Climate and Biodiversity Crises: Threats to Human and Animal Health in Belgium and Beyond

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Biodiversity Loss and Climate Change: What Are They?

Climate Change: a change of climate which is attributed directly or indirectly to human activity that alters the composition of the global atmosphere and which is in addition to natural climate variability observed over comparable time periods.

Main Drivers:
Burning fossil fuels
Deforestation
Industrial processes
Agricultural emissions

Biodiversity loss: loss of life on Earth at various levels, ranging from reductions in the genetic diversity to the collapse of entire ecosystems.

Main Drivers:
Habitat destruction
Pollution
Overexploitation of resources
Invasive species
Climate change

Climate change, leads to global warming, extreme weather events, and rising sea levels, all of which threaten ecosystems and human well-being.

Biodiversity loss, undermines the resilience of ecosystems that provide essential services such as clean air, water, and food, crucial for human health.

Pollution contaminates natural resources, harms wildlife, and poses significant health risks to humans.

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The biosphere upon which humanity depends, has been deeply reconfigured by human activities

75%

of the land area has been significantly altered, negatively impacting the well-being of 3.2 billion people

66%

of the ocean area is experiencing increasing cumulative impacts only 3% of the oceans is unaffected by human activities

>85%

of wetland area has been lost

90%

of land is projected to be significantly altered, by 2050

1 million

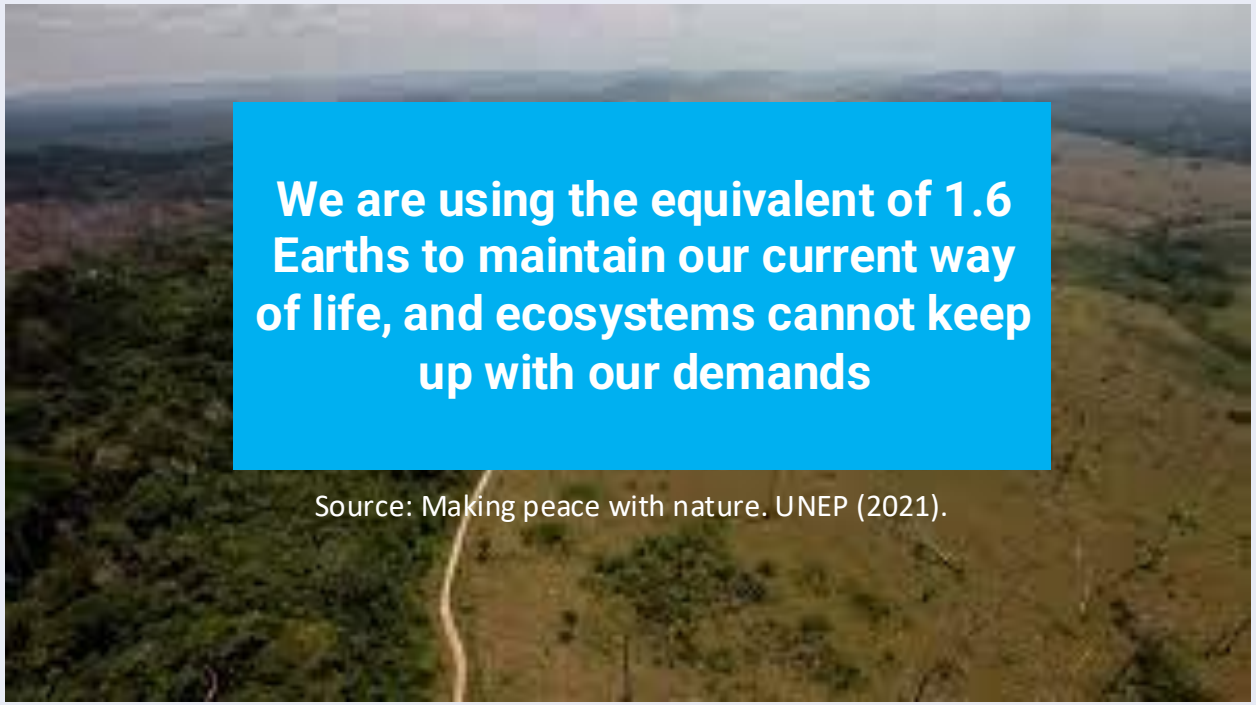
species (500,000 plants and animals and 500,000 insects) are at risk of extinction assuming a total of 8.1 million species (2.6 million plants and animal and 5 million insects)

The Triple Planetary crisis: **Biodiversity Loss**

- **Overexploitation of natural resources**
  - 100 billion tons of raw material p/a
  - 10 million hectares of forests are destroyed p/a
  - Expansion of aquaculture is to reach 96 million tonnes in 2023

- Population has doubled in the past 50 years. **People & livestock ~ 96%** of the total biomass of mammals on earth.

