



An Institute for Civil Services

MAINS 2019

**GIST OF REPORT
GIST OF LIVING
PLANET REPORT- 2018
AIMING HIGHER**

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GIST OF LIVING PLANET REPORT- 2018

AIMING HIGHER

Contents

1. Introduction	04
2. Why biodiversity matters.....	05
3. The threats and pressures wiping out our world.....	06
4. Biodiversity in a changing world.....	09
5. Aiming higher, what future do we want.....	10
6. The path ahead	11

1

INTRODUCTION

- Everything that has built modern human society is provided by nature and, increasingly, research demonstrates the natural world's incalculable importance to our health, wealth, food and security.
- All economic activity ultimately depends on services provided by nature, estimated to be worth around US\$125 trillion a year. Business and the finance industry are starting to question how global environmental risks will affect the macroeconomic performance of countries, sectors and financial markets, and policy-makers wonder how we will meet climate and sustainable development targets with declining nature and biodiversity.
- Exploding human consumption is the driving force behind the unprecedented planetary change we are witnessing, through the increased demand for energy, land and water. Consumption indicators provide a picture of overall resource use.
- While climate change is a growing threat, the main drivers of biodiversity decline continue to be the overexploitation of species, agriculture and land conversion. Indeed, a recent assessment found that only a quarter of land on Earth is substantively free of the impacts of human activities. This is projected to decline to just one tenth by 2050.
- Marine and freshwater ecosystems are also facing huge pressures. Almost 6 billion tonnes of fish and invertebrates have been taken from the world's oceans since 1950. Plastic pollution has been detected in all major marine environments worldwide, from shorelines and surface waters down to the deepest parts of the ocean, including the bottom of the Mariana Trench.
- Decision makers at every level need to make the right political, financial and consumer choices to achieve the vision that humanity and nature thrive in harmony on our only planet. This vision is possible with strong leadership from us all.

2

WHY BIODIVERSITY MATTERS

- Humans have evolved, grown and thrived, in nature. In fact, nature – and everything that it gives us – has been the catalyst for where we are today. Its resources have enabled people to dominate the planet complete with modern expectations, benefits and luxuries. To sustain modern human society we will continue to need the resources of nature that, throughout history, have allowed us to thrive.

THE IMPORTANCE OF NATURE TO THE WORLD'S ECONOMIES

- From the supply of raw materials, 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.
- We are living through the Great Acceleration – a unique event in the 4.5 billion-year history of our planet – with exploding human population and economic growth driving unprecedented planetary change through the increased demand for energy, land and water. This is so great that many scientists believe we are entering a new geological epoch, the Anthropocene. Yet the human benefits of the Great Acceleration have only been possible with nature. Without healthy natural systems we need to ask whether future human development is even possible.

Alarming Trends

- In the last 50 years, global average temperature has risen at 170 times the background rate.
- Ocean acidification may be occurring at a rate not seen in at least 300 million years.
- Earth is losing biodiversity at a rate seen only during mass extinctions.
- Still more change may be headed our way as people are responsible for releasing 100 billion tonnes of carbon into the Earth system every 10 years.
- It looks like warm water coral reefs – the most diverse of marine habitats – may not make it to the end of the century.
- Without colossal action to reduce emissions, the Arctic is likely to be ice-free in summer before mid-century. Researchers are concerned this could set up a dangerous feedback loop, amplifying warming.
- New research is also linking changes in the Arctic to a major shift in the jet stream that influences weather in the northern hemisphere. This can influence drought in California, deep freezes on the eastern coast of the US and across Europe, and the trajectory of hurricanes. Early analysis indicates it contributed to the unprecedented heat wave across the northern hemisphere in 2018.

3

THE THREATS AND PRESSURES WIPING OUT OUR WORLD

- Understanding that Earth's natural systems are critical in maintaining our modern human society means piecing together the biggest threats to nature so that we can better protect it. Climate change is certainly a growing threat, but today, the main drivers of biodiversity decline continues to be the overexploitation of species, agriculture and land conversion – all driven by runaway human consumption. Researchers are developing sophisticated new tracking and analytical tools to match commodities and their supply chains to specific impacts on biodiversity, and increasing the transparency around these complex relationships may help to stop biodiversity loss.
- Beyond overexploitation and agriculture, invasive species are another 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. According to the IUCN Red List data, whatever the threat category or the species group, overexploitation and agriculture are the 'big killers' with the greatest current impact on biodiversity.
- Overexploitation and ever-expanding agriculture are driven by spiralling human consumption. Over the past 50 years our Ecological Footprint – a measure of our consumption of natural resources – has increased by about 190%. Creating a more sustainable system will require major changes to production, supply and consumption activities.

