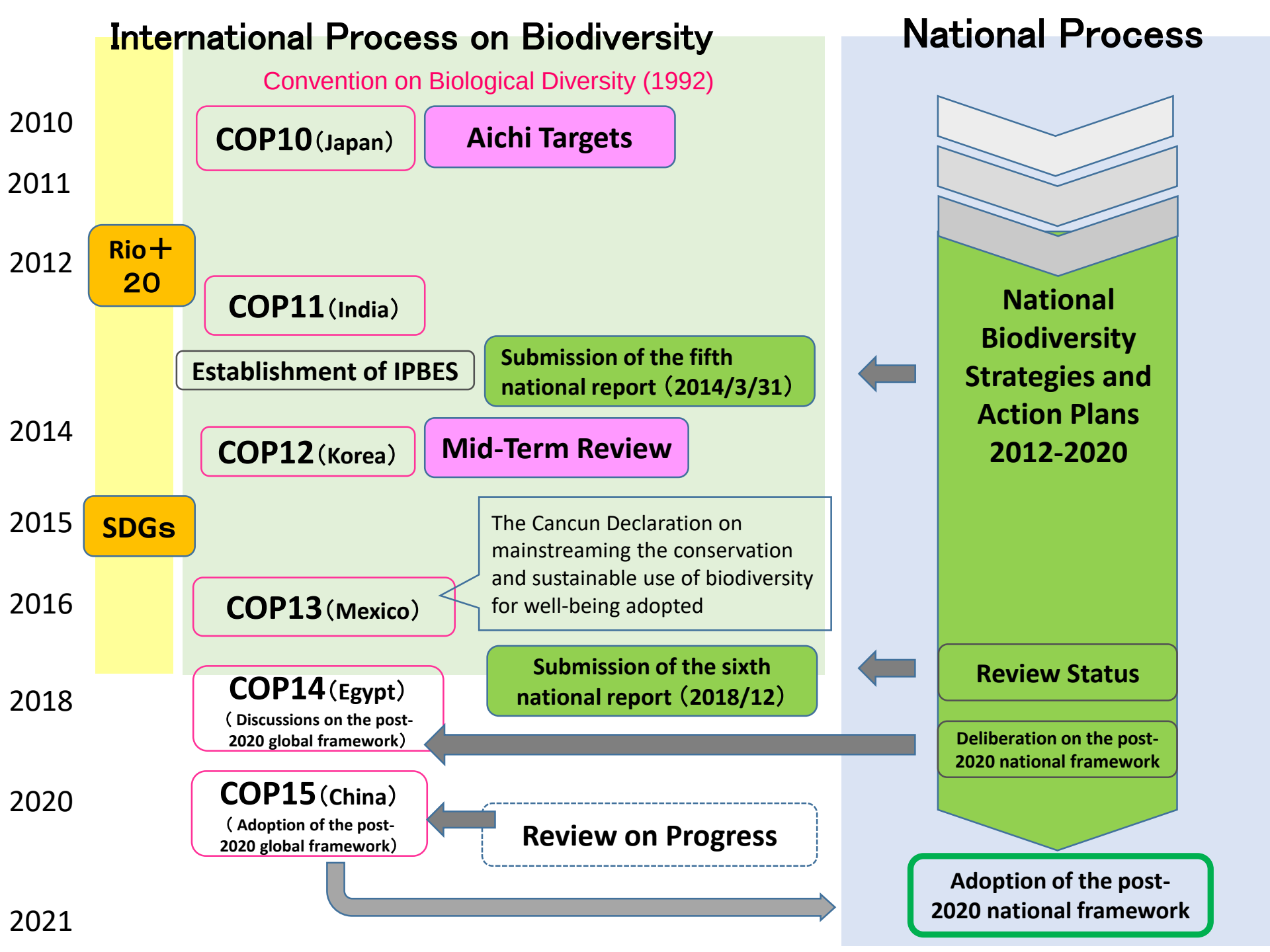
Structure of Strategic Plan for Biodiversity 2011-2020



Post Aichi Biodiversity Goals (2021 – 2030)

- Overall target year for SDGs set at 2030 but those targets derived from the Aichi Targets set at 2020 as their target year.

- There will be **vacuum period between 2021 – 2030 for those SDG biodiversity targets**.
- Next Strategic Plan for Biodiversity is expected to cover this period.
- The Executive Secretary of the CBD invites Parties and stakeholders to contribute to the development of the **Post-2020 Biodiversity Framework**.