- **One million of 8 million** species of plants & animals threatened by extinction and rising



Source: Making peace with nature. UNEP (2021).

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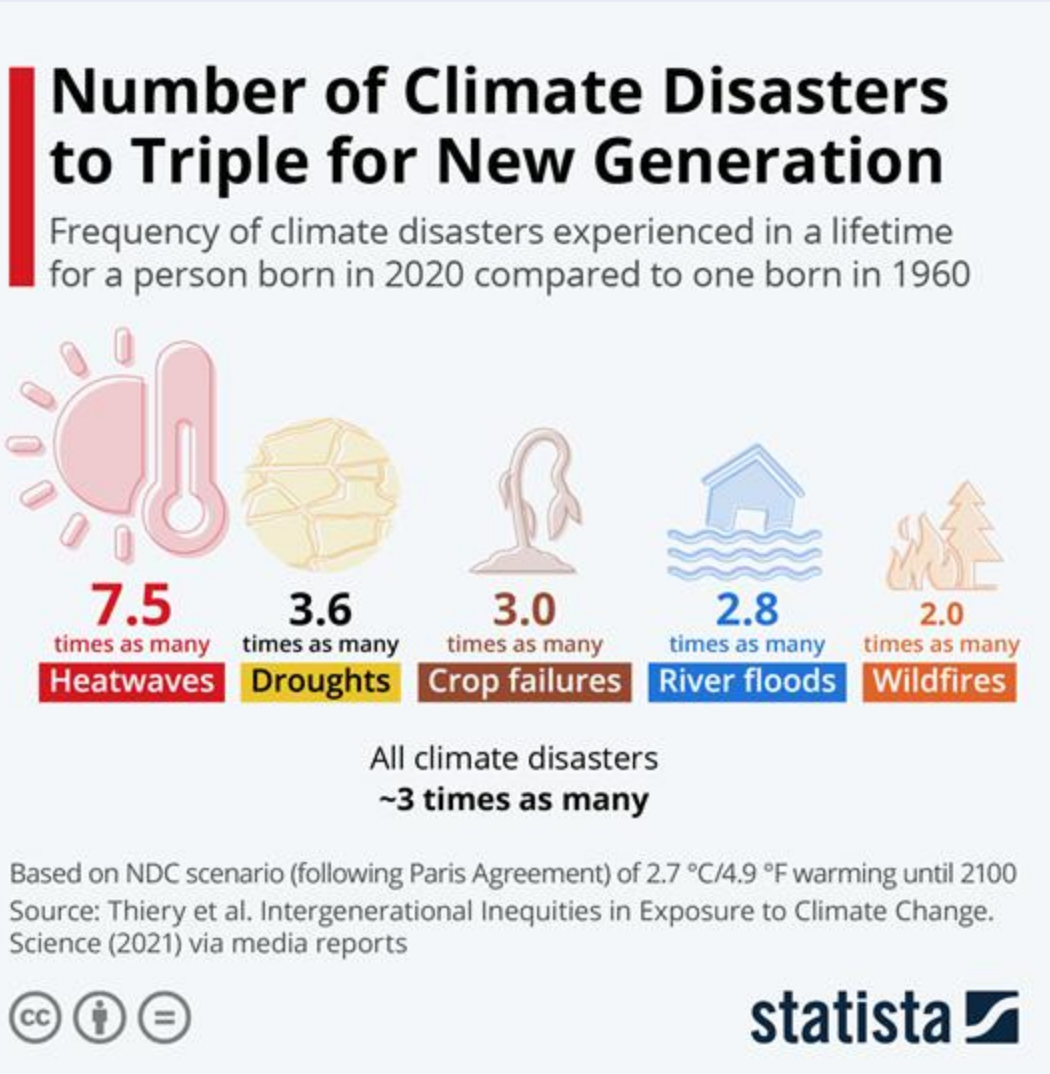
The Triple Planetary crisis: **Climate Change**

- shifts in climate zones
- changes in precipitation patterns
- melting of ice sheets and glaciers
- more frequent and intense extreme weather events.



