Policy responses to Global Environmental Change

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Global policies on environment and sustainability

2030 Agenda for sustainable development: transforming our world

Sustainable Development Goals (SDGs)

The 17 Sustainable Development Goals, 169 targets and 231 indicators

„We resolve, between now and 2030, to end poverty and hunger everywhere; to combat inequalities within and among countries; to build peaceful, just and inclusive societies; to protect human rights and promote gender equality and the empowerment of women and girls; and to ensure the lasting protection of the planet and its natural resources. We resolve also to create conditions for sustainable, inclusive and sustained economic growth, shared prosperity and decent work for all, taking into account different levels of national development and capacities"

UN (2015) Transforming our world: the 2030 agenda for sustainable development. UN, New York

SUSTAINABLE DEVELOPMENT GOALS

1 NO POVERTY

2 ZERO HUNGER

3 GOOD HEALTH AND WELL-BEING

4 QUALITY EDUCATION

5 GENDER EQUALITY

6 CLEAN WATER AND SANITATION

7 AFFORDABLE AND CLEAN ENERGY

8 DECENT WORK AND ECONOMIC GROWTH

9 INDUSTRY, INNOVATION AND INFRASTRUCTURE

10 REDUCED INEQUALITIES

11 SUSTAINABLE CITIES AND COMMUNITIES

12 RESPONSIBLE CONSUMPTION AND PRODUCTION

13 CLIMATE ACTION

14 LIFE BELOW WATER

15 LIFE ON LAND

16 PEACE, JUSTICE AND STRONG INSTITUTIONS

17 PARTNERSHIPS FOR THE GOALS

- Strengthen resilience and adaptive capacity to climate-related hazards and natural disasters in all countries

- Integrate climate change measures into national policies, strategies and planning

- Implement the commitment undertaken by developed-country parties to the United Nations Framework Convention on Climate Change to a goal of mobilizing jointly $100 billion annually by 2020 from all sources

- Promote mechanisms for raising capacity for effective climate change-related planning and management in least developed countries and small island developing States, including focusing on women, youth and local and marginalized communities

- 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
- 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
- By 2020, integrate ecosystem and biodiversity values into national and local planning, development processes, poverty reduction strategies and accounts
- 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

- End all forms of discrimination against all women and girls everywhere

- Eliminate all forms of violence against all women and girls in the public and private spheres, including trafficking and sexual and other types of exploitation

- Recognize and value unpaid care and domestic work through the provision of public services, infrastructure and social protection policies and the promotion of shared responsibility within the household and the family as nationally appropriate

