



Recent Policy Developments and Circular Economy Prospects and Needs

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We are living in strange times ...



Source: Wikipedia

*German philosopher Georg Hegel was right:
“The only thing we can learn from the history,
is that we learn nothing from history.”*



*As well as Slavoj Žižek adding:
“Political issues are too serious to be left only
to politicians.”*

Let's start this story in my home country Slovenia

Slavoj Žižek

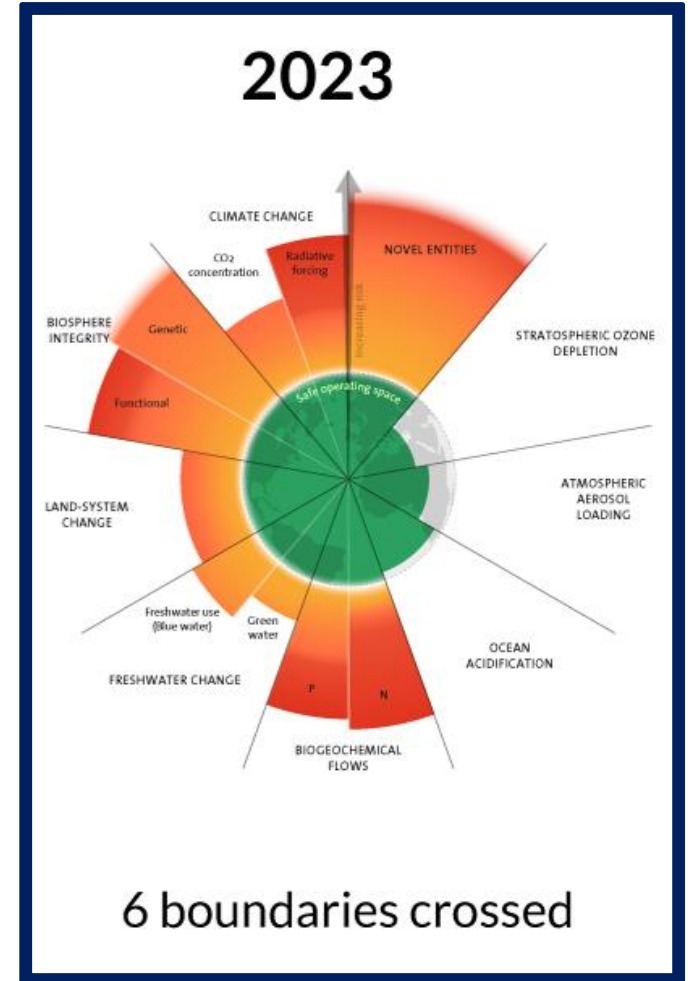
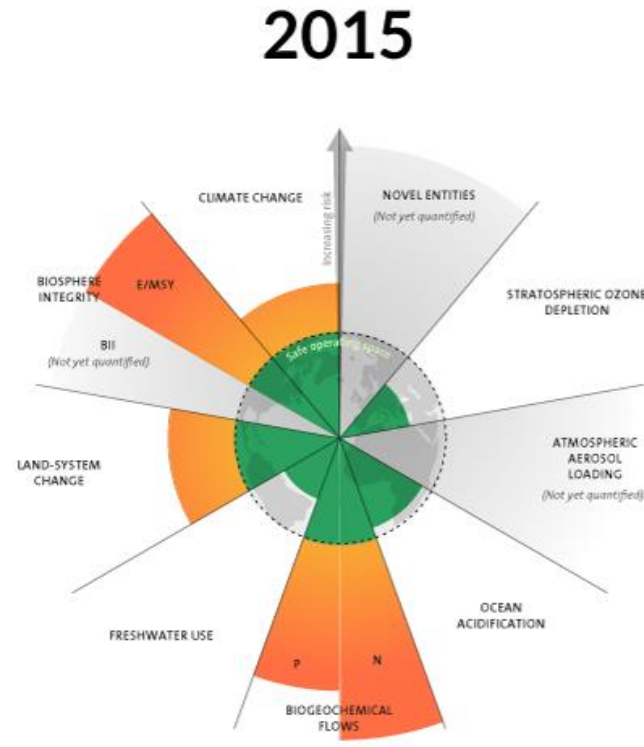
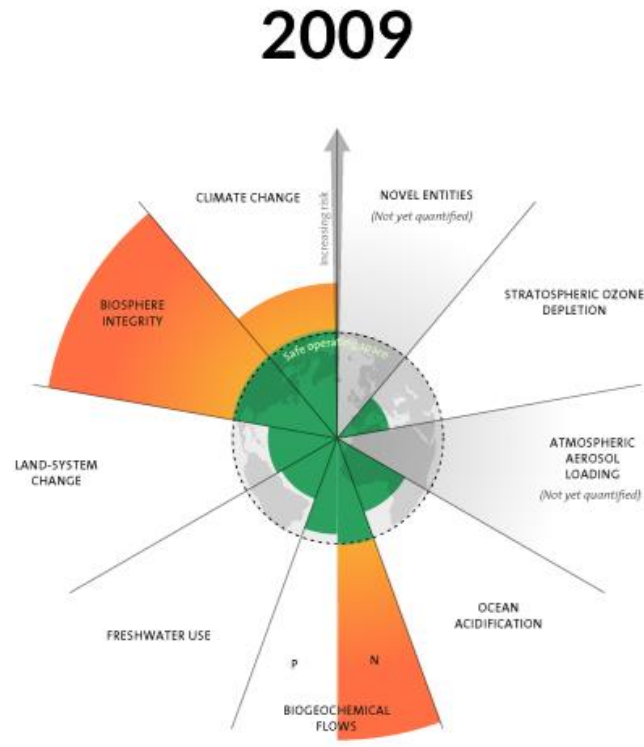


“It is clear that we are approaching the ecological and digital apocalypse ... but we should not loose nerves.”

“Everything under heaven is in utter chaos; the situation is excellent.”

“It is easier to imagine the end of the world than the end of capitalism.”

Planetary crises is making instability the norm



Source: Azote for Stockholm Resilience Centre,
based on analysis in Richardson et al 2023

Natural Resources

Why they are important, trends and impacts?

This Importance of Natural Resources

*Access to and use of natural resources have been in the human history **closely related to the level of the achieved wellbeing of the nations, but also to stability, security, conflicts, wars** (Access to Land, Water, Oil and Gas, Minerals, Precious Metals ...)*

*It was driving the **geo-political efforts of consumption countries to control the resource rich countries.***

*The whole history of the colonialisaton of nature, is also central to **fairness and equity.***

Definition: Materials and Resources



Biomass: crops for food, energy and bio- based materials, wood for energy and industrial uses



Fossil fuels: covering coal, gas and oil, among other



Metals: such as iron, aluminum and cooper, among other



Non-metallic minerals: sand, gravel, limestone and minerals used for industrial applications



