Pomen odgovornega ravnanja z naravnimi viri za trajnostno prihodnost in učinkovito soočenje s podnebno krizo

JANEZ POTOČNIK
So-predsedujoči UNEP IRP - Mednarodni panel za vire
Partner SYSTEMIQ
Član Rimski klub

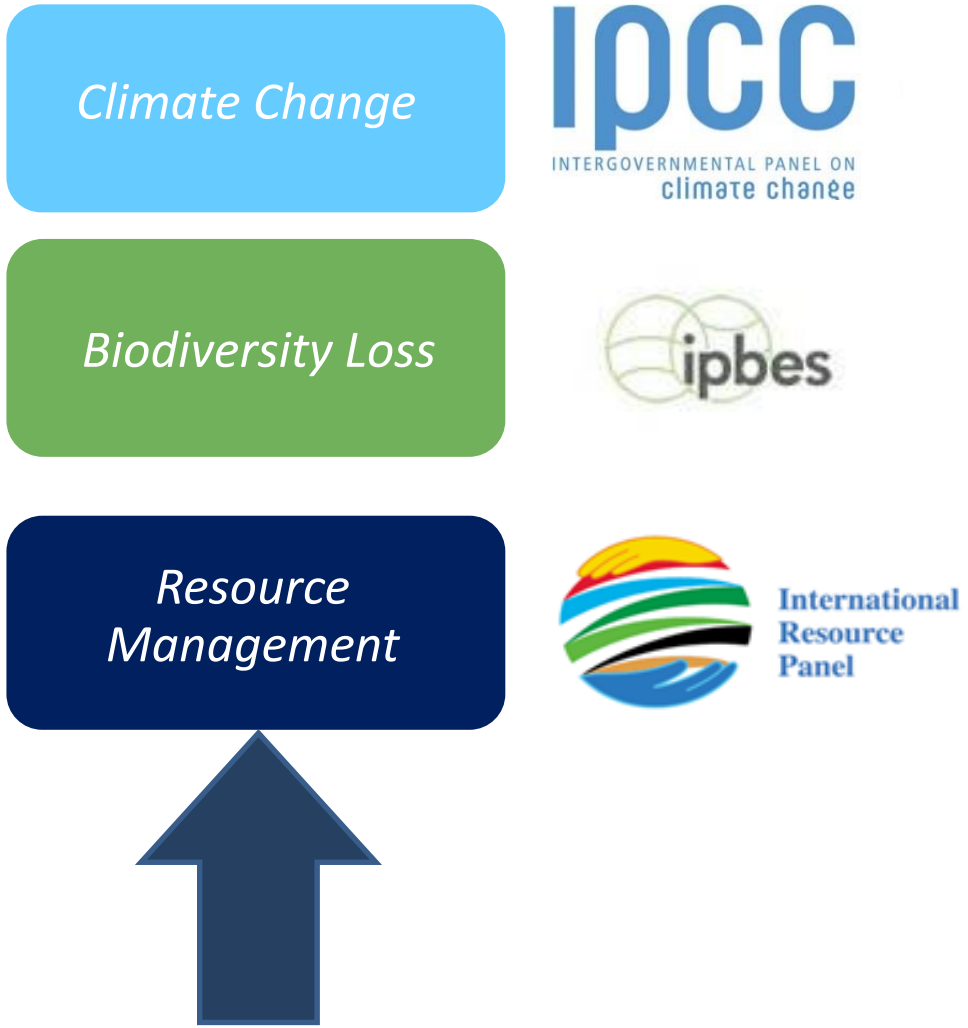
Bruselj, 17. April 2023

International Resource Panel

Natural Resource Management Optic

Who are we?

International Resource Panel - IRP *was launched in 2007 with the idea of creating a science-policy interface on the sustainable use of natural resources and in particular their environmental impacts over the full life cycle*



IRP Structure

Panel Co-Chairs:
Janez Potočnik and Izabella Teixeira

Steering Committee Co-Chairs:
Astrid Schomaker and Steven Stone

SCIENTIFIC PANEL

Internationally recognized experts on sustainable resource management;

Scientific assessments and advice, networks

Science-Policy interface

Head of Secretariat: *Merlyn van Voore*

UNE SECRETARIAT

Direction, procedures, support in development and implementation of assessments, outreach

STEERING COMMITTEE

Governments from developing and industrialized countries;

Strategic guidance, political support, regional synergies

Strategic Partners

One planet handle with care

World Business Council for Sustainable Development

UNITED NATIONS ESCAP
Economic and Social Commission for Asia and the Pacific

International Science Council

SCIENCE POLICY BUSINESS FORUM

WORLD RESOURCES INSTITUTE

WORLD ECONOMIC FORUM

WORLD RESOURCES FORUM

PBL Netherlands Environmental Assessment Agency

SUN

UNITED NATIONS ECLAC

ELLEN MACARTHUR FOUNDATION

EARTH COMMISSION

OECD

International Science Council

ICC

YEE! YOUTH AND ENVIRONMENT EUROPE

PACE
PLATFORM FOR ACCELERATING THE CIRCULAR ECONOMY

IUCN

Main Challenges

The diagnosis of the resource challenge

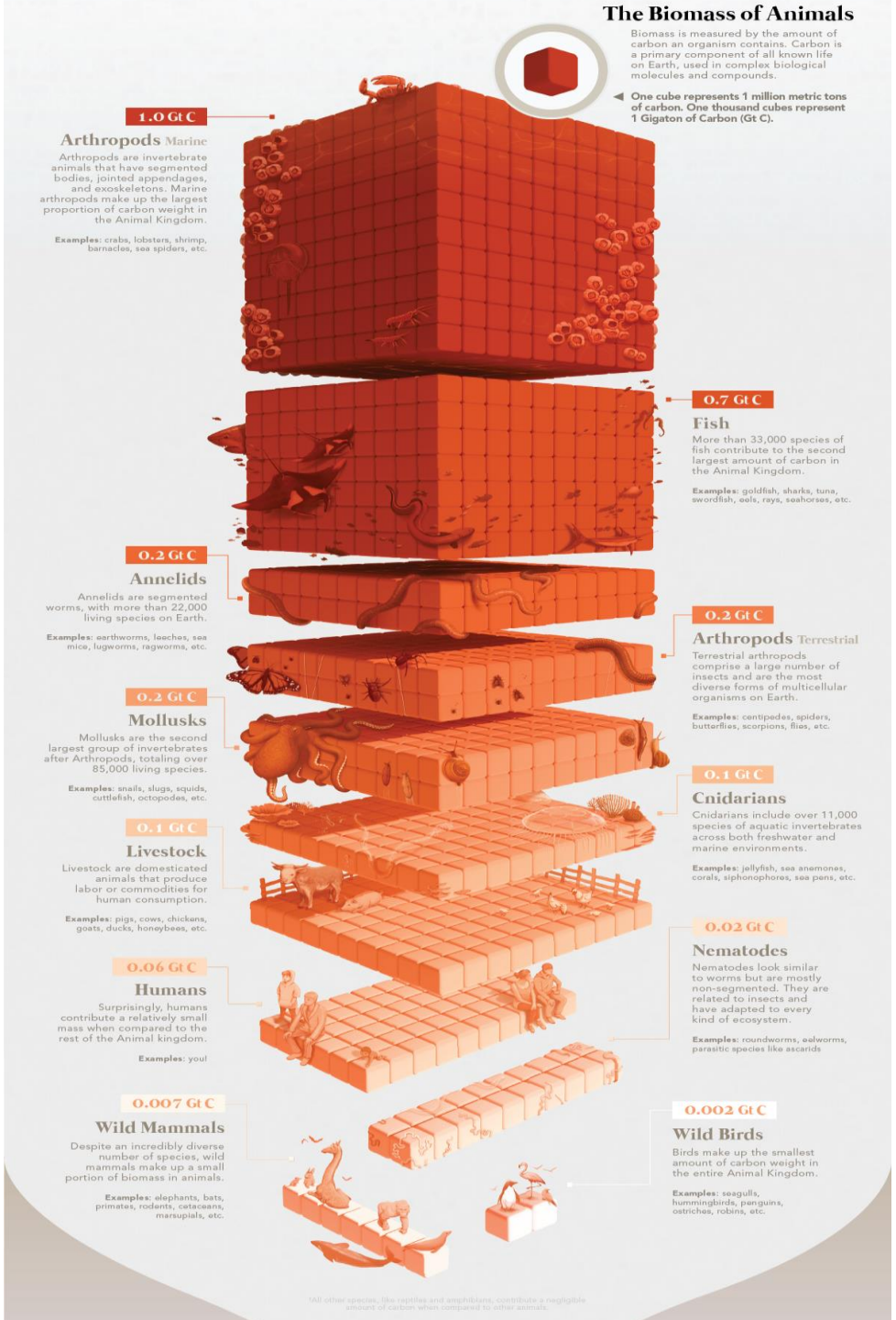
Acute

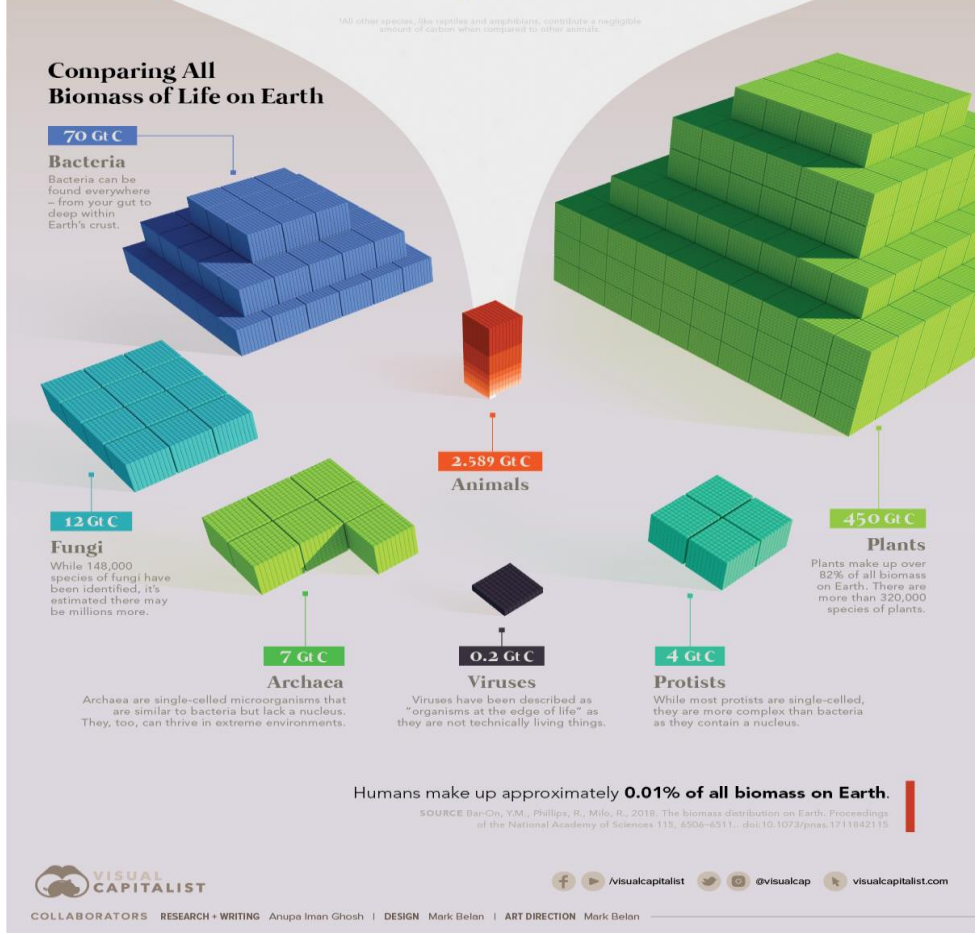
- *Energy and Food Challenges due to terrible war in Ukraine*
- *Summer, where climate ordinary days are becoming rare*
- *Health – Covid related developments*

Chronical

- *Environmental Challenges – Climate Change, Biodiversity Loss, Pollution/Health*
- *Social inequalities - Created Wealth Distribution, Poverty*

Taking pain-killers to remove the acute pain will not heal chronical diseases, rather hide them and make them worse