- Ensure women's full and effective participation and equal opportunities for leadership at all levels of decision-making in political, economic and public life
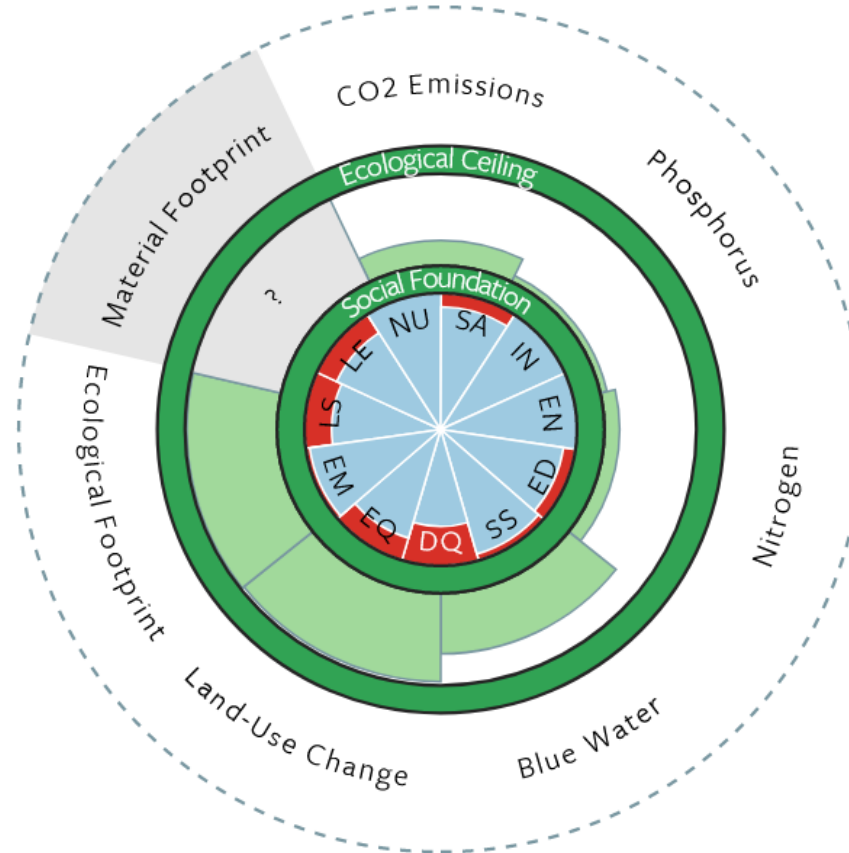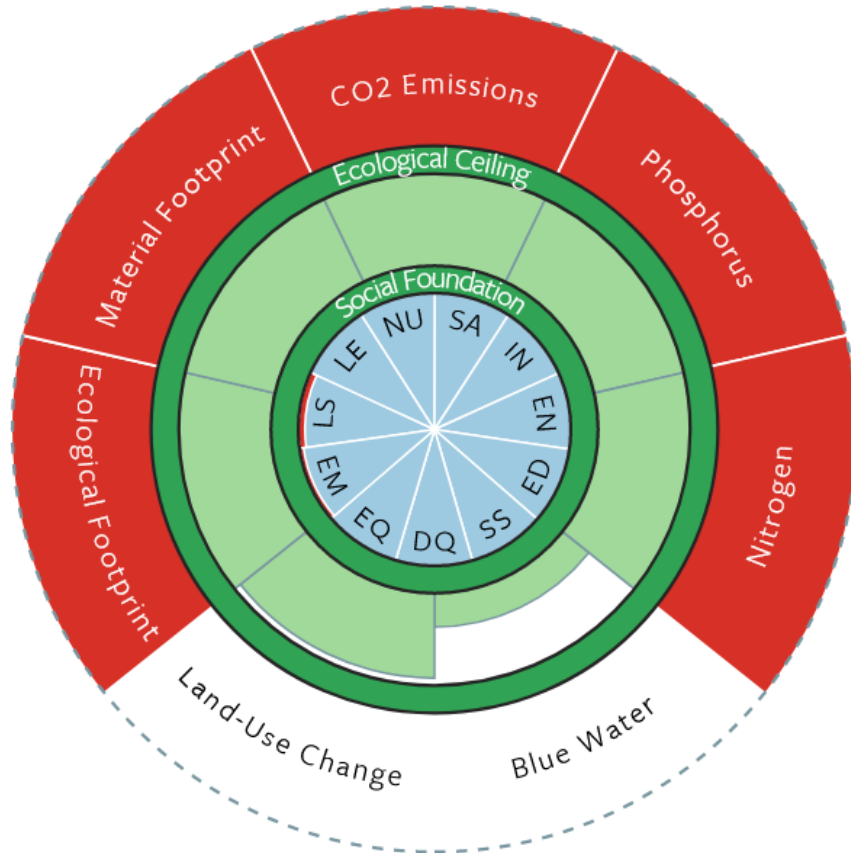
- By 2030, progressively achieve and sustain income growth of the bottom 40 per cent of the population at a rate higher than the national average

- By 2030, empower and promote the social, economic and political inclusion of all, irrespective of age, sex, disability, race, ethnicity, origin, religion or economic or other status

- Ensure equal opportunity and reduce inequalities of outcome, including by eliminating discriminatory laws, policies and practices and promoting appropriate legislation, policies and action in this regard

- Implement the principle of special and differential treatment for developing countries, in particular least developed countries, in accordance with World Trade Organization agreements

Czech Republic

Moldova

Ecological Ceiling

CO2 Emissions
Material Footprint
Phosphorus
Ecological Footprint
Nitrogen
Land-Use Change
Blue Water

Social Foundation

LS NU SA IN EN ED SS DQ EQ EM LE

LS - Life Satisfaction
LE - Healthy Life Expect.
NU - Nutrition
SA - Sanitation
IN - Income
EN - Access to Energy
ED - Education
SS - Social Support
DQ - Democratic Quality
EQ - Equality
EM - Employment

Andrew L. Fanning et al., The social shortfall and ecological overshoot of nations. Nature Sustainability 5, 2022, pp. 26-36

Biophysical Indicator	Czech Republic	Moldova	Per Capita Boundary	Unit
CO_2 Emissions	11	0.5	1.6	tonnes CO_2 per year
Phosphorus	3.6	0.1	0.9	kilograms P per year
Nitrogen	63.1	1.5	8.9	kilograms N per year
Blue Water	214	379	574	cubic metres H_2O per year
eHANPP	2.4	2.5	2.6	tonnes C per year
Ecological Footprint	4.5	1.7	1.7	global hectares (gha) per year
Material Footprint	22.3		7.2	tonnes per year

Social Indicator	Czech Republic	Moldova	Threshold	Unit
Life Satisfaction	6.3	5.8	6.5	[0-10] Cantril scale
Healthy Life Expect.	68.9	60.8	65	years of healthy life
Nutrition	3292	2837	2700	kilocalories per capita per day
Sanitation	100	86.1	95	% with access to improved sanitation
Income	100	99.6	95	% who earn above $1.90 per day
Access to Energy	100	100	95	% with access to electricity
Education	96	87.7	95	% enrolment in secondary school
Social Support	91.4	86.9	90	% with friends or family they can depend on
Democratic Quality	1	0	0.8	Democratic Quality Index
Equality	74.3	63.5	70	[0-100] Scale -> (1 - Gini Index) * 100
Employment	93.3	93.3	94	% of labour force employed

# Trade-offs between various SDGs goals: is everything possible?

How can we protect the environment, reduce poverty and maintain economic growth?