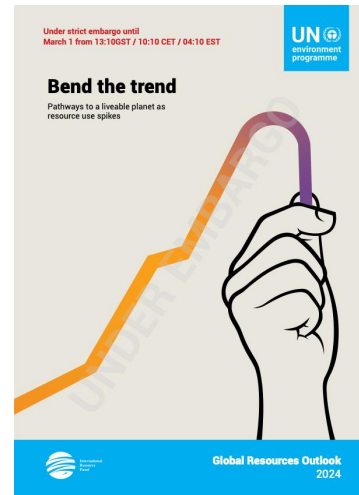
Land



Water

Materials:
Everything
extracted from
the Earth

Resources:
Materials + Land
and Water

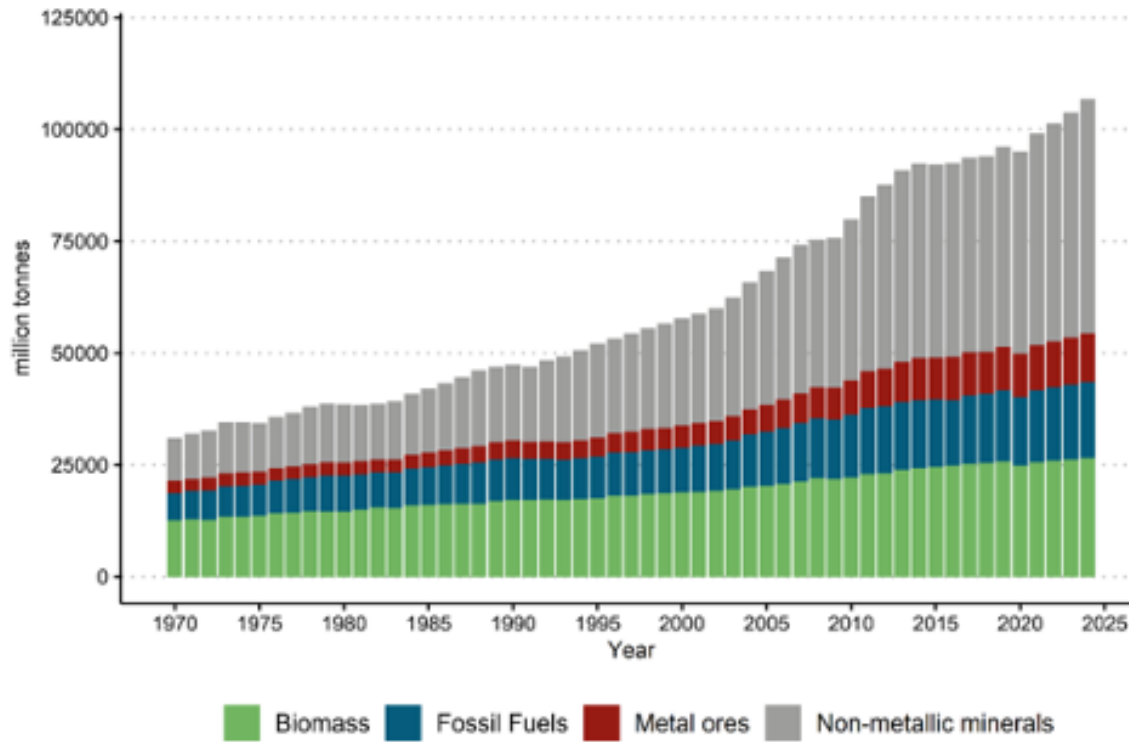


Economy Championed by Industrialised Nations is Wasteful and Unjust

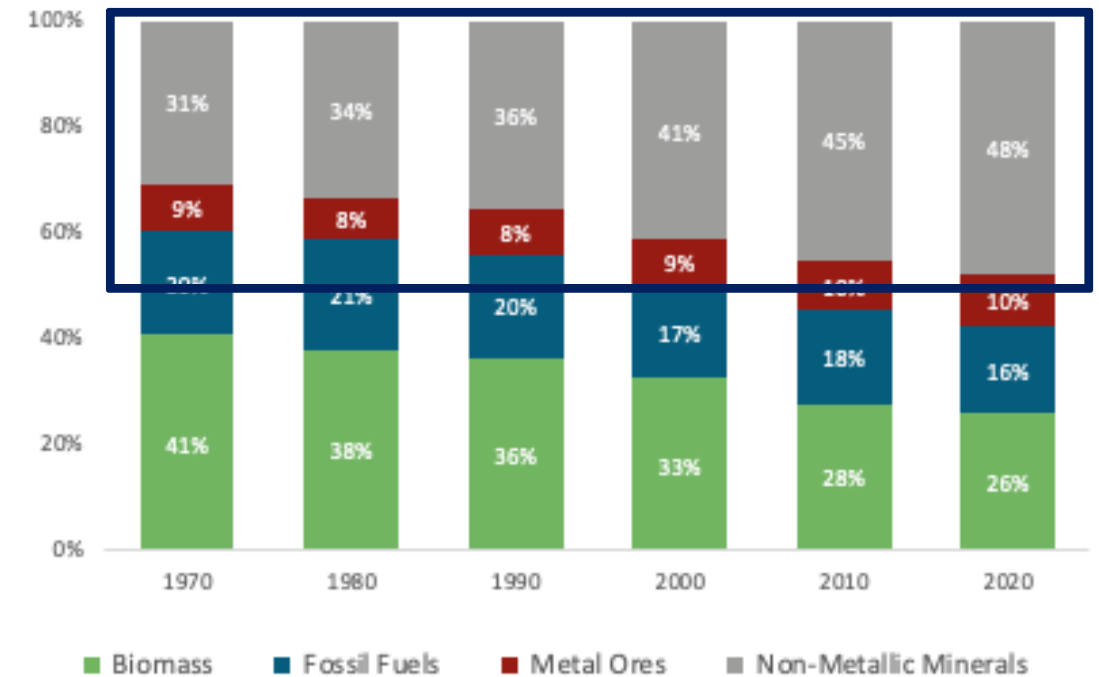
We must shift away from the prevailing resource wasteful economic approach based on maximising the output of sectors, simplistically defined by GDP, towards an economy that is efficiently meeting human needs and optimise human wellbeing. The current logic is both ethically and ecologically unsustainable. We must set the order right. Economy was invented to serve humans and our needs, and not the opposite.

Trends: Global Material Use and Share in 1970-2023

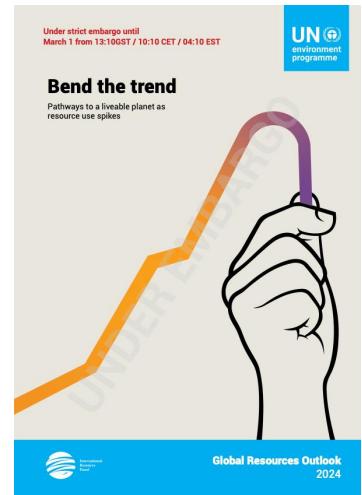
Global Material Use has increased for more than a factor of 3 since 1970 due to urbanisation and industrialisation (and population growth) - 2.3% per year



*... which is increasing also the share of Non-Metallic Minerals in Global Material Use
(Main Asia-Pacific Region Impact)*



Definition: Material footprint



Primary materials associated with final demand, independently of where they are sourced (domestically or abroad)

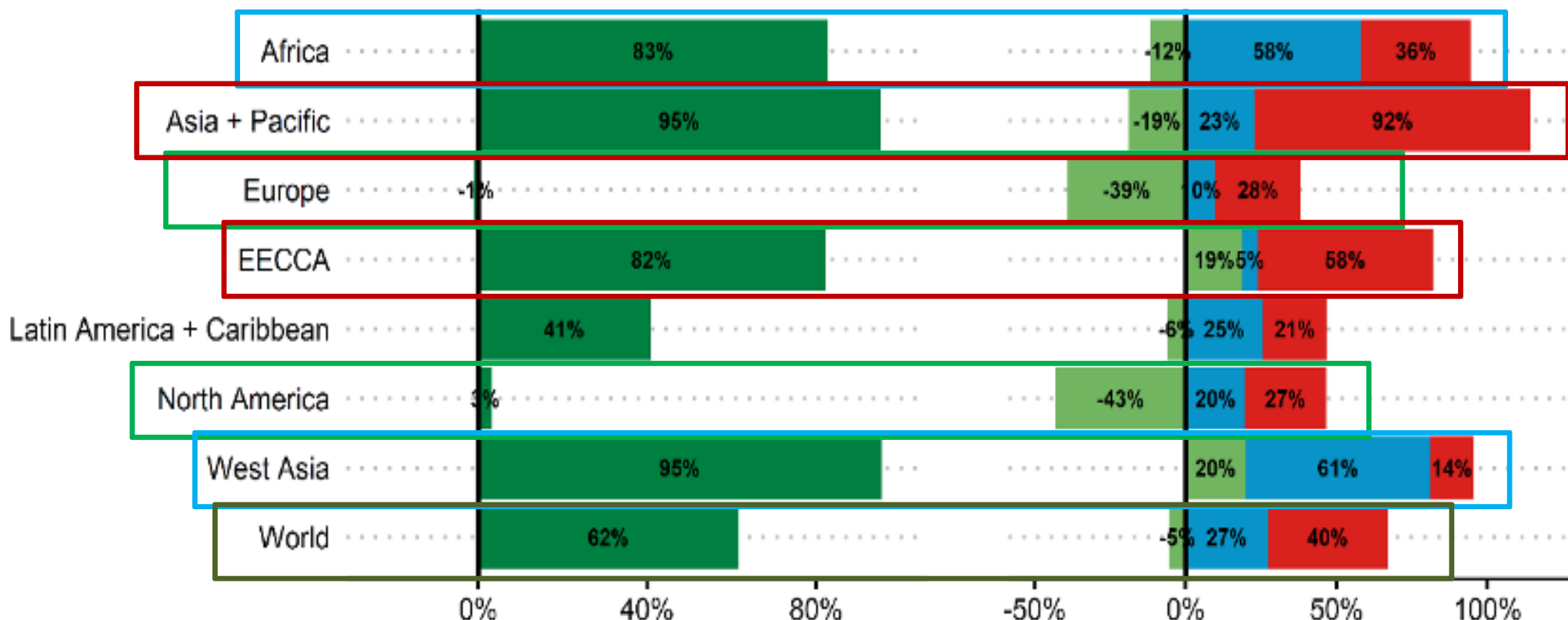
Material Footprint = Domestic Extraction + Raw Material Trade Balance

