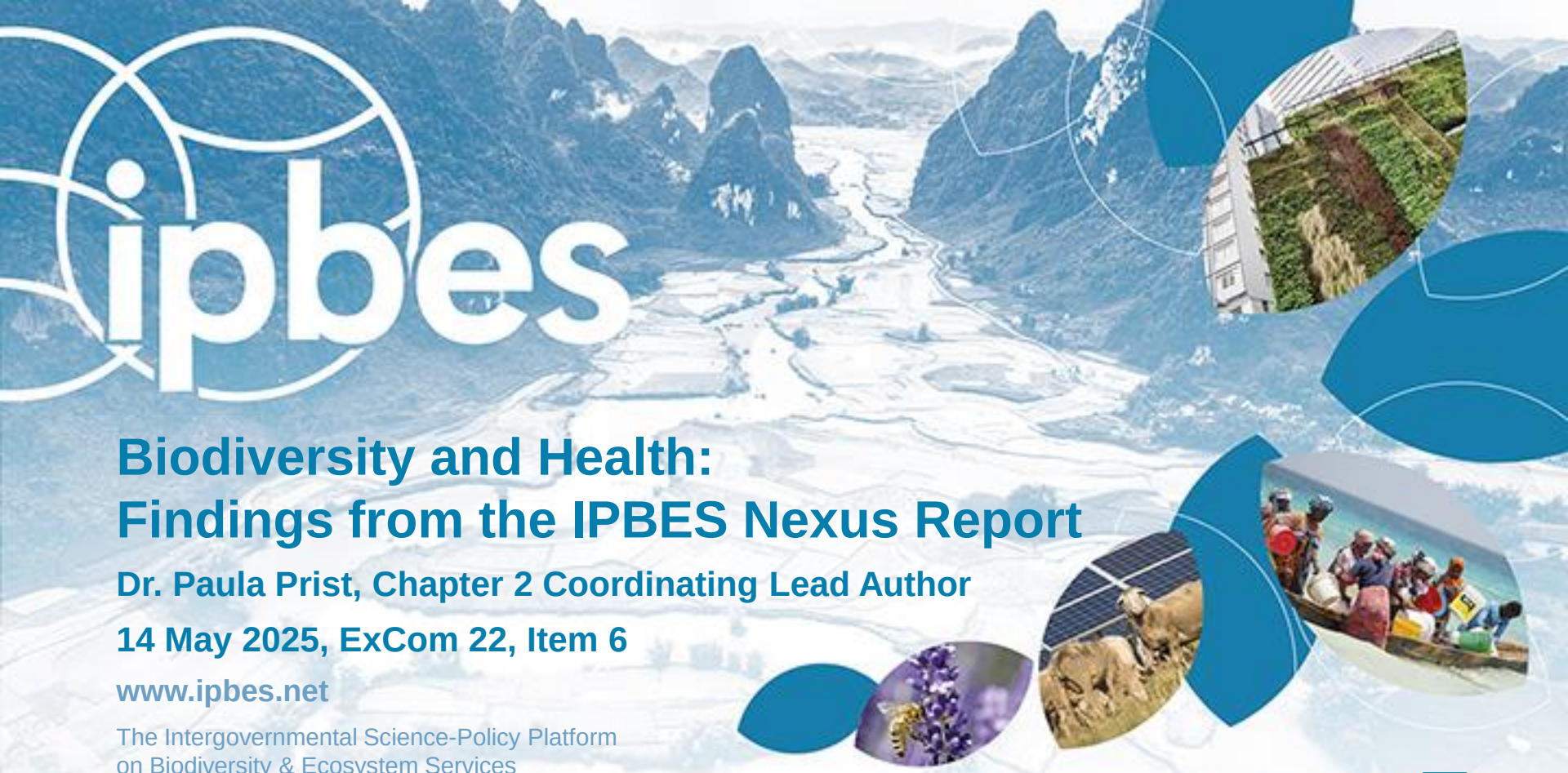


Biodiversity and Health: Findings from the IPBES Nexus Report

Dr. Paula Prist, Chapter 2 Coordinating Lead Author

14 May 2025, ExCom 22, Item 6

www.ipbes.net

The Intergovernmental Science-Policy Platform on Biodiversity & Ecosystem Services

#NexusAssessment

UN environment programme

unesco

Food and Agriculture Organization of the United Nations

UNDP

Global crises are interconnected

- The **global crises** of biodiversity loss, water and food insecurity, health risks and climate change are **interconnected – our responses to address them are not**
- Theses crises interact and exacerbate each other in ways that make **separate efforts** to address them **ineffective** and **counterproductive**