By Decoupling: breaking the link between resource use and economic growth

Using less land, water, energy and materials to maintain economic growth is: Resource decoupling

Using resources wisely over their lifetime to reduce environmental impact is: Impact decoupling

INNOVATIVE SOLUTION

Resource decoupling

Impact decoupling

Human well-being

Economic activity (GDP)

Resource use
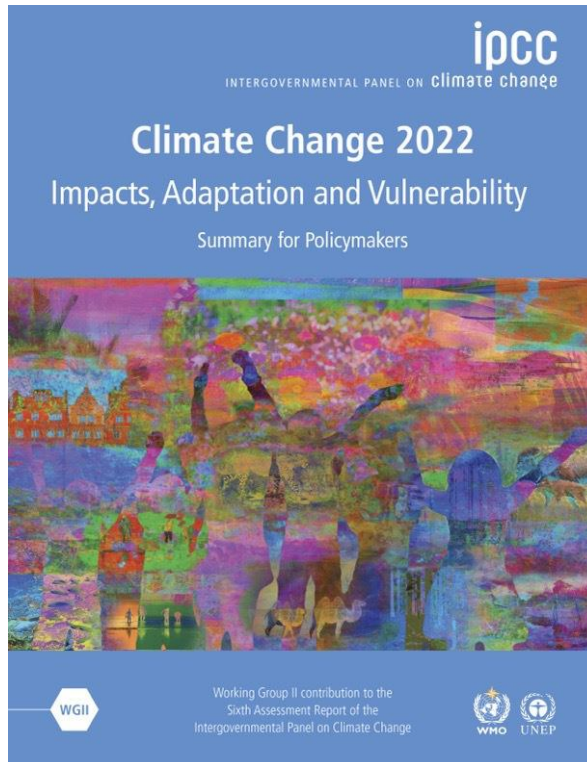
Environmental impact

Time
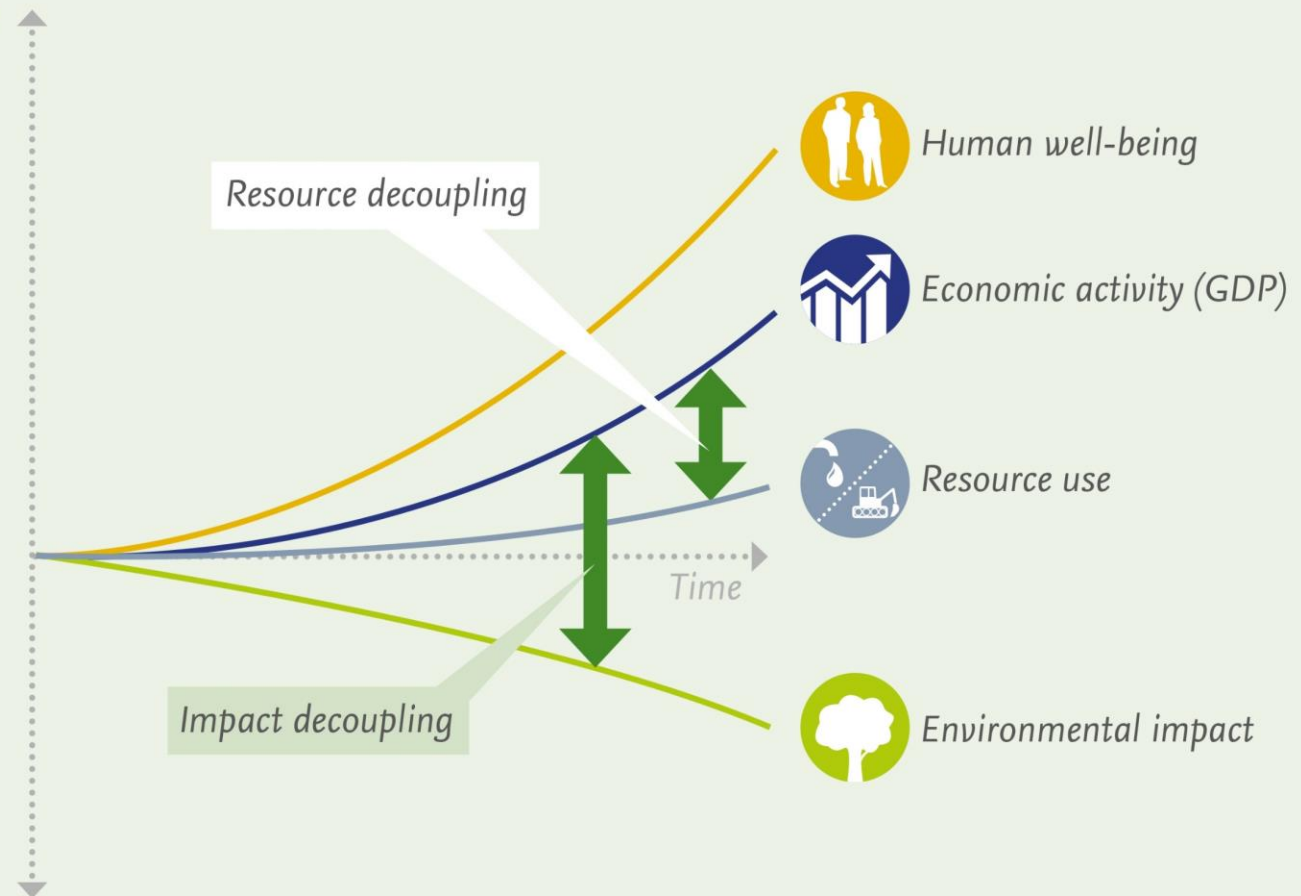
UNEP (2011) Decoupling natural resource use and environmental impacts from economic growth