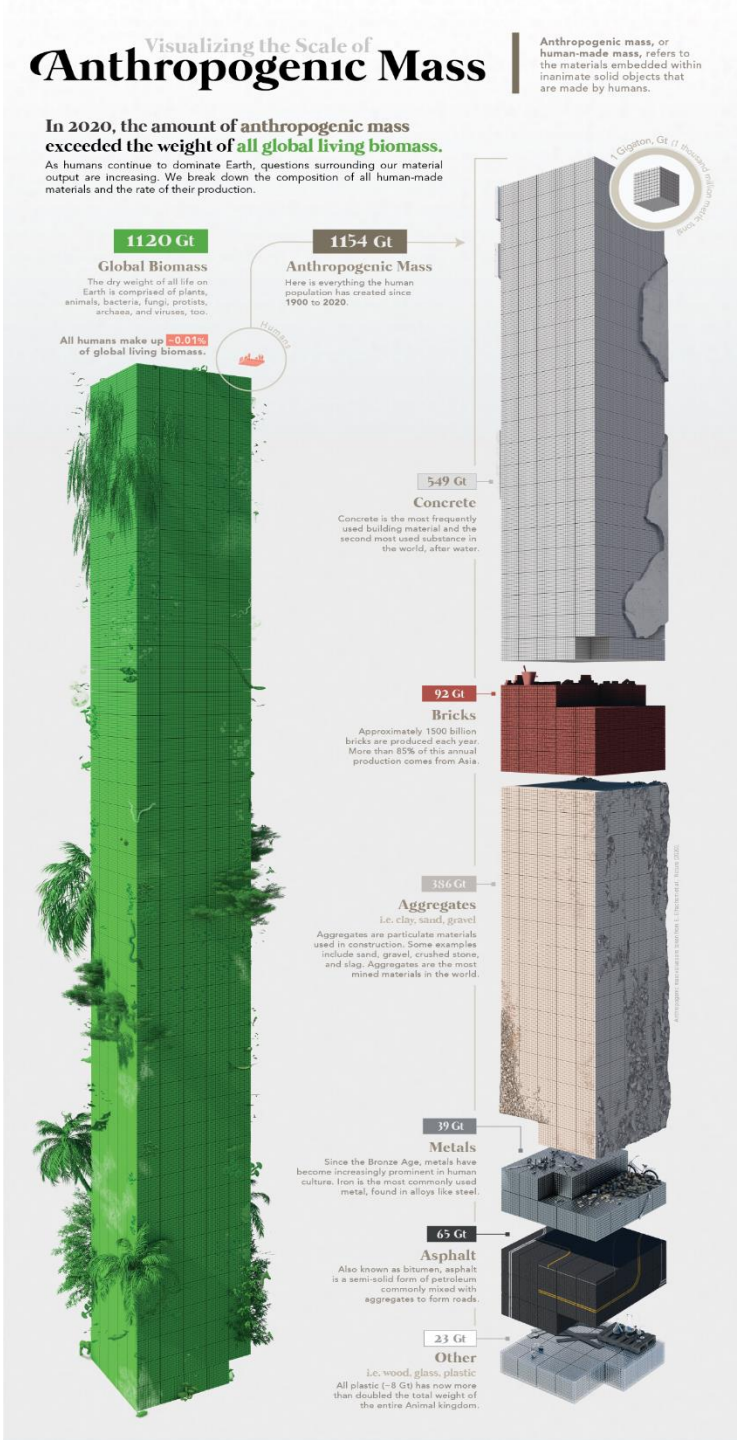


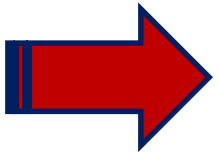


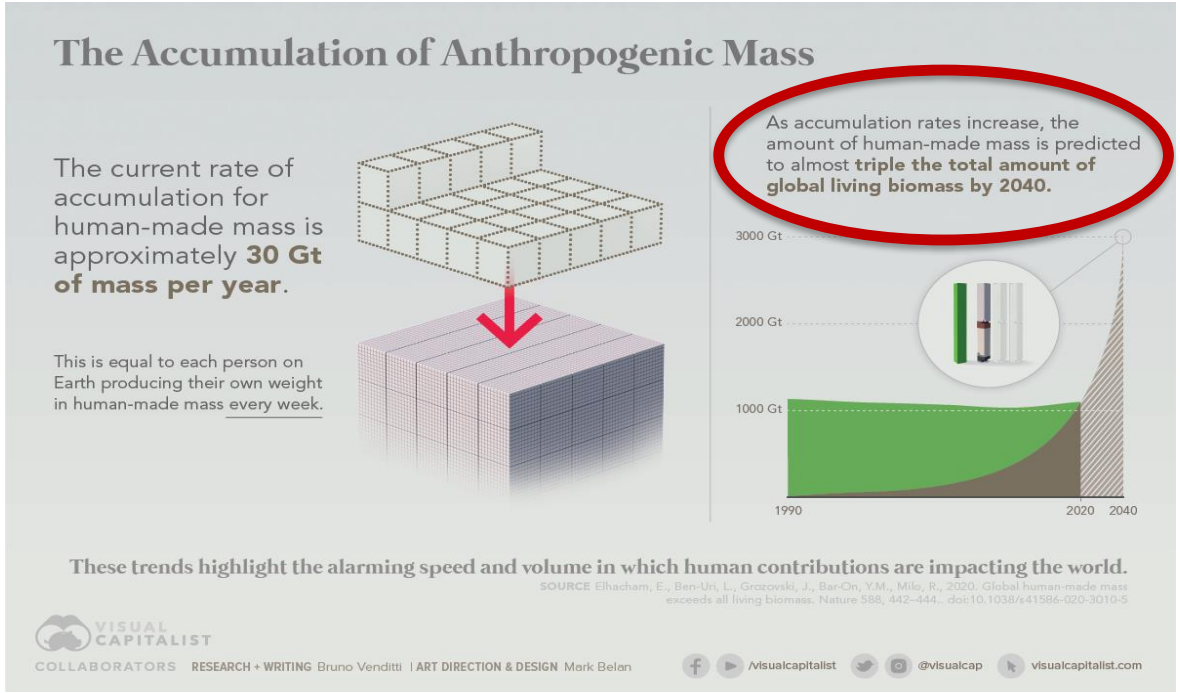
Biomass of Life

Humans in Perspective

Source: Visualcapitalist.com

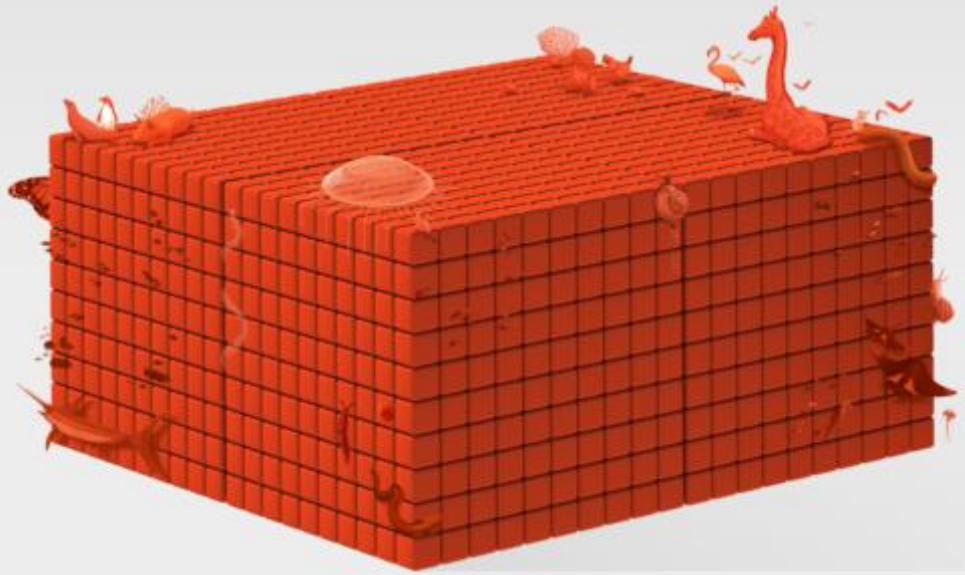




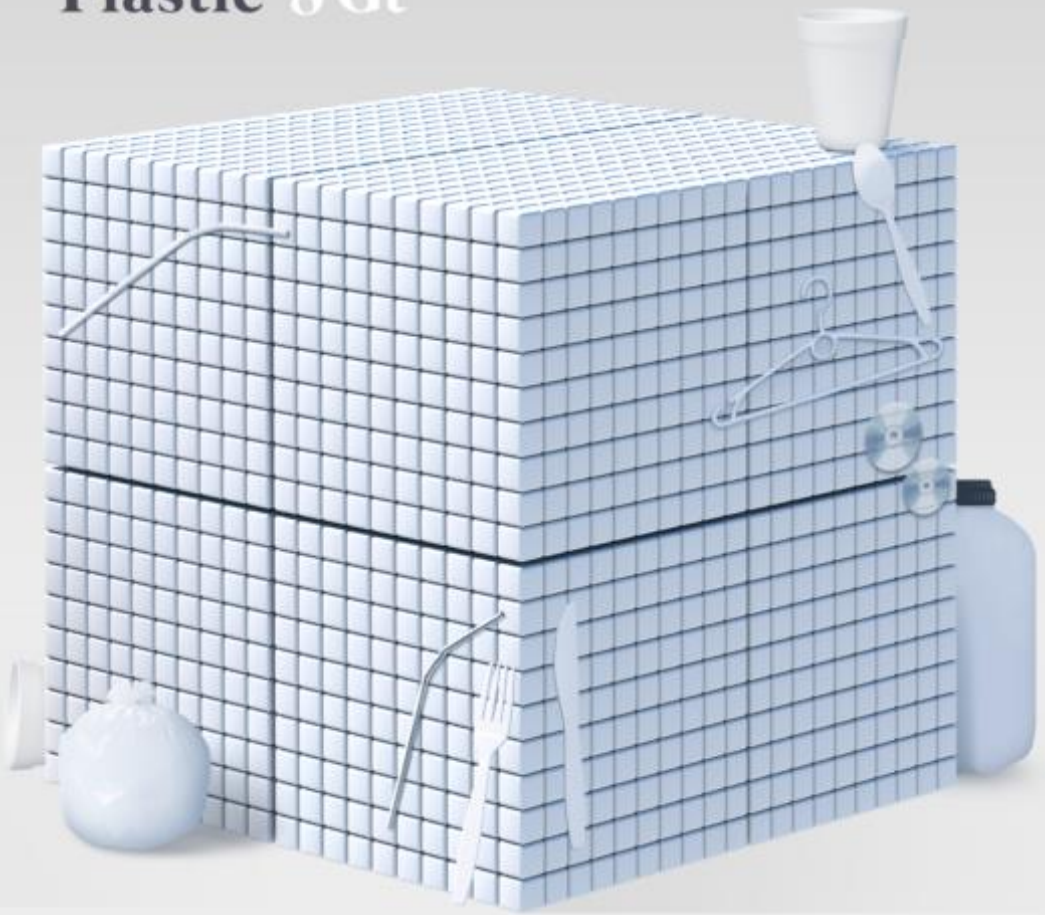


Source: Visualcapitalist.com

Animal Kingdom 4 Gt

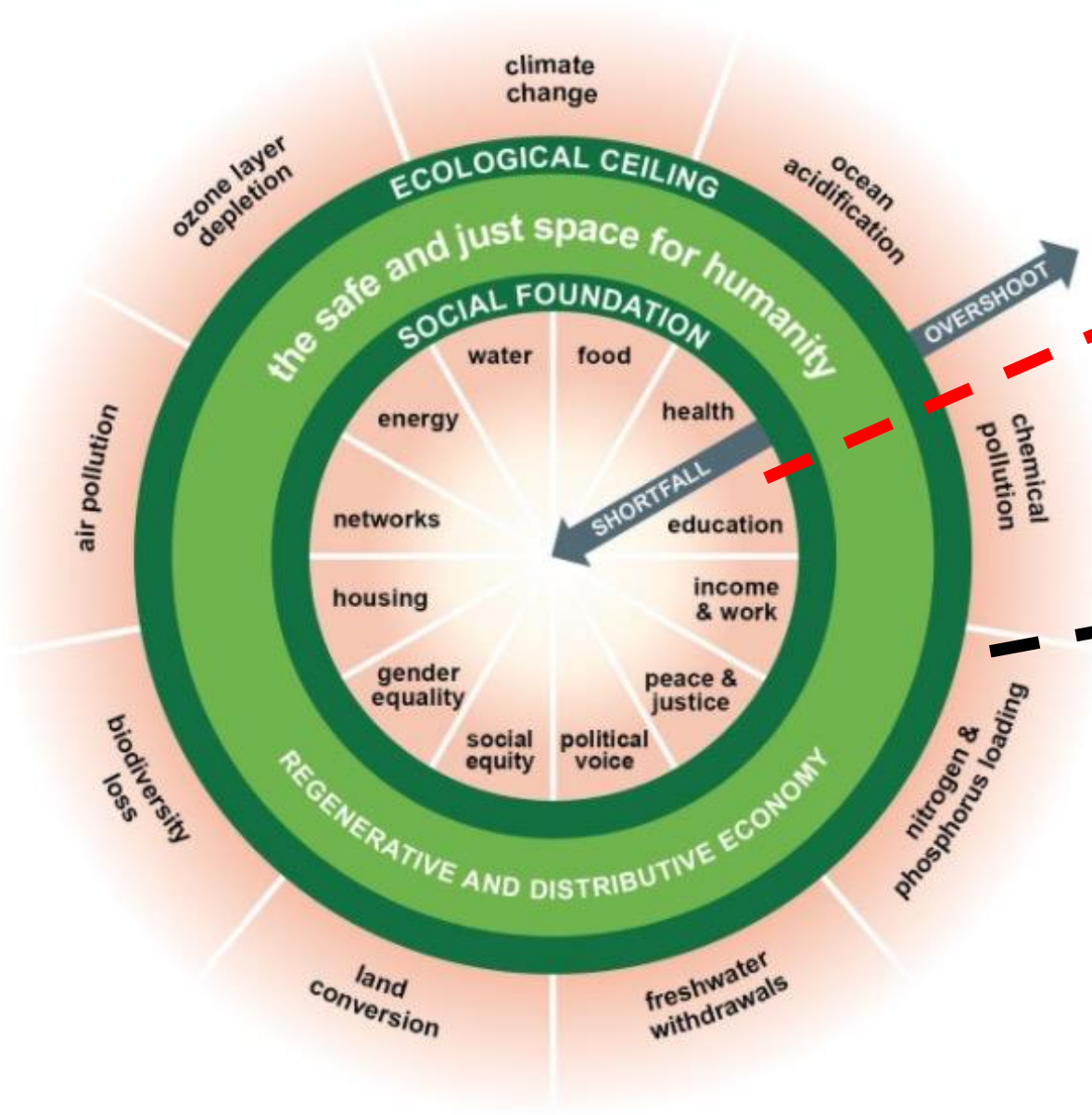


Plastic 8 Gt



Source: Visualcapitalist.com

A "doughnut" compass for human prosperity



Basis human needs

incl. minimum requirements

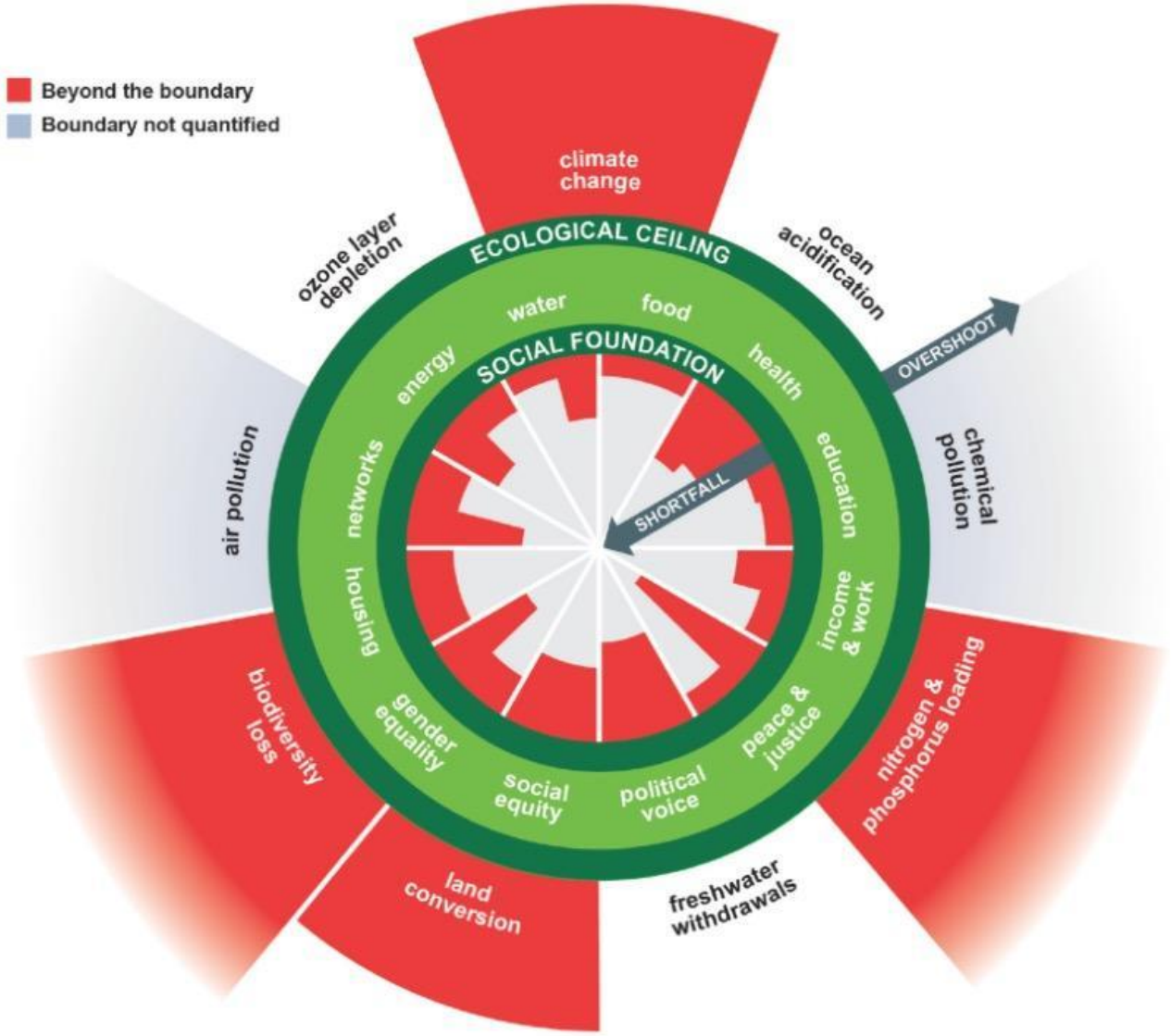
of resource supply

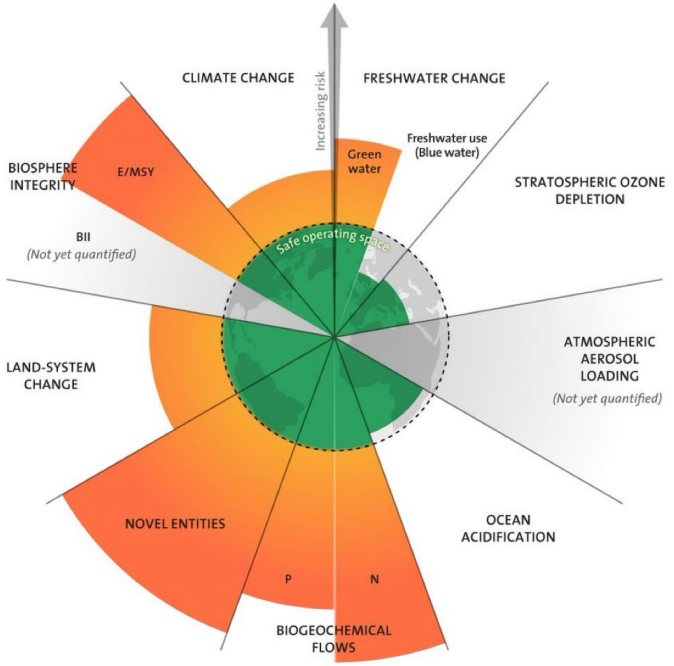
Outer limit by Planetary

Boundaries

Adapted from Raworth 2017

Humanity is living far out of balance

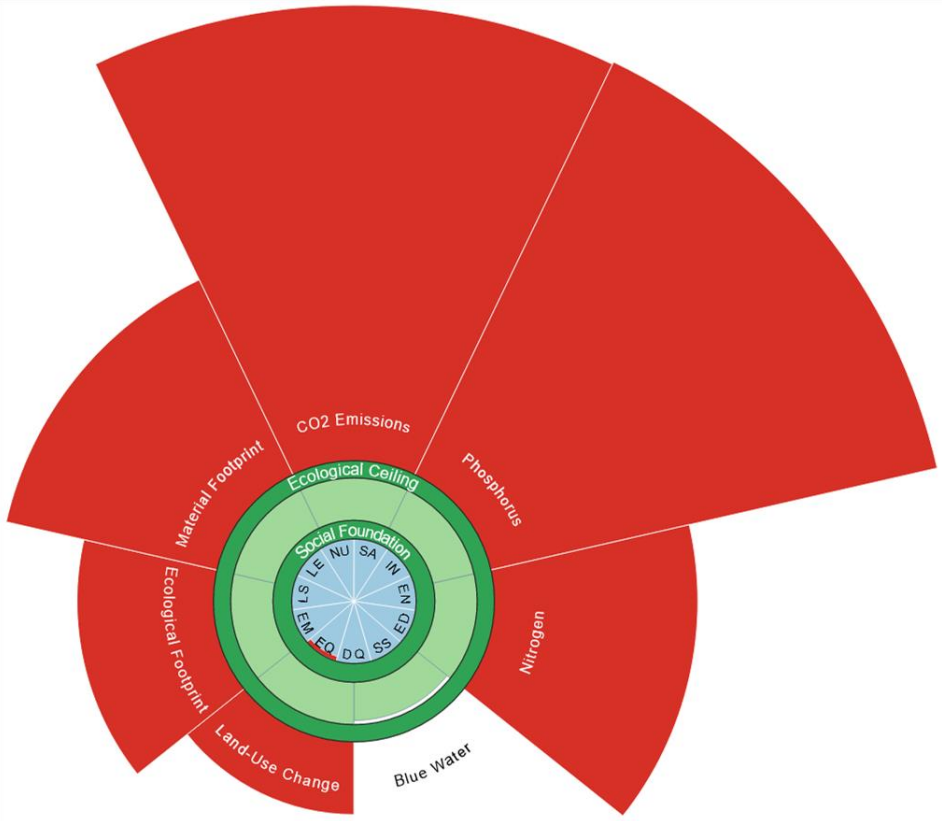




Source: Potsdam Institute for Climate Impact Research, 2022 reassessment

DOUGHNUT ECONOMICS ACTION LAB

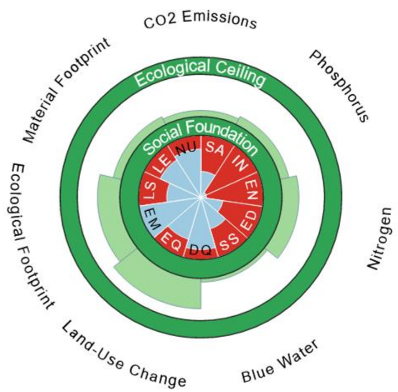
Divergent national contexts