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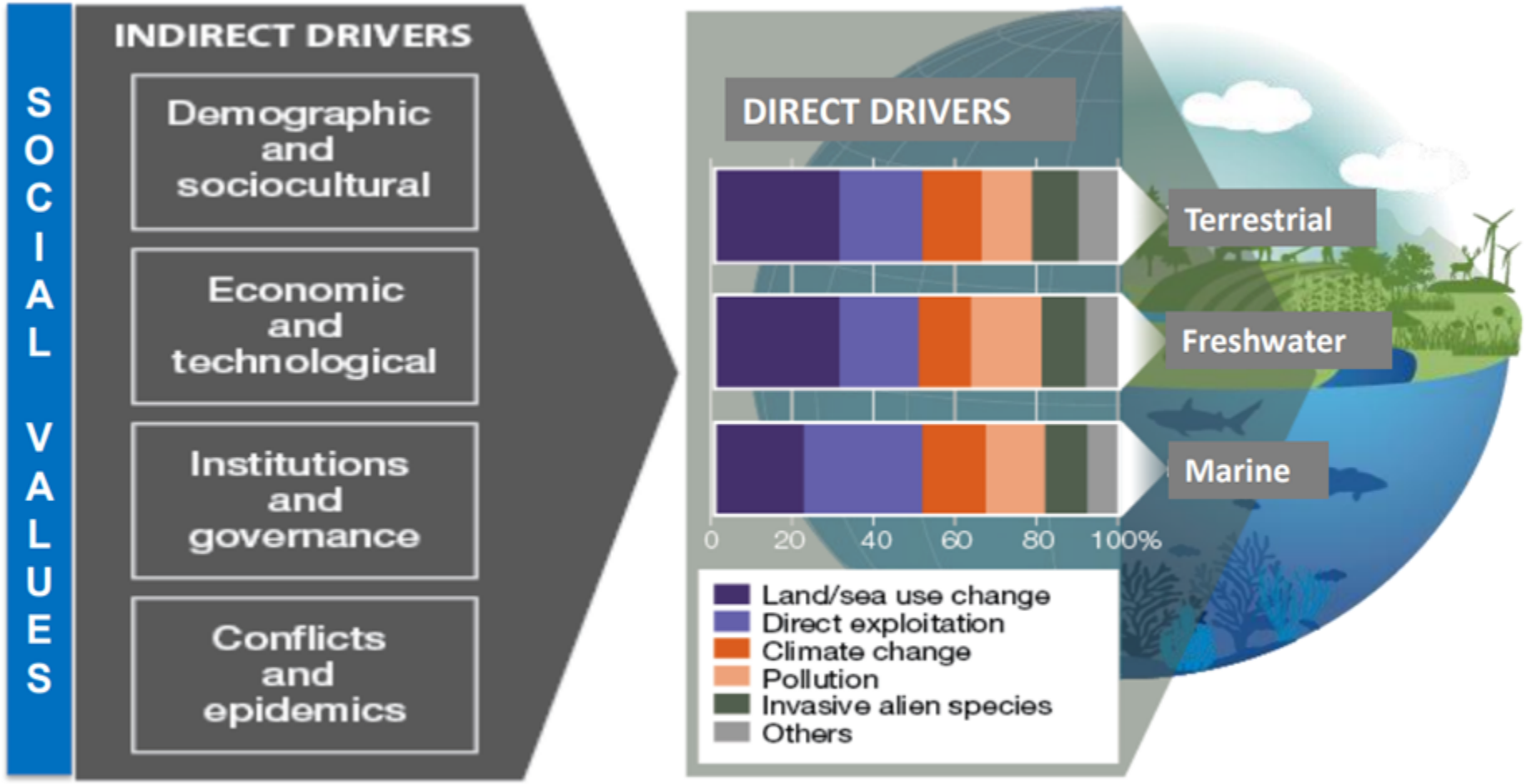
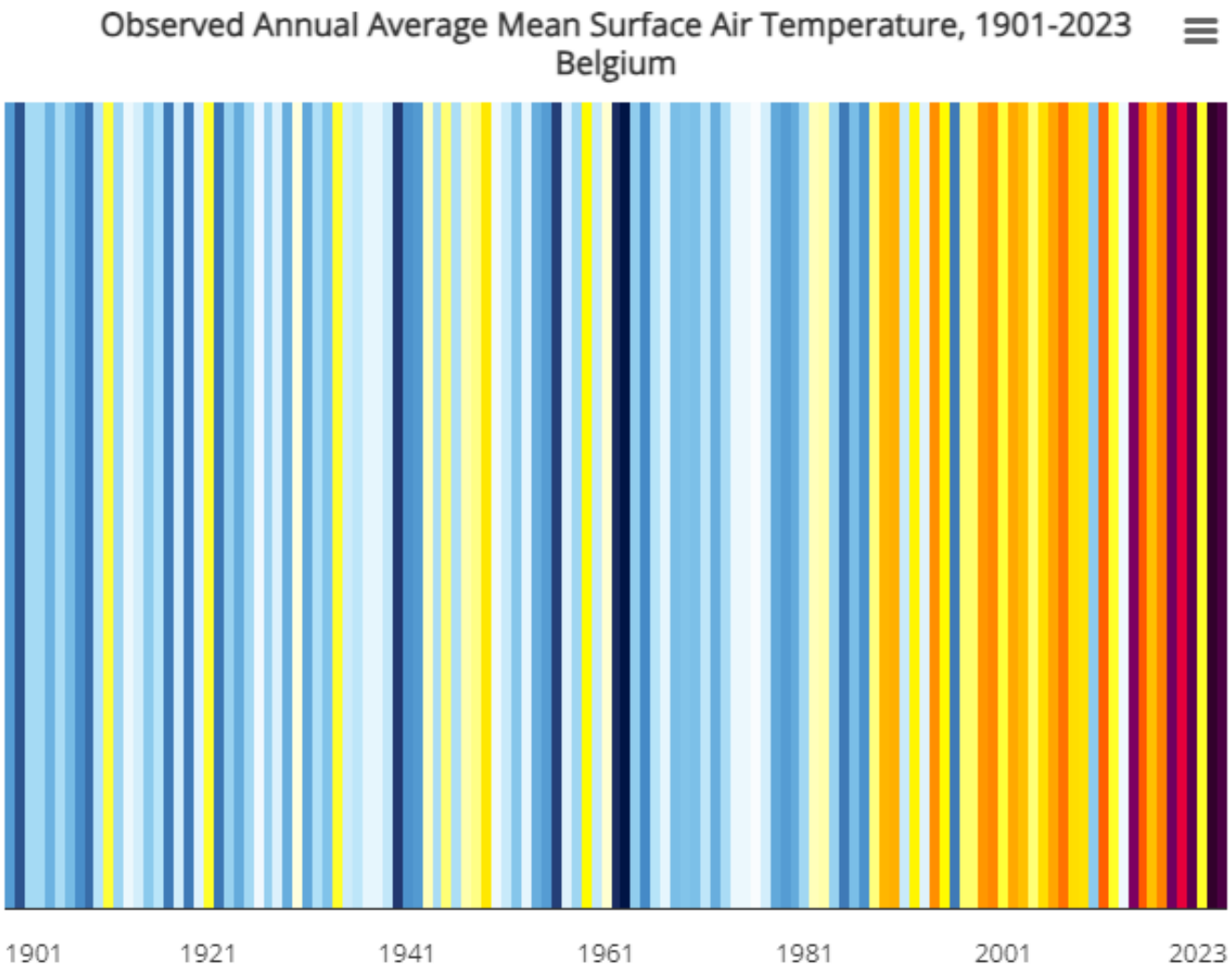
Direct drivers of change have accelerated during the past 50 years to levels unprecedented in human history