Climate change

- United Nations Framework Convention on Climate Change (UN FCCC)

- Paris Agreement (COP 21, effective from 2016)

- Its overarching goal is to hold "the increase in the global average temperature to well below 2°C above pre-industrial levels" and pursue efforts "to limit the temperature increase to 1.5°C above pre-industrial levels."

- Parties aim to reach global peaking of greenhouse gas emissions as soon as possible, recognizing that peaking will take longer for developing country Parties, and to undertake rapid reductions thereafter in accordance with best available science, so as to achieve a balance between anthropogenic emissions by sources and removals by sinks of greenhouse gases in the second half of this century, on the basis of equity, and in the context of sustainable development and efforts to eradicate poverty.

- Adaptation to climate change
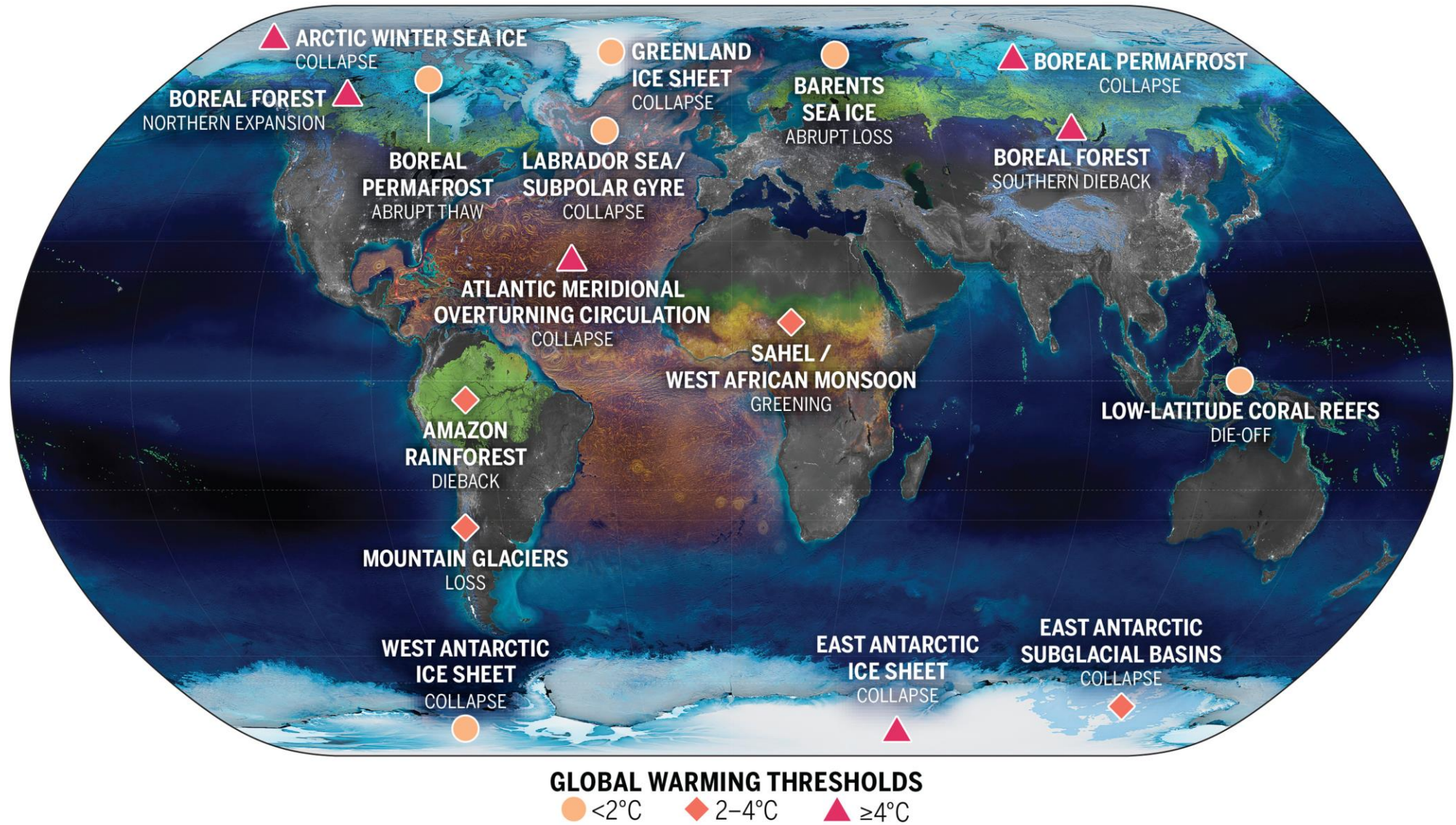
McKay et al., Exceeding 1.5°C global warming could trigger multiple climate tipping points. Science, 2022