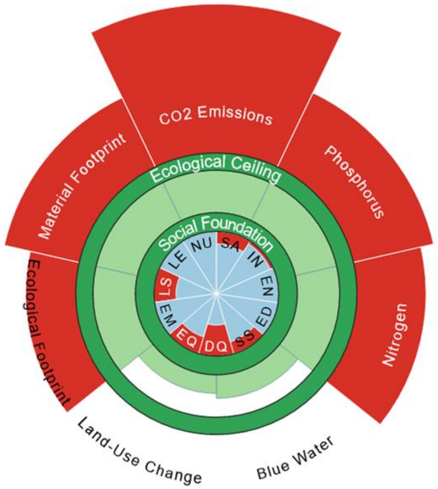
Source: Doughnut Economics Action Lab, University of Leeds (goodlife.leeds.ac.uk)

Divergent national contexts

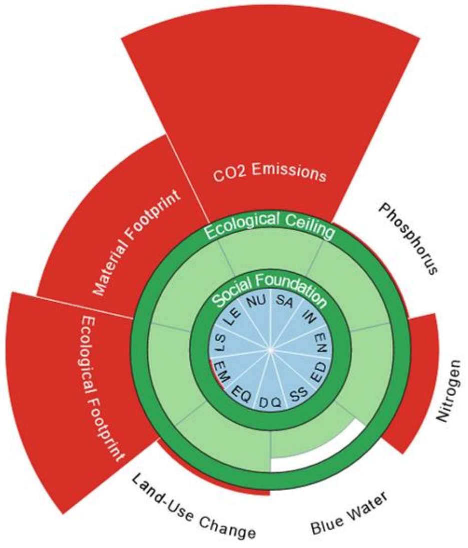
goodlife.leeds.ac.uk



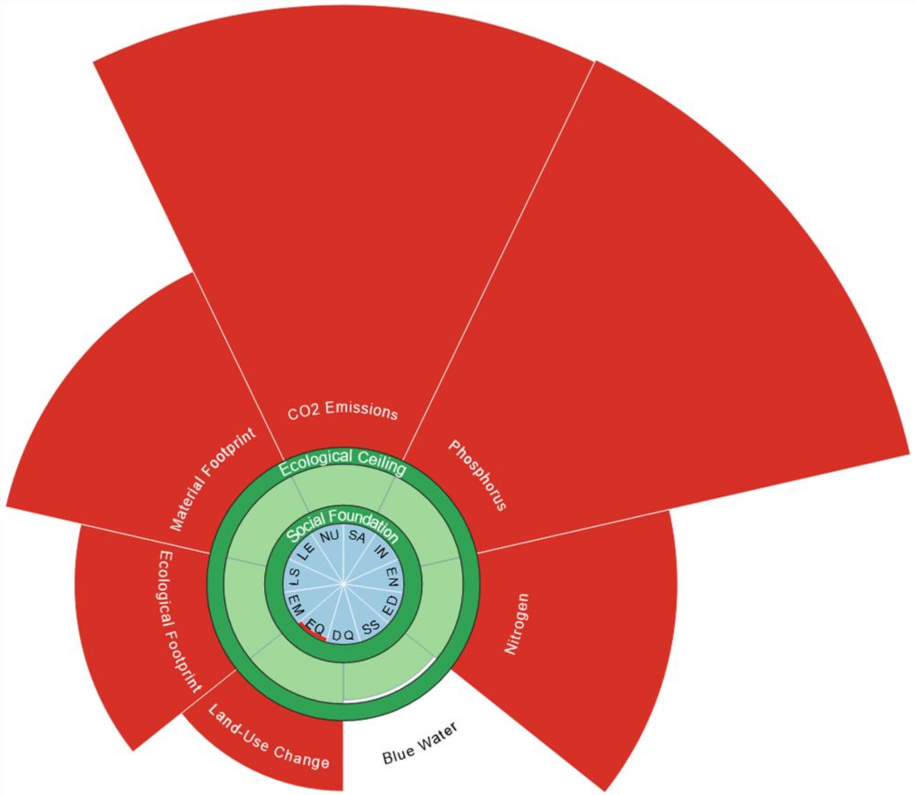
Malawi
$1,000 pc



China
$17,200 pc



Belgium
$54,000 pc

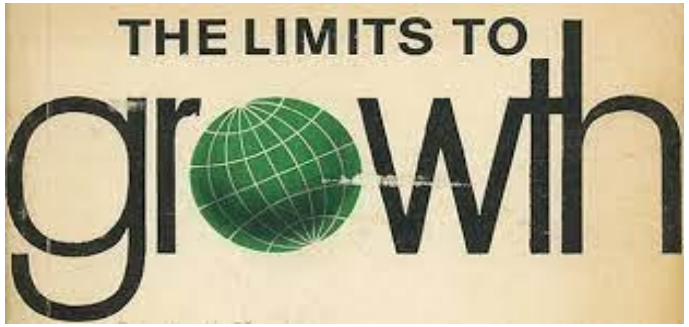


Australia
$54,900 pc

Source: Doughnut Economics Action Lab, University of Leeds (goodlife.leeds.ac.uk)

The World has Changed

1972



Population on the Planet 3.8 billion

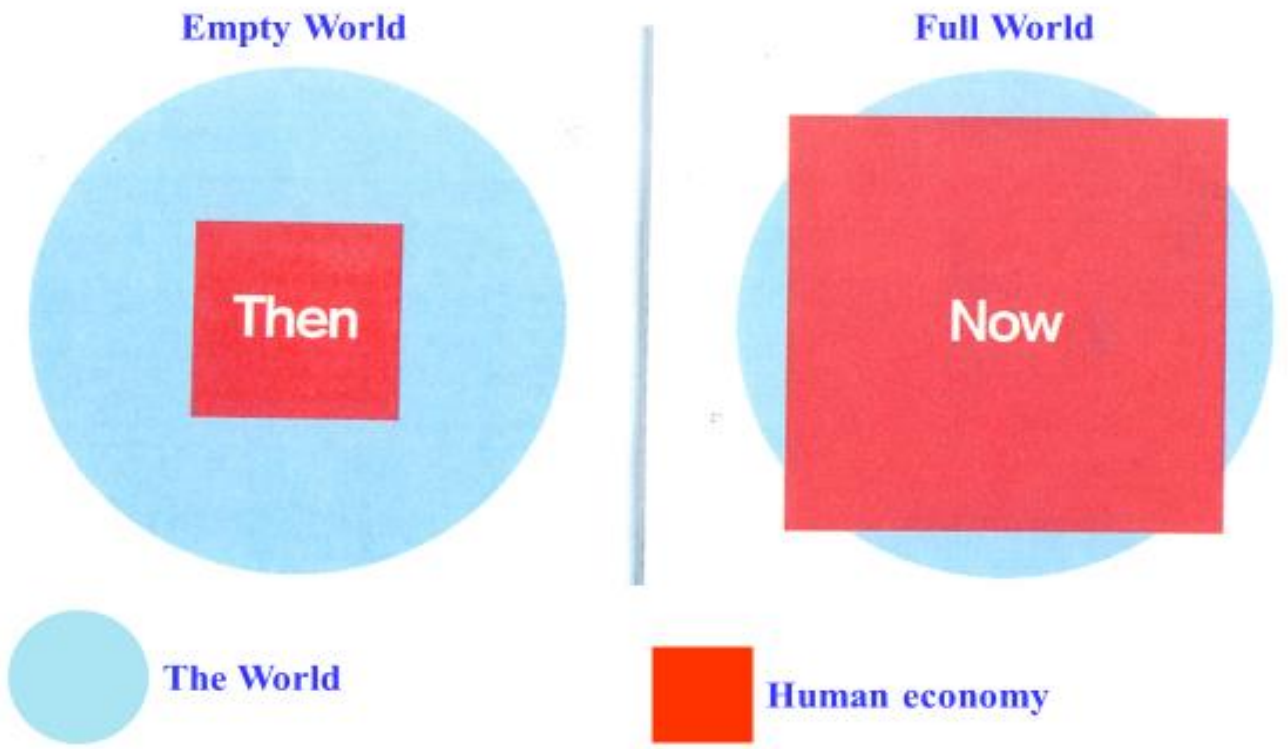
2022

*The **Growth of Limits***

Climate Change,
Pandemics, Biodiversity
Loss, Security Threats …

Population on the Planet 8 billion

From "Empty" World to "Full" World



Source: Club of Rome: Simplified after Herman Daly

Labour and Infrastructure limiting factors of human wellbeing → *Natural resources and Environmental sinks limiting factors of human wellbeing*