Underpinning the proximate causes of deterioration in nature are the root causes, or indirect drivers of change, e.g., economic growth, population growth, trade.

Belgium – Climate change



- **Temperature & Precipitation Trends**:
  - Average temperature rose by 2°C (1830-2010), with more extreme heat events.
  - Increased winter precipitation and more frequent extreme events, with projections showing continued changes, escalating flooding risks.

- **National climate plans and objectives**

Updated NDC (18/12/2020) - NDC to meet -55% EU27 target

1. National energy and climate plan 2021-2030
2. Interfederal energy pact (2017)
3. National climate change adaptation strategy

Climate action progress report:

- In 2022, GHG emissions in Belgium were 106.5 MtCO2-eq, 4.0% lower compared to 2021.
- Net GHG emissions (i.e. including LULUCF) in 2022 were 25.7% lower than 1990 levels.
- By 2050, net GHG emissions in Belgium are expected to be 5.2 tonnes per capita

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Belgium – Biodiversity loss

- **Habitat Conservation**:
  - 9% of Belgian habitats have a **favourable** conservation status, while 73% are in **bad** condition, 17% **inadequate**, and 1% **unknown**.
- **Species Conservation**:
  - 43% of species have a **bad** status, 26% an **inadequate** status, and 19% a **favourable** status. For 12%, data is insufficient.
- **Pressures on Biodiversity**:
  - Key threats include **land conversion**, **pollution**, and **overexploitation** of natural resources, primarily for food, driving species decline and extinction.

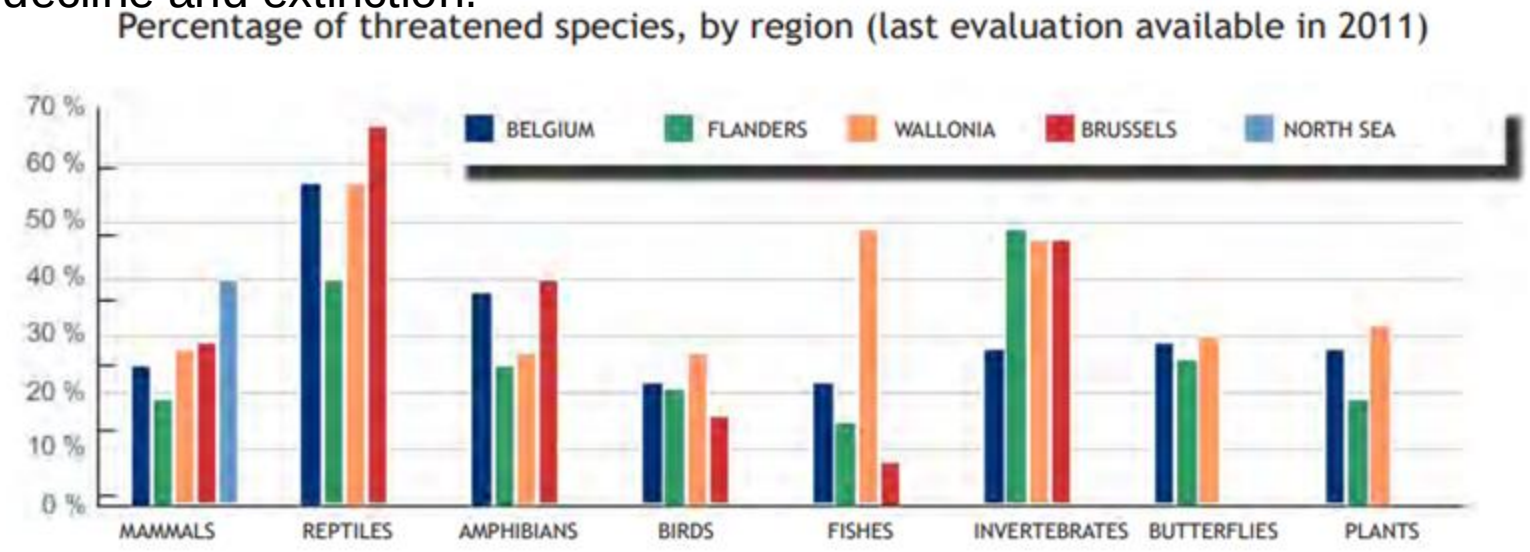

Figure 2. Species status in Belgium, Flanders, Wallonia, Brussels and the Belgian part of the North Sea in 2011. (Source: Statistics Belgium - http://statbel.fgov.be/fr/statistiques/chiffres/environnement/diversite_biologique/).