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, and how this relationship has been altered over time. Through changes in technology and land management practices, biocapacity has increased about 27% in the past

50 years. But it has not kept pace with human consumption: humanity's Ecological Footprint has increased about 190% over the same time period.

- 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, fibre, timber, accommodation of roads and buildings, and sequestration of carbon dioxide from fossil fuel burning.

CHOICE & CHANGE: THE IMPACTS OF CONSUMPTION

- Direct biodiversity loss
- Disruption of habitats
- Pollution and degradation of the environment
- Disruption of ecosystem functions
- Land Degradation

VALUING FORESTS FOR PEOPLE AND NATURE

- Globally the rate of net forest loss has slowed due to reforestation and plantations; but while decreasing over time, deforestation rates are still high in tropical forests, which contain some of the highest levels of biodiversity on Earth. While throughout history people have cleared forest land for food and farming and harvested forest resources to support their livelihoods and market demand, now the pressures on these forests are more industrial and more connected with global market trends.

- Yet it is not just forest area that is being reduced by human activities; forest quality is also being affected. On a global scale, the area of minimally disturbed forests declined by 92 million hectares between 2000 and 2013, at the rate of 0.6% per year.
- WWF highlighted areas of forest most vulnerable to deforestation between 2010 and 2030. By drawing on projections in the International Institute for Applied Systems Analysis 'Living Forests Model', a major literature survey and interviews with dozens of experts around the world, the report identified 11 deforestation fronts (shown overleaf in figure 10). 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 scenario 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.
- Almost 6 billion tonnes of fish and invertebrates have been taken from the world's oceans since 1950. Now, big data and a new wave of technologies are helping to improve our understanding of what is happening in our oceans by tracking where large vessels are travelling.
- 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 midcentury. The implications of this for the planet and all of humanity are vast.
- 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, marine flowering plants that include the widely distributed genera *Zostera*, *Thalassia*, and *Posidonia*, also 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 runoff. Seagrasses have been disappearing at a rate of 110 square km per year since 1980 and that 29% of the known areal extent has disappeared since seagrass areas were initially recorded in 1879.

TRACKING THE GLOBAL FOOTPRINT OF FISHERIES

- Global Fishing Watch is harnessing vessel tracking systems, satellite data, artificial intelligence and Google's computing power to generate a clearer view of global industrial fishing activity by larger vessels, weighing 300 tonnes or more.
- By analysing the identity, speed and direction of broadcasting vessels, we can derive new intelligence on vessel behaviour and activity. Global Fishing Watch uses machine learning algorithms to determine which vessels are fishing boats, and where, when and how they are fishing.
- These groundbreaking new datasets, and the high-definition view they give of global industrial fishing activity, are increasingly being used by governments and management bodies to inform policy decisions and enforcement, and to strengthen transparent governance of marine resources in support of sustainability goals.
- Global sea catch increased from the 1950s on, peaking at 130 million tonnes in 1996. While since then it has decreased at an average rate of 1.2 million tonnes per year, we still extract over 110 million tonnes from the oceans each year.

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,

residential or commercial development, energy production and mining. For freshwater habitats, fragmentation of rivers and streams and abstraction of water are common threats.

- **SPECIES OVEREXPLOITATION:** There are both direct and indirect forms of overexploitation. Direct overexploitation refers to unsustainable hunting and poaching or harvesting, whether for subsistence or for trade. Indirect overexploitation occurs when non-target species are killed unintentionally, for example as bycatch in fisheries.
- **POLLUTION:** Pollution can directly affect a species by making the environment unsuitable for its survival (this is what happens, for example, in the case of an oil spill). It can also affect a species indirectly, by affecting food availability or reproductive performance, thus reducing population numbers over time.

- **INVASIVE SPECIES AND DISEASE:** Invasive species can compete with native species for space, food and other resources, can turn out to be a predator for native species, or spread diseases that were not previously present in the environment. Humans also transport new diseases from one area of the globe to another.
- **CLIMATE CHANGE:** As temperatures change, some species will need to adapt by shifting their range to track suitable climate. 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 (for example misaligning reproduction and the period of greater food availability in a specific habitat).