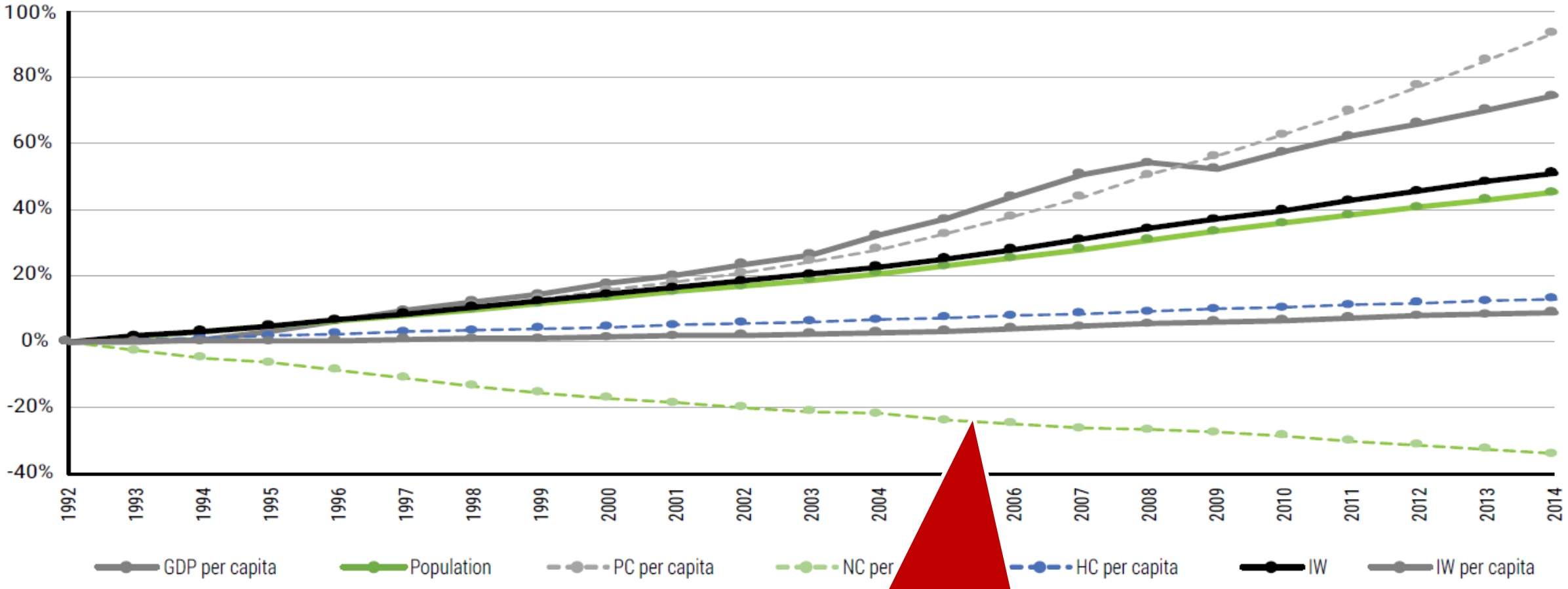
For the first time in a human history, we face the emergence of a single, tightly coupled human social-ecological system of planetary scope.

We are more interconnected and interdependent than ever.

Our individual and collective responsibility has enormously increased.

Inclusive Wealth (IW) Index (and its components) evolution - 1992 to 2014

Source: Inclusive Wealth Report 2018



IW – Inclusive Wealth

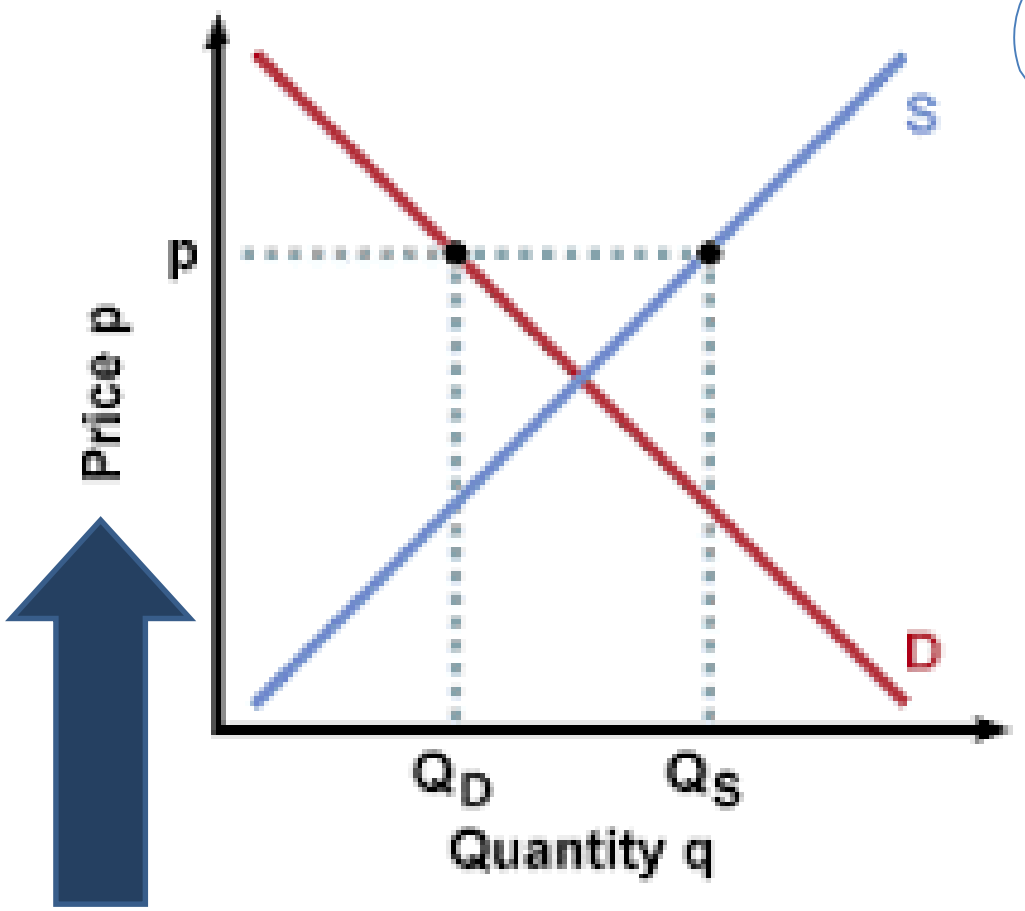
PC – Production capital

HC – Human capital

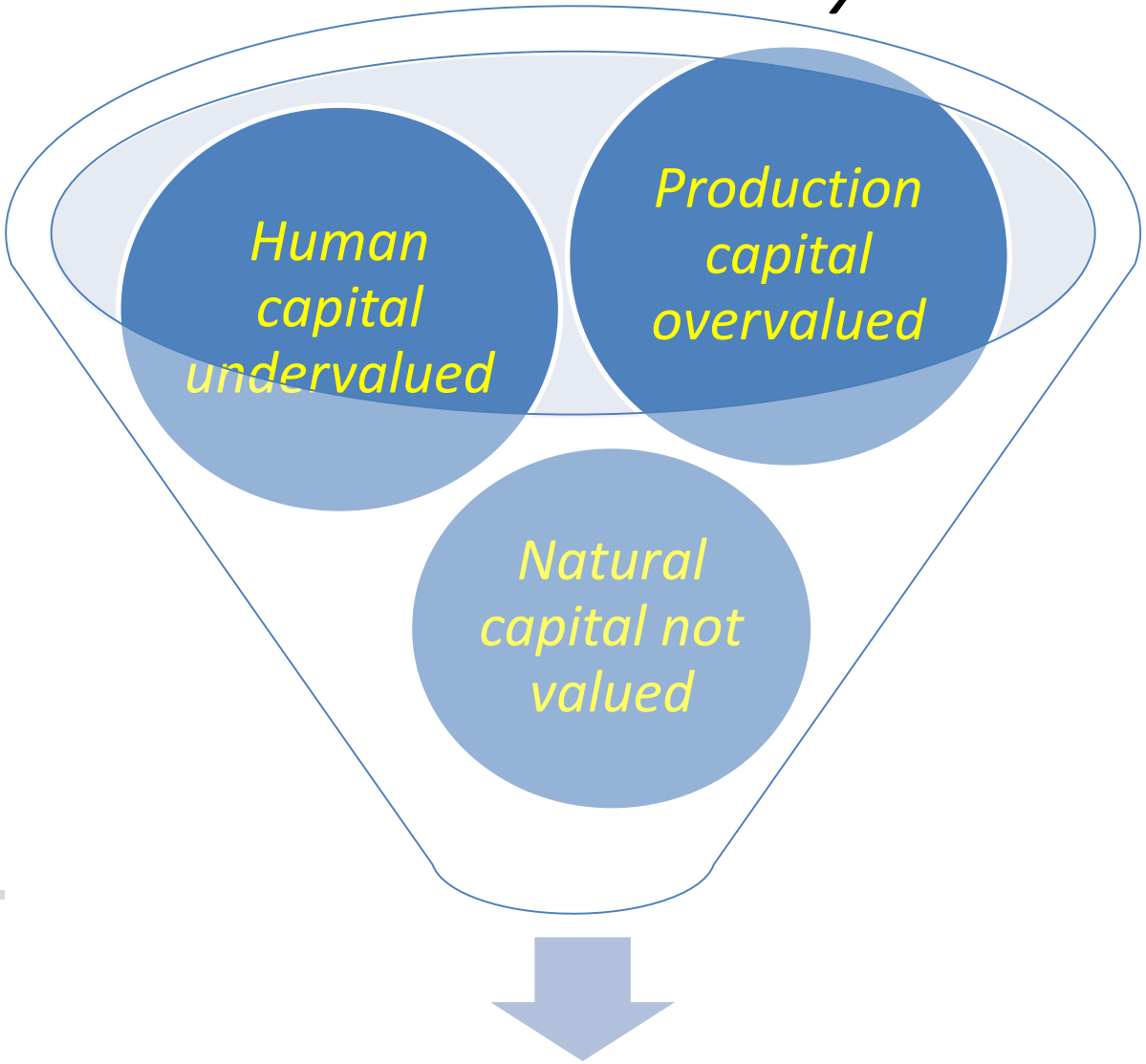
NC – Natural capital

Growth of GDP in the past decades has been achieved at the cost of depleting natural capital and indebting future generations

Producers/Consumers Rational Behaviour



Market Economy



Economic, social and environmental (in)balance

Resource Perspective

The Common Roots of the Triple Planetary Crises

Natural Resources:

Provide the foundation for the goods, services and infrastructure that make up our current socio-economic systems

Biomass (wood, crops, including food, fuel, feedstock and plant-based materials)

Fossil fuels (coal, gas and oil)

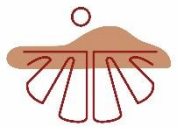
Metals (such as iron, aluminum and cooper…)

Non-metallic minerals (including sand, gravel and limestone)

Materials

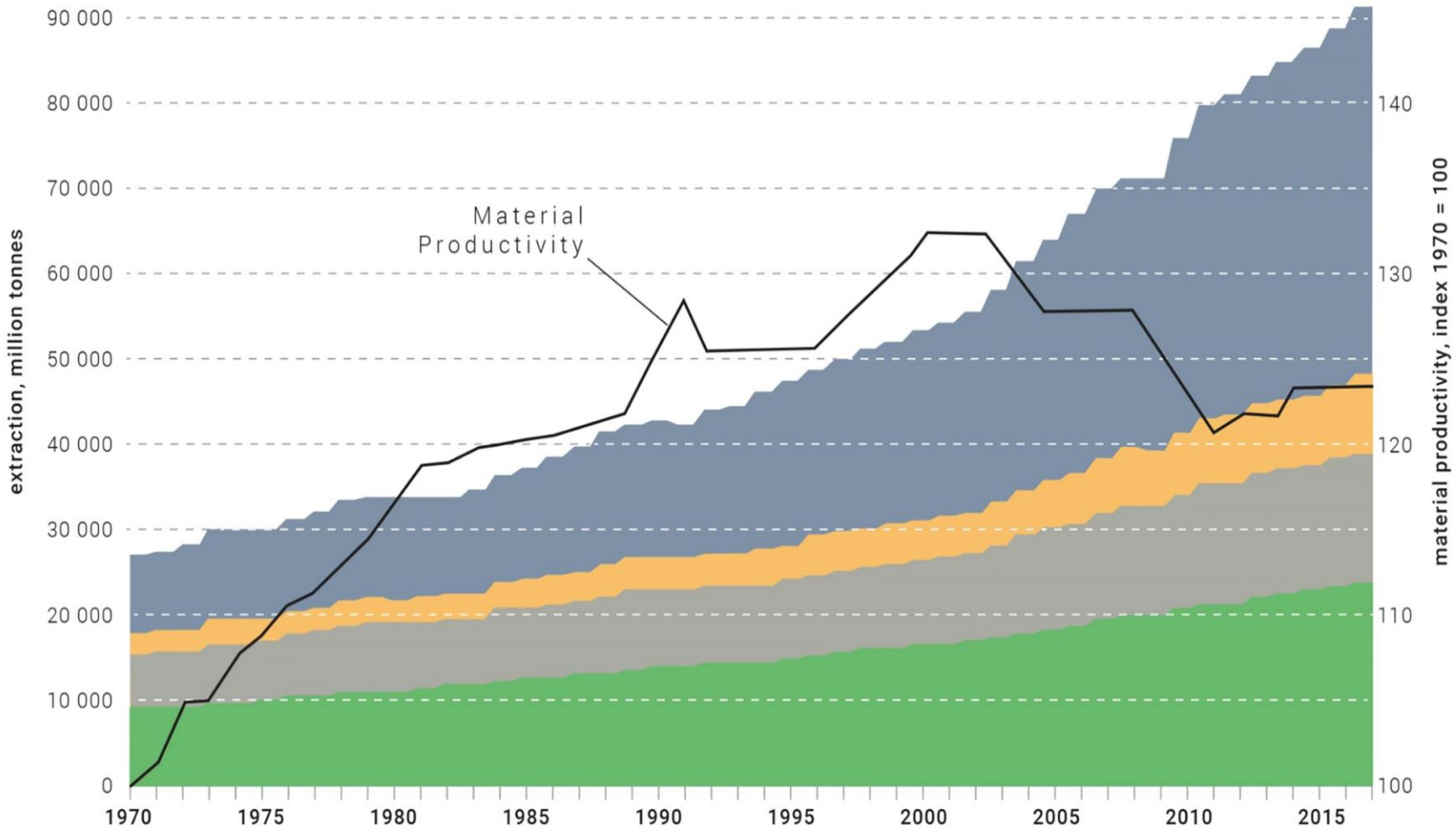
Extracted from earth

Water and Land



International Resource Panel

Global Material Use, Demand per capita and Material Productivity in the years 1970-2017



Global material use has more than tripled since 1970

Global material demand per capita grew from 7.4 tons in 1970 to 12.2 tons per capita in 2017