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Climate change – health implications

- Alters habitats, forcing wildlife closer to human populations, increasing the risk of **zoonotic disease spillover**. Changes in temperature and precipitation patterns affect the distribution and behavior of vectors (e.g., mosquitoes, ticks), leading to the spread of vector-borne zoonotic diseases.
- Increases the frequency and intensity of **extreme weather events**, disrupting ecosystems and also contributing to **NCDs**.
- **Air pollution** from wildfires, rising ozone levels, and increased particulate matter worsen respiratory conditions like asthma and contribute to **cardiovascular illnesses**.
- Causes **shifts in migration patterns** of wildlife.
- Altered weather patterns disrupt agriculture, leading to malnutrition and hunger, and reduce access to clean water, increasing waterborne diseases like cholera.
- Rising global temperatures cause **heat** stress, dehydration, and worsened conditions for those with pre-existing health issues.

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Biodiversity Loss – health implications

- **Reduces natural barriers** that prevent the transmission of pathogens from animals to humans.
- **Decreases ecosystem resilience**, leading to higher vulnerability of remaining species, including humans, to a wide range of diseases.
- **Eliminates predator species** that control populations of disease-carrying animals, such as rodents, increasing disease transmission risk.
- Reduced diversity of crops and pollinators threatens **global food supplies**, leading to malnutrition and food insecurity.
- Many modern medicines derive from natural sources; biodiversity loss **reduces the potential for discovering new treatments.**

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Societal Implications of Loss of Biodiversity and Climate Change

While each of these issues is an environmental issue, they are also

Development issues affecting poverty, food and energy security and human health

Economic issues - Climate change incurs significant economic costs. Biodiversity usually has no market price but has economic and social value

Security issues - these issues can lead to local conflict

Equity/ethical issues - industrialized countries have largely caused the problems - developing countries and poor people are most vulnerable

Moral issues - we humans have no right to destroy the environment

These issues are both inter-and intra-generational and in each case the problem gets more serious over time

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Nexus

- **Biodiversity loss and climate change** are interconnected, worsening human health and well-being.

- **Unsustainable consumption, land-use change, and economic activities** have worsened biodiversity loss, affecting ecosystems, water, food security, and contributing to climate change.