IPCC Climate Change 2022: Impacts, Adaptation and Vulnerability

- Adaptation options for managing a wide range of climate risks have been proposed, planned or implemented across all sectors and regions, with prospects for wide-ranging benefits to nearly all people and ecosystems

- Many options are widely applicable and could be scaled up to reduce vulnerability or exposure for the majority of the world's population and the ecosystems they depend on (high confidence). These include nature restoration (high confidence), changing diets and reducing food waste (high confidence), infrastructure retrofitting (high confidence), building codes (medium confidence), disaster early warning (high confidence) and cooperative governance (medium confidence).

Incremental vs. transformational adaptation

- The majority of climate risk management and adaptation currently being planned and implemented is incremental (high confidence). Transformational adaptation will become increasingly necessary at higher global warming levels (medium confidence) but can be associated with significant and inequitable trade-offs (medium confidence).

- Adaptations with some of the highest transformative potential include migration (high confidence), spatial planning (medium confidence), governance cooperation (medium confidence), universal access to health care (medium confidence) and changing food systems (medium confidence). Options that tend to modify existing systems incrementally include early-warning systems (high confidence), insurance (medium confidence) and improved water use efficiency (high confidence)

(IPCC 2022)

Enabling Conditions

- Adaptation enablers are defined as those conditions or properties that specifically promote or advance the adaptation process. Enablers are positively associated with likelihood that adaptation planning occurs, and strategies will be put into practice.

- Three broad enabling conditions are:

- governance (legislation, regulation, institutions, litigation),

- finance (needs, sources, intermediaries, instruments flows, equity) and

- knowledge (capacities, climate services, big data, Indigenous/local knowledge, co-production, boundary organisations).

Biodiversity

Convention on Biological Diversity

The Kunming-Montreal Global Biodiversity Framework (GBF) (COP 15, 2022)

