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Living Planet Report 2018: Aiming Higher by WWF

Chapter 1- Why Biodiversity matters?

The importance of nature in our lives

- Humans have evolved, grown and thrived, in nature. Modern human society needs the resources of nature to thrive. Perception that nature is 'nice to have' and its protection is secondary to the more important tasks of increasing economic growth, creating jobs, enhancing the competitiveness of industry etc is inherently wrong.
- However this perception is changing slowly, at global level companies and governments are now signaling their intention to adopt more integrated approaches.

Nature is of incalculable importance to our health, wealth, and security.

- Medical treatments have been inspired by wild species, from painkillers to treatments for heart conditions and from cancer cures to remedies for high blood pressure.
- Being in natural areas improves our physical wellbeing, through encouraging outdoor exercise.
- Our nutritional requirement rely one way or the other on natural system.
- Nature is crucial in replenishing freshwater that underpins all the economic activity.
- While it is sometimes easy to assume that water security is assured primarily via dams, reservoirs, treatment works and distribution networks, it is in the end nature that replenishes the freshwater that underpins all economic activity.
- Nature will play an essential role in helping human societies cope with the inevitable consequences of rising global temperatures.
- Wildlife is increasingly being used for **bio-mimicry**, engineers and designers use solutions honed by natural selection to meet challenges in the human world.

The importance of nature to the world's economies

Nature is important as it supplies from raw material, water, food, medicines and energy, to the pollination of crops, formation of soils and protection from floods, storms and erosion.

- The planet's natural systems provide a range of vital services that underpin production, trade, livelihoods and consumption in every country.
- However nature should not only be looked as a supplier of raw materials but its social, cultural, spiritual and religious significance should also be recognized.
- IPBES (intergovernmental science policy platform on biodiversity and ecosystem services) an organization established to assess the state of biodiversity and the ecosystem services it provides to society in 2018.
- According to the several assessments by the Intergovernmental Science Policy Platform on Biodiversity and Ecosystem Services (IPBES), culture plays the central role in defining all links between people and nature.
The IPBES Conceptual Framework – which underpins all its assessments and syntheses – calls this much broader notion **Nature's Contribution to People (NCP)**.
- All our food, in the end, relies one way or another on natural systems, including the complex ecological relationships that enable soils to support plant growth.
About 87% of all flowering plant species are pollinated by animals 8, and crops that are partially pollinated by animals account for 35% of global food production 9.
- Globally it is estimated that nature approximately provides services worth 25 trillion dollars annually.

- In every region, biodiversity and nature's capacity to contribute to people is being degraded, reduced and lost due to a number of common pressures –
 - habitat stress
 - overexploitation and unsustainable use of natural resources
 - air, land and water pollution
 - increasing numbers and impact of invasive alien species
 - and climate change
- changing planetary conditions are increasingly linked to major socio-economic disruptions.



The Great Acceleration

- Great Acceleration is the unique ongoing event with exploding human population and economic growth driving unprecedented planetary change through the increased demand for energy, land and water.
- This human being-induced change is being seen as a new geological epoch, the Anthropocene.
- There has been an exponential rise in health, knowledge and standard-of-living improvements but all this has come at a huge cost to the stability of the natural systems.
- The impact of Great Acceleration now interferes profoundly with Earth's atmosphere, ice sheets, ocean, forests, land and biodiversity.
- Earth is losing biodiversity at a rate seen only during mass extinctions.
- In the last 50 years, global average temperature has risen at 170 times the background rate 31. Ocean acidification may be occurring at a rate not seen in at least 300 million years.

Chapter 2 - The threats and pressures wiping out our world



Threats old and new

- The main drivers of biodiversity decline are **overexploitation of species, agriculture and land conversion**. The two factors are driven by spiraling human consumption.
- **Invasive species** are also a frequent threat, their spread relying heavily on trade-related activities such as shipping.

- **Pollution and disturbance**, for example through agricultural pollution, dams, fires and mining, are additional sources of pressure.
- **Climate change** is playing a growing role and is already beginning to have an effect at an ecosystem, species and even genetic level.
- Since 1970s our **Ecological Footprint – a measure of our consumption of natural resources** – has increased by about 190.