International Process on Biodiversity
National Process
Convention on Biological Diversity (1992)
2010
2011
2012
2014
2015
2016
2018
2020
2021
COP10 (Japan)
Aichi Targets
Rio＋20
COP11 (India)
Establishment of IPBES
Submission of the fifth national report（2014/3/31）
COP12 (Korea)
Mid-Term Review
SDGs
The Cancun Declaration on mainstreaming the conservation and sustainable use of biodiversity for well-being adopted
COP13 (Mexico)
Submission of the sixth national report（2018/12）
COP14 (Egypt)
（Discussions on the post-2020 global framework）
COP15 (China)
（Adoption of the post-2020 global framework）
Review on Progress
National Biodiversity Strategies and Action Plans 2012-2020
Review Status
Deliberation on the post-2020 national framework
Adoption of the post-2020 national framework

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

- The intergovernmental body which assesses the state of biodiversity and of the ecosystem services.
- Mission - strengthen the science-policy interface for biodiversity and ecosystem services for the conservation and sustainable use of biodiversity, long-term human well-being and sustainable development.
- One thousand scientists from all over the world currently contribute to the work of IPBES on a voluntary basis.

- Its regional assessment reports are recently out with the conclusion; **"we must act to halt and reverse the unsustainable use of nature – or risk not only the future we want, but even the lives we currently lead"**

Aichi Targets

Understand values

Mainstream biodiversity

Address incentives

Sustainable production

Halve rate of loss

Sustainable fisheries

Manage within limits

Reduce pollution

Reduce invasive spp.

Minimize reef loss

Protected areas

Prevent extinctions

Conserve gene pool

Restore ecosystems

Enhance resilience

Implement Nagoya Prot.

Revise NBSAPs

Respect and conserve TK

Improve knowledge

Mobilize resources

The Aichi Biodiversity Targets

Strategic Goal A: *Address the underlying causes of biodiversity loss by mainstreaming biodiversity across government and society*

1 By 2020, at the latest, people are aware of the values of biodiversity and the steps they can take to conserve and use it sustainably.

2 By 2020, at the latest, biodiversity values have been integrated into national and local development and poverty reduction strategies and planning processes and are being incorporated into national accounting, as appropriate, and reporting systems.

3 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, and positive incentives for the conservation and sustainable use of biodiversity are developed and applied, consistent and in harmony with the Convention and other relevant international obligations, taking into account national socio economic conditions.

4 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 and have kept the impacts of use of natural resources well within safe ecological limits.

Strategic Goal B: *Reduce the direct pressures on biodiversity and promote sustainable use*

5 By 2020, the rate of loss of all natural habitats, including forests, is at least halved and where feasible brought close to zero, and degradation and fragmentation is significantly reduced.

6 By 2020 all fish and invertebrate stocks and aquatic plants are managed and harvested sustainably, legally and applying ecosystem based approaches, so that overfishing is avoided, recovery plans and measures are in place for all depleted species, fisheries have no significant adverse impacts on threatened species and vulnerable ecosystems and the impacts of fisheries on stocks, species and ecosystems are within safe ecological limits.

7 By 2020 areas under agriculture, aquaculture and forestry are managed sustainably, ensuring conservation of biodiversity.

8 By 2020, pollution, including from excess nutrients, has been brought to levels that are not detrimental to ecosystem function and biodiversity.

9 By 2020, invasive alien species and pathways are identified and prioritized, priority species are controlled or eradicated, and measures are in place to manage pathways to prevent their introduction and establishment.

10 By 2015, the multiple anthropogenic pressures on coral reefs, and other vulnerable ecosystems impacted by climate change or ocean acidification are minimized, so as to maintain their integrity and functioning.

Strategic Goal C: *Improve the status of biodiversity by safeguarding ecosystems, species and genetic diversity*

11 By 2020, at least 17 per cent of terrestrial and inland water, and 10 per cent of coastal and marine areas, especially areas of particular importance for biodiversity and ecosystem services, are conserved through effectively and equitably managed, ecologically representative and well connected systems of protected areas and other effective area-based conservation measures, and integrated into the wider landscape and seascapes.

12 By 2020 the extinction of known threatened species has been prevented and their conservation status, particularly of those most in decline, has been improved and sustained.

13 By 2020, the genetic diversity of cultivated plants and farmed and domesticated animals and of wild relatives, including other socio-economically as well as culturally valuable species, is maintained, and strategies have been developed and implemented for minimizing genetic erosion and safeguarding their genetic diversity.

Strategic Goal D: *Enhance the benefits to all from biodiversity and ecosystem services.*

14 By 2020, ecosystems that provide essential services, including services related to water, and contribute to health, livelihoods and well-being, are restored and safeguarded, taking into account the needs of women, indigenous and local communities, and the poor and vulnerable.

15 By 2020, ecosystem resilience and the contribution of biodiversity to carbon stocks has been enhanced, through conservation and restoration, including restoration of at least 15 per cent of degraded ecosystems, thereby contributing to climate change mitigation and adaptation and to combating desertification.

16 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 and operational, consistent with national legislation.

Strategic Goal E: *Enhance implementation through participatory planning, knowledge management and capacity building*

17 By 2015 each Party has developed, adopted as a policy instrument, and has commenced implementing an effective, participatory and updated national biodiversity strategy and action plan.