Domestic Extraction = Material harvested (agriculture, forestry and fisheries) or extracted (mining and quarrying) domestically

Raw Material Trade Balance = Import minus exports of raw materials required to produce materials and consumer goods

Trends: Drivers of Material Footprint 2000-2022, % by world regions

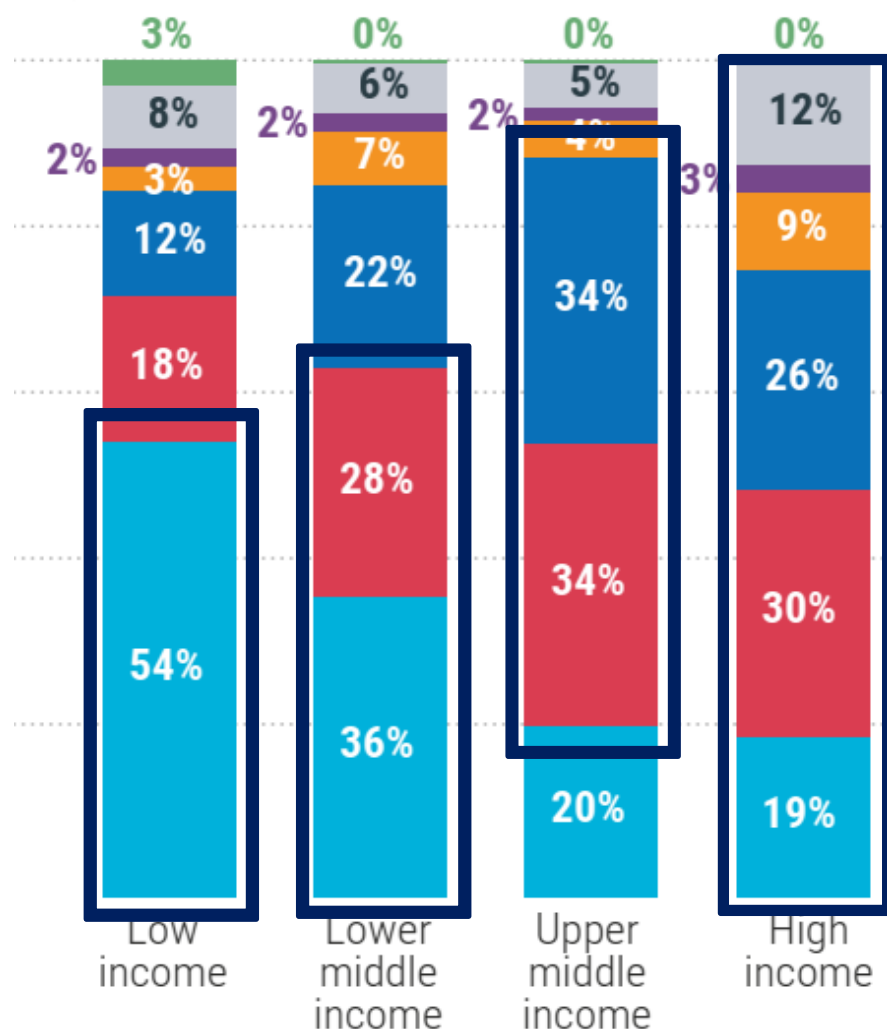
Tons per
capita - 2020



■ Net change % DE Material Footprint
 ■ Affluence
 ■ Population
 ■ Technology

5
 13
 17
 18
 12
 30
 13
 13

Trends: The material needs for provisioning systems (built environment, mobility, energy and food) by country income groups (2020)



■ Food
 ■ Mobility
 ■ Built environment
 ■ Energy
 ■ Communication
 ■ Other
 ■ Waste Management and Resource Recovery

Energy includes household energy consumption

All other provisioning systems include their embodied energy

Built environment and mobility: (construction, transport sector&infrastructure): 59 billion tonnes

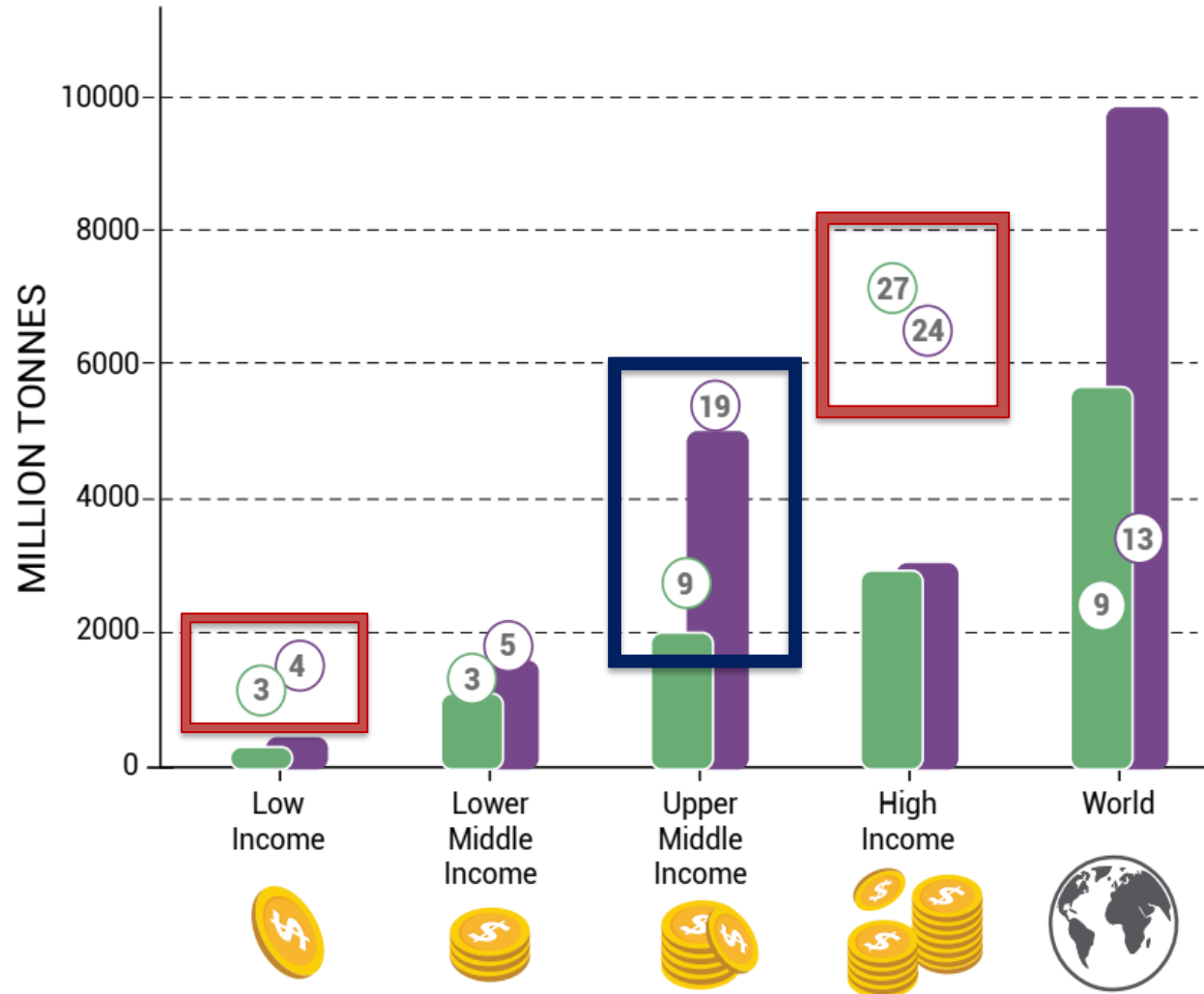
Food: 23.6 billion tonnes

Energy: (electricity, power, heat): 6.1 billion tonnes

Together = 90% of total global material demand, but differ in importance by income group

Source: Global Material Flows Database (UNEP 2023a)

***Trends:** High-income countries use six times more materials per capita and are responsible for ten times more climate impacts per capita than low-income countries.*

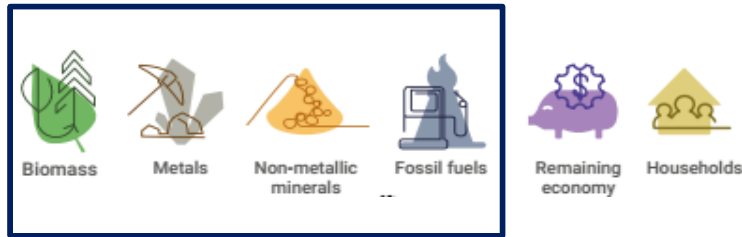


Since 2000 ...