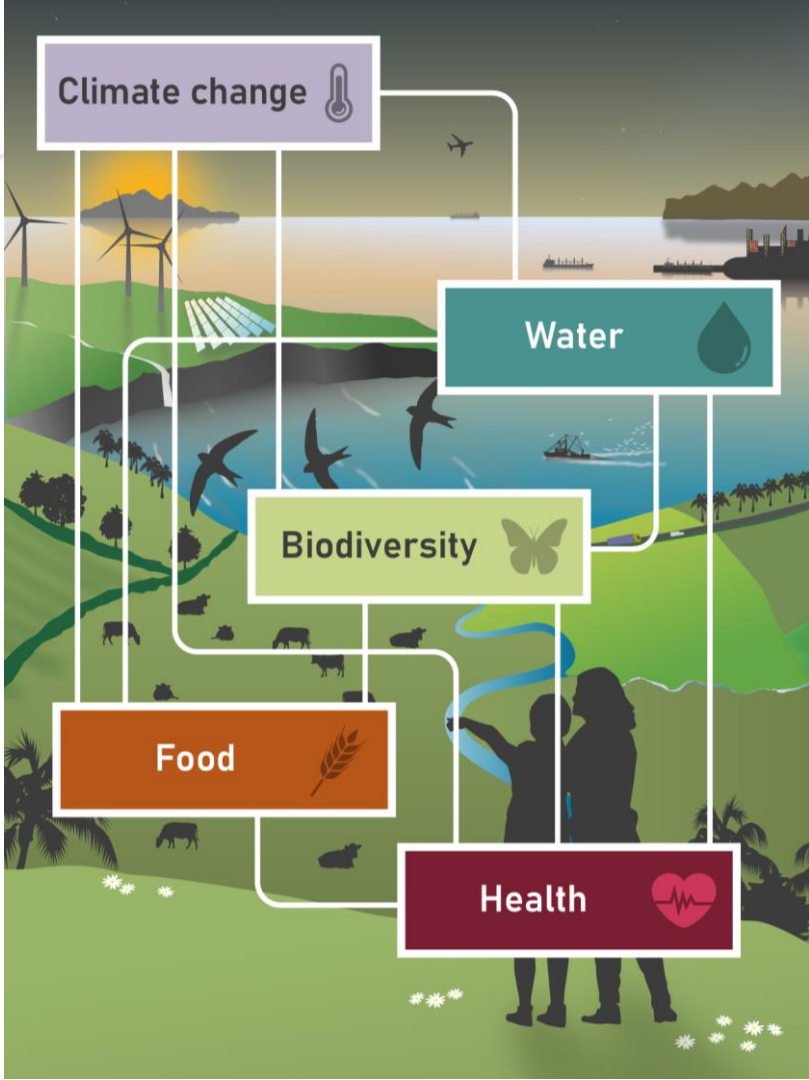
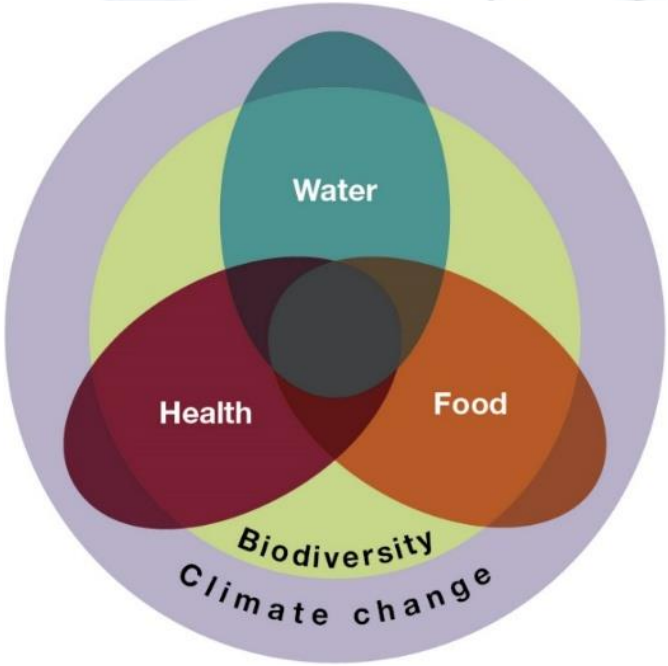


Figure SPM.1

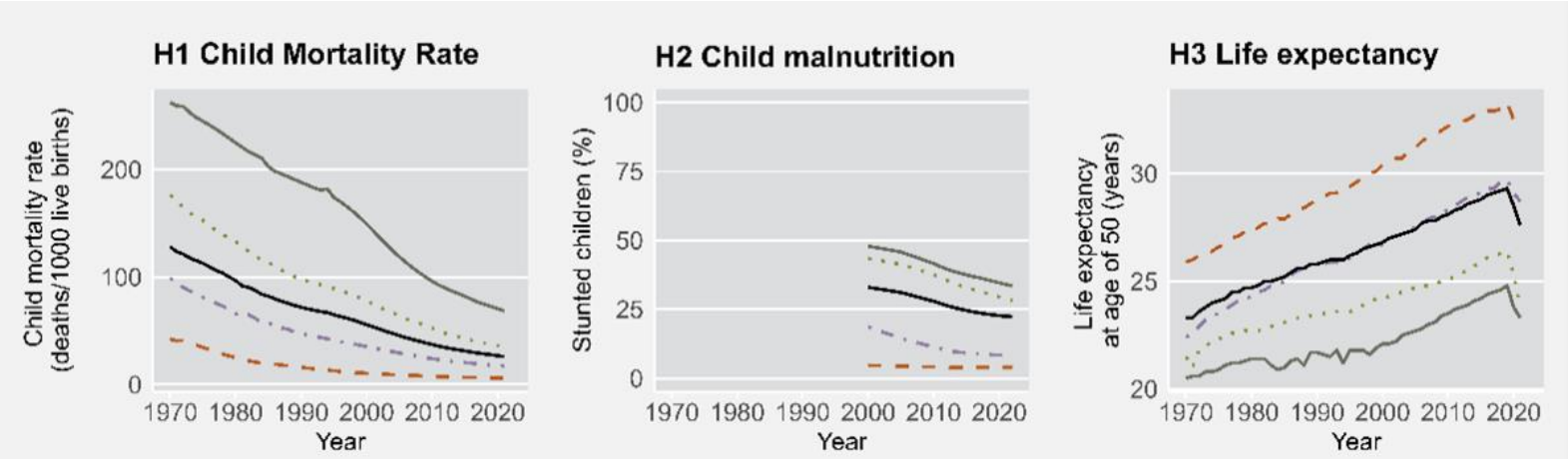
Each of these global crises is linked to a nexus element