Runaway Consumption

- The ability of ecosystems to renew themselves is called **biocapacity**.
- Together **biocapacity and ecological footprint** provide an empirical basis for determining whether humanity is living within the means of our planet.
- Biocapacity has increased by 27% due to changed technologies and land management practices.
- However it has not kept pace with the human consumption which has increased 190% over the same period.

The Ecological Footprint of Consumption

- Prior to the explosive population growth of the 20th century, humanity's rate of consumption was much smaller than the Earth's rate of renewal.
- As a result, prevailing economic models are based on growth, very rarely taking resource limitations into account. But this simplification is no longer viable.
- Ecological Footprint accounting tracks human demand on nature by quantifying the biologically productive area required to meet all these competing demands, including food, fiber, timber, accommodation of roads and buildings, and sequestration of carbon dioxide from fossil fuel burning.

The demand covers six area types

Integrating data to connect consumers to their impacts

- To look deeper into production-related impacts on the environment, the mapping and monitoring of supply chains is crucial to identify and understand how global consumption drives environmental impacts.
- Supply chains are the link between the driving forces of environmental change, like consumption activities, and the pressures these impose (such as land-use change), the state of the environment and the resulting impacts (for example, species loss).

Facts and terms

European Commission's Copernicus Satellite Programme, provide unprecedented capabilities to monitor changes in land cover globally, and at high spatial and temporal resolution. For example, the two Sentinel-2 satellites, launched in 2015 and 2017, survey the entire Earth's land surface (bar the poles) every five days at a resolution of between 10m and 60m.

Global Forest Watch is an online platform that provides near real-time information about how forests are changing around the world and includes capabilities for companies to assess impacts associated with the production of the commodities they include in their products.

Rotterdam Effect: Some materials are imported into one country, and then processed or simply transferred from one ship to another, and then exported again. Known as the 'Rotterdam Effect' after the busiest port in Europe, this can lead to errors in accurately linking goods to their true origin.

Multi-Regional Input-Output (MRIO) models offer one approach to approximating consumer dependence on direct and embedded materials. MRIO datasets describe spending between sectors and economies, and by final consumers.

Choice and Change: The impacts of consumption

The way our supply chains are structured, the materials they use, how these are extracted and manufactured, and the consumption choices we make have a myriad of impacts on the world around us. Using different datasets helps us to map these out and understand the consequences of our choices.

Note:

Supply chains are the link between the driving forces of environmental change, like consumption activities, and the pressures these impose (such as land-use change), the state of the environment and the resulting impacts (for example, species loss).

- Human activities associated with the production or harvesting of food, fiber and energy from terrestrial ecosystems have enormous impacts on biodiversity.
- Different types of land use affect the balance between wild and domesticated species, the size and quality of habitats, and the non-living chemical and physical parts of the environment that affect living organisms and the functioning of ecosystems.

- **Direct biodiversity loss**
 - Agriculture accounts for the lion's share of the conversion of forested land.
 - Decreases in forest area and forest quality both impact the plants and animals living within them.
- **Disruption of habitats**
 - The degree of forest fragmentation is a major threat to biodiversity conservation and ecosystem service provision.
 - It is estimated that in 70% of the forest masses of the world, a **forest edge** can be found within a mean distance of less than 1 km.

Note:

- Edge effects are changes in population or community structures that occur at the boundary of two or more habitats.
- Areas with small habitat fragments exhibit especially pronounced edge effects that may extend throughout the range.
- This has huge implications for habitat structure and quality; forest recolonization and the disruption of corridors for wildlife dispersal; forest microclimate and hydrology
- Fragmentation can also make forests more accessible to people, increasing the pressure on forest resources.
- **Pollution and degradation of the environment**
 - Excessive use of synthetic agricultural inputs such as pesticides, antibiotics, hormones and fertilizers are associated with declines in soil and aquatic biodiversity.
- **Disruption of ecosystem functions**
 - Ecosystems such as forests play an important role in reducing disaster risks, mitigating some of the most acute effects of climate change.
 - When such natural infrastructures are lost, people exposed to natural hazards such as floods, storms and landslides tend to migrate and settle in new areas resulting in further pressure on nature and biodiversity loss.
 - Pesticide use results in critical reductions in pollinator numbers and performance reducing agricultural productivity.
 - About 87% of all flowering plant species are pollinated by animals, and crops that are partially pollinated by animals account for 35% of global food production.
 - Human activities have important consequences for the abundance and/or richness of soil organisms, particularly through the negative impacts of land-use change and agricultural intensification.
 - Soil biodiversity is key to sustain food production as it detoxify polluted soils, suppress soil-borne diseases and contribute to the nutritional quality of food.