- **High-income:** Highest material footprint of all groups, relatively constant. Climate impact per capita = 10 x low-income group.
- **Middle-income:** material footprint more than doubled, approaching high-income levels. Climate impact per capita = roughly 50% of high-income group; 6 x low-income group.
- **Low-income:** Remain comparatively low, and mostly unchanged.

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

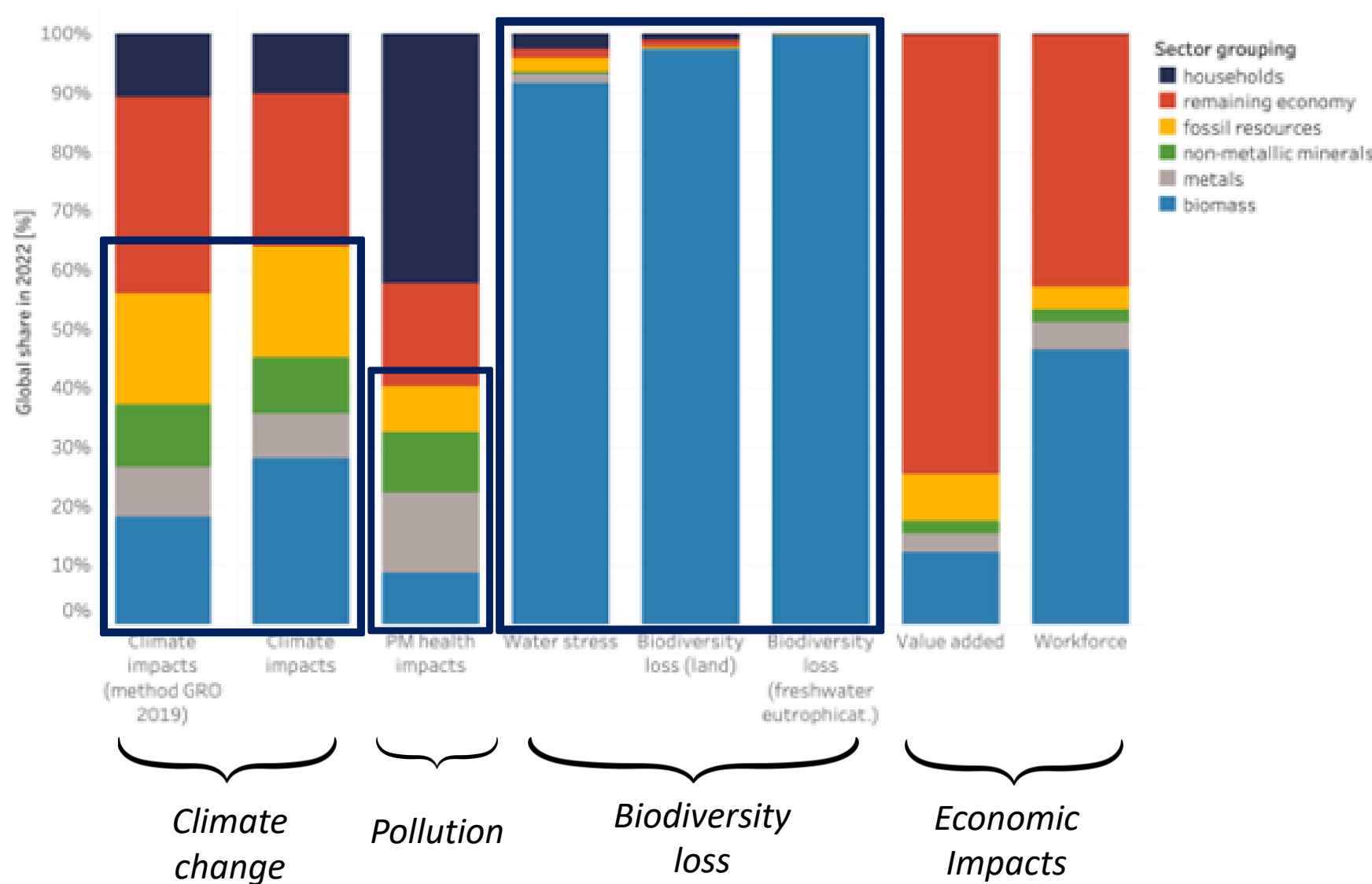
*Environmental impacts of materials
in the value chain in
extraction and processing phase*