4

BIODIVERSITY IN A CHANGING WORLD

- First published 20 years ago, for two decades the Living Planet Index has tracked the state of biodiversity by measuring the population abundance of thousands of vertebrate species around the world. The latest index shows an overall decline of 60% in population sizes between 1970 and 2014.
- Current rates of species extinction are 100 to 1,000 times higher than the background rate, also known as the standard rate of extinction in Earth's history before human pressure became a prominent factor. Species population declines are especially pronounced in the tropics, with South and Central America suffering the most dramatic decline, an 89% loss compared to 1970.
- Freshwater species numbers have also declined with a focused Freshwater Index showing an 83% decline since 1970. To put these trends in a broader context, this chapter also explores three other indicators measuring changes in species distribution, extinction risk and community composition. All these results paint the same picture – that of continuing biodiversity loss.

BIODIVERSITY:

A multifaceted concept

- 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 we see today is the fruit of billions of years of evolution, shaped by natural processes and, increasingly, by the influence of humans. It forms the web of life of which we are an integral part and upon which we so fully depend. It also encompasses the variety of ecosystems such as those that occur in deserts, forests, wetlands, mountains, lakes, rivers, and agricultural landscapes. In each ecosystem, living creatures, including humans, form a community, interacting with one another and with the air, water, and soil around them."

5

AIMING HIGHER: WHAT FUTURE DO WE WANT?

- The immense changes in societies around the globe, especially since the Industrial Revolution, have brought equally immense impacts on nature. Without a dramatic move beyond 'business as usual' the current severe decline of the natural systems that support modern societies will continue – with serious consequences for nature and people.
- With two key global policy processes underway there is currently a unique window of opportunity to reverse the trend – and bend the curve of biodiversity loss. Lessons can be learned from progress towards solving other critical global issues, like climate change, and everyone – governments, business, finance, research, civil society and individuals – has a part to play.

A unique opportunity

- Between now and the end of 2020, there is a unique window of opportunity to shape a positive vision for nature and people. The Convention on Biological Diversity, is in the process of setting new goals and targets for the future. These, together with the Sustainable Development Goals, will become the key international frameworks for protecting nature and enhancing biodiversity.
- Existing CBD goals and targets are to be achieved by 2020. The 196 countries that are parties to the Convention are currently working on a post-2020 strategic plan with new goals and targets. This provides a vital opportunity to create a bold and achievable plan of action. If the loss of biodiversity is to be halted and reversed, this opportunity must be seized.

- Although the CBD has a vision for 2050, currently there are no biodiversity policy commitments beyond 2030. However, because of the nature of the challenge we face, it's critical to consider a longer timescale. When wildlife populations and habitats are damaged, or lost, some kinds of recovery can take decades. Also, the intensity of some threats, such as climate change, will increase after 2030.
- Climate change targets are routinely set for 2050 and 2080, recognizing the long-term dynamics of the climate system. Species and ecosystems also demonstrate dynamics that may play out over decades to centuries, hence longer-term goals, supported by policy commitments, are also crucial.
- If we aim higher and move away from business as usual, implementing approaches designed to restore nature rather than simply tracking a managed decline, then we can achieve a healthier, more sustainable world that is good for people as well as our natural systems.

A Roadmap for 2020 to 2050

- **Step 1:** Translate the aspirational vision to an ambitious goal
- **Step 2:** Identify ways to measure progress towards the goal
- **Step 3:** Identify actions to deliver the required transformation in global biodiversity

6

THE PATH AHEAD

- The evidence becomes stronger every day that humanity's survival depends on our natural systems, yet we continue to destroy the health of nature at an alarming rate. It's clear that efforts to stem the loss of biodiversity have not worked and business as usual will amount to, at best, a continued, managed decline. That's why we, along with conservation and science colleagues around the world, are calling for the most ambitious international agreement yet – a new global deal for nature and people – to bend the curve of biodiversity loss.
- Decision-makers at every level from individuals to communities, countries and companies need to make the right political, financial and consumer choices to realize the vision that humanity and nature can thrive. This vision is possible with strong leadership from us all.

Way Ahead

- **Reframing the debate:** Between now and 2020, a year when global leaders will make key

decisions on biodiversity, climate and sustainable development, we have a unique opportunity to build momentum towards the most ambitious deal yet – one that provides a blueprint for biodiversity and for people to 2050 and beyond.

- **A global deal for nature and people:** Bending the curve of biodiversity loss – with a new framework for biodiversity that can start to reverse the loss of nature by 2030 – needs to be at its core. Such a deal is essential not just for nature but for people too, because addressing the decline in natural systems is key to achieving the 2030 agenda for Sustainable Development and the Paris Agreement on Climate Change.
- **Scenarios and leadership for the future we want:** Models and scenarios can assist in mapping the best path ahead. This critical work will explicitly include biodiversity in future systems modelling, helping us to identify potential win-win solutions for both nature and people.