Land Degradation

- Land degradation is the persistent reduction of the capacity of the land to support both biodiversity and human needs.
- It includes the loss of soil; loss of habitat and hydrological function; deforestation; overgrazing and shrub encroachment and drainage and eutrophication in wetlands.
- In March 2018, the IPBES released its latest Land Degradation and Restoration Assessment (LDRA), finding that only a quarter of land on Earth is substantively free of the impacts of human activities.
- By 2050 this fraction is projected to decline to just a tenth. Wetlands are the most impacted category, having lost 87% of their extent in the modern era.
- The immediate causes of land degradation are typically local but the key driver is the growing demand for ecosystem-derived products.
- The consequences of land degradation are a complex interaction between degradation, poverty, conflict and the migration of people.
- Loss of habitat is the key driver of declining terrestrial biodiversity worldwide, and land degradation is a big contributor to global climate change.

Preventing degradation is much cheaper in the long run than permitting it, and then later paying for the impacts and restoration.

Pollinators

- The majority of flowering plants are pollinated by insects and other animals.
- Pollinators are a diverse group, including more than 20,000 species of bees, many other types of insects (e.g. flies, butterflies, moths, wasps and beetles) and even vertebrates such as some birds and bats.
- More than 75% of the leading global food crops benefit from pollination. Some of these are key sources of human nutrition.
- Changing land use due to agricultural intensification and urban expansion is one of a number of key drivers of pollinator loss.
- Improving habitat diversity within the landscape, and the inclusion of non-agricultural habitats within land management plans, has been shown to ameliorate pollinator loss, boost pollinator numbers and improve ecosystem services.
- The abundance, diversity and health of pollinators is also threatened by a number of other drivers such as changing climate, invasive species and emerging diseases and pathogens.
- What's so special in the soil?
- Soil biodiversity encompasses microorganisms (those only visible under microscopes, such as fungi and bacteria).

- These organisms influence the physical structure and chemical composition of soils.
- They are essential for enabling and regulating critical ecosystem processes such as carbon sequestration, greenhouse gas emissions, and the uptake of nutrients by plants.
- They represent a storehouse for potential medical applications as well as new biological controls on pathogens and pests.

Global Soil Biodiversity Atlas

- The recently published **Global Soil Biodiversity Atlas mapped** for the first time potential threats to soil biodiversity across the globe.
- It generated a risk index combining eight potential stressors to soil organisms: **loss of above-ground diversity, pollution and nutrient overloading, overgrazing, intensive agriculture, fire, soil erosion, desertification and climate change.**

Valuing forests for people and nature

Forests are among the richest ecosystems. Tropical, temperate and boreal forests cover nearly 30% of the Earth's land area, and yet they are home to more than 80% of all terrestrial species of animals, plants and insects.

- The rate of forest area net loss has slowed due to reforestation and the establishment of new plantations, as well as policy and regulatory efforts to reduce forest conversion.
- However it remains very high in tropical forests, particularly in some frontier areas in South America, sub-Saharan Africa and Southeast Asia. They are cleared for agriculture, subsistence farming and urban growth.
- Using proximity to forest edges as a way of measuring forests' vulnerability shows that 60-70% of the world's forests are at risk from the negative effects of human activities, altered microclimate and invasive species.
- The pressure on forests from both small- and large-scale agriculture is likely to continue in order to growing demand for fibre and fuel as well as for food.
- While part of the increased food supply will originate from growing yields in existing agricultural lands, additional land will be needed.
- This will further increase the pressure on tropical forests, thus continuing to threaten priority areas for biodiversity conservation, unless there is a fundamental shift in how forests are valued for the many benefits they provide.
For example, in addition to providing habitats for animals and livelihoods for people, forests also offer watershed protection, prevent soil erosion and mitigate climate change.