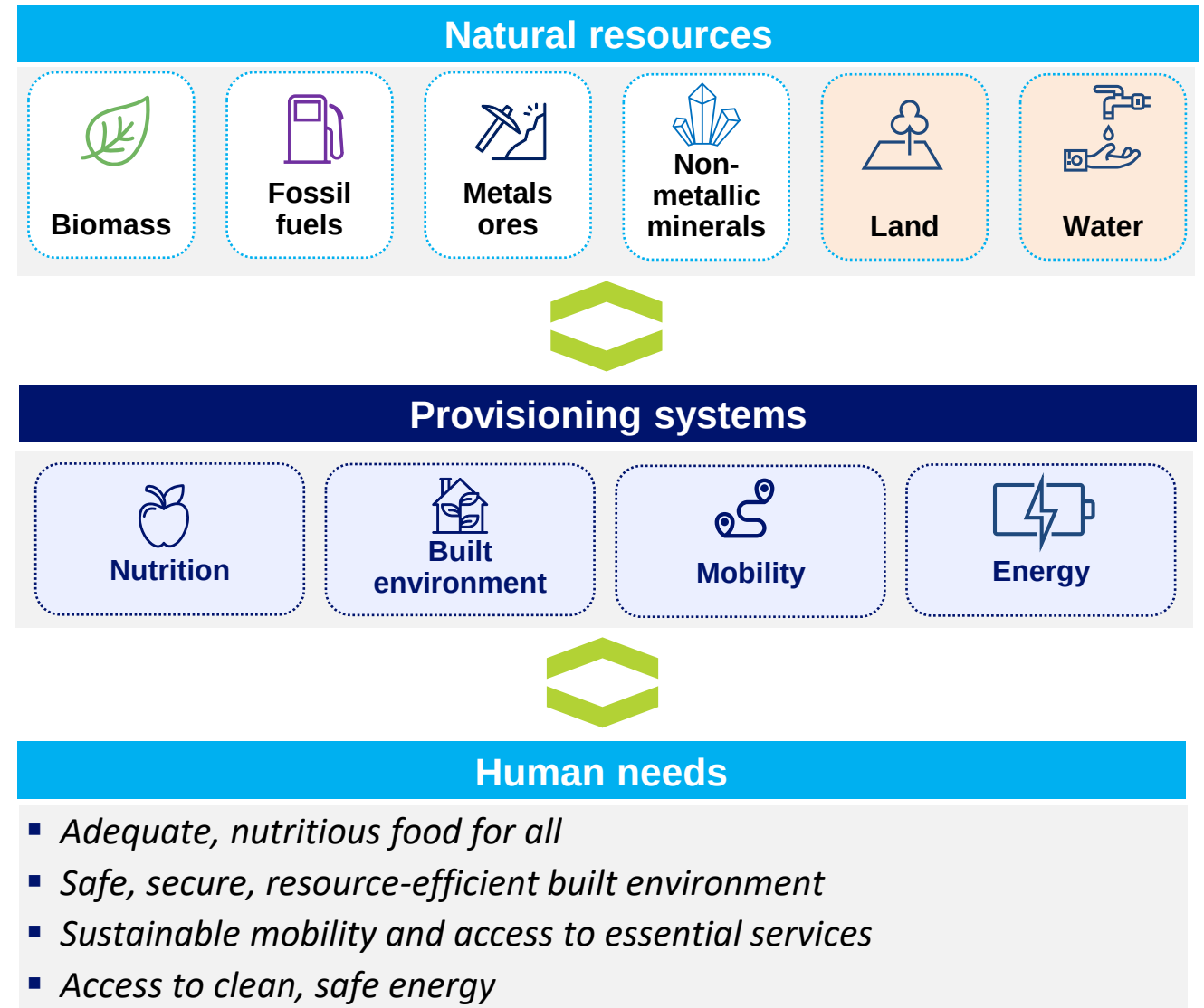
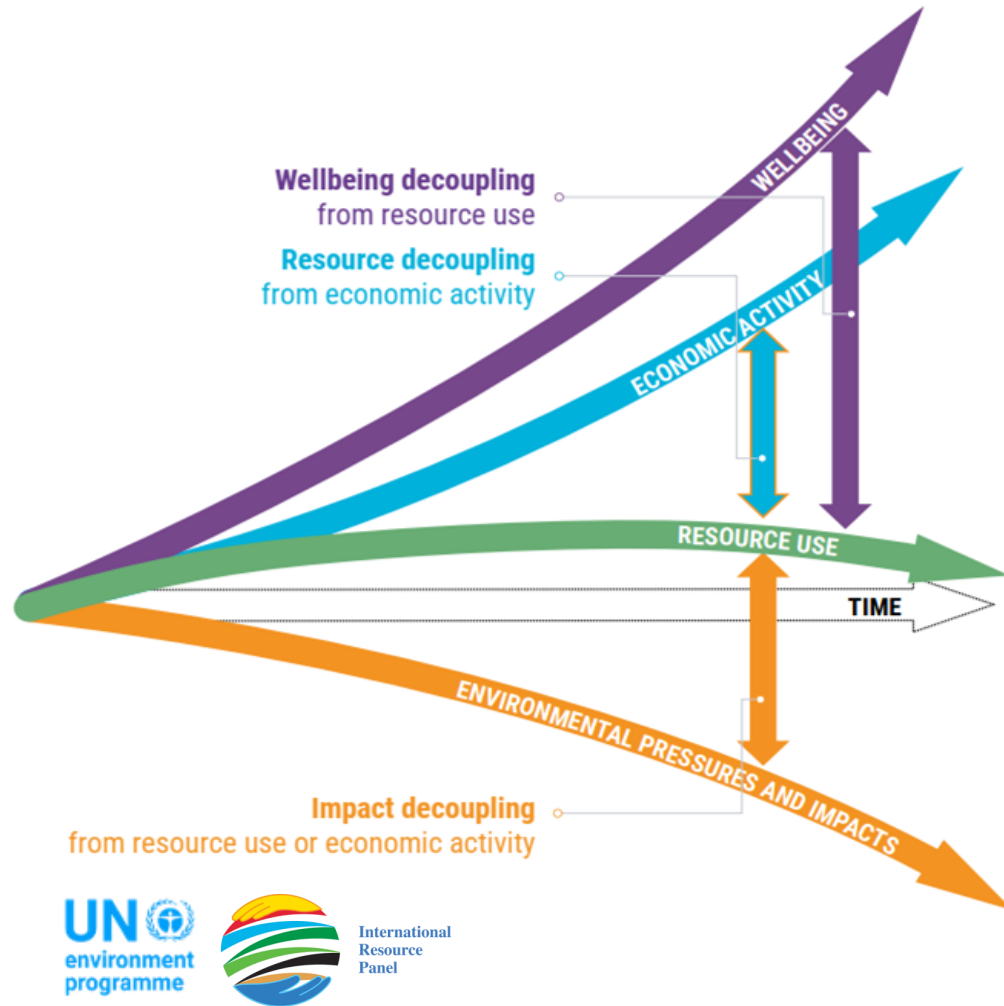
*60% of global climate change impacts
including land use change*

40% of air pollution health impacts

*More than 90% of water stress and
global land and water eutrophication
related biodiversity loss*



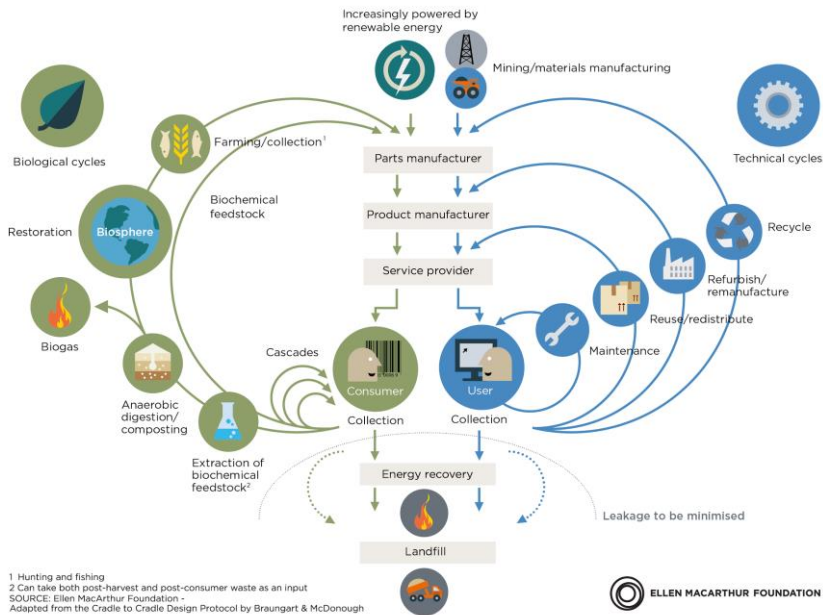
***Solutions:** Decoupling resource use from economic activity and human wellbeing & targeting it to human needs through provisioning systems*



Why Circular Economy?

The Logic of the Obvious

CIRCULAR ECONOMY - an industrial system that is restorative by design



Circular economy should be seen as an instrument helping 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 SDGs

Circular Bio-Economy is just using common sense

Circular (bio)economy is the oldest concept on planet Earth. All nature is based on the principles of a circular economy: nothing is lost, and everything has its purpose. We humans, as part of nature, should abide by the same principles. Unfortunately, what seems logical in theory isn't so clear in practice.





Importance of the Point of Perception

*When you complain that you
are caught in a traffic jam ...
you are wrong.*

You are traffic jam.