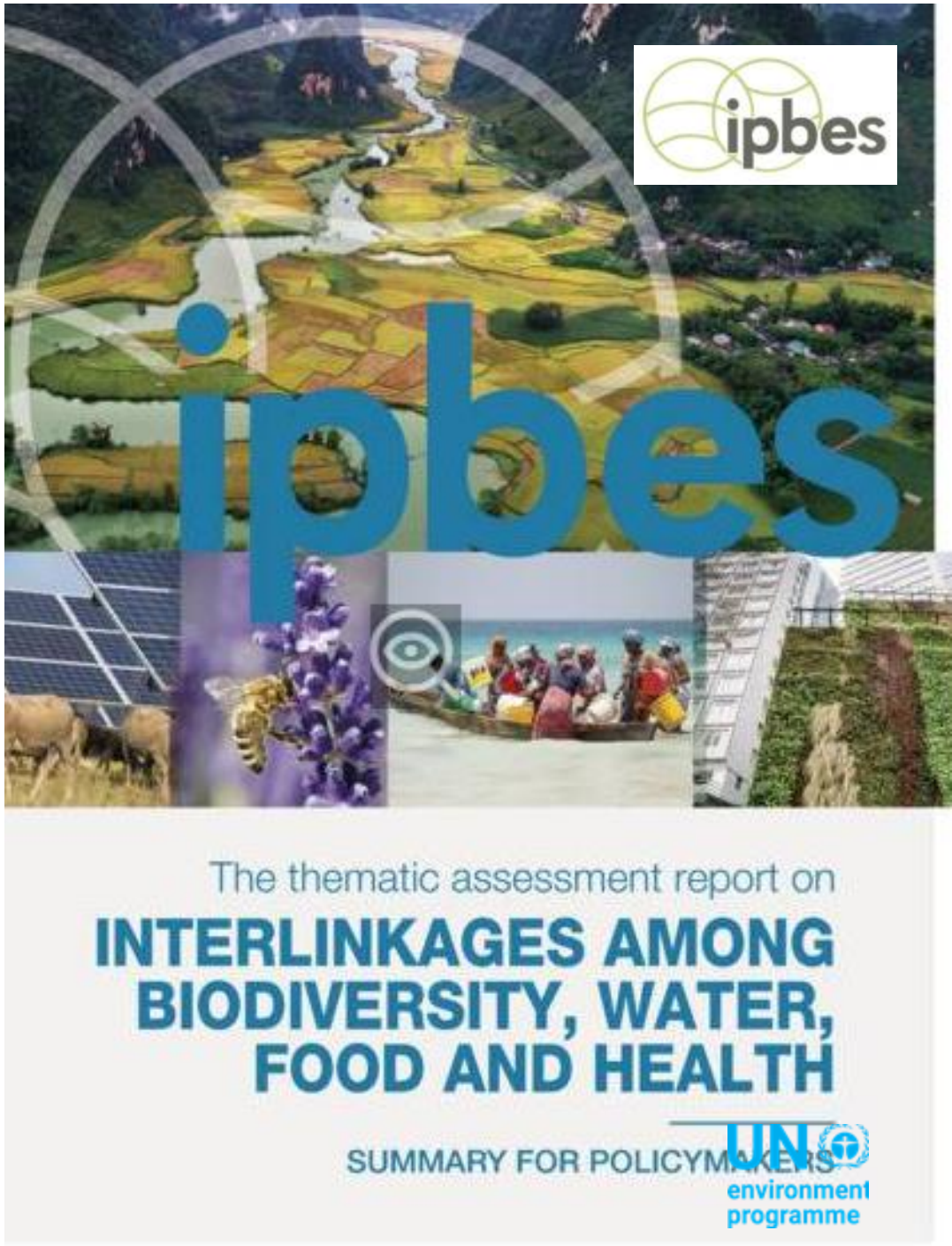
- **Short-term profit-driven decisions** harm biodiversity and vulnerable populations.

- **Current trends** will worsen biodiversity