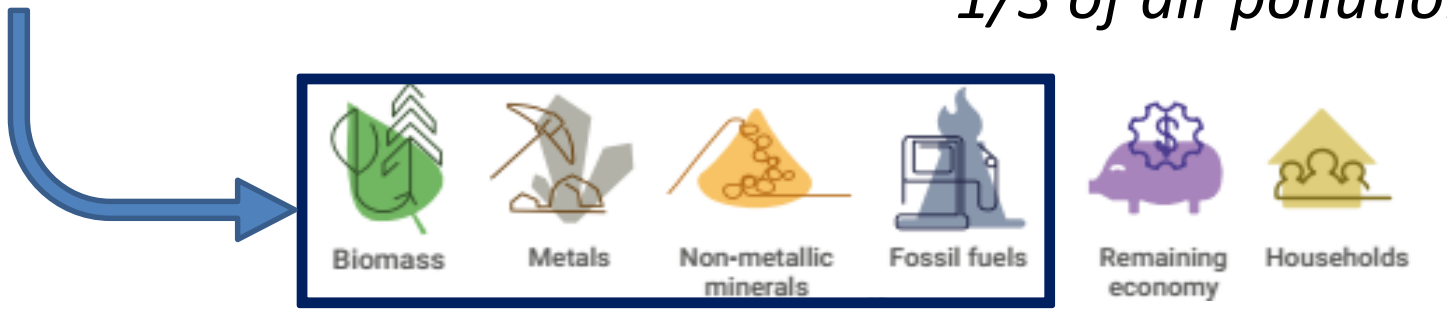
Material productivity started to decline around 2000 and has stagnated in the recent years

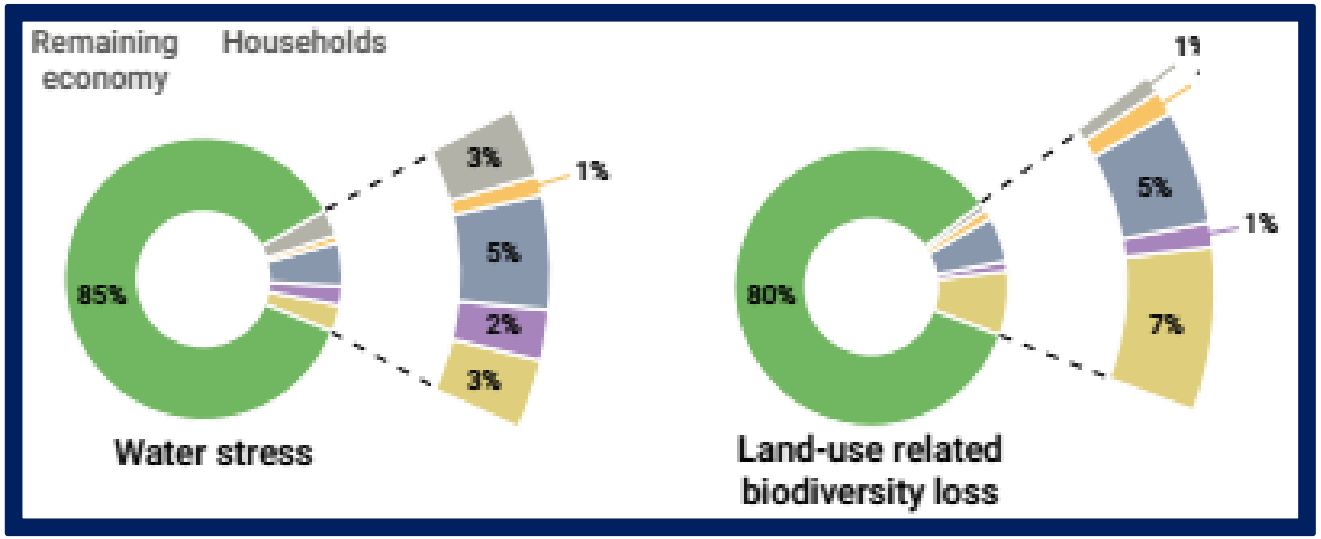
- *Non-metallic minerals*
- *Metals*
- *Fossil fuels*
- *Biomass*

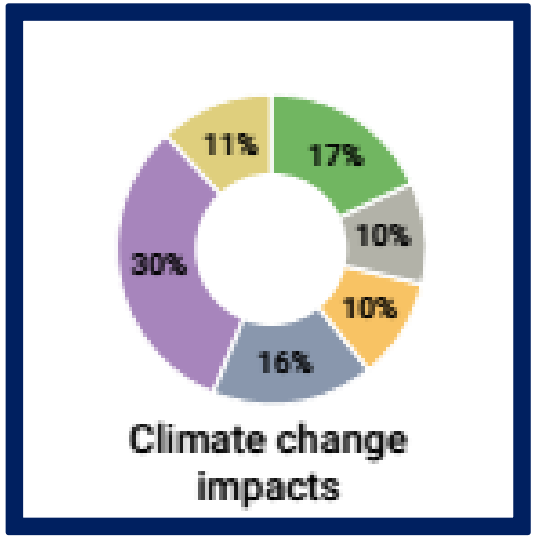
Extraction and Processing of Natural Resources Drives all Aspects of the Triple Planetary Crisis

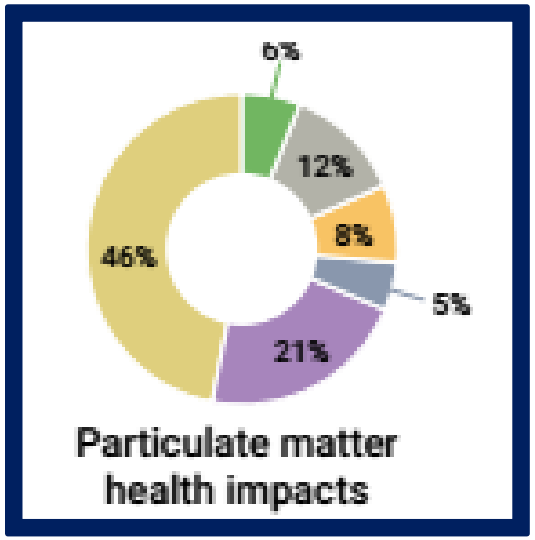
Environmental impacts of materials in the value chain in extraction and processing phase

90% of global land related biodiversity loss and water stress
50% of global climate change impacts
1/3 of air pollution health impacts



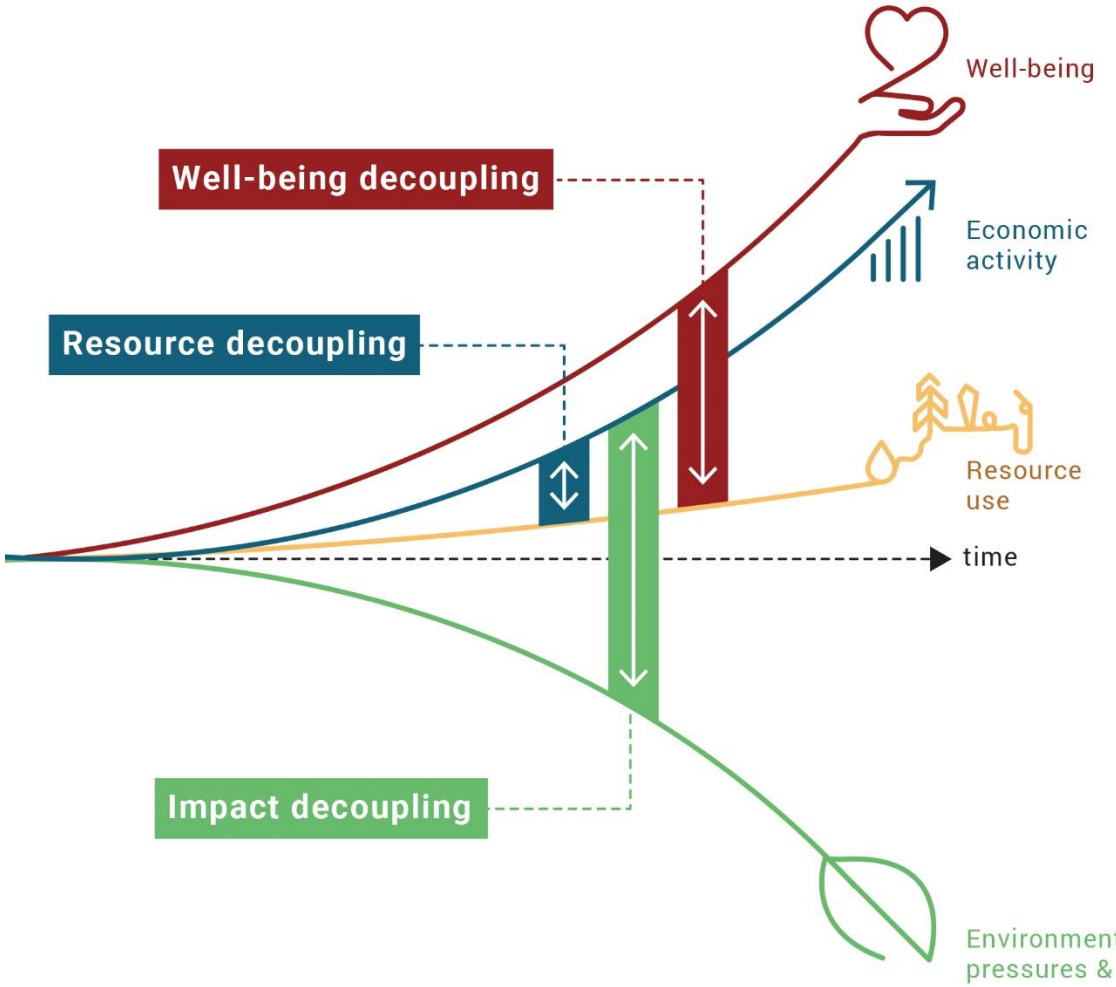






If current trends would continue, global material consumption is predicted to double by 2060

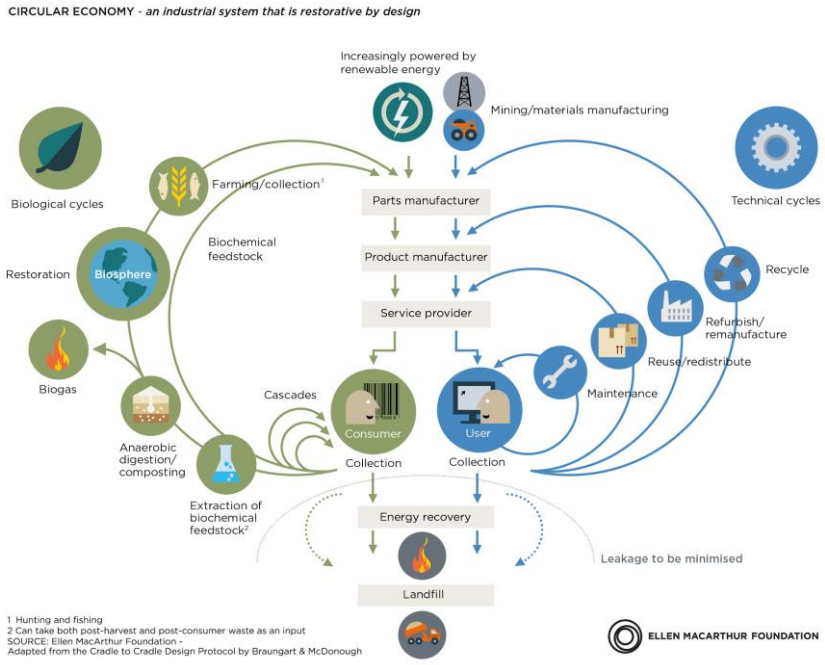
Decoupling



UN environment

International Resource Panel

Some basics …



Circular economy should be seen as an instrument for strengthening resilience and strategic autonomy - delivering decoupling of economic growth from resource use and environmental impacts in practice, as well as a part of the bigger picture of economic, societal and cultural transformation needed to deliver the EGD and SDGs

The first dimension is often overlooked…

Resource Efficiency

Dimensions	
1 ***BETTER: Minimise product need through better system design***	***Refuse and Rethink strategies***
2 ***LEANER: Optimise product design***	***Reduce strategies in manufacture and use***
3 ***LONGER: Maximise lifespan of products and its parts***	***Reuse, Repair, Refurbish, Remanufacture, Repurpose and Recycle strategies***
4 ***CLEANER: Minimise waste and pollution***	***Recovery strategies***

Often overlooked, but crucial for effectiveness

From Product Maximisation to Providing Human Needs

It is not not about owing it is about using

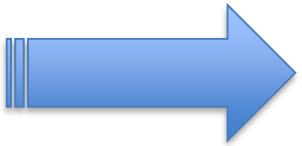
We do not need cars	*…*	*We need mobility*
We do not need light bulbs	*…*	*We need light*
We do not need chairs	*…*	*We need to sit*
We do not need refrigerators	*…*	*We need chilled and healthy food*
We do not need CDs	*…*	*We want to listen to the music*
We do not need pesticides	*…*	*We want healthy plants*

Dematerialisation, Rethinking Ownership, Efficiency should be Complemented with Sufficiency

From Selling Refrigerator to Selling the Service of Cooling

Dematerialisation and Decoupling

Amazon.com



Wallpapers.vista

Refrigerators sold to the consumer are the basis for producers' profit

Selling food and drink cooling service Refrigerators used are producers' cost

Making EGD Implementable

The System Change Compass:
Implementation of the European green Deal vision

- ***Sets zero net emissions*** *of GHG by* ***2050*** *and* ***decoupling of growth and resource use***
- *Acknowledges need for fair and* ***just transition***
- *Aims at* ***strongly interlinked and mutually reinforcing*** *policy recommendations*

- ***Does not sufficiently address drivers and pressures*** *that cause environmental damage*
- ***Does not offer systemic perspective*** *to guide decision-making*
- *Implementation is put at extra risk due to* ***COVID-19 recovery and war in Ukraine***

- ***Maps and envisions*** *the system in service of people and planet*
- ***Derives system level orientations*** *towards desired state*
- *Charts pathway towards prosperity and wellbeing* ***within planetary boundaries***

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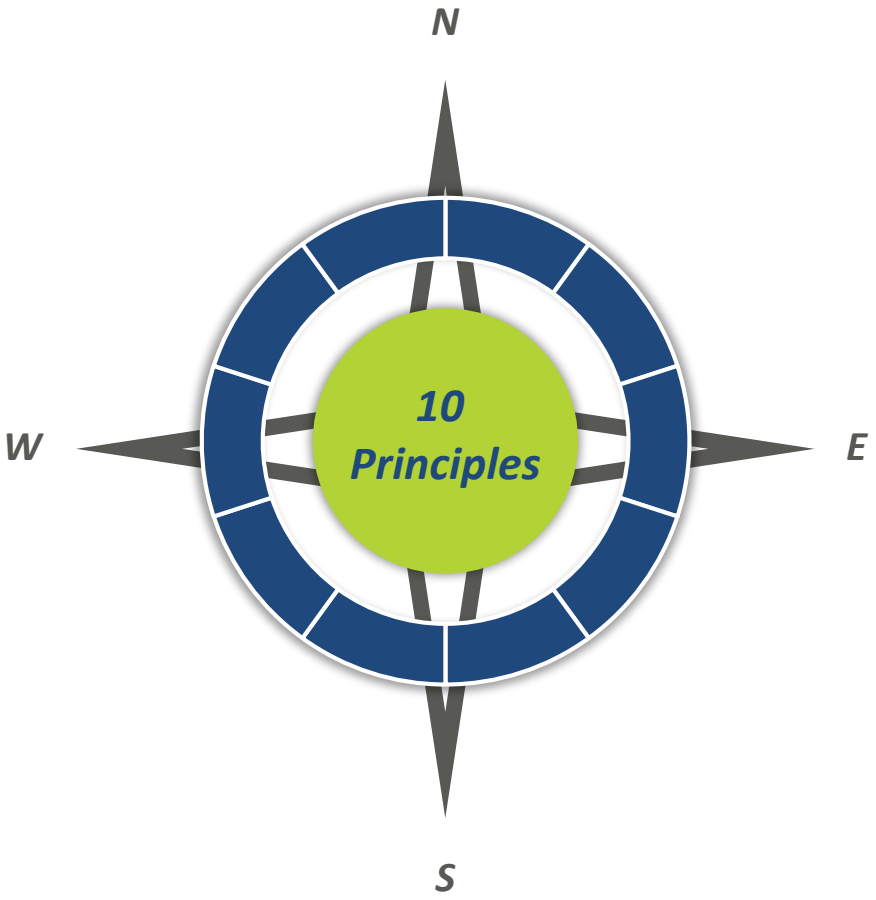
From the IRP science to the System Change Compass