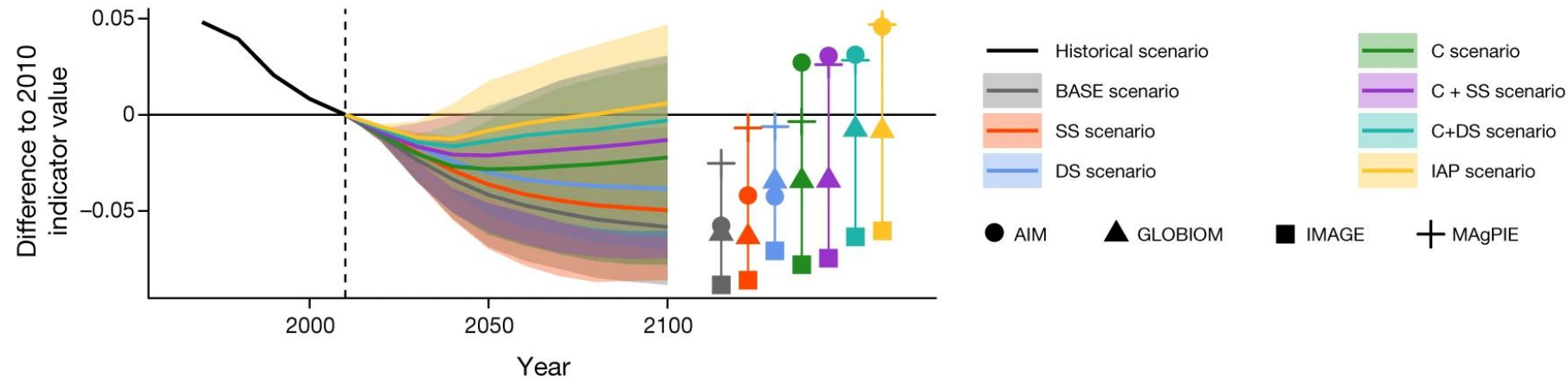4 goals for 2050 and 23 targets for 2030

The vision of the Kunming-Montreal Global Biodiversity Framework is a world of living in harmony with nature where "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 take urgent action to halt and reverse biodiversity loss to put nature on a path to recovery for the benefit of people and planet by conserving and sustainably using biodiversity and by ensuring the fair and equitable sharing of benefits from the use of genetic resources, while providing the necessary means of implementation
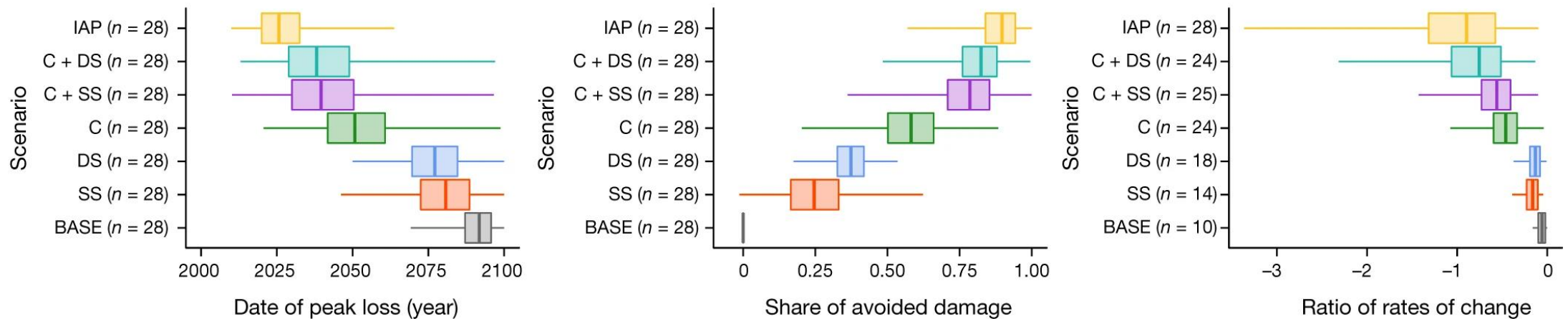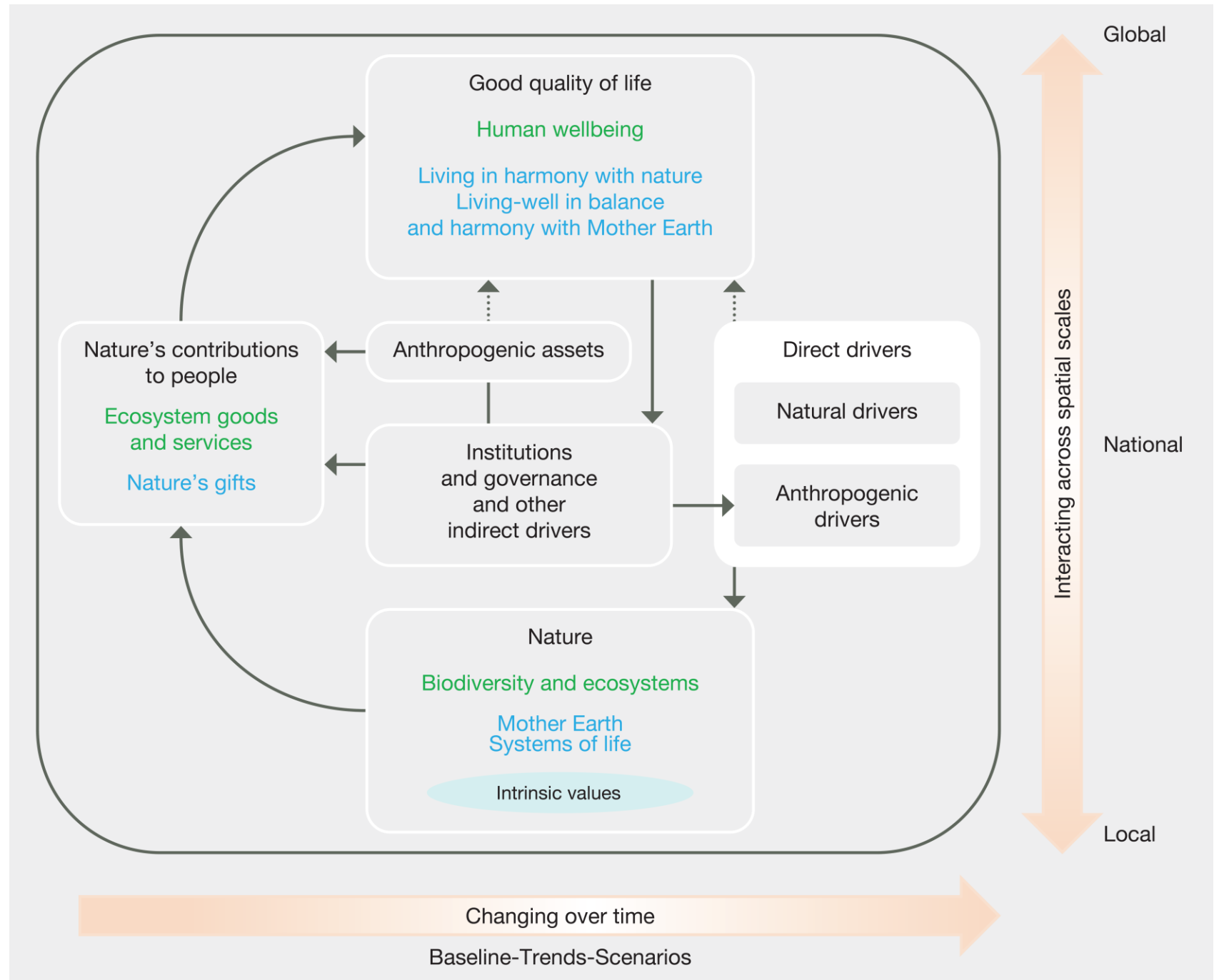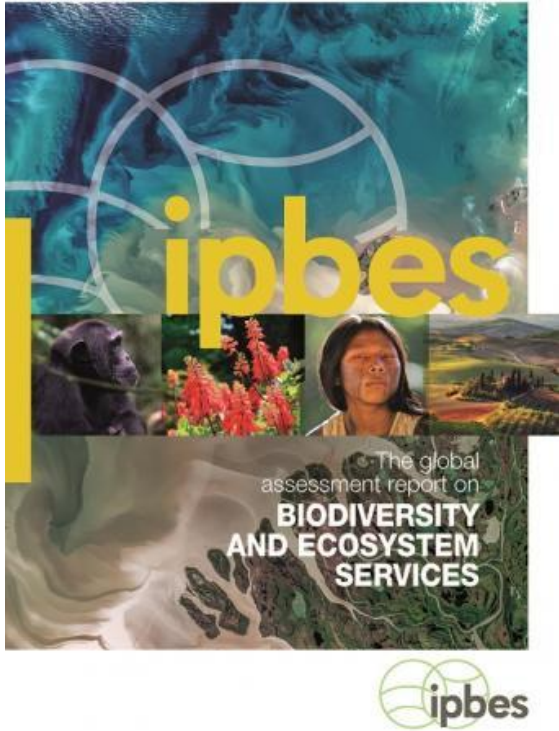
Bending the curve of global biodiversity loss