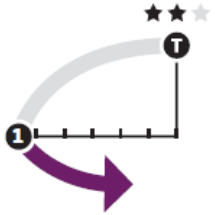
18 By 2020, the traditional knowledge, innovations and practices of indigenous and local communities relevant for the conservation and sustainable use of biodiversity, and their customary use of biological resources, are respected, subject to national legislation and relevant international obligations, and fully integrated and reflected in the implementation of the Convention with the full and effective participation of indigenous and local communities, at all relevant levels.

19 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, widely shared and transferred, and applied.

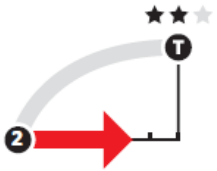
20 By 2020, at the latest, the mobilization of financial resources for effectively implementing the Strategic Plan 2011-2020 from all sources and in accordance with the consolidated and agreed process in the Strategy for Resource Mobilization should increase substantially from the current levels. This target will be subject to changes contingent to resources needs assessments to be developed and reported by Parties.

Please feel free to use the Aichi Biodiversity Targets icons in your own materials. More details at www.cbd.int/sp

Challenges identified in Global Biodiversity Outlook 4

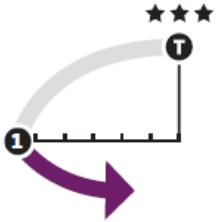
TARGET 3	Incentives, including subsidies, harmful to biodiversity, eliminated, phased out or reformed in order to minimize or avoid negative impacts		No significant overall progress, some advances but some backward movement. Increasing recognition of harmful subsidies but little action
	Positive incentives for conservation and sustainable use of biodiversity developed and applied		Good progress but better targeting needed. Too small and still outweighed by perverse incentives
TARGET 5	The rate of loss of forests is at least halved and where feasible brought close to zero		Deforestation significantly slowed in some tropical areas, although still great regional variation
	The loss of all habitats is at least halved and where feasible brought close to zero		Varies among habitat types; data scarce for some biomes
	Degradation and fragmentation are significantly reduced		Habitats of all types, including forests, grasslands, wetlands and river systems, continue to be fragmented and degraded

TARGET 6

All fish and invertebrate stocks and aquatic plants are managed and harvested sustainably, legally and applying ecosystem based approaches		Great regional variation; positive for some countries but data limited for many developing countries
Recovery plans and measures are in place for all depleted species		Variable; progress in some regions
Fisheries have no significant adverse impacts on threatened species and vulnerable ecosystems		Some progress e.g. on long-lining used in tuna fisheries, but practices still impacting vulnerable ecosystems
The impacts of fisheries on stocks, species and ecosystems are within safe ecological limits, i.e. overfishing avoided		Overexploitation remains an issue globally, but with regional variation

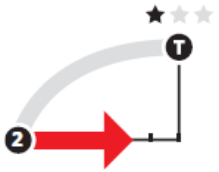
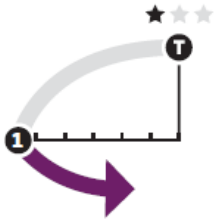
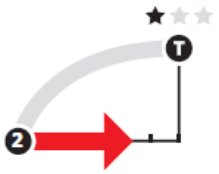
TARGET 8	Pollutants (of all types) have been brought to levels that are not detrimental to ecosystem function and biodiversity	*No clear evaluation*	Highly variable between pollutants
	Pollution from excess nutrients has been brought to levels that are not detrimental to ecosystem function and biodiversity	★★★ T 1	Nutrient use leveling off in some regions, e.g. Europe and North America, but at levels that are still detrimental to biodiversity. Still rising in other regions. Very high regional variation
TARGET 10	Multiple anthropogenic pressures on coral reefs are minimized, so as to maintain their integrity and functioning	★★★ T 1	Pressures such as land-based pollution, uncontrolled tourism still increasing, although new marine protected areas may ease overfishing in some reef regions
	Multiple anthropogenic pressures on other vulnerable ecosystems impacted by climate change or ocean acidification are minimized, so as to maintain their integrity and functioning	*Not evaluated*	Insufficient information was available to evaluate the target for other vulnerable ecosystems including seagrass habitats, mangroves and mountains

TARGET 12

Extinction of known threatened species has been prevented		Further extinctions likely by 2020, e.g. for amphibians and fish. For bird and mammal species some evidence measures have prevented extinctions
The conservation status of those species most in decline has been improved and sustained		Red List Index still declining, no sign overall of reduced risk of extinction across groups of species. Very large regional differences