loss, water scarcity, food insecurity, health issues, and climate change.

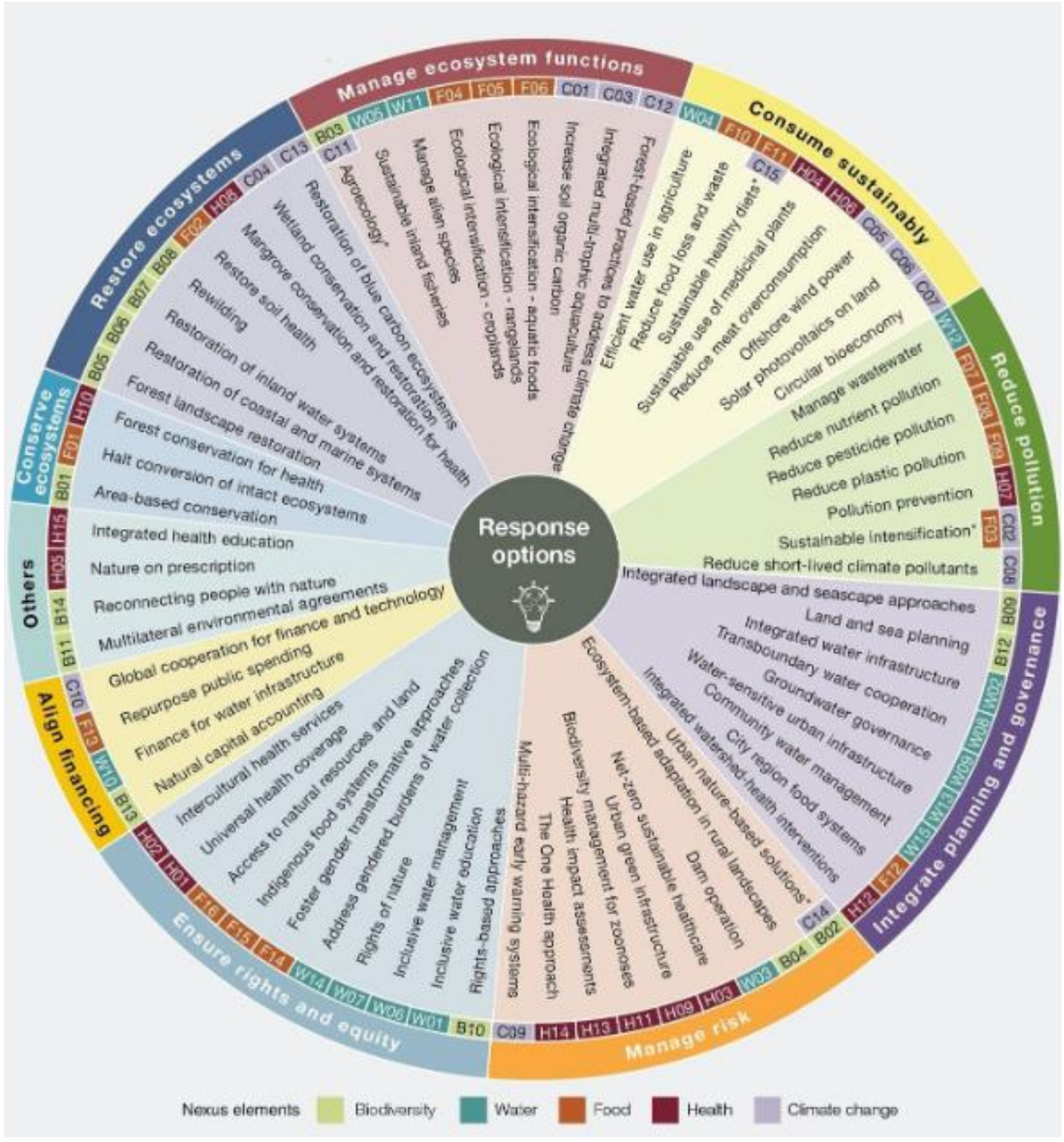
- **Single-focused solutions** risk trade-offs, undermining progress.