Living Forests report series

In a series of five **Living Forests Reports**, WWF highlighted areas of forest most vulnerable to deforestation between 2010 and 2030; the report identified 11 deforestation fronts.

- Living Forests Report is part of an ongoing conversation with partners, policymakers, and businesses about how to protect, conserve, sustainably use, and govern the world's forests in the 21st century.
- It is prepared by WWF.

These are places where the largest concentrations of forest loss or severe degradation are projected to occur between 2010 and 2030 under business-as-usual scenarios and without interventions to prevent losses.



Ocean habitats vital to humanity in steep decline

- The rapid loss of some of the ocean's most productive and species rich habitats like coral reefs, mangroves and seagrasses threatens the wellbeing of hundreds of millions of people.

- **Plastic pollution** is also a growing global problem. **Plastic debris** has been detected in all major marine environments worldwide, from shorelines and surface waters down to the deepest parts of the ocean, even at the bottom of the Mariana Trench.
- Billions of people rely on healthy oceans to provide livelihoods, jobs and food and the range of goods and services that flow from coastal and marine environments. Nearly 200 million people depend on coral reefs to protect them from storm surges and waves.

Key habitats that underpin ocean health and productivity are in steep decline:

- **Coral reefs** support more than a quarter of marine life but the world has already lost about half of its shallow water corals in only 30 years. If current trends continue, up to 90% of the world's coral reefs might be gone by mid-century.
- **Tropical seas** overheated by climate change have bleached, damaged and killed coral at unprecedented levels. Prolonged heat led to catastrophic die-off of fast-growing coral species and these were replaced by slower-growing groups that shelter fewer sea creatures.
- Other threats to coral reefs include **overfishing, selective fishing and destructive fishing practices**, and **pollution from runoff** which sullies reef waters, compromising coral health.
- **Mangroves** are a key natural asset for many tropical and subtropical coastlines, providing livelihoods to many millions of coastal families and protecting them from violent storms and coastal erosion.
 - They sequester nearly five times more carbon than tropical forests and provide nurseries to innumerable juvenile fish species that grow to join wider ocean ecosystems.
 - Clearing for development as well as **over-exploitation and aquaculture** have contributed to a decline in the extent of mangroves by 30% to 50% over the past 50 years.
- **Seagrasses** represent important coastal ecosystems that provide critical human benefits including habitat that supports commercial and subsistence fisheries, nutrient cycling, sediment stabilization, and globally significant sequestration of carbon. They are threatened directly by **destructive fishing practices, boat propellers, coastal engineering, cyclones, tsunamis and climate change, and indirectly by changes** in water quality due to land run-off. Seagrasses have been disappearing at a rate of 110 km² per year since 1980.

Plastics in the ocean

- Plastic marine debris ranges from microscopic pieces to larger waste items such as bags, cigarette filters, etc which are the most visible form of plastic pollution.
- Plastic debris has been detected in all major marine environments worldwide, from shorelines and surface water down to the deepest parts of the ocean, even at the bottom of the Mariana Trench
- Today 90% of the world's seabirds have fragments of plastic in their stomachs compared to only 5% in 1960.
- Impacts were found to be greatest at the southern boundary of the Indian, Pacific and Atlantic Oceans, a region thought to be relatively pristine.

Threats and pressures on our source of life

Freshwater ecosystems contain disproportionately more species per unit area than marine and terrestrial ecosystems. Although they cover less than 1% of the Earth's surface, freshwater habitats are home to more than 10% of known animals and about one-third of all known vertebrate species

- Freshwater habitats such as lakes, rivers and wetlands are the source of life for all humans and command high economic value.
- They are affected by factors such as **habitat modification, fragmentation and destruction; invasive species; overfishing; pollution; forestry practices; disease; and climate change.**
- In many cases, these combined threats have led to catastrophic declines in freshwater biodiversity. Globally, wetland extent is estimated to have declined by more than 50% since 1900.