TARGET 13

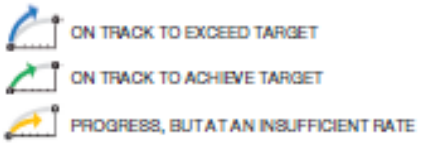
The genetic diversity of cultivated plants is maintained		Ex situ collections of plant genetic resources continue to improve, albeit with some gaps. There is limited support to ensure long term conservation of local varieties of crops in the face of changes in agricultural practices and market preferences
The genetic diversity of farmed and domesticated animals is maintained		There are increasing activities to conserve breeds in their production environment and in gene banks, including through in vitro conservation, but to date, these are insufficient
The genetic diversity of wild relatives is maintained		Gradual increase in the conservation of wild relatives of crop plants in ex situ facilities but their conservation in the wild remains largely insecure, with few protected area management plans addressing wild relatives
The genetic diversity of socioeconomically as well as culturally valuable species is maintained	*Not evaluated*	Insufficient data to evaluate this element of the target
Strategies have been developed and implemented for minimizing genetic erosion and safeguarding genetic diversity		The FAO Global Plans of Action for plant and animal genetic resources provide frameworks for the development of national and international strategies and action plans

TARGET 14	Ecosystems that provide essential services, including services related to water, and contribute to health, livelihoods and well-being, are restored and safeguarded ...		High variation across ecosystems and services. Ecosystems particularly important for services, e.g. wetlands and coral reefs, still in decline
	... taking into account the needs of women, indigenous and local communities, and the poor and vulnerable		Poor communities and women especially impacted by continuing loss of ecosystem services
TARGET 15	Ecosystem resilience and the contribution of biodiversity to carbon stocks have been enhanced through conservation and restoration		Despite restoration and conservation efforts, there is still a net loss of forests, a major global carbon stock

AICHI BIODIVERSITY TARGETS		PROGRESS					WAY FORWARD
Strategic Goal	Target	West Asia	South Asia	North East Asia	South East Asia	Oceania	
A. Address the underlying causes of biodiversity loss by main-streaming biodiversity across government and society	1. Awareness of biodiversity increased						• Realign incentives by various means, e.g. through integrating agroforestry in REDD+ to achieve carbon and rural livelihood benefits; • Clarify NCP for justifying PES schemes; • Integrate urban ecosystems and NCP into urban planning; • Integrate policies covering positive and negative incentives that engage all relevant stakeholders; and • Strengthen multi-stakeholder partnerships among companies, industry associations, civil society, and governments, to promote sustainable practices.
	2. Biodiversity values integrated						
	3. Incentives reformed						
	4. Sustainable production and consumption						
B. Reduce the direct pressures on biodiversity and promote sustainable use	5. Habitat loss halved or reduced						• Strengthen governance and reinforce economic incentives to implement LULCC on the ground; • Better understand the importance of agroecosystems to maintain and build natural capital beyond productivity; • Strengthen financial incentives for conservation; • Strengthen border control and quarantine to prevent the spread of invasive alien species; and • Integrate the management of fisheries, coastal zones and inland watersheds.
	6. Sustainable management of marine living resources						
	7. Sustainable agriculture, aquaculture and forestry						
	8. Pollution reduced						
	9. Invasive alien species prevented and controlled						
	10. Pressures on vulnerable ecosystems reduced						
C. Improve the status of biodiversity by safe-guarding ecosystems, species and genetic diversity	11. Protected areas increased and improved						• Upscale and share good practices in co-management and collaborative governance across scales and sectors; • Strengthen the adaptive management of PAs supported by a robust monitoring system such as the Management Effectiveness Evaluation (MEE) tool; • Incentivise local stakeholders by integrating their views on NCP and specific socio-cultural contexts into planning and management; and • Strengthen public policies and incentives to maintain local crop and livestock breed varieties.
	12. Extinction prevented						
	13. Genetic diversity maintained	Insufficient data to assess progress					

IPBES ,2018

AICHI BIODIVERSITY TARGETS		PROGRESS					WAY FORWARD
Strategic Goal	Target	West Asia	South Asia	North East Asia	South East Asia	Oceania	
D. Enhance the benefits to all from biodiversity and ecosystem services	14. Ecosystems and essential services safe-guarded						• Incentivise nature-symbiotic agriculture that generates multiple NCP; • Ensure the tenure and management rights of, and fair and equitable benefit-sharing for IPLCs in co-management / shared governance consistent with national legislation; • Match economically viable restoration activities with employment and income generation; • Strengthen leadership and governance to ensure fair and equitable benefit sharing within REDD+ safeguards and ABS provisions; and • Strengthen incentives for the private sector to enter into legal contracts on ABS.
	15. Ecosys-tems restored and resilience enhanced				Insuffi-cient data to assess progress	Insuffi-cient data to assess progress	
	16. Nagoya Protocol in force and operational						
E. Enhance implementation through participatory planning, knowledge man-agement and capacity-building	17. NBSAPs adopted as policy instru-ments						• Support countries to update and implement NBSAPs; • Support ILKP on sustainable use; • Improve access to and capacity for mobilising data and information to strengthen the science base for policy-making and implementation; and • Seek more funds in five emerging areas including PES, biodiversity offsets, green products, PPP and charities, and international development finance.
	18. Traditional knowledge respected						
	19. Knowledge improved, shared and applied						
	20. Financial resources from all sources in-creased	Insuffi-cient data to assess progress					