- There are **five nexus elements**:
  - Biodiversity
  - Water
  - Food
  - Health
  - Climate change
- The elements, including their social, economic and environmental components:
  - **Interact** across ecosystems, geographic regions and scales;
  - **Influence** each other (interlinkages) and
  - **Depend** on each other to function (interdependencies) – a change in one element may impact another element
- These interactions, interlinkages and dependencies **are not well understood**; thus, decisions addressing the crises and nexus elements are taken in isolation – a **siloed approach**



Past and current trends in health

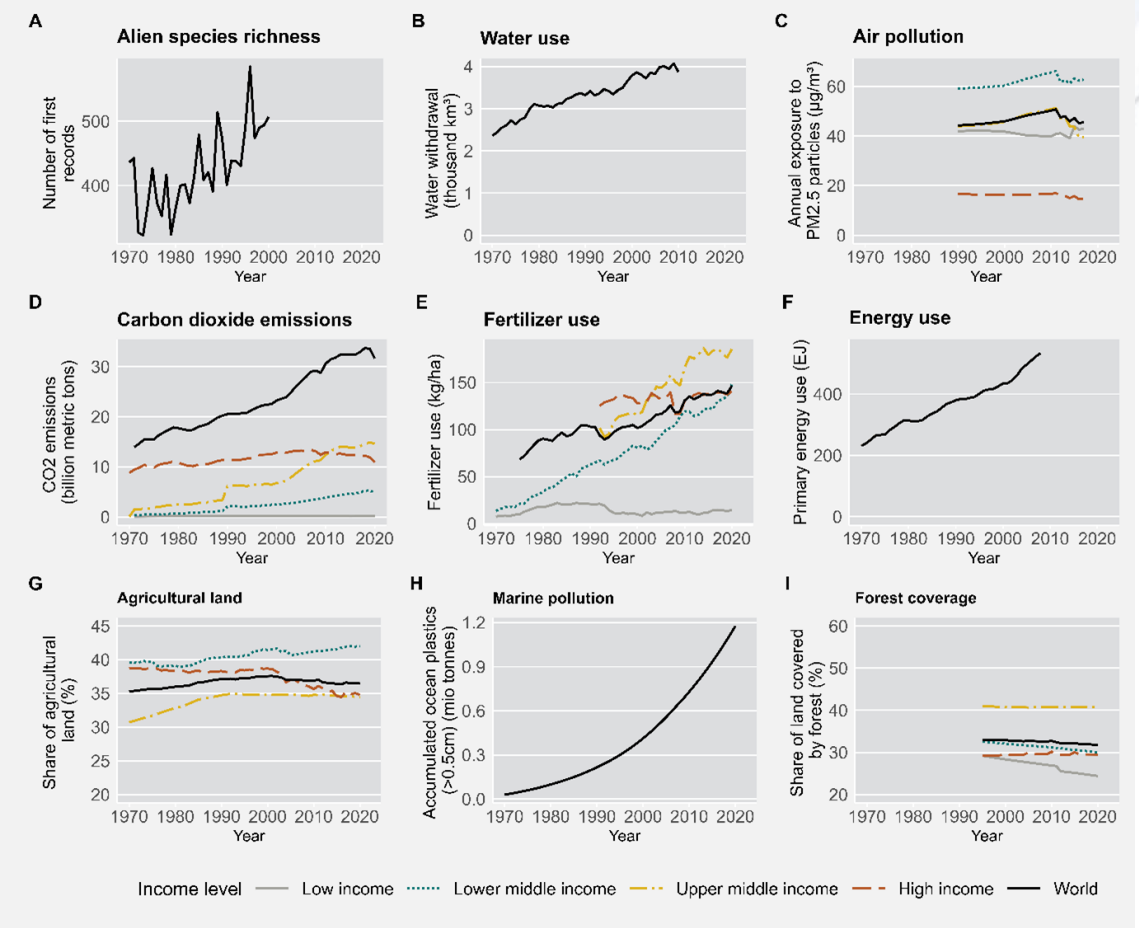
- People are **living longer**: mortality rates, malnutrition and life expectancy
- Prevalence of **non-infectious chronic diseases has increased**:
  - Globally, infectious diseases account for approximately 16% of all deaths and 44% of deaths in low-resource countries
- **Diabetes and obesity have escalated** in recent decades
- **Mental health conditions** have also **significantly increased** globally