The importance of healthy freshwater ecosystems

- Freshwater ecosystems are under increasing levels of threat and the trend for freshwater species is alarming.
- Freshwater ecosystem health is defined by its water quality and quantity, connectivity to other parts of the system and landscape, habitat condition, and diversity of plant and animal species.
- Eutrophication (an enrichment by or excess of nutrients to the water) and toxic pollution are major sources of water quality degradation.
- Climate change is exacerbating existing stressors and causing changes in the timing, availability and temperature of waters, affecting the condition of freshwater habitats and the life history of freshwater species.

Connected, flowing rivers: critical for freshwater ecosystems

- River systems, their floodplains and deltas, are among the most biologically diverse and productive ecosystems on the planet.
- They provide the primary source of protein for hundreds of millions of people worldwide. For these economic and ecosystem benefits to be realized, rivers must retain key characteristics and processes.
- When natural connectivity and flow are retained the river is called 'free-flowing'.

- Infrastructure development – especially dams – has caused a dramatic decline in the number of free flowing rivers.
- Rivers can both be prevented by the construction of poorly planned dams and ensuring that any dams that are constructed are located and designed to mitigate environmental damage as much as possible.
- River protection can also occur via various legal and policy mechanisms.

The Brisbane Declaration and Global Action Agenda on Environmental Flows, published in 2018, is a clarion call to governments and stakeholders to build on previous successes through widespread implementation of environmental flows through legislation and regulation, water management programmes and research, linked by partnership arrangements involving diverse stakeholders.

Threats through the lens of the Living Planet Index (LPI)

LPI – Threats to biodiversity

- **Habitat loss and degradation**

This refers to the modification of the environment where a species lives, by complete removal, fragmentation or reduction in quality of key habitat. Common causes are unsustainable agriculture, logging, transportation, fragmentation of rivers and streams etc.

- **Species Overexploitation:** There are both direct and indirect forms of overexploitation-

- Direct overexploitation refers to unsustainable hunting and poaching or harvesting.
- Indirect overexploitation occurs when non-target species are killed unintentionally, for example as by-catch in fisheries.

- **Pollution**

Pollution can directly affect a species by making the environment unsuitable for its survival. It can also affect a species indirectly, by affecting food availability or reproductive performance.

- **Invasive species and disease**

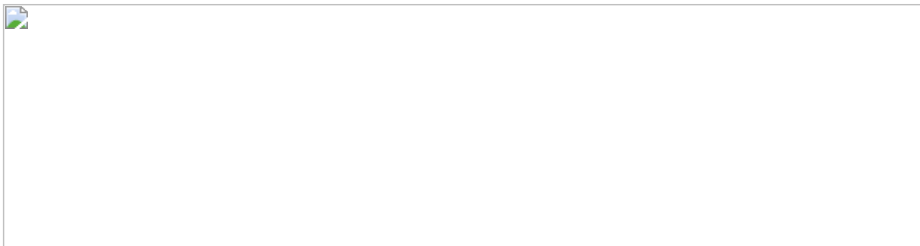
Invasive species can compete with native species for space, food and other resources, can turn out to be a predator or spread diseases that were not previously present in the environment.

- **Climate change**

The effects of climate change on species are often indirect. Changes in temperature can confound the signals that trigger seasonal events such as migration and reproduction, causing these events to happen at the wrong time.

Threats to LPI populations around the world

All freshwater and terrestrial populations in the global LPI are assigned to one of **five major biogeographic realms**, regions characterized by distinct assemblages of species.



This gives us a better understanding of how biodiversity is changing in different parts of the world and helps us to identify whether different local threat processes are driving these changes.

Information about threats is available for just under a quarter – or 3,789 populations – in the global LPI. Each population can be associated with up to three different threats. Habitat degradation and loss is consistently the most reported threat in all realms; but there is some variation between realms and taxonomic groups.

Planetary Boundaries

- Field studies, models, Earth observations and geological evidence have all been used to build an understanding of global change, the capacity of living organisms to adapt to change and the systemic risks when adaptation fails.
- The Planetary Boundaries concept is an effort to use this Earth system perspective to provide information on human-driven changes. The concept suggests that the world's societies need to set limits on human-caused disturbances to tightly linked Earth system processes.
- It is already a useful integrating framework for illustrating the risks of human interference with the Earth system through our patterns of consumption and production. It presents the idea of a safe zone for critical Earth system processes.