IPBES ,2018

Aichi Targets and SDGs

Many Aichi Targets have been integrated into SDG 14 & 15

SDG	Synergies and trade-offs between Biodiversity-related Sustainable Development Goals (14, 15) and other Sustainable Development Goals, and possible policy options to integrate Biodiversity and Ecosystem Services aspects into other Sustainable Development Goals
1 NO POVERTY **End poverty in all its forms everywhere**	• Globally and in the Asia-Pacific region, people's income levels tend to be low in biodiversity-rich areas, and where people depend more on BES for income and risk insurance. **NCP**[1] 9 12 13 14 16 *(well established)* • Without simultaneously conserving BES and ensuring resource access by those dependent on BES, trade-offs occur between BES conservation and poverty eradication. **Drivers**[2]**: LU EC ST** *(well established)* • Poverty eradication and BES conservation can be compatible through various intervention options, such as community-based natural resource management (CBNRM), Indigenous Protected Areas (IPA) and community-based ecotourism.
2 ZERO HUNGER **End hunger, achieve food security and improved nutrition and promote sustainable agriculture**	• In the Asia-Pacific region approximately 481 - 579 million people directly depend on nature for food and livelihoods. Healthy BES underpin sustainable and productive agriculture. Various traditional agriculture landscapes found throughout the Asia-Pacific region provide cradles of many local crop and livestock varieties. **NCP** 1 2 4 6 8 9 10 12 *(well established)* • Agriculture intensification increases crop yield, but with indiscriminate agrochemical inputs, sacrifices BES beyond food production. **Drivers: LU OE PO IS** *(well established)* • Integrated Pest/Nutrient Management (IPM/INM), agroforestry and sustainable pastoralism, among others, can resolve the trade-offs. Traditional sustainable agricultural systems practiced by IPLCs in the Asia-Pacific region can be revisited to reinforce reciprocal benefits to nature and agriculture.
3 GOOD HEALTH AND WELL-BEING **Ensure healthy lives and promote well-being for all at all ages**	• Healthy BES are essential for human health in diverse aspects, e.g., clean air and water provision, diverse and nutritious dietary sources, pharmaceutical genetic resources, human immunity development, regulation of pests and pathogens, as well as interactions with nature that improve psychological and physical health. **NCP** 2 3 6 7 8 10 12 14 16 *(well established)* • "One-Health" approach, an integrative approach to human-animal-ecological health interactions, was introduced to the Asia-Pacific region. The ASEAN Agreement on Transboundary Haze Pollution is in force to tackle the connection between forest/land fires and their human health impacts.
4 QUALITY EDUCATION **Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all**	• A higher educational background improves people's support for BES conservation. BES provide opportunities for humans to acquire knowledge and to develop skills that help societies prosper. **NCP** 15 *(well established)* • Several natural sites in the Asia-Pacific region are used for education and nature-based tourism. Community schools set up by some indigenous communities in South-East Asia help hand down the traditional knowledge that is central to sustainable agriculture and landscape management to younger generations, and also improve education access in remote areas.
5 GENDER EQUALITY **Achieve gender equality and empower all women and girls**	• Women and girls play a key role in maintaining agrobiodiversity that underpins food and livelihood security in South-East Asia and West Asia. Women in the Pacific islands have an important role in supporting sustainable fisheries through their engagement in early childhood development, when children's moral and cultural norms are formed. *(established but incomplete)*
6 CLEAN WATER AND SANITATION **Ensure availability and sustainable management of water and sanitation for all**	• Water security, a concept that encompasses water quantity, quality, and functioning water systems, is supported by a rich mix of different ecosystem types in the Asia-Pacific region including forests, grasslands, wetlands, cultivated areas, and terrestrial waterbodies. **NCP** 6 7 8 *(well established)* • Degradation of watershed ecosystems, as well as over-extraction and poor management of surface and ground water seriously undermine water security. **Driver: OE** *(well established)* • Payments for Ecosystem Services (PES) is increasingly used for incentivising watershed protection by upstream communities, and thus for ensuring downstream water security. Transboundary environmental legislative arrangements relating to water security are in place in two subregions.
7 AFFORDABLE AND CLEAN ENERGY **Ensure access to affordable, reliable, sustainable and modern energy for all**	• The heavy reliance of the poor on biomass fuel for household energy consumption, largely due to limited energy access, leads to forest biomass overexploitation. The Asia-Pacific region boasts large untapped potential for hydropower development. Watershed forests prevent soil erosion and downstream sedimentation, and thereby contribute to the longevity of reservoirs and hydropower facilities. Biofuel energy is another potential source for increasing power supply. **NCP** 6 8 11 *(well established)* • Large scale hydropower development impacts river ecosystems, and expanding biofuel crop production competes for land with forests and food production. **Drivers: LU OE** *(well established)*

IPBES Regional Assessment Report

IGES contributed to the preparation of the regional assessment report through hosting the IPBES Technical Support Unit for Asia-Pacific Regional Assessment, nomination of experts for the assessment authors, as well as through organising a series of capacity building events for Asia-Pacific region.