System Change Compass (10 Principles)



Application to the system to derive systemic orientations

30 System-level orientations

3-5 ecosystem-level orientations

50+ Champion orientations

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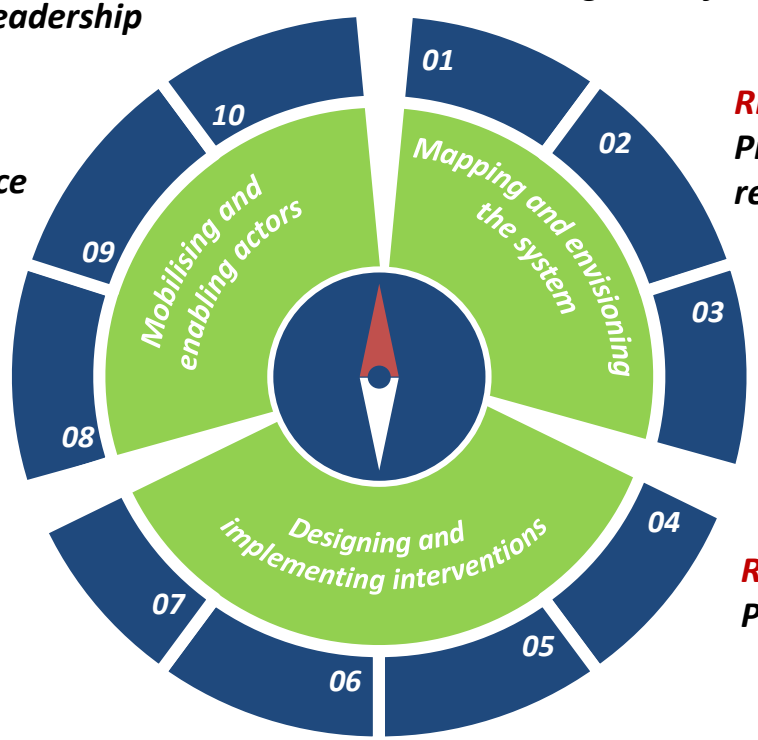
Redefining the Socio-Economic System

REDEFINING LEADERSHIP:
Intergenerational agreement through new forms of leadership

REDEFINING PROSPERITY:
Embracing social fairness for real prosperity

REDEFINING GOVERNANCE:
A systematic approach to governance influenced by science

REDEFINING NATURAL RESOURCE USE:
Prosperity decoupled from natural resource use



REDEFINING FINANCE:
The facilitator of the transition

REDEFINING PROGRESS:
Meeting societal needs as a purpose of a model based on economic ecosystems

REDEFINING METRICS:
Performance measurement updated

REDEFINING CONSUMPTION:
From owning to using

REDEFINING INCENTIVES:
Show the real value of social and natural capital

REDEFINING COMPETITIVENESS:
Digitization and smart prosperity at the heart of European competitiveness

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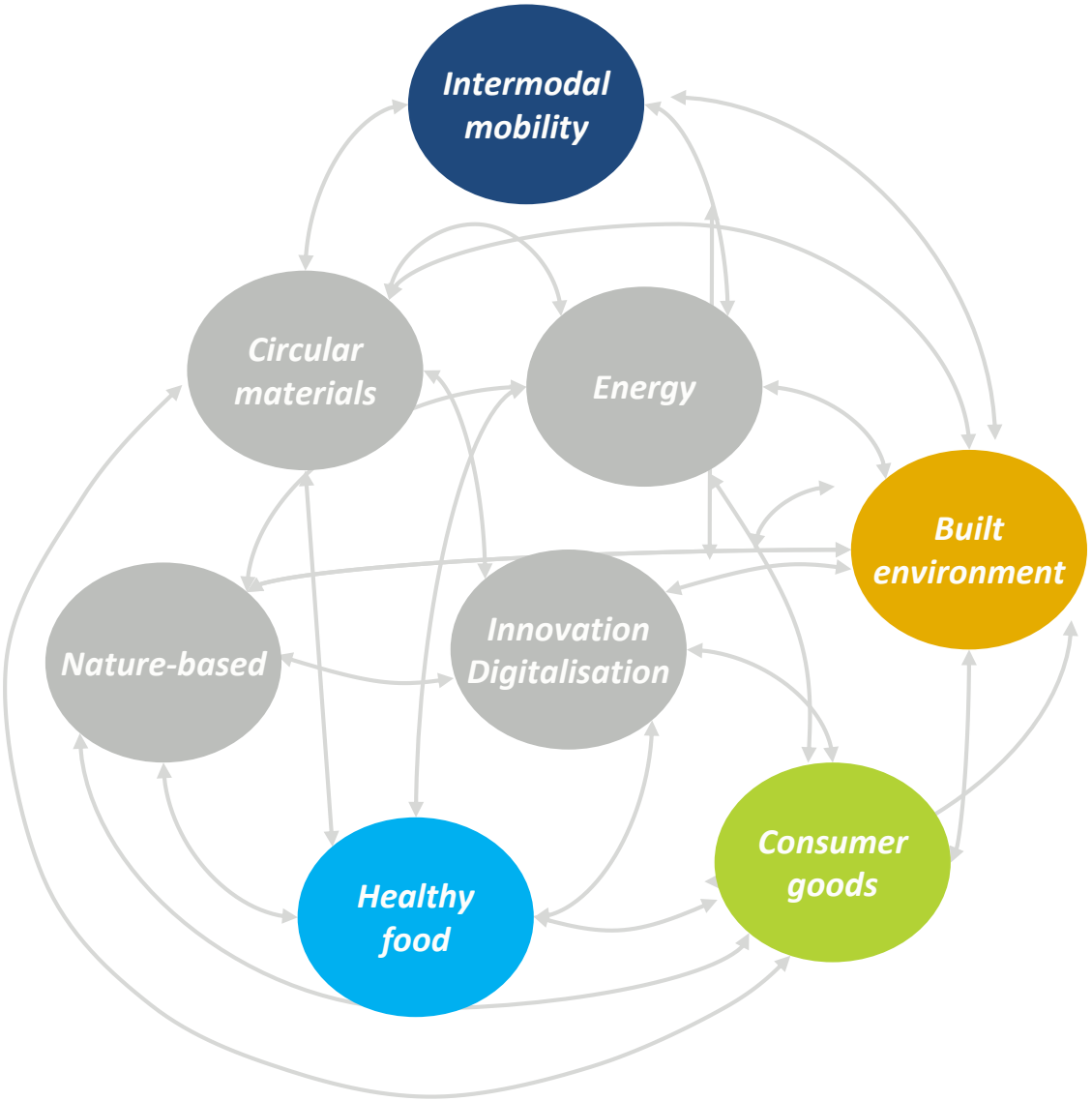
Provisioning Systems



Related to resource intensive human needs

- Nutrition
- Mobility
- Housing
- Daily functional needs

- Resource relevant systems enabling and supporting the provisioning systems delivering societal needs

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50+ nascent industrial investment opportunities that should be supported to build ecosystems based on compass orientations

Healthy food

- Organic food and beverages
- Regenerative agriculture
- Sustainable aquaculture and fishing
- Reduce and valorise food waste
- Urban agriculture
- Product reformulation for nutritious food
- Alternative proteins

Built Environment

- Smart urban planning
- Rethink built environment ownership
- Repurpose underutilized buildings
- Retrofit existing buildings
- Fluid and sufficiency-oriented space management
- Circular and net-zero housing

Intermodal Mobility

- Fast charging infrastructure
- High-speed railway infrastructure
- Modern and adapted transit infrastructure
- Car- and ride-sharing models
- End-of-life management for cars
- Electric and autonomous vehicles
- Infrastructure to improve traffic flow and AV adoption
- Green aviation
- Green shipping
- Walking/cycling infrastructure

Consumer goods

- Product-as-a-Service models
- Maintenance and value retention in products
- Peer-to-peer product sharing platforms

Nature-based

- Restoration of degraded land and coasts
- Smart forest management
- Urban greening
- Systems for paid ecosystem services
- Seaweed
- Marine and land-based environmental protection areas
- Ecotourism

Energy

- Renewable power generation
- Energy storage
- Hydrogen economy
- Smart metering and (point-of-use) energy management
- Grid integration and technologies
- Production of low-carbon gaseous and liquid fuels (transition technology only)
- Carbon capture infrastructure (transition technology only)

Circular Materials

- Localised and distributed value chain systems
- Asset recovery systems and reverse logistics
- Markets for secondary materials
- High-value material recycling
- Materials-as-a-Service models
- New materials and high-performing substitutes
- Additive manufacturing

Information and processing

- Distributed manufacturing
- High-speed digital infrastructure
- Digital material information and tracking systems
- Data generation, processing, and protection
- Artificial Intelligence for societal challenges

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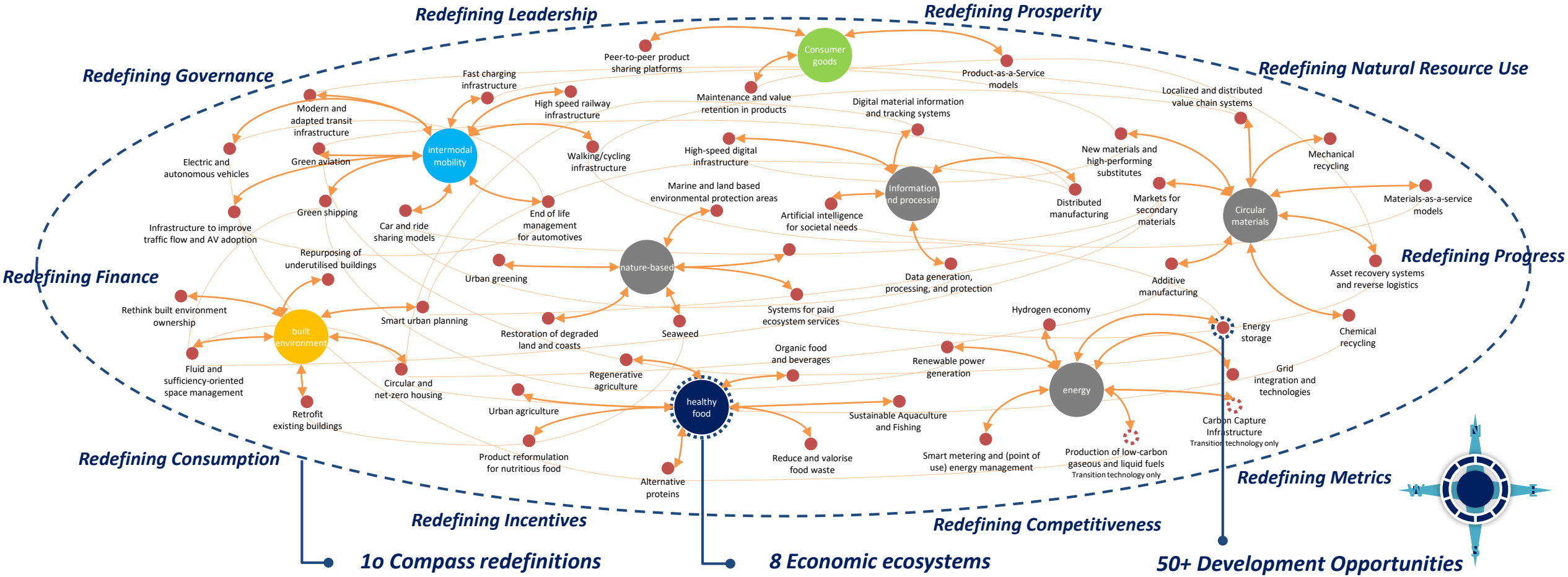
System Change Compass



1o Compass redefinitions | **8 Economic ecosystems** | **50+ Development Opportunities**

New organization of economic activities	*One overarching system that consolidates the European economy in its entirety.*	*Economic ecosystems can meet a specific societal need (e.g. intermodal mobility system) or support the fulfilment of multiple societal needs (e.g. new energy system).*	*"Champions" are economic subsystems which could become the new spearheads of the green, resilient and fair post-COVID economy Europe wants to build*
Application of the compass on each level	***10*3 = 30 system-level policy orientations***	***3-5 specific economic ecosystem policy orientations***	***50+ economic subecosystems orientations***

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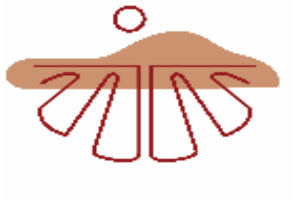
Global Resources Outlook 2024: Resource Use for Societal Wellbeing

Biomass

Fossil fuels

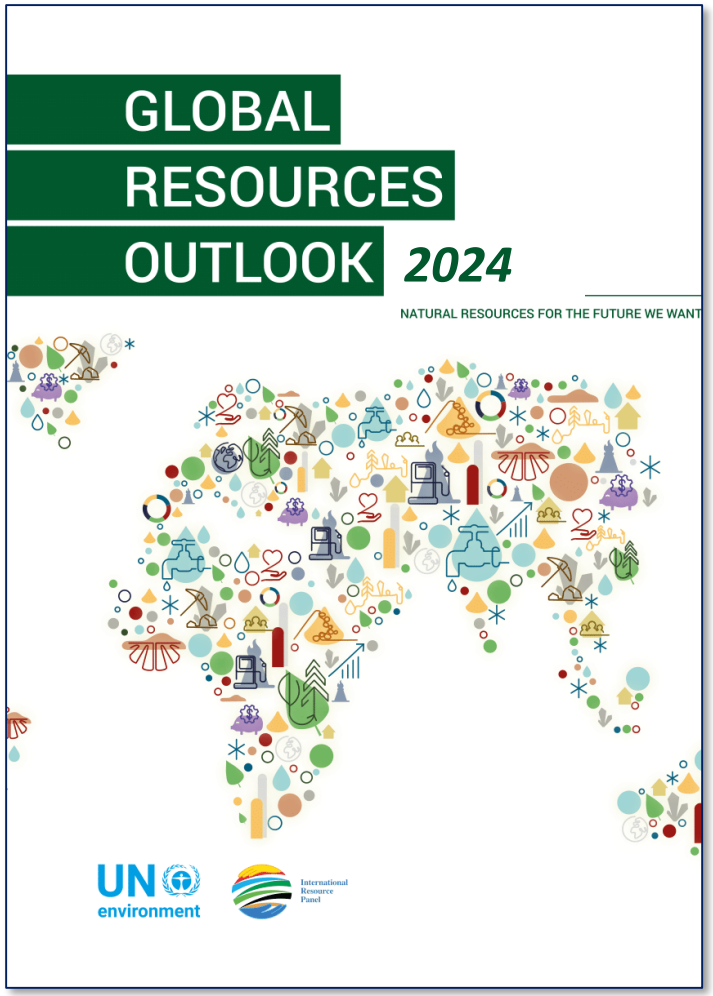
Metals

Non-metallic minerals



Land

Water



- *Provisioning systems logic*
- *Wellbeing indicators*
- *System-change focused scenarios*