- The Planetary Boundaries framework highlights nine critical issues where human activities are reducing the safe operating space:
 - Loss of biosphere integrity (the destruction of ecosystems and biodiversity)
 - Climate change
 - Ocean acidification
 - Land-system change
 - Unsustainable freshwater use
 - Perturbation of biogeochemical flows (nitrogen and phosphorus inputs to the biosphere)
 - Alteration of atmospheric aerosols,
 - Pollution by novel entities,
 - Stratospheric ozone depletion
- People have already pushed at least four of these systems beyond the limit of a safe operating space-biosphere integrity, biogeochemical flows and land-system change. Freshwater use has also passed beyond a safe threshold.
- Biosphere integrity plays a critical role in determining the state of the Earth system, regulating its material flows, energy balance, climate, and responses to abrupt and gradual change. It not only interacts with the other planetary boundary categories, but also maintains the overall resilience of the Earth system.



Our changing climate will impact the Earth system in many ways because climate influences the ways that ecosystems on land and below water function and interact with each other.

Chapter 3 - Biodiversity in a Changing World

Population Indicator: The Living Planet Index

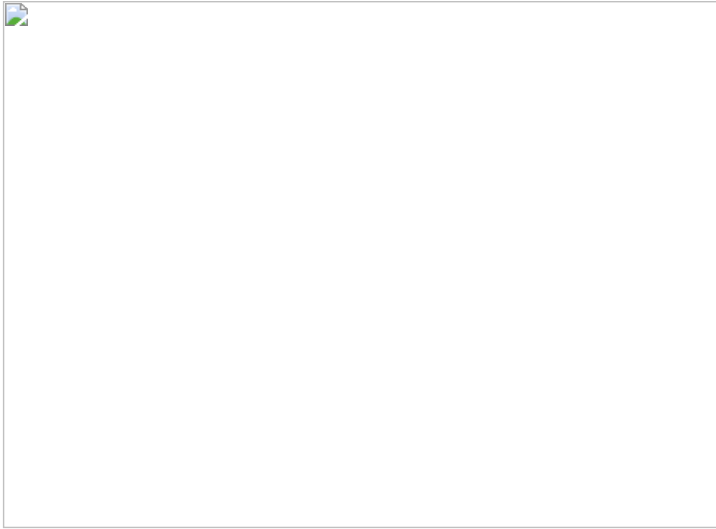
- The Living Planet Index (LPI) is an indicator of the state of global biodiversity and the health of our planet.
- Published since 1998, it tracks the population abundance of thousands of mammals, birds, fish, reptiles and amphibians around the world.
- The species population data that is collected goes into a global index, as well as indices for more specific bio-geographic areas, referred to as realms, based upon distinct groupings of species.
- The 2018 indices include data from 1970 to 2014.
- The global index, calculated using available data for all species and regions, shows an overall decline of 60% in the population sizes of vertebrates between 1970 and 2014– in other words, an average drop of well over half in less than 50 years.
- Living Planet Indices – whether the Global Index or those for a specific realm or species group – show the average rate of change over time across a set of species populations.

Realm Living Planet Indices

Populations are in decline in all realms, but declines are especially pronounced in the three tropical realms. The LPI indicates that the Neotropical realm, covering South and Central America, and the Caribbean, has suffered the most dramatic decline at 89% loss compared to 1970. Nearctic and Palearctic populations are faring slightly better with declines of 23% and 31%.

Freshwater Living Planet Index

- Freshwater ecosystems provide habitat for around 1 in 10 known species of fishes, mollusks, reptiles, insects, plants and mammals despite covering less than 1% of the Earth's surface.
- These ecosystems are strongly affected by habitat modification, fragmentation and destruction; invasive species; overfishing; pollution; forestry practices; disease; and climate change.



Freshwater LPI shows 83% decline, equivalent to 4% per year since 1970. The largest declines are seen in the Neotropics (-94%), the Indo-Pacific (-82%) and the Afrotropics (-75%), especially in reptiles and amphibians, and in fishes.