SDG	Synergies and trade-offs between Biodiversity-related Sustainable Development Goals (14, 15) and other Sustainable Development Goals, and possible policy options to integrate Biodiversity and Ecosystem Services aspects into other Sustainable Development Goals
Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all	• Conservation awareness spreads alongside globalisation, and increased state revenue strengthens BES conservation. Beautiful natural scenery and wildlife attract tourists, generating economic opportunities. **NCP** 16 *(well established)* • Large-scale land investments, e.g. for plantation, mining and tourism, while creating job opportunities, can negatively affect forests and water resources. Increased income changes consumption volumes and patterns, and thereby multiplies pressures on BES. **Drivers: LU OE IS PO EC** *(well established)* • Countries in the region are taking initiative to integrate NCP into development through green growth policies, especially in South-East Asia.
Build resilient infrastructure, promote sustainable industrialization and foster innovation	• Infrastructure development can negatively affect BES when poorly planned. **Drivers: PO LU** *(well established)* • "Blue and green" infrastructure, nature-based solutions and other ecosystem-based approaches take into account the complementarity between the functions of built infrastructure and ecosystems for enhanced resilience, has recently been introduced to the Asia-Pacific region. **NCP** 1 3 6 7 8 16 17
Reduce inequality within and among countries	• Local stakeholder participation and fair and equitable benefit-sharing are imperative for the success of CBNRM and community-based ecotourism. The Nagoya Protocol is a multilateral legal instrument whose objective is the fair and equitable sharing of benefits arising from the utilization of genetic resources. **NCP** 14 16
Make cities and human settlements inclusive, safe, resilient and sustainable	• Urbanisation can be a sustainability solution by concentrating industry, trade, transport, health care, education, and pollution treatment in relatively small areas. *(well established)* • Rapid urbanisation in the Asia-Pacific region impacts BES through land conversion, hydrological cycle changes, as well as the changes in lifestyles and consumption patterns. **Drivers: LU OE PO SC** *(well established)* • Urban ecosystems are increasingly integrated into urban planning in several Asia-Pacific countries with explicit recognition of NCP. Cultural and natural heritages in the Asia-Pacific region are increasingly recognised and conserved, with 332 designated UNESCO World Heritage sites. **NCP** 3 4 6 7 8 9 16
Ensure sustainable consumption and production patterns	• Increased cash crop production and natural resource extraction, as well as rapid urbanisation coupled with changing diets, material uses and leisure preferences, increasingly affect BES in the region. **Drivers: LU OE EC SC** *(well established)* • Voluntary sustainability standards and green public procurement, among others, have become common instruments.
Climate Action	• Climate change affects BES, but ecosystem functions mitigate climate change and its impacts. **NCP** 4 6 9 *(well established)* • The massive expansion of biofuel crop production for renewable energy can significantly undermine BES sustainability and food security. **Driver: LU** *(well established)* • Ecosystem-based mitigation and adaptation measures are readily available, including REDD+, EbA and Eco-DRR.
Promote just, peaceful and inclusive societies	• Unclear land tenure, weak governance, corruption, political unrest, and local conflicts exacerbate land degradation and resource overexploitation. Competition for scarce resources sometimes triggers conflicts. *(established but incomplete)* • Decentralisation and enhanced local participation in decision making improve conservation outcomes in some cases through CBNRM, co-management, collaborative governance, ICCAs and IPAs, in which local institutions and customary laws play pivotal roles in BES management. Multi-stakeholder collaboration in conservation movements can assist peace-building.
Revitalize the global partnership for sustainable development	• Global partnership, technology, and finance, among others, constitute a critical enabling environment for BES sustainability. Regional and transboundary collaboration between countries sharing important species, areas, or issues, has been strengthened. Biotechnology is a key contributor to food and environmental security, human health, and BES conservation. Information and knowledge sharing platforms have become increasingly available and play a key role in raising public awareness on environmental issues. Achievement of the Aichi Biodiversity Targets requires five times the current amount of investment.