Chapter 2, Figure 2.13

Drivers of biodiversity loss

- **Drivers of biodiversity loss also affect human health**
  - Land- and sea-use change
  - Unsustainable exploitation
  - Climate change
  - Pollution
  - Invasive alien species



Chapter 2, Figure 2.4

Drivers of biodiversity loss

- **Land- and sea-use change and unsustainable exploitation**
    - Driver of infectious disease emergence
- **Pollution**
    - Air pollution - estimated 9 million premature deaths in 2019 – 16% of all deaths worldwide that year


Photo by Paula Prist

Drivers of biodiversity loss

- **Climate change**
  - Direct impacts due to **heat events** and **extreme events** such as floods and wildfires
  - Direct mental health impacts – **stress, anxiety**
  - Indirect impacts – increases of infectious disease

- **Invasive alien species (IAS)**
  - **85% of IAS negatively affect human well-being**, ranging from being vectors for infectious zoonotic diseases to altering cultural landscapes

Photo by Fachy Marin on Unsplash

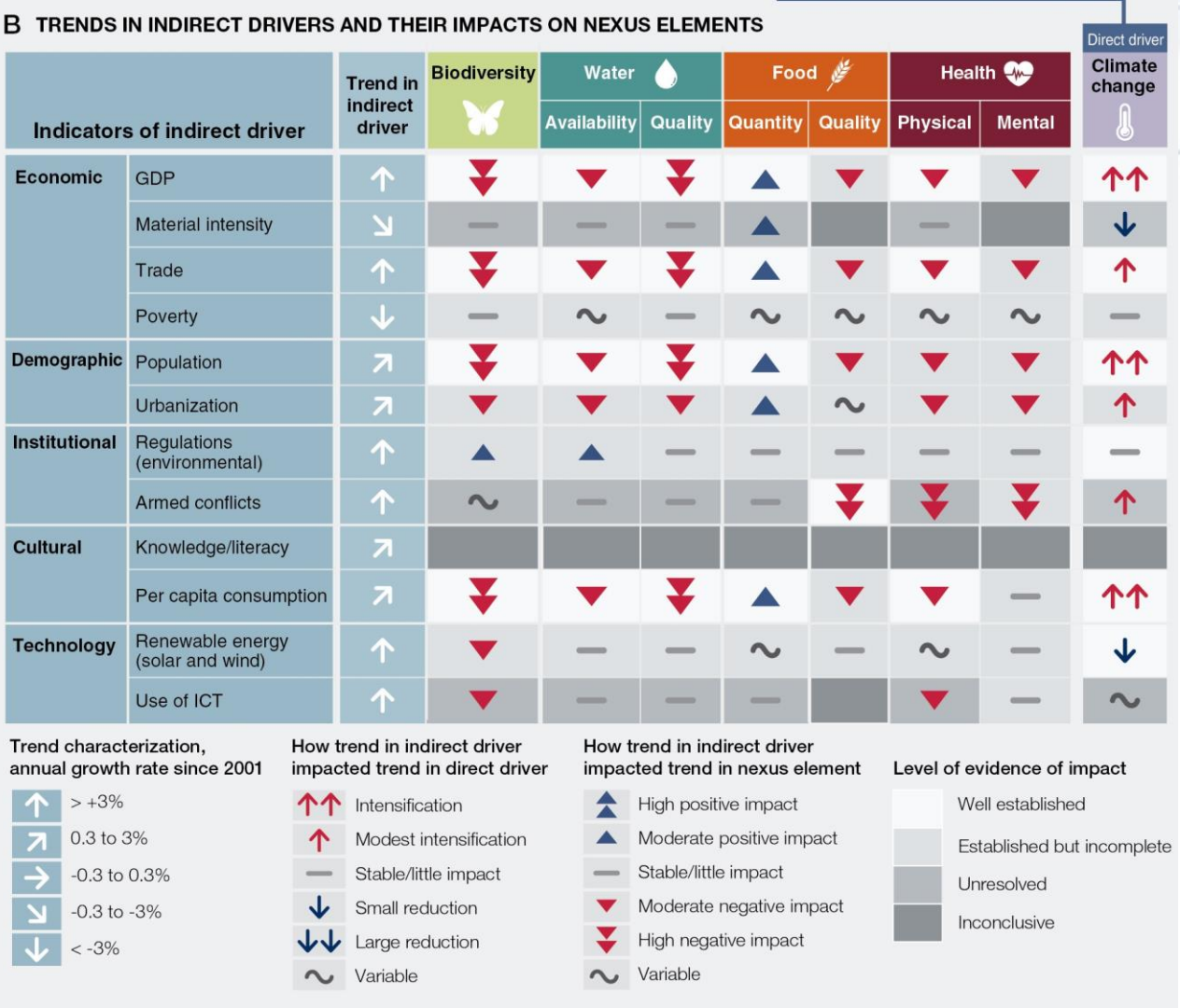
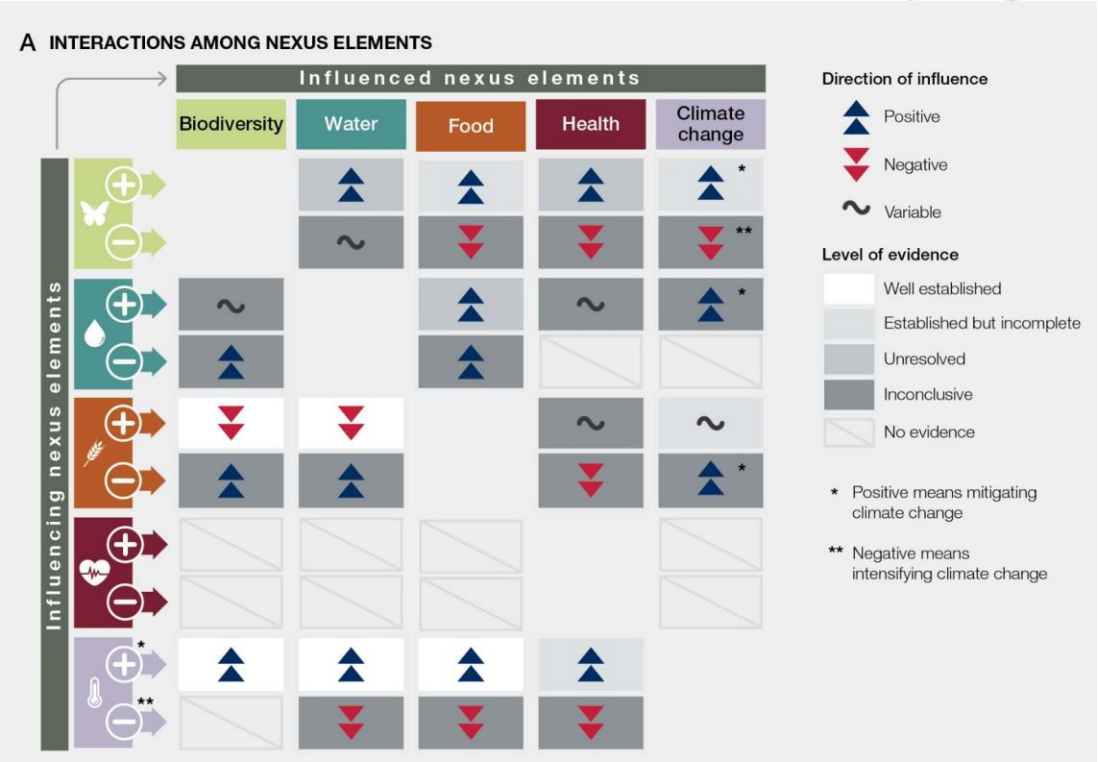