- **Integrated approaches** addressing synergies between biodiversity, water, food, health, and climate support global goals like the **SDGs**.

- **Siloed policies** hinder broader progress.



Nexus – Response options



- **Low-cost response options** benefit biodiversity, water, food, health, and climate when scaled effectively.
- **Synergies in action**: Bundling or sequencing options enhances effectiveness.
- **Ecosystem preservation**: Protecting/restoring ecosystems supports biodiversity and multiple nexus elements.
- **Integrated planning**: Landscape/seascape approaches address complex sustainability challenges.
- **Sustainable consumption** reduces pressures and mitigates climate change.
- **Pollution reduction** benefits biodiversity, water, and health.
- **Policy alignment**: Advances SDGs, Kunming-Montreal Framework, and Paris Agreement goals.
- **Financial needs**: Broader reforms amplify the impact of investments in response options

Nexus - Funding

- **Current Financial Systems**
  - Allocate 35 times more to activities damaging biodiversity than supporting it.
  - Private investments incentivized by subsidies and enabling environments that ignore negative externalities.
  - Illegal financial flows harming biodiversity exceed positive investments.
- **Economic Reforms Needed**
  - Tools and actions available to integrate nexus approaches into financial decision-making.
  - Alignment of economic and financial systems with sustainable development requires significant transformations.
  - Ensuring affordable finance for developing countries is key.
- **Synergies and Gaps**
  - Some synergies exist (e.g., water funds, sustainable agricultural invetments).
  - Combined climate and biodiversity finance remains limited, mainly focusing on nature-based climate solutions.

Nexus – Governance

- **Transforming Governance**: Shift from siloed to integrated, inclusive, adaptive approaches for nexus challenges.
- **Nexus Governance Features**:
  - Integrative, transdisciplinary problem-solving.
  - Inclusive engagement and equity focus.
  - Adaptive and experimental strategies for scaling solutions.
- **Scaling Mechanisms**:
  - Localize adaptive solutions.
  - Institutionalize policies.
  - Reshape unsustainable worldviews.
- **Action Road Maps**: Tools to align governance with SDGs, Kunming-Montreal Framework, and Paris Agreement.
- **Urgent Economic Reforms**: Realign incentives to channel resources toward biodiversity and equitable transitions.

Nexus – global policy frameworks

Thank you!

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