Main Blind-Spots

Climate Change in Focus

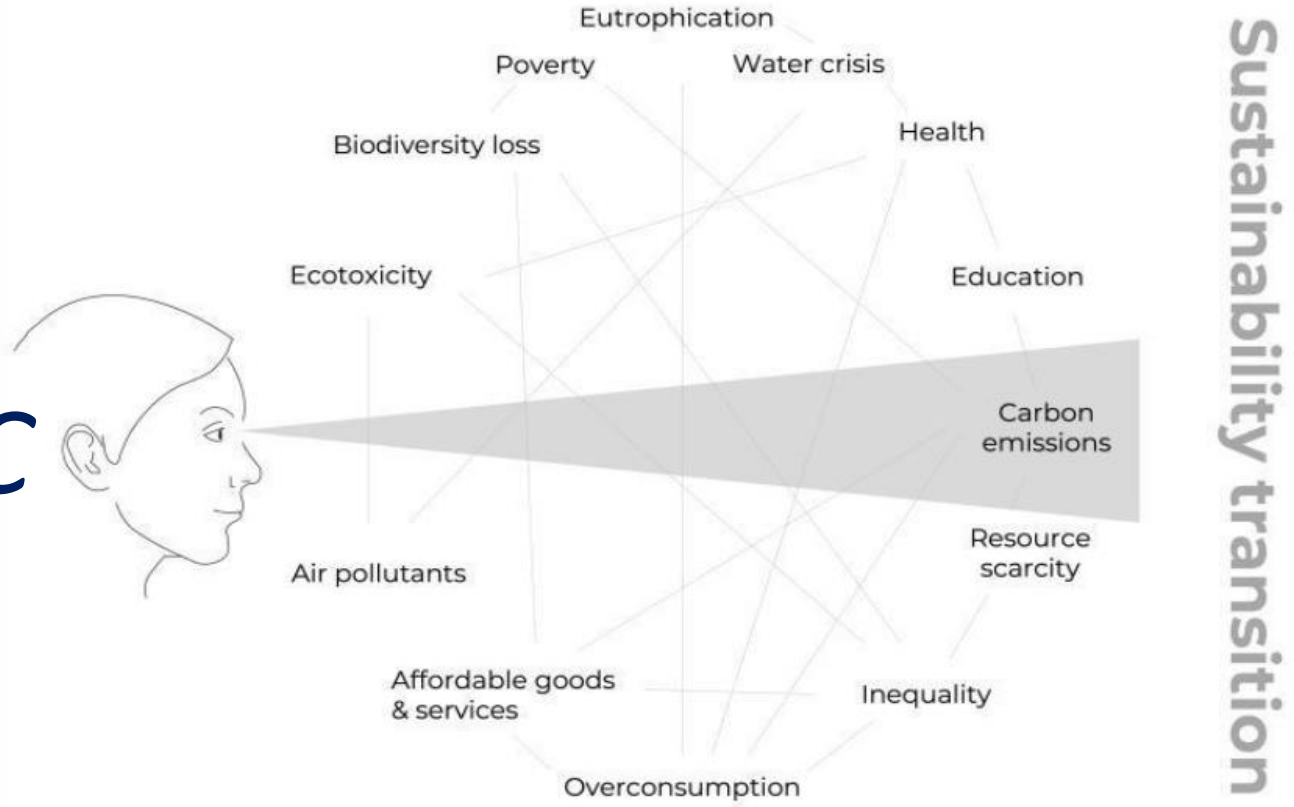
1

Lack of Holistic System approach

Public leaders lack capacity or knowledge of how to translate system change visions into their concrete policies/investment structures which ends in conflicting policy logics that hinder real transformation

We need to extend the optic and potential policy options beyond the currently prevailing energy supply

UNFCCC



This leads to trade-offs and future lock-ins rather then to synergies and potential multiple-benefits ➢ and resilient economy and society

A 'Glasgow Breakthrough' was announced on road transport aiming for zero emission vehicles to be the new normal, accessible, affordable, and sustainable in all regions by 2030.

UN CLIMATE CHANGE CONFERENCE UK 2021

IN PARTNERSHIP WITH ITALY

System change in road transport means less and more efficient traffic, for more value

Five Levers for Sustainable Car-Based Transport

Reduce demand for car-based transport

- ***Reduce*** *overall* ***mobility need*** *(e.g., through remote work)*
- ***Modal shift*** *from cars to foot, bike, & public transport*
- ***Higher utilization of vehicles*** *through sharing*

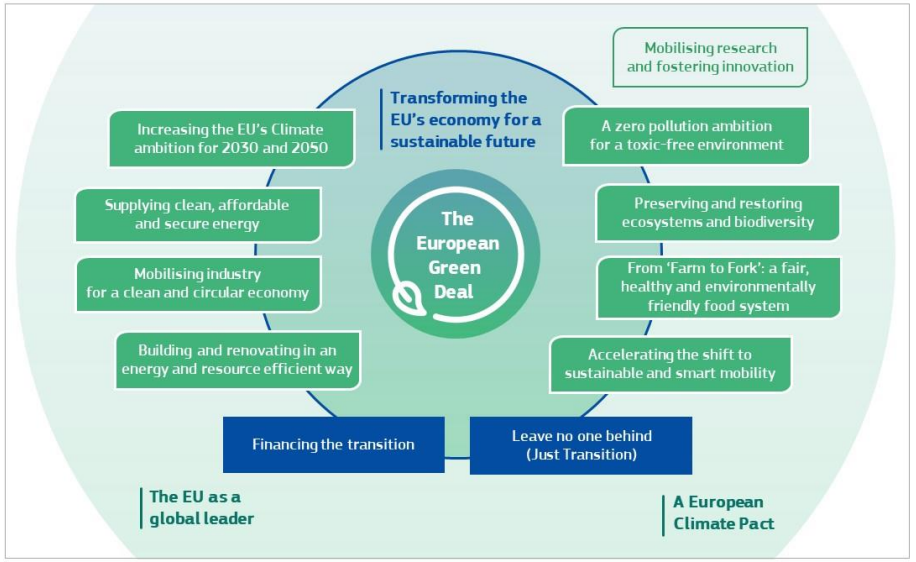
Ensuring remaining vehicles are as sustainable as possible

- ***Electrification*** *based on renewable energy*
- ***Circularity****, maximizing value of used materials*

2

Lack of Drivers and Pressures Perspective

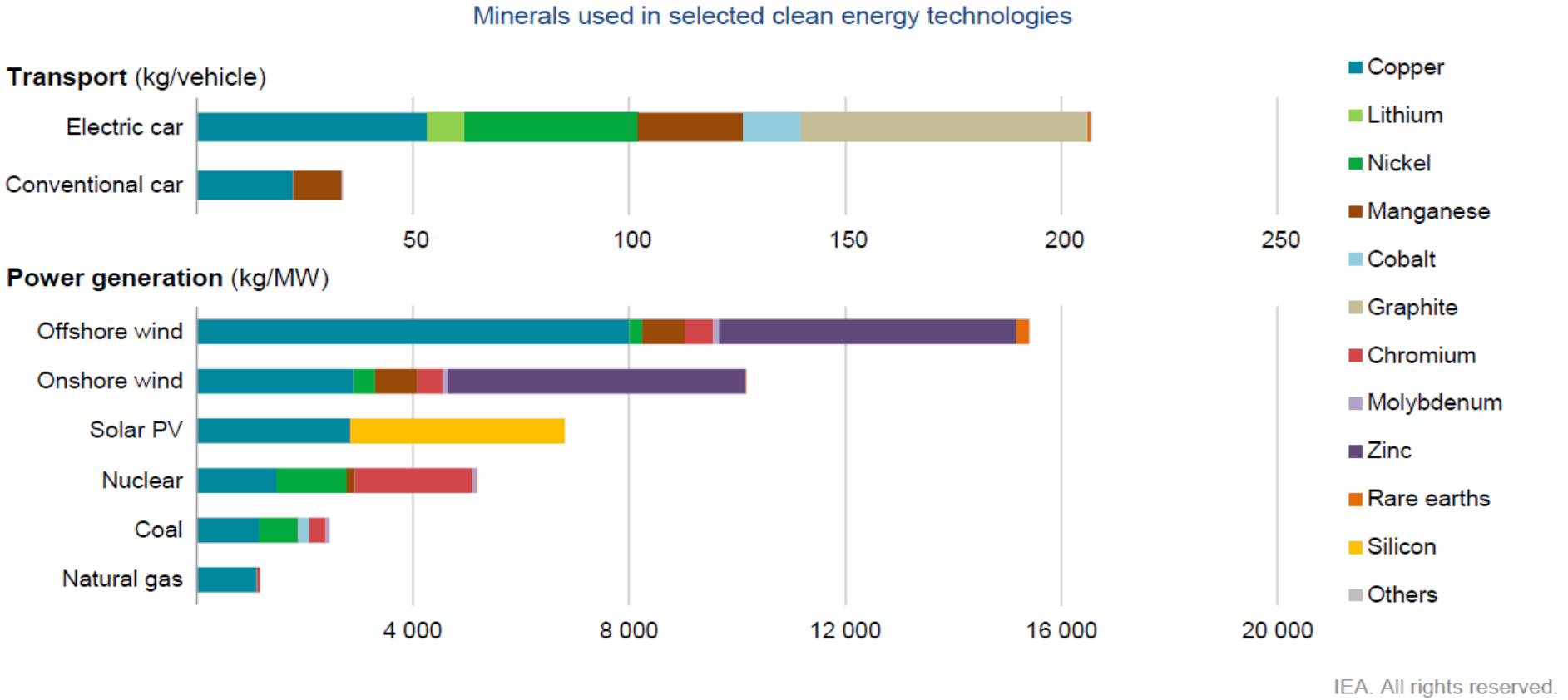
Policy attention does not focus on the roots of the problem and address the drivers and pressures. It lack focus on natural resource use and management, as well as on market signals leading consumers and producers' behaviour.



It is "a new growth strategy that aims to transform the EU into a fair and prosperous society, with a modern, resource-efficient and competitive economy where there are: no net emissions of greenhouse gases in 2050 and where economic growth is decoupled from resource use … At the same time, this transition must be just and inclusive"

Energy Transition

Choice of minerals



Notes: kg = kilogramme; MW = megawatt. Steel and aluminium not included. See Chapter 1 and Annex for details on the assumptions and methodologies.

We are replacing fossil with mineral energy supply

Source: Financing Minerals Extraction for Sustainable Development – IRP report in development to be released by end 2023

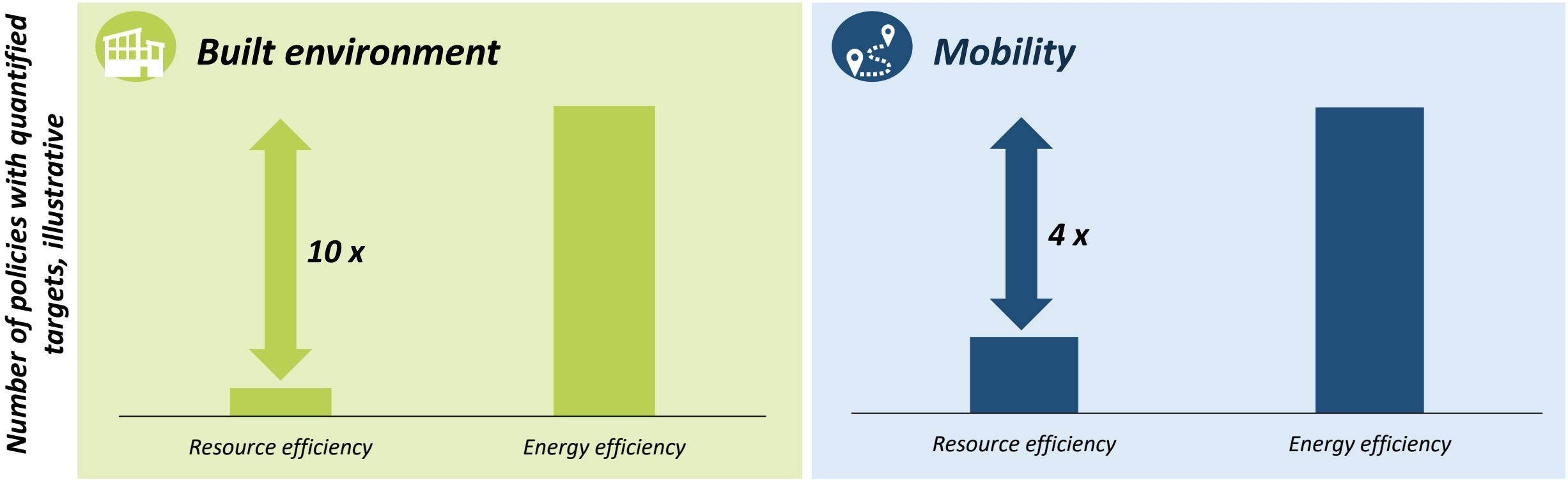
Energy transition is resource demanding on the energy supply side and on the energy demand side

- *Reaching net zero by 2050 will require about six times today's critical mineral use in 2040. And even meeting today's under-ambitious national climate plans would require more than doubling of critical minerals we are using today.*
- *Electric vehicles use close to ten times the material of conventional cars – using at least eight different critical material types, compared to just three for conventional cars.*

Most climate policies still neglect systemic resource efficiency solutions, and thus miss major opportunities for climate and society

Examples - non exhaustive

***G20 Nationally Determined Contributions** and **Long-term Climate Plans** focus on energy efficiency and miss out on more systemic resource efficiency opportunities.*



Source: SYSTEMIQ analysis of G20 NDCs

3

Lack of Demand Side Focus

Policy attention is mainly given to the supply side of the economy, to the cleaning of the existing economic system - lacking the attention to the demand side which is leaving out an important solutions potential and questions of responsibility and equity.