B TRENDS IN INDIRECT DRIVERS AND THEIR IMPACTS ON NEXUS ELEMENTS
Indicators of indirect driver
Trend in indirect driver
Biodiversity
Water
Availability
Quality
Food
Quantity
Quality
Health
Physical
Mental
Direct driver
Climate change
Economic
GDP
Material intensity
Trade
Poverty
Demographic
Population
Urbanization
Institutional
Regulations (environmental)
Armed conflicts
Cultural
Knowledge/literacy
Per capita consumption
Technology
Renewable energy (solar and wind)
Use of ICT
Trend characterization, annual growth rate since 2001
> +3%
0.3 to 3%
-0.3 to 0.3%
-0.3 to -3%
< -3%
How trend in indirect driver impacted trend in direct driver
Intensification
Modest intensification
Stable/little impact
Small reduction
Large reduction
Variable
How trend in indirect driver impacted trend in nexus element
High positive impact
Moderate positive impact
Stable/little impact
Moderate negative impact
High negative impact
Variable
Level of evidence of impact
Well established
Established but incomplete
Unresolved
Inconclusive

Figure SPM.3

Element connections and impacts

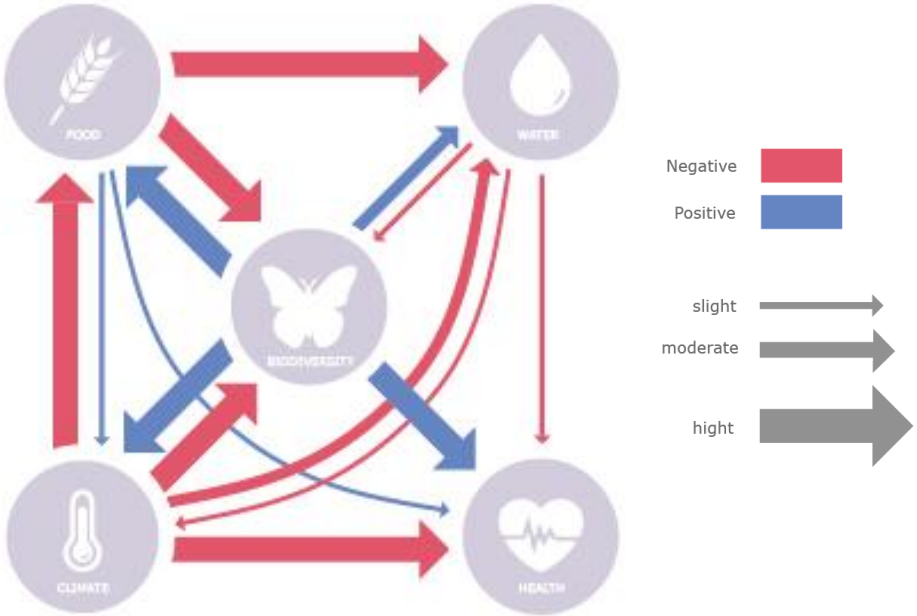


Overall impact of a nexus element on the rest of the nexus

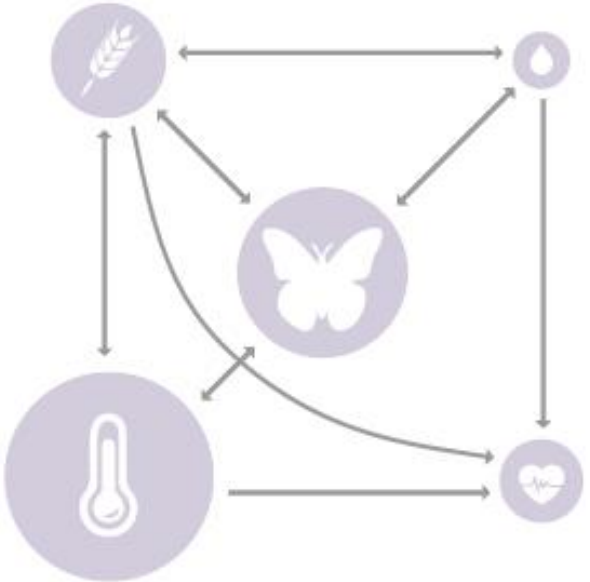
Figure SPM.4

Element connections and impacts

Overall connections found between nexus elements



Overall impact of a nexus element on the rest of the nexus



Chapter 2, Figure 2.20

Element connections and impacts – Indigenous peoples

Biodiversity-water-food-health-climate change nexus – Tharu communities, Nepal

- **Conservation** and **sustainable use and management** of forest ecosystems and agroecosystems, including the use of a variety of plant and animal species
    - 63 plant species used for medicinal purposes
- Nature contributes to **individual and community health and well-being** (physical, mental, spiritual)
- **Socio-ecological resilience** to climate change and shocks
- Tharu-nature interactions threatened by competition for resource use and **loss of traditional knowledge**

Tharu community rice farming near Chitwan National Park

Tharu village near Chitwan National Park

Chapter 2, Box 2.10

Future scenarios

If **current trends continue** there are **substantial negative outcomes** for biodiversity, water quality and some dimensions of health while exacerbating climate change

A PROJECTED FUTURE IMPACTS ON THE NEXUS ELEMENTS

Nexus archetype	Nexus element: Biodiversity	Water	Food	Health	Climate
1. Nature-oriented nexus	▲▲▲	▲▲	▲	▲	▲▲
2. Balanced nexus	▲	▲	▲▲	▲▲	▲
3. Conservation first	▲▲	~	▼▼	~	▲
4. Climate first	▼	~	▼▼	▲	▲▲
5. Food first	▼▼	▼	▲▲	▲	▼▼
6. Nature overexploitation	▼▼	~	▼▼	▼	▼▼

Impacts on each nexus element under each nexus archetype

- ▲▲▲ Highly positive
- ▲▲ Moderately positive
- ▲ Slightly positive
- ~ Variable
- ▼ Slightly negative
- ▼▼ Moderately negative
- ▼▼ Highly negative

Scenarios with nexus-wide benefits

- Effective conservation and restoration
- Sustainable management of nature resources
- Sustainable healthy diets
- Pollution reduction
- Climate change mitigation and adaptation

Figure SPM.5

Nexus response options

- **Nexus response options** are **actions or policies** that support **effective, sustainable, synergistic governance and management** of the **nexus elements and their interlinkages**
- The options assessed represent a **range of solutions** available to **actors in multiple sectors**, including Indigenous Peoples and local communities
- The options can be applied at different **spatial** and **temporal scales** and in different **ecological, social, political, and economic contexts**
- Over **70 response options** are assessed in the Chapter 5 sector-based subchapters of the report

Figure SPM.10

Response option impacts on the nexus elements

Many health response options benefit multiple nexus elements and many response options benefit the health element