Leclère, D., Obersteiner, M., Barrett, M. et al. Bending the curve of terrestrial biodiversity needs an integrated strategy. Nature 585, 551–556 (2020).

The global assessment report on BIODIVERSITY AND ECOSYSTEM SERVICES

ipbes

Good quality of life

Human wellbeing

Living in harmony with nature
Living-well in balance
and harmony with Mother Earth

Nature's contributions to people

Ecosystem goods and services

Nature's gifts

Anthropogenic assets

Direct drivers

Natural drivers

Anthropogenic drivers

Institutions and governance and other indirect drivers

Nature

Biodiversity and ecosystems

Mother Earth
Systems of life

Intrinsic values

Global

National

Local

Interacting across spatial scales

Changing over time

Baseline-Trends-Scenarios

Transformative change

- The Sustainable Development Goals and the 2050 Vision for Biodiversity cannot be achieved without transformative change

- Transformative change can be defined as a fundamental, system-wide reorganization across technological, economic and social factors, including paradigms, goals and values (IPBES, 2018; IPCC, 2018).

- Transformative change can be defined as societal change in terms of technological, economic and social structures. It includes both personal and social transformation, and includes shifts in values and beliefs, and patterns of social behaviour.

- Transformative change has emerged in the policy discourse and is increasingly seen as both necessary and inevitable for biodiversity-related issues and sustainable development more broadly.

Chapter 6.
OPTIONS FOR DECISION MAKERS

Feeding the world without consuming the planet

- **Intensification of agriculture**: Encouraging ecological intensification and sustainable use of multi-functional landscapes to close the yield gap.

- **Organic agriculture**: Improving certification schemes and organic agriculture

- **Global supply chains**: regulating root causes, such as land rights, commodity prices, agricultural systems and market access

- **Dietary transitions**: substantially reducing the consumption of animal products in developed countries and emerging economies has the potential to greatly lower the negative impacts of farming while at the same time generating significant dividends in terms of people's health

- **Reducing food waste**: improved food distribution and better food storage in developing regions, and consumer education, and less wasteful marketing practices in developed countries