Source: Mint

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



Main question often-overlooked to be addressed

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



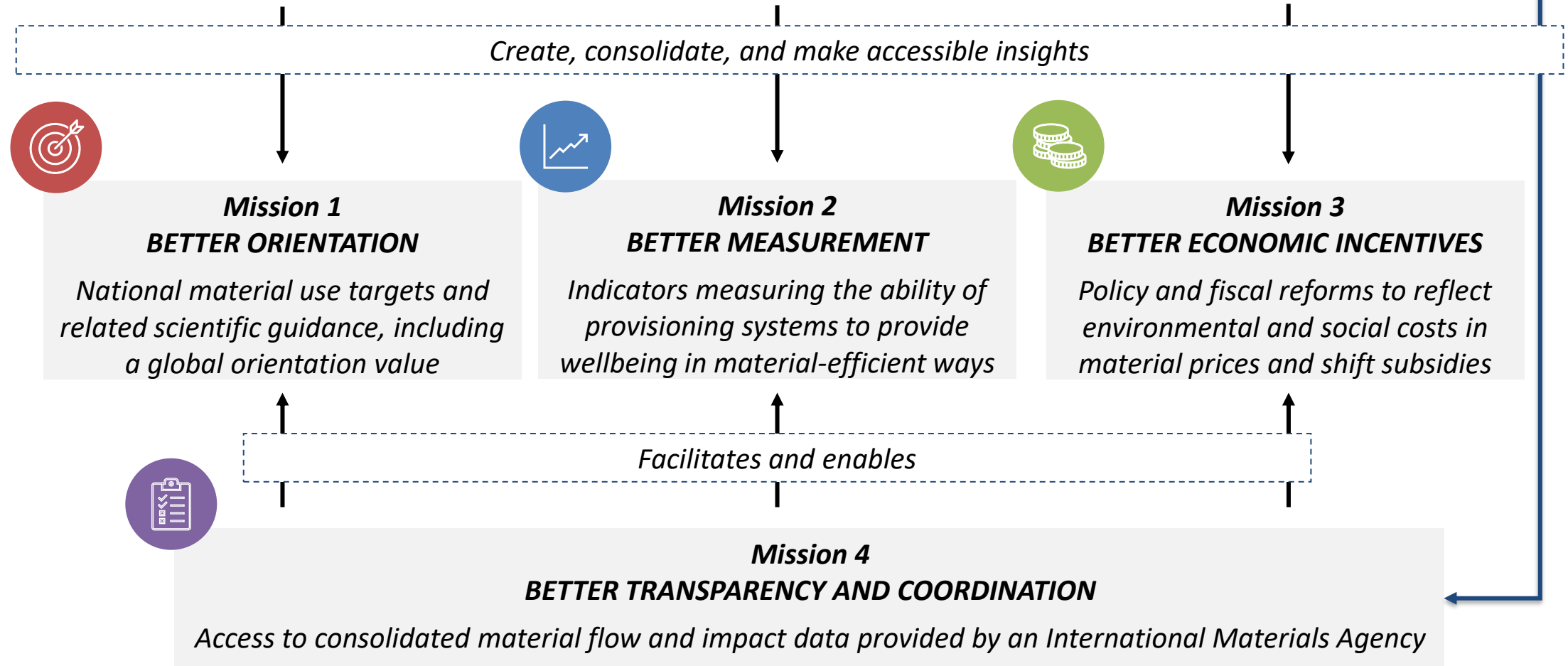
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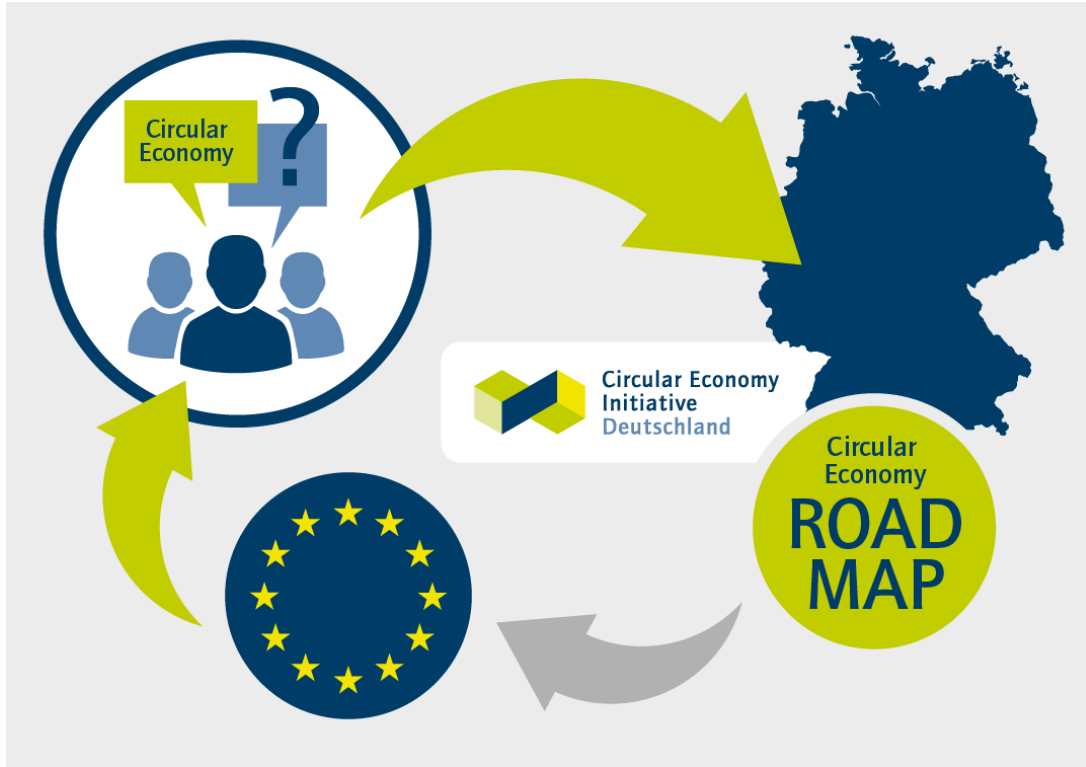
Efficiency ... Sufficiency

*Sufficiency (optimising supply and demand) could be addressed from **consumption side** through reducing consumption, optimising what is sufficient to meet human needs and/or from the **production side** by meeting human needs using less energy & materials, by improving energy and resource efficiency.*

Call to action based on GRO24 Recommendations: We need global materials stewardship to support and advance the sustainable resource use transition

International organisations support policymakers, businesses, investors, and civil society in four key missions:

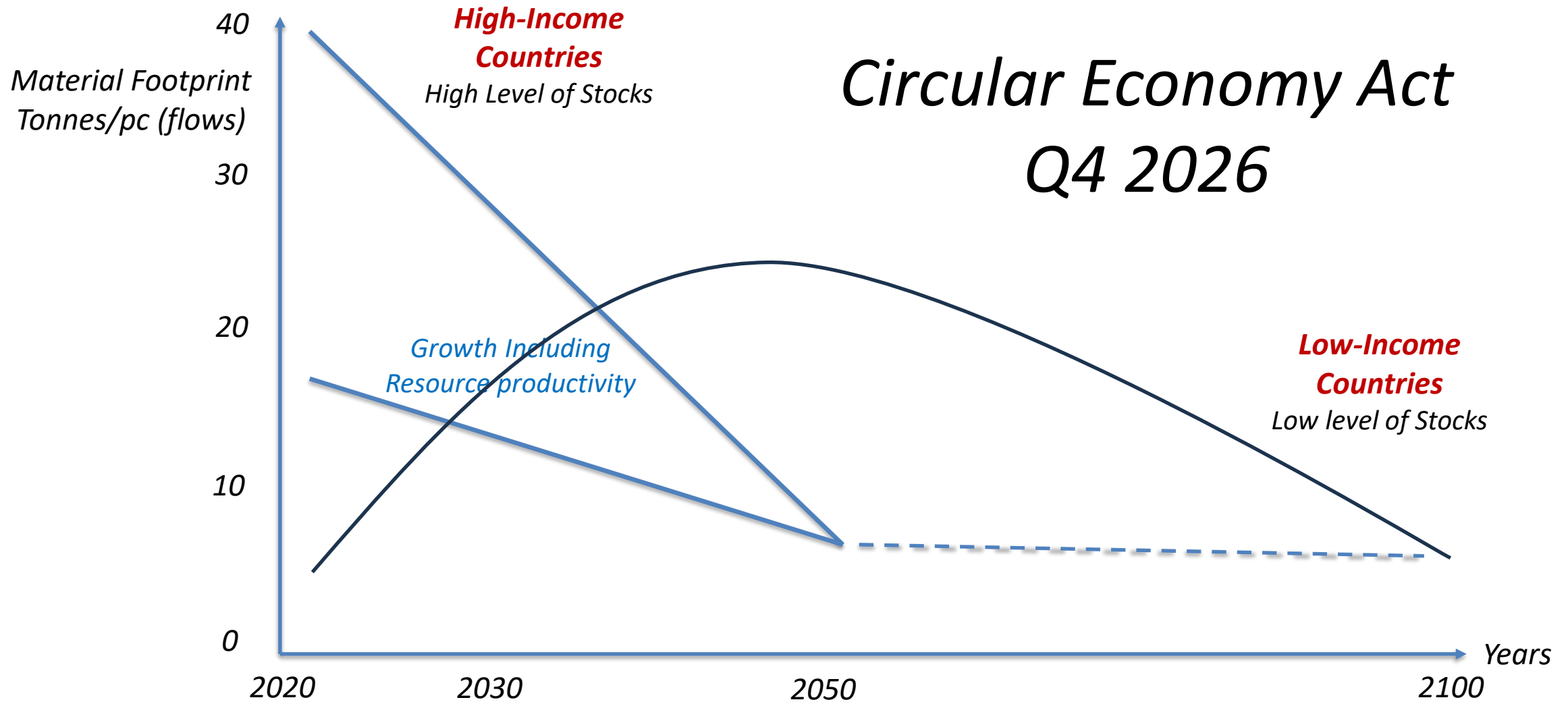




- *Aims to transform the country's economic and environmental framework by focusing on resource efficiency, reducing waste, and boosting sustainable growth.*
- *Material footprint target set in line with IRP SDGs recommendations to 6 – 8 tons/per capita till 2045*

Introducing demand side/resource use in political space

Setting the North Star for material use/decoupling based on Material Footprint



Science based material targets would:

- *Give natural resources/materials management proper recognition and attention in policy space. Currently it is not matching energy transition and GHG emissions.*
- *Provide a clear signal to all government services to give proper attention and develop suitable policies, and to the private sector that this is the direction to take.*
- *Complement efficiency with sufficiency policies, and decarbonisation with dematerialisation policies and provide missing attention to demand- side solutions.*
- *Introduce in (international) policy debates essential question of who is crossing planetary boundaries through excessive resource use in production/consumption.*
- *Effectively address the equity and fairness globally, as well as on national levels, and help closing the gap existing among global north and global south countries.*

Climate Change

Why is circular economy important part of solution?