Nexus elements

- **Biodiversity**
- **Water**
- **Food**
- **Health**
- **Climate change**

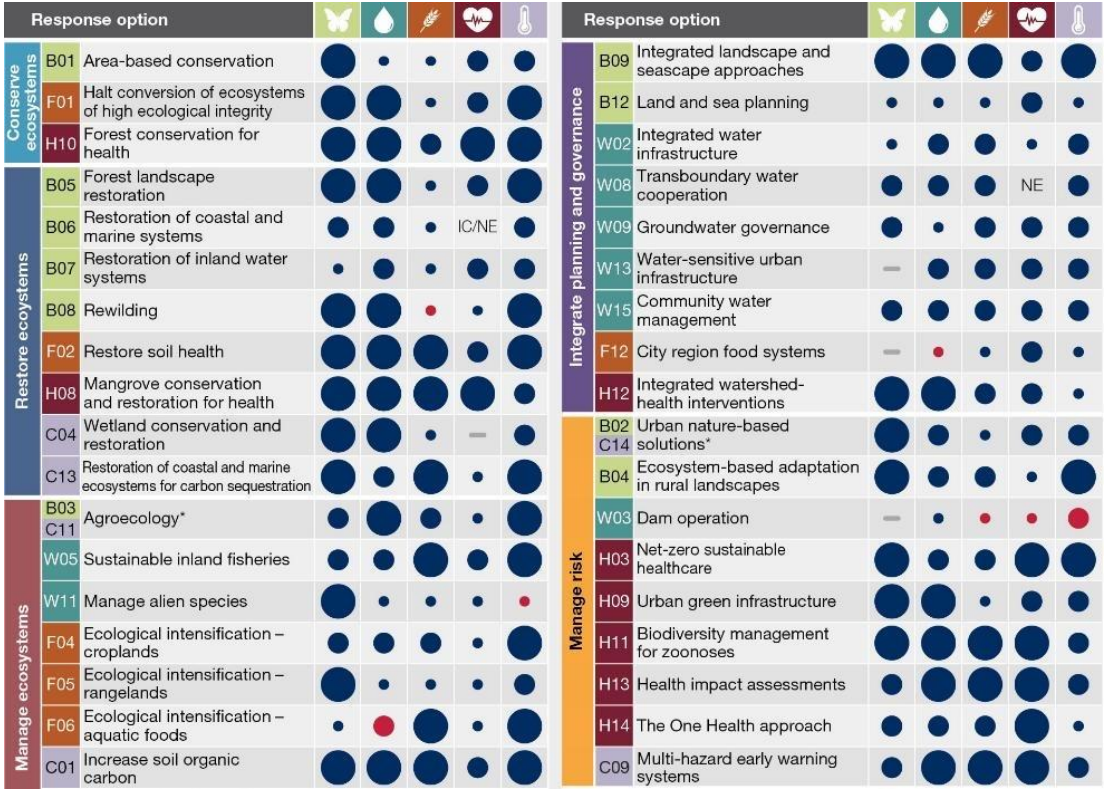


Figure SPM.8 (partial figure)

Blue dots = positive impacts

Red dots = positive impacts

= no impact

IC = inconclusive

NE = no evidence

Options for delivering sustainable approaches to health

15 health response options assessed

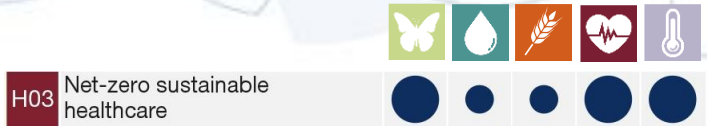
- Evidence for implementation worldwide
- Technologically feasible
- Positive impacts on nexus elements
- Social implications
- Economic implications
- Alignment with international policy frameworks
- Equity
- Potential for transformative change


Photo by Paula Prist

Examples of health response options and their benefits

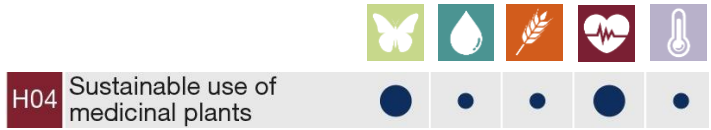
H03 Net-zero sustainable healthcare

- Changing practices - increased prevention and community care reduces need for hospitalization
- Reduces healthcare carbon and environmental footprints (e.g., CO_2 emissions and pollution)



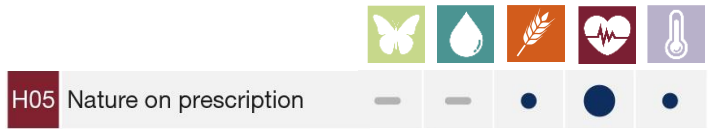
H04 Sustainable use of medicinal plants

- Plants are impacted by unsustainable harvesting practices, climate change, and pollution
- Policies and actions to facilitate conservation and sustainable use can maintain plant populations
- Restoration efforts can increase cultivation



H05 Nature prescription

- Nature-based health interventions
- Supports biodiversity conservation
- Support climate change mitigation and adaptation



Examples of health response options and their benefits

H08 Mangrove conservation and restoration for health

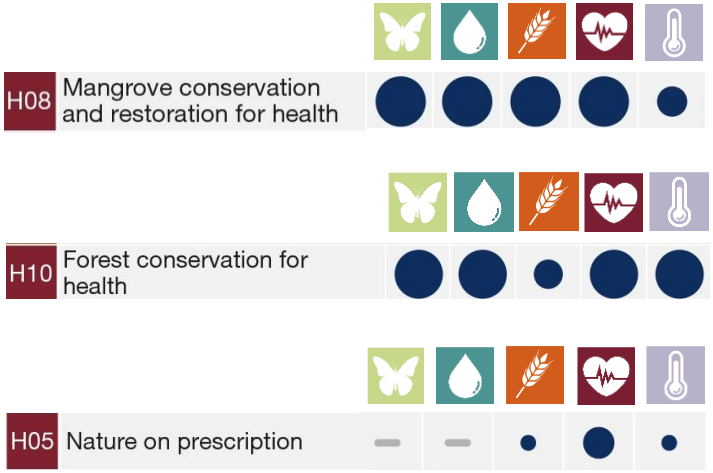
- Conserve biodiversity
- Water purification services
- Provide food and medicinal plants
- Disaster risk reduction from coastal hazards that threaten lives and livelihoods such as flooding, storms, and tsunamis
- Climate change adaptation and mitigation

H10 Forest conservation for health

- Increased water quantity and quality
- Climate change mitigation and adaptation