- *To unpack the standstill in our climate efforts and make them effective, to start closing the existing gap among high-income and low-income countries, we must stop ignoring the inherent wastefulness of our production and consumption systems, in particular in high-income countries. For example, it would be in vain to decarbonize the production of steel, as important as this is, if it is used to produce under-used cars and houses, which contribute to traffic and property market bubbles, but not to real social prosperity.*
- *Efficiency policies should be complimented by sufficiency policies. We should start looking how to integrate material and consumption footprints in NDC's structure and logic.*

- *Standards and behaviour patterns linked to the current economic model were set by high-income countries. We are ethically bound to show the world, that we are willing and able to change a reality we created, and to lead the essential transition – at home and globally. While the responsibility for the past is clear, responsibility for future is joined and common - cooperation is the magic ingredient for success.*
- *But only by leading that transition, only by looking first in the mirror, we would give nobody an excuse to repeat some of the mistakes done in the past and avoid collective failure.*

If we want to avoid extinction of elephants in nature, we must extinct elephants in the rooms

Source: Hop distance - The elephant in the room ...blogs.bmj.com

To Conclude

Science is Clear and Change is Unavoidable

How to meet human needs in most energy and resource efficient way?

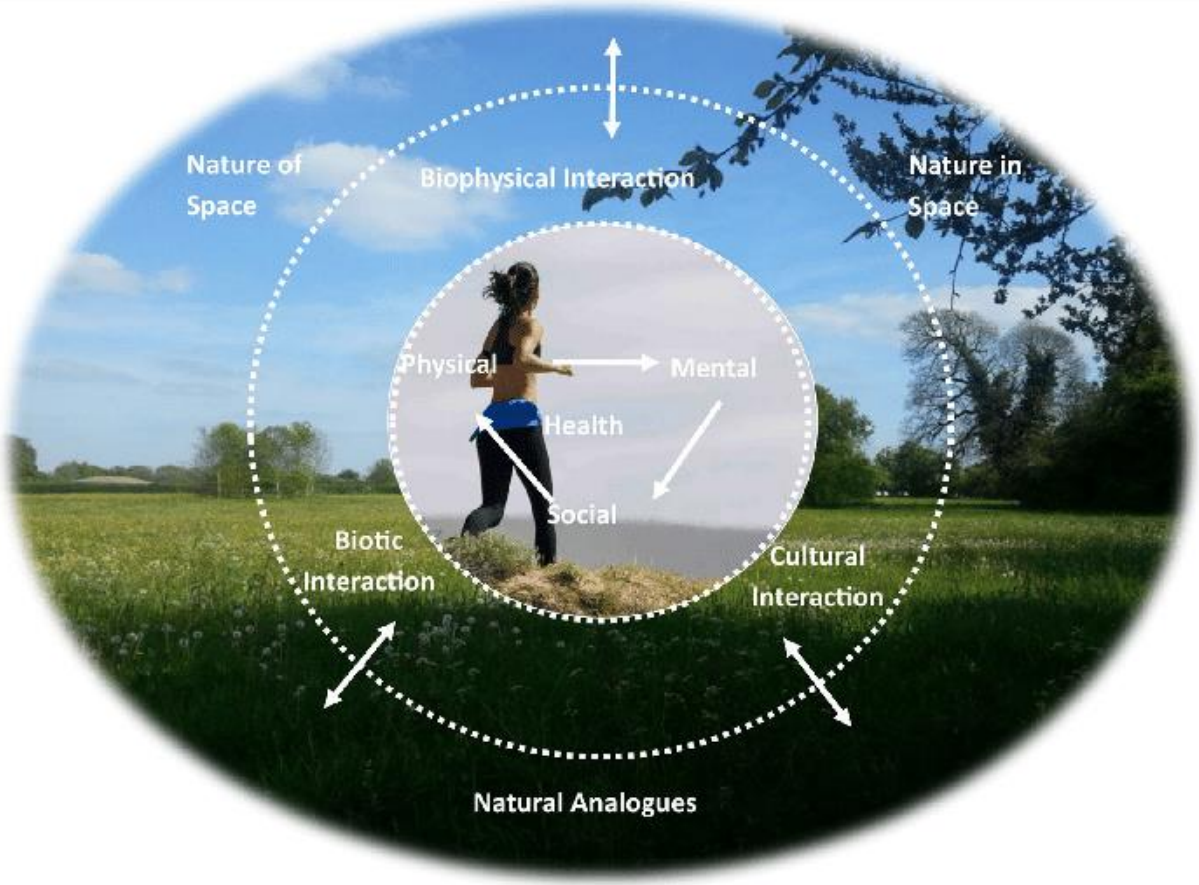
https://edistaffing.com

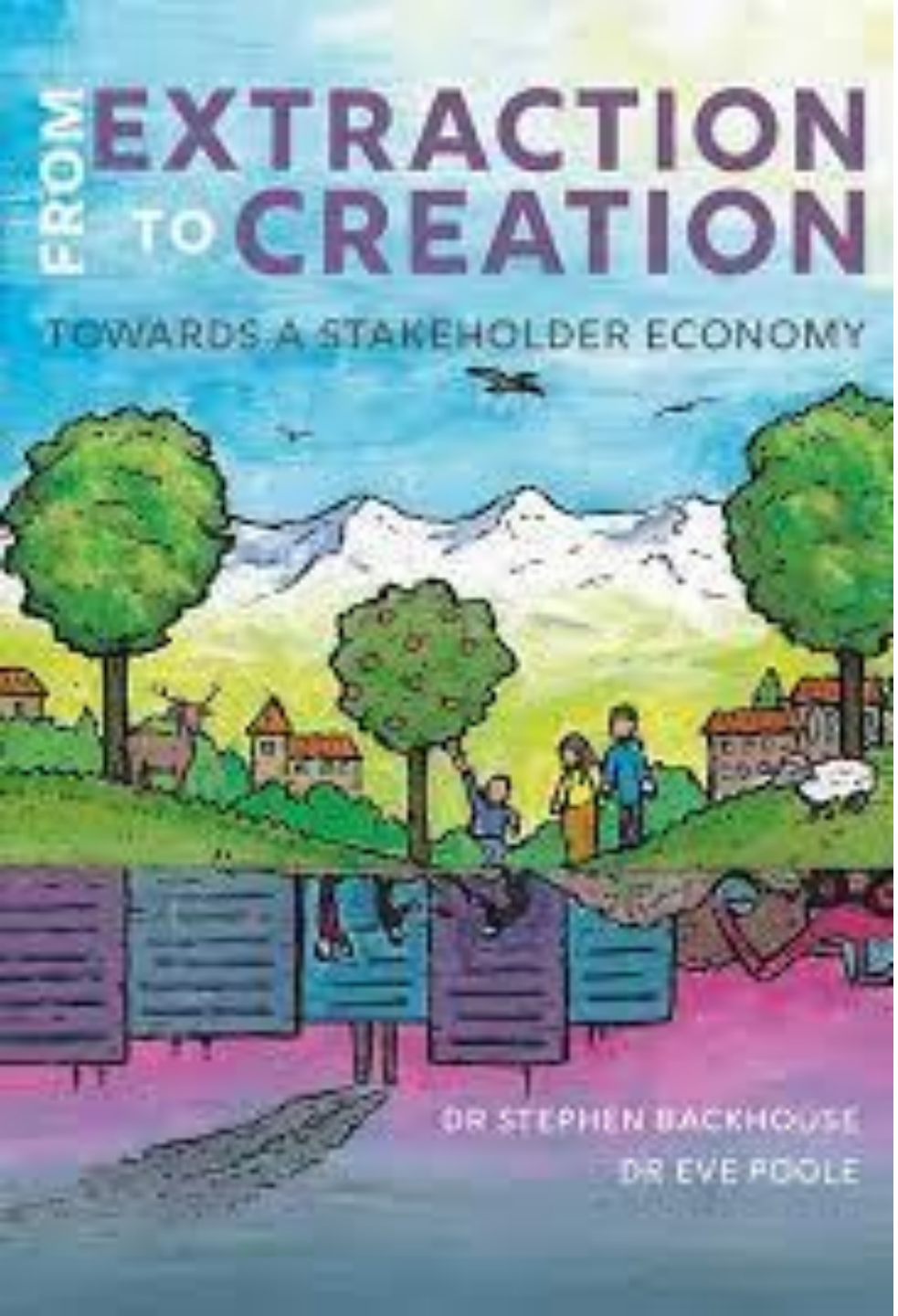
From Humans in function of economic success and development to an economy in function of delivering human needs

We must set the order right!

From economy considering Humans as external/superior to Nature
to an economy acknowledging that we are embedded with Nature

Destroying Nature is destroying ourselves!





From extraction-based production to a creation-based production

We should stop stimulating extraction based economic success and reward responsible, innovative, creative ways of meeting human needs

From an egoistic, short-term based interests' governance structures and logic to cooperation and sharing sovereignty.

We must improve our collective resilience. We need a well-designed intergenerational pact.

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Access to and use of natural resources have been in the human history

closely related to the level of the achieved wellbeing, but also to stability, security, conflicts, wars

Land, Water, Oil and Gas, Minerals, Precious Metals …

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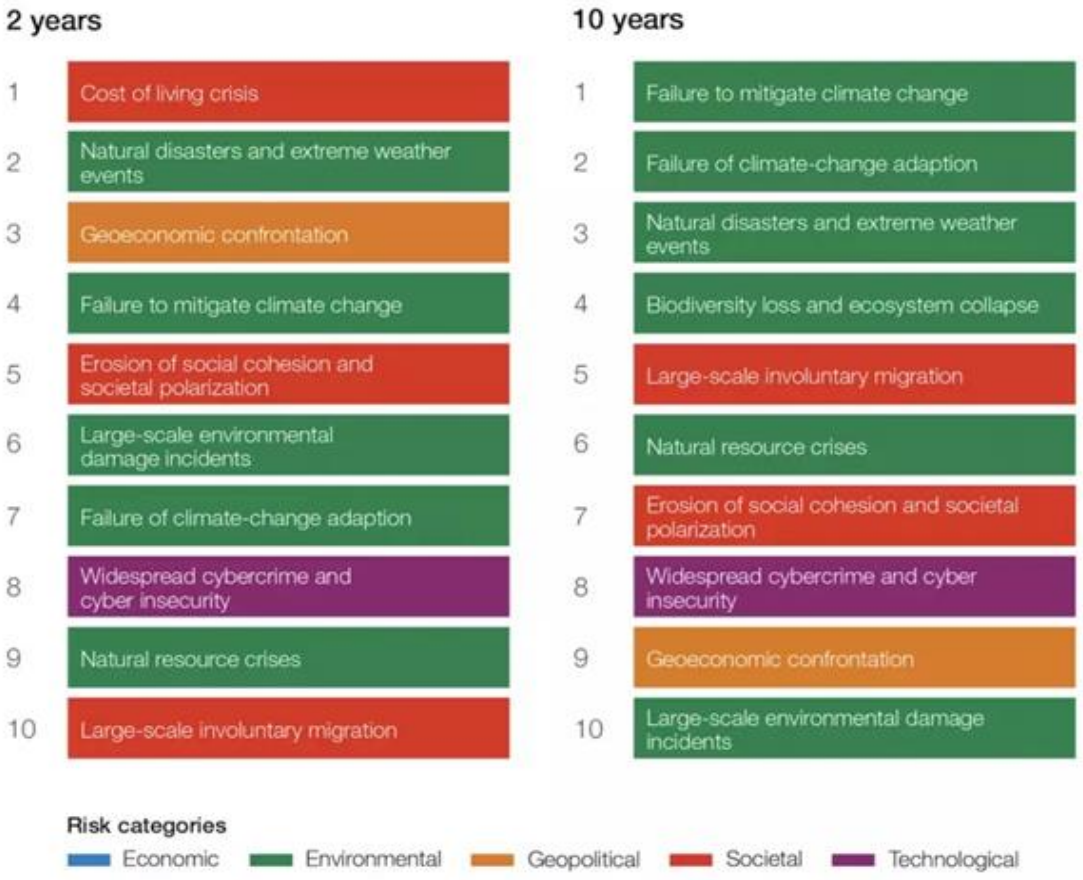
Global Risks Report 2023

Top 10 Risks

WORLD ECONOMIC FORUM

"Please estimate the likely impact (severity) of the following risks over a 2-year and 10-year period"



Source: World Economic Forum, Global Risks Perception Survey 2022-2023

It is getting green !!!
Taking pain-killers to remove the acute pain
do not heal chronical diseases …
rather hides them and make them worse

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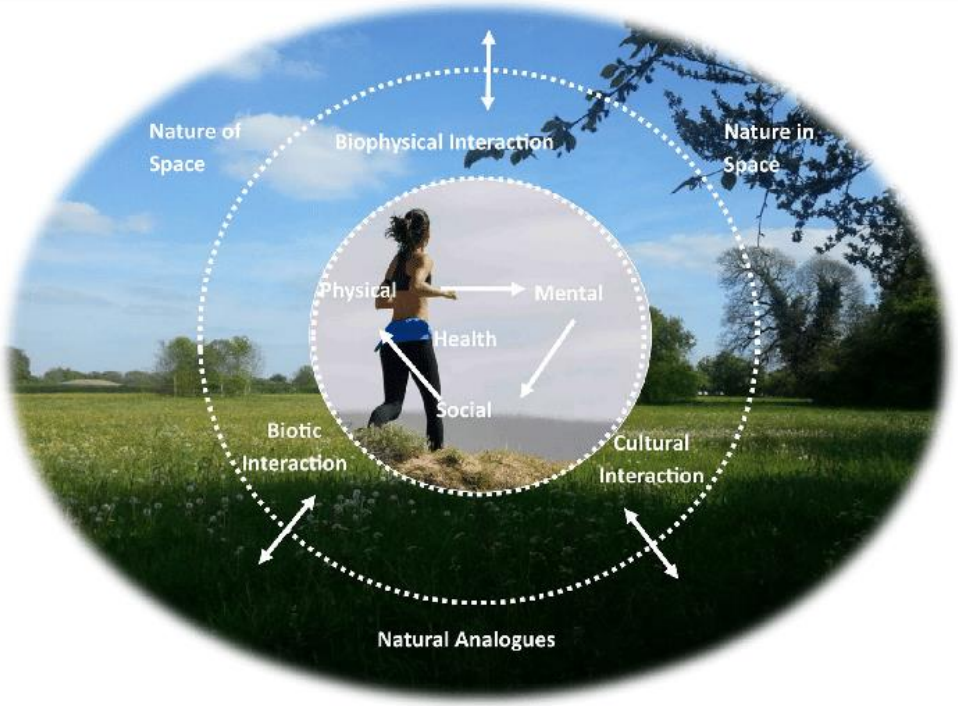
The lessons learned recently are more than convincing to understood that changing our relationship with nature, is ultimately an economic, security and resilience imperative … central also to fairness and equity

This relationship is not stable, nor balanced, and it will be resolved either with collective wisdom and effort, or in a hard and very painful way (conflicts, hunger, pandemics, migration …)

Put the current challenges in the strategic context, broaden and strengthen the front of stakeholders for change!



And finally, most important advice from the most famous Belgium

HERCULE POIROT

When asked why he is speaking about himself always in a third person he replied something like that:

If one is such a genius like me, it is very important to establish a healthy distance to himself.

THANK YOU

for helping us delivering the future we want!