- **Food market transparency and price stability**: Policy responses to price increases have included reductions on food taxes and import tariffs, and increasing subsidies and food-based safety nets
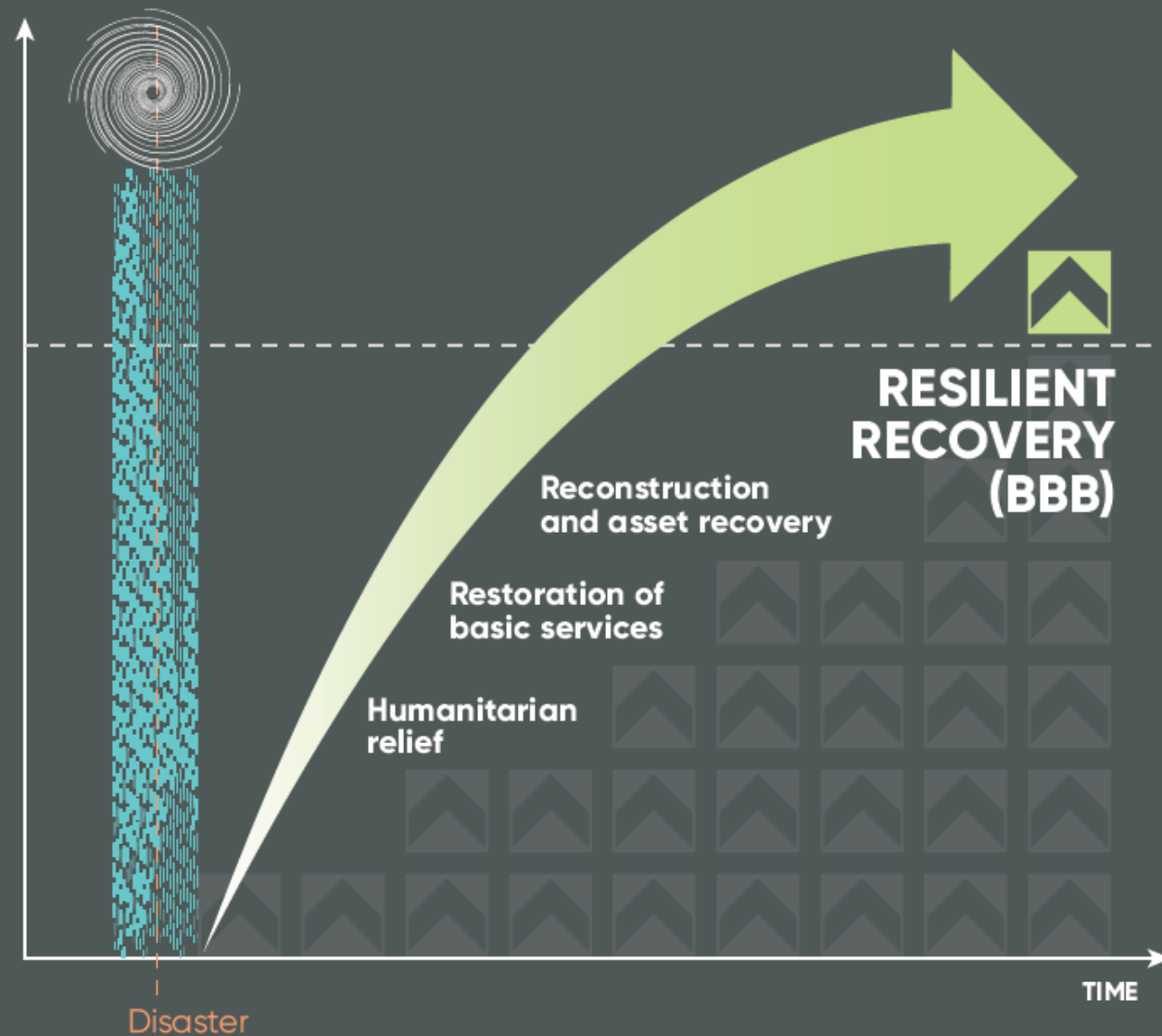
Disaster risk reduction

The Sendai Framework for Disaster Risk Reduction 2015-2030 (Sendai Framework)

7 targets and 4 priorities for action to prevent new and reduce existing disaster risks: (i) Understanding disaster risk; (ii) Strengthening disaster risk governance to manage disaster risk; (iii) Investing in disaster reduction for resilience and; (iv) Enhancing disaster preparedness for effective response, and to "Build Back Better" in recovery, rehabilitation and reconstruction.

It aims to achieve the substantial reduction of disaster risk and losses in lives, livelihoods and health and in the economic, physical, social, cultural and environmental assets of persons, businesses, communities and countries

„Building Back Better"

An illustration of the post-disaster recovery and its three phases.

RESILIENT
RECOVERY
(BBB)

Reconstruction
and asset recovery

Restoration of
basic services

Humanitarian
relief

TIME

Disaster

The vertical axis refers to a range of aspects, from the stock of assets, to the income, consumption and well-being of the affected population. Building back better means that the recovery process is stronger compared to pre-disaster levels, but also faster and more inclusive.

GFDRR
Global Facility for Disaster Reduction and Recovery