Different Biodiversity Indicators, Same Story

- Biodiversity is often referred to as the 'web of life'. It is the variety of all living things – plants, animals and micro-organisms – and the ecosystems of which they are a part.
- It includes diversity within species and between species and can refer to any geographic scale – from a small study plot to the entire planet.
- The biodiversity is shaped by natural processes and, increasingly, by the influence of humans.
- Species and the natural systems around us, respond to human pressures and conservation interventions in a variety of ways and there is no single measure to capture all these changes.
- Therefore different metrics and indicators are needed to understand biodiversity change as well as to track progress towards biodiversity targets and to devise effective conservation programs.

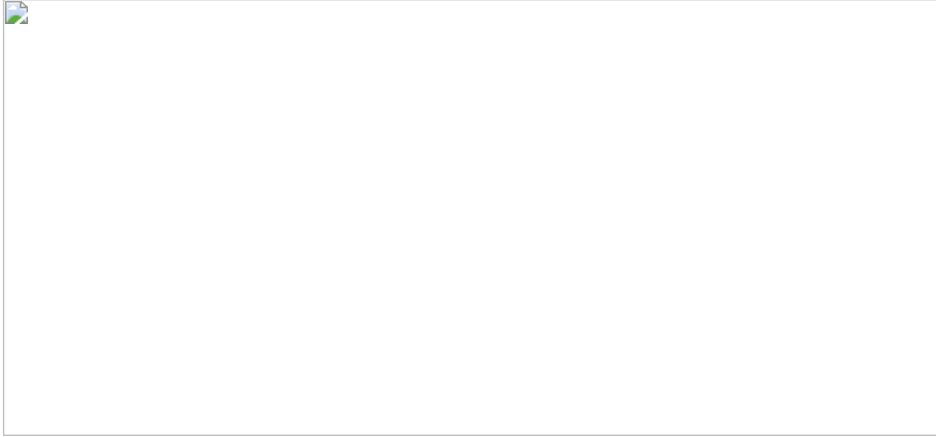
To complement the population-based Living Planet Index and put the trends that it measures in a broader context, the report include an overview of three other biodiversity indicators: **the Species Habitat Index**, **the IUCN Red List Index**, and the **Biodiversity Intactness Index**.

Distribution: the Species Habitat Index

- The Species Habitat Index, is an aggregate measure of the extent of suitable habitat available for each species to help provide a richer picture of both past and projected future biodiversity change.
- This index captures changes in species range and incorporates information about species habitat preferences, habitat fragmentation and climate change.
- When used together, species distribution and habitat suitability models can estimate the combined impact of habitat loss and climate change on species, in both the past and the future.
- The overall trends in the Species Habitat Index for mammals declined by 22% from 1970 to 2010, with the greatest declines in the Caribbean (>60%).
- Other regions with declines of more than 25% were Central America, North-East Asia and North Africa.

Extinction risk: the IUCN Red List of Threatened Species

- Information on life-history traits, population and distribution size and structure, and their change over time is used which is used by Red List assessors to classify species into one of eight categories.
- Extinct, Extinct in the Wild, Critically Endangered, Endangered, Vulnerable, Near Threatened, Least Concern or Data Deficient.



- A Red List Index value of 1.0 equates to all species within a group qualifying as Least Concern. An index value of 0 equates to all species having gone Extinct.
- Currently, the Red List Index is available for five taxonomic groups in which all species have been assessed at least twice: birds, mammals, amphibians, corals and cycads.
- Current index values for all groups show declines, indicating that species are moving towards extinction more rapidly.

Composition: the Biodiversity Intactness Index (BII)

- The Biodiversity Intactness Index (BII) estimates how much of a region's originally present biodiversity remains, relative to if the region were still covered with primary vegetation and facing minimal human pressures.
- The Index ranges from 100–0% with 100 representing an undisturbed or pristine natural environment with little to no human footprint.
- The most recent global estimates suggest that the BII fell from 81.6% in 1970 to 78.6% in 2014.
- Models that focus on tropical and subtropical forest biomes, using finer-scale land-use data, suggest their BII is both lower and declining more rapidly – from 57.3% in 2001 to 54.9% in 2012.

Chapter 4 - Aiming higher: what future do we want?