H11 Biodiversity management for zoonoses

- Conservation and avoiding biodiversity loss



Relevancy for the Warsaw International Mechanism functions

Findings from the Nexus Assessment can support the three functions of the WIM – for example:

- Helping to identify **opportunities for scaling approaches** to address loss and damage (**Function 1**)
- Discusses **interlinkages** between **health and climate change** and highlights measures to achieve **improved health**, including health-oriented sectoral options as well as options that benefit from and require cross-sector collaboration (**Functions 1 and 2**)
- Explores different **mechanisms, approaches, and market and non-market economic instruments** to enhance nexus approaches within the context of evolving economic paradigms (**Function 3**)
- Assesses policies and procedures relevant to the **climate change governance**, including **financing options and incentives** to support mitigation and adaptation efforts while conserving, restoring, and sustainably using biodiversity and meeting global objectives for food, water, and health (**Functions 2 and 3**)
- Reinforcing the importance of **full and effective participation** of a wide range of **actors** in the co-design, coordination, and implementation of approaches to address loss and damage to increase the **magnitude of benefits** and **ensure equitable outcomes** (**Functions 2 and 3**)
- Provides guidance on how **economic, financing and governance systems** can evolve towards integrated approaches that support **cross-sectoral collaboration, planning, and management** (**Functions 1, 2, and 3**)

IPBES website Nexus Assessment page

https://www.ipbes.net/nexus-assessment

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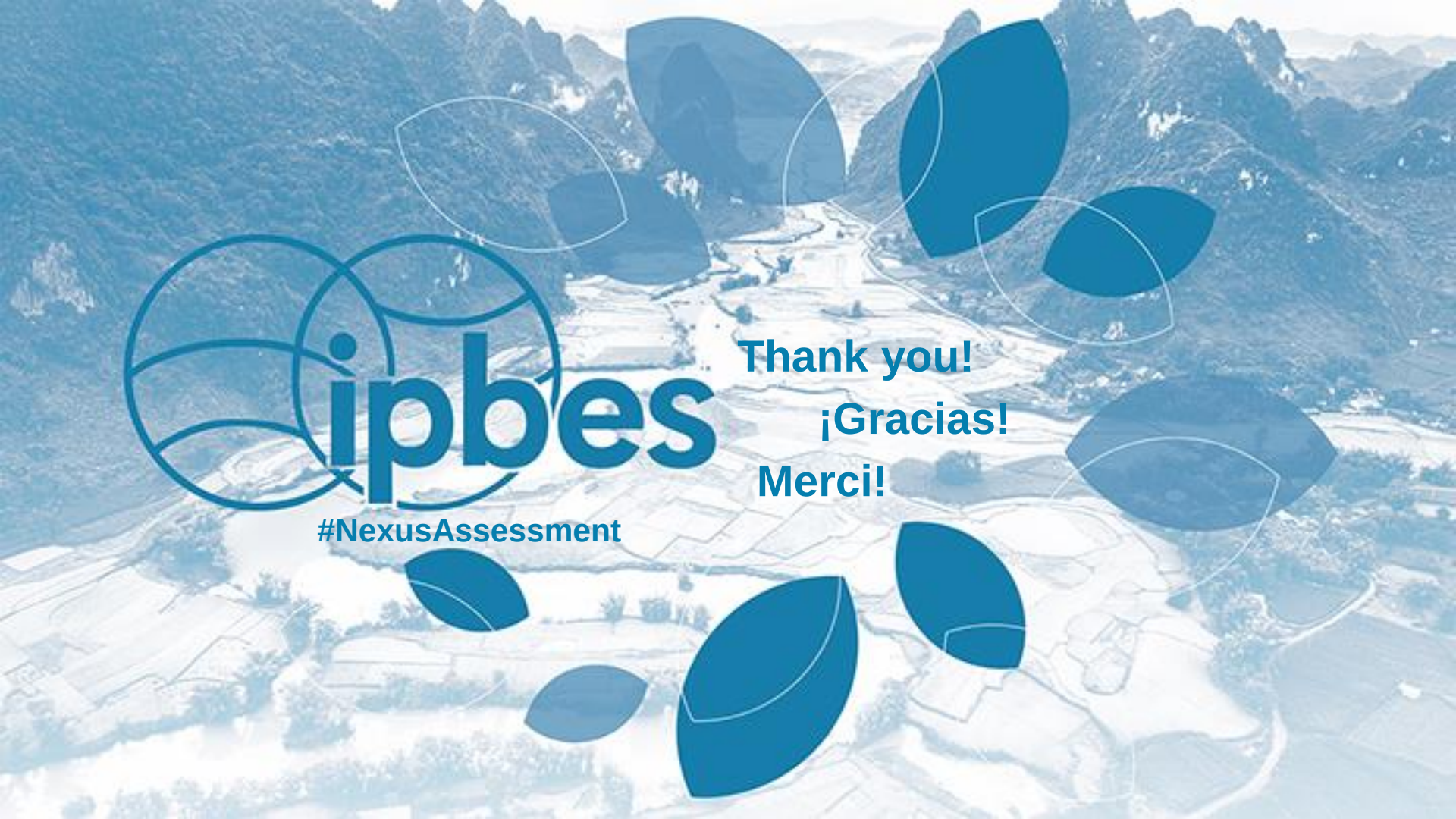
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