Back to my home country Slovenia

Slavoj Žižek

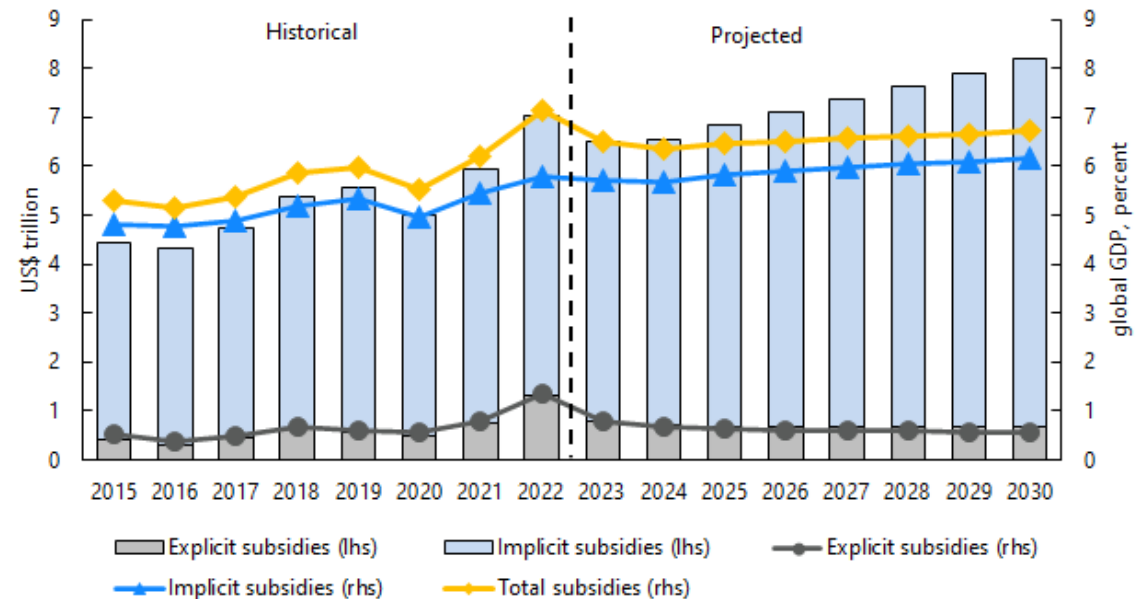


“In short, the truly courageous stance is to admit that the light at the end of the tunnel is most probably the headlight of a train approaching us from the opposite direction.”

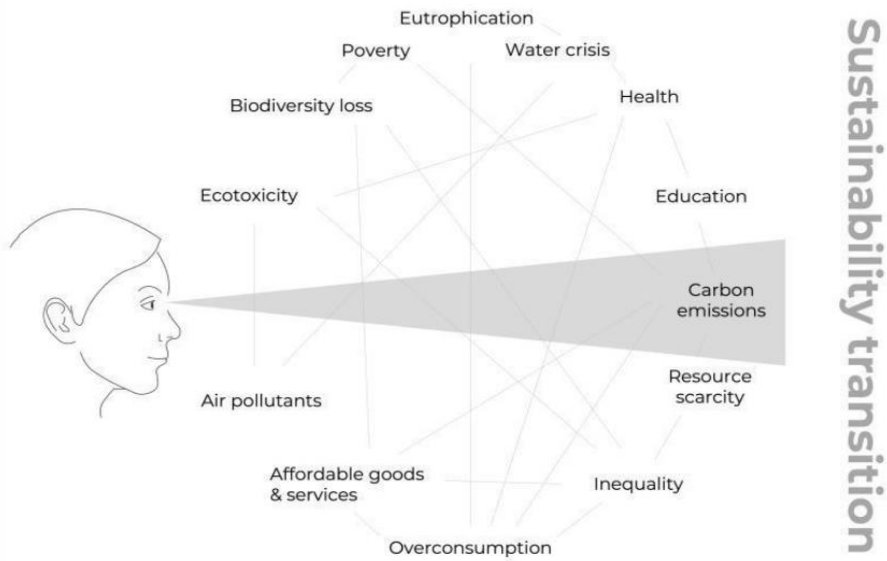
Some Climate Change Related Facts

- *Global CO₂ emissions* in billion metric tonnes 37.41 highest ever (Source: Statista 2024)
- *Global surface temperature increase* above pre-industrial level 1.5 – 1.7 degrees Celsius (Source Copernicus monthly figures 2023/24)
- *The system that moves water around the Earth* is off balance for the first time in human history (Source: Global Commission on the Economics of Water, The Economics of Water, 2024)
- *Fossil fuel subsidies* \$7 trillion or 7.1 percent of GDP (Source: IMF Data/Projections 2022)

The Global Hypocrisy Indicator



Energy Transition is Important But not Enough



Climate breakdown is a symptom of ecological overshoot, which is caused by the deliberate exploitation of human behaviour.

*The **material footprint** is dangerously underdiscussed. Most climate “solutions” lack focus on the root cause of the crisis. Where discussion of climate often centres on carbon emissions, which is of course important, while a focus on **overshoot** highlights the material usage (including fossil fuels), **waste output** (the consequence of the still prevailing wasteful linear economy) and **growth of human society**, all of which affect the Earth’s biosphere.*



*We should not focus only on production related energy challenges, but **also ask for what that energy will be used.***

Hart Hagan, environmental journalist summarised that picturesque by saying: “Species causing the extinction of 150 species per day does not need more energy to do more of what it does”.

Climate Change can only be effectively addressed by combining

SUPPLY SIDE SOLUTIONS

CARBON MANAGEMENT

LAND

WATER

ENERGY

MATERIALS

DECOUPLING - CIRCULAR ECONOMY

DEMAND SIDE SOLUTIONS

ECO-SYSTEM SERVICES, ENVIRONMENTAL SINKS

NATURE BASED SOLUTIONS



UN Secretary-General António Guterres

“A world powered by renewables is a world hungry for critical minerals”

Critical Energy Transition Minerals’ Panel

Important to remember, Panel was set to enable energy transition needed to help tackle environmental climate change challenge!

Indispensable Pillars for Material Resilience



①

Supply Transition Materials with highest environmental and social standards

Securing enough supply: ensuring supply is sufficient to power the energy transition