Bending the curve of biodiversity loss

- Biodiversity has been described as the 'infrastructure' that supports all life on Earth.
- The natural systems and biochemical cycles that biological diversity generates allow the stable functioning of our atmosphere, oceans, forests, landscapes and waterways.
- The global community in 1992 came together and collectively agreed on the importance of the natural world and their responsibility to protect it.

The Convention on Biological Diversity (CBD) and the Aichi Targets

- Initiated - 1992 Rio Earth Summit
- First global agreement on the conservation and sustainable use of biological diversity
- Came into force in 1993
- The CBD sets overall goals and policies with general obligations; the responsibility for achieving these goals rests largely with countries themselves.

Long-term vision: “By 2050, biodiversity is valued, conserved, restored and wisely used, maintaining ecosystem services, sustaining a healthy planet and delivering benefits essential for all people.

To meet this vision the CBD, there are a set of five medium-term strategic goals with 20 targets – called the **Aichi Targets**.

Goal C - “To improve the status of biodiversity by safeguarding ecosystems, species and genetic diversity” and includes three targets.

- Target 11 concerns the global coverage of protected areas
- Target 12 is directed at the conservation of species
- Target 13 concerns the conservation of genetic diversity of cultivated plants, farmed and domesticated animals, and their wild relatives
- However, the continued decline in species shows that we have failed the natural world.

- These changes are triggered by spiraling increase in our consumption which interferes profoundly with biodiversity and all the other natural systems.
- Today world requires bold and well-defined goals and a credible set of actions to restore the abundance of nature to levels that enable both people and nature to thrive.
- Without these changes it is impossible to achieve the targets of SDG 2030s which includes mitigating climate change, adapting to climate impacts, maintaining the quality of soil, air and water, and supporting a resilient basis for the food, fuel etc.

A roadmap for 2020 to 2050

There are three necessary steps in a roadmap for the post-2020 agenda:

- Clearly specify the goal for biodiversity recovery,
- Develop a set of measurable and relevant indicators of progress,
- Agree a suite of actions that can collectively achieve the goal in the required timeframe.

Translate the aspirational vision to an ambitious goal

- Current goals of CBD aims at 2050 and are aspirational in nature but this vision is concrete and achievable enough to be the basis of the goal of a post-2020 agreement on biodiversity.
- This will require a new set of targets that aim higher and are effective beyond 2020.

Identify ways to measure progress towards the goal

- Since the current targets were set, almost a decade ago, so the second step is to identify the best metrics to measure true progress towards the chosen goal.
- Measuring progress towards biodiversity targets is very complicated. Biodiversity assessment requires multiple measures at different spatial scales and across different ecological dimensions.
- There is a need for indicators that can track three key dimensions of biodiversity necessary for the vision and the goals described here, and in the CBD and SDG targets:-
 - Changes in population abundance –Living Planet Index
 - Extinction rate on a global scale - Red List Index (RLI)
 - Changes to local biodiversity using indicators such as the Biodiversity Intactness Index (BII)

If they are to be used to support concrete global action, there is a need to improve taxonomic representativeness, integration and data coverage.

The Path Ahead

- It has been established beyond doubt that humanity's survival depends on our natural systems yet we continue to destroy the health of nature at an alarming rate.
- It is important that a new global deal for nature and people should be made – to bend the curve of biodiversity loss.
- It is important to politically escalate political relevance of nature and galvanize a cohesive movement across state and non-state actors to drive change.

A global deal for nature and people

- In 2017, scientists published a paper proposing a new 'Global Deal for Nature' as a companion to the Paris Climate Agreement.
- It talked about promoting increased habitat protection and restoration, national and eco-region scale conservation strategies, and the empowerment of indigenous peoples to protect their sovereign lands.
- Such a deal is essential in addressing the decline in natural systems to achieving the 2030 agenda for Sustainable Development and the Paris Agreement on Climate Change.

Imagining the future: Scenarios and leadership for the future we want

- WWF is collaborating with a consortium of almost 40 universities, conservation organizations and intergovernmental organizations to launch the research initiative **Bending the Curve of Biodiversity Loss**.
- The initiative will help in identifying potential win-win solutions for both nature and people.