IPBES ,2018

Goal 15: Sustainably manage forests, combat desertification, halt and reverse land degradation, halt biodiversity loss

Targets

- By 2020, ensure the conservation, restoration and sustainable use of terrestrial and inland freshwater ecosystems and their services, in particular forests, wetlands, mountains and drylands, in line with obligations under **international agreements**
- By 2020, promote the implementation of sustainable management of all types of forests, **halt deforestation, restore degraded forests and substantially increase afforestation and reforestation globally**
- By 2030, combat desertification, restore degraded land and soil, including land affected by desertification, drought and floods, and strive to **achieve a land degradation-neutral world**
- By 2030, ensure the conservation of mountain ecosystems, including their biodiversity, in order to enhance their capacity to provide benefits that are essential for sustainable development
- Take urgent and significant action to reduce the degradation of natural habitats, **halt the loss of biodiversity and, by 2020, protect and prevent the extinction of threatened species**
- Promote fair and equitable sharing of the benefits arising from the utilization of genetic resources and promote appropriate access to such resources, as **internationally agreed**

Goal 15: Targets (continued)

- Take urgent action to **end poaching and trafficking of protected species of flora and fauna** and address both demand and supply of illegal wildlife products
- By 2020, introduce measures to prevent the introduction and significantly reduce the impact of **invasive alien species** on land and water ecosystems and control or eradicate the priority species
- By 2020, **integrate ecosystem and biodiversity values into national and local planning**, development processes, poverty reduction strategies and accounts
- Mobilize and significantly **increase financial resources from all sources** to conserve and sustainably use biodiversity and ecosystems
- Mobilize significant resources from all sources and at all levels to finance sustainable forest management and provide adequate incentives to developing countries to advance such management, including for conservation and reforestation
- Enhance global support for efforts to combat poaching and trafficking of protected species, including by increasing the capacity of local communities to pursue sustainable livelihood opportunities

SARAYA's efforts to support biodiversity

- Oil palms are grown on plantations in Malaysia and Indonesia where **the expansion of plantations is destroying habitats for endangered wildlife** such as orangutans and elephants.
- Saraya co-founded the Borneo Conservation Trust (BCT) with local governments and concerned organizations.
- On Borneo, the BCT is working to connect habitats fragmented by plantations.
- **One percent of designated Saraya product sales are donated to the BCT to support its activities.**
- With this funding, the BCT repurchases land that was lost to palm oil plantations and uses it to conserve biodiversity through activities such as protecting wildlife.
- Saraya launched in 2010 the first detergent in Japan made from RSPO-certified palm oil.

Connect Through Life
SARAYA

Detergent made from RSPO-certified palm oil

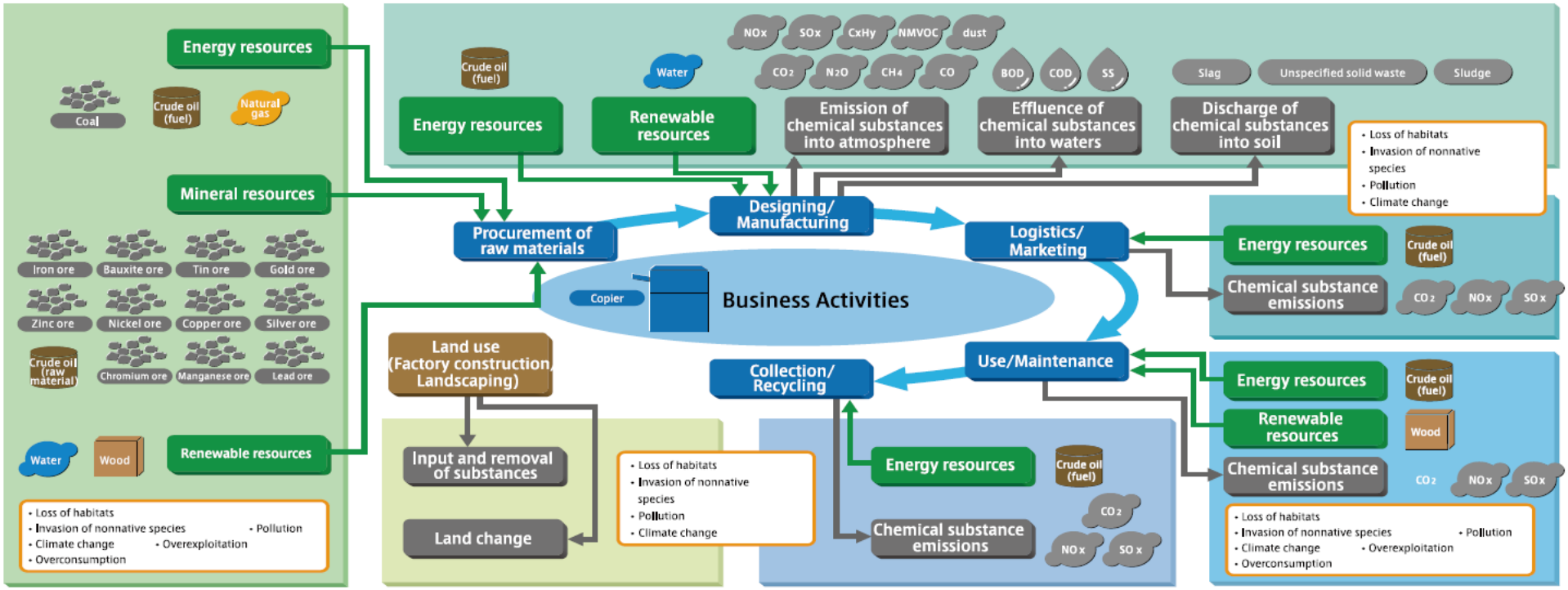
Source: Japan Business Initiative for Biodiversity