Aligning expanded supply with sustainable development

Improving supply resilience by improving TM geographic diversification

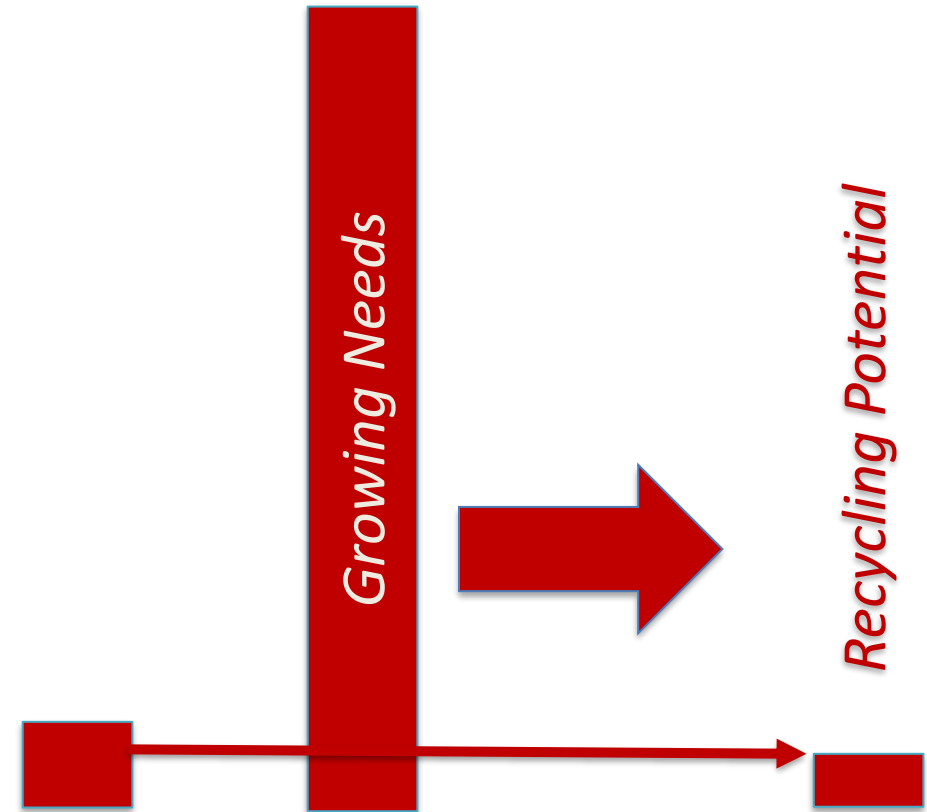
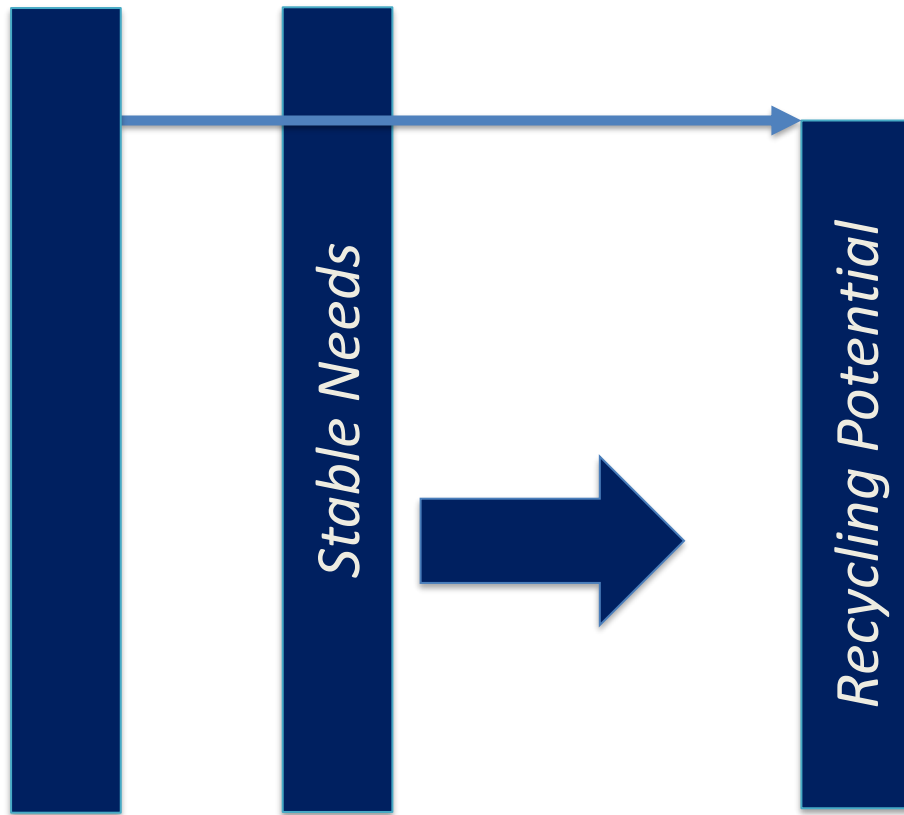


②

Activate policies which encourage all circularity levers

Recycling: Capturing future secondary Transition Materials

Pilar 2: Recycling Potential: Stable and Growing Needs



Indispensable Pillars for Material Resilience



1

Supply Transition Materials with highest environmental and social standards

Securing enough supply: ensuring supply is sufficient to power the energy transition

Aligning expanded supply with sustainable development

Improving supply resilience by improving TM geographic diversification



2

Activate policies which encourage all circularity levers

Recycling: Capturing future secondary Transition Materials

More intensive use: Using products that contain transition materials more intensively

Light weighting: Reducing the weight of products that contain transition materials

Lifetime extension: Increasing the lifetime of products that contain transition materials



3

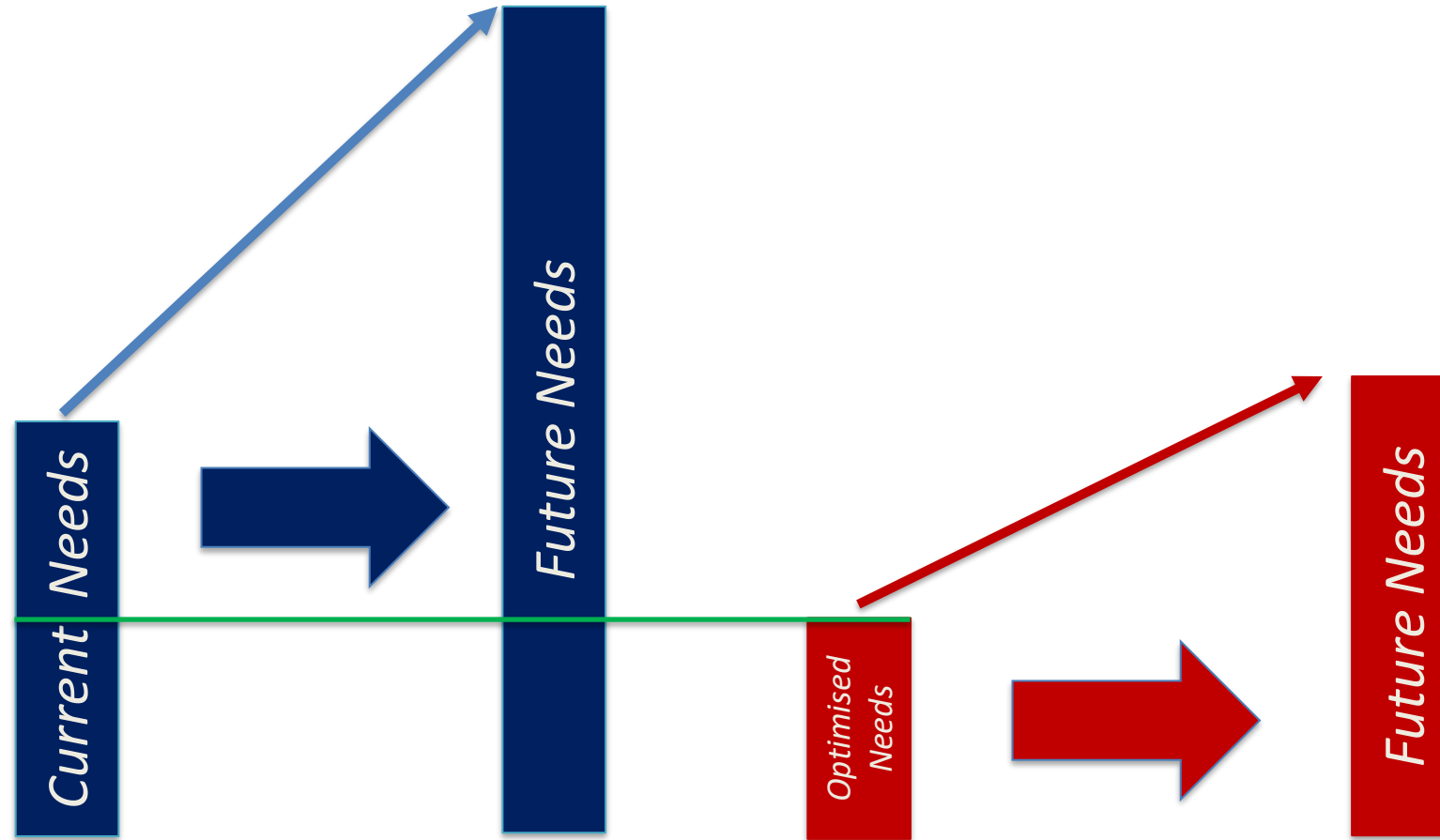
Optimize delivery of human needs in energy and material intensive systems

Most energy and material intensive systems (GRO24)

Mobility: reduced need for travel through work from home, balanced urban design; communal and active transport

Buildings: better utilisation of buildings; space-efficient, balanced neighbourhoods