KAO's efforts to support biodiversity

- Recognizing that its businesses depend on natural capital, Kao is **committed to supporting zero deforestation** in its procurement of raw materials.
- Guidelines have been formed and concrete targets raised for sustainable procurement of palm oil and paper. By 2020, Kao aims to **purchase only sustainably sourced palm oil that is traceable to the plantation**.
- While 19 manufacturing sites of 16 companies of the Kao group have obtained **RSPO Supply Chain Certification** as of end of 2015, it is aimed to have all plants obtain certification by 2020 through further efforts to build a traceable supply chain.

Source: Japan Business Initiative for Biodiversity

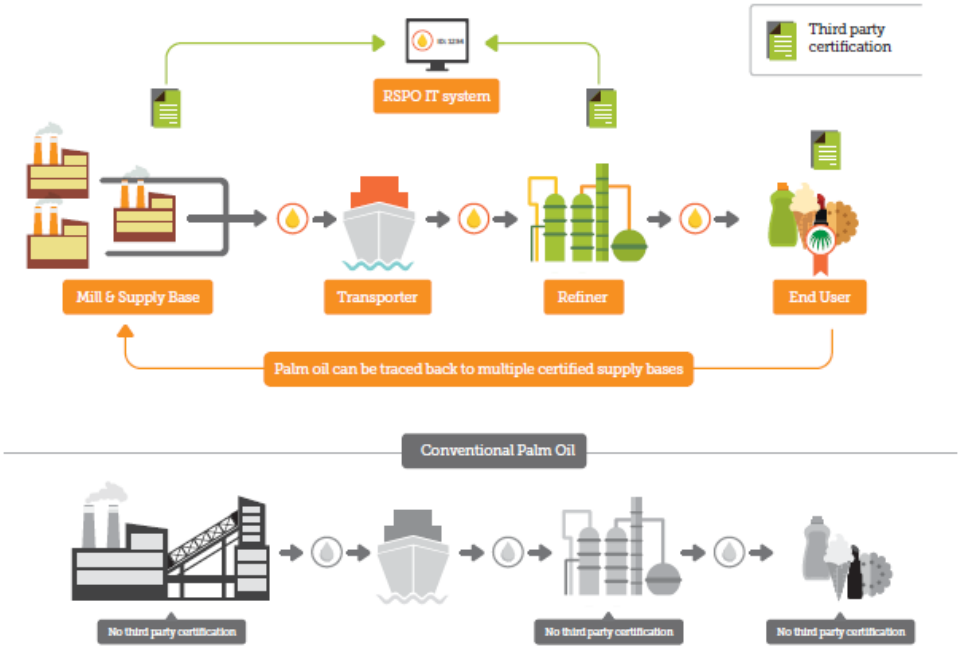
An Example of Business & Biodiversity Inter-Relations



Source: Ricoh/ JBIB (2016)

Roundtable on Sustainable Palm Oil (RSPO) Certification System

- The RSPO was established in 2004 to promote the production and use of sustainable palm oil.
- Palm oil production is a cause for deforestation of rainforests rich in biodiversity.



Source: 2018 Roundtable on Sustainable Palm Oil

Possible solutions

- Expanding protected areas - the world currently protects 15% of land and 7% of the oceans.
- Right incentives - keeping the animals and plants alive worth more than dead, for example by supporting eco-tourism. There are environmentally harmful subsidies for agriculture and energy that are encouraging unsustainable production.
- Changing consumer and business behavior - land being cleared for cattle, soy, palm oil, and timber. Palm oil found in many foods and toiletries. Getting them to choose only sustainable options (e.g. producing or using more biodegradable detergent)

- Monetizing the value of biodiversity - by estimating the financial value of the ecosystem services. (Over the last 20 years, New York has spent $2bn protecting the natural watershed that supplies the city with clean water. Building a water treatment plant instead would have cost $10bn.)
- Complying with a global treaty, the CBD has set many targets. Some are likely to be reached, for example protecting 17% of all land and 10% of the oceans by 2020. (Others, such as making all fishing sustainable by the same date are not.)
- We need to switch to a more sustainable diet (less beef and more vegetables) and to waste less food, water and energy.
- Biodiversity needs to be mainstreamed in the parts of government which are responsible for agriculture, energy and water etc.
- The government needs to consider more long-term environmental costs/benefits rather than short-term economic costs/benefits.

All in all, a fundamental change in how we live is necessary and long overdue!!


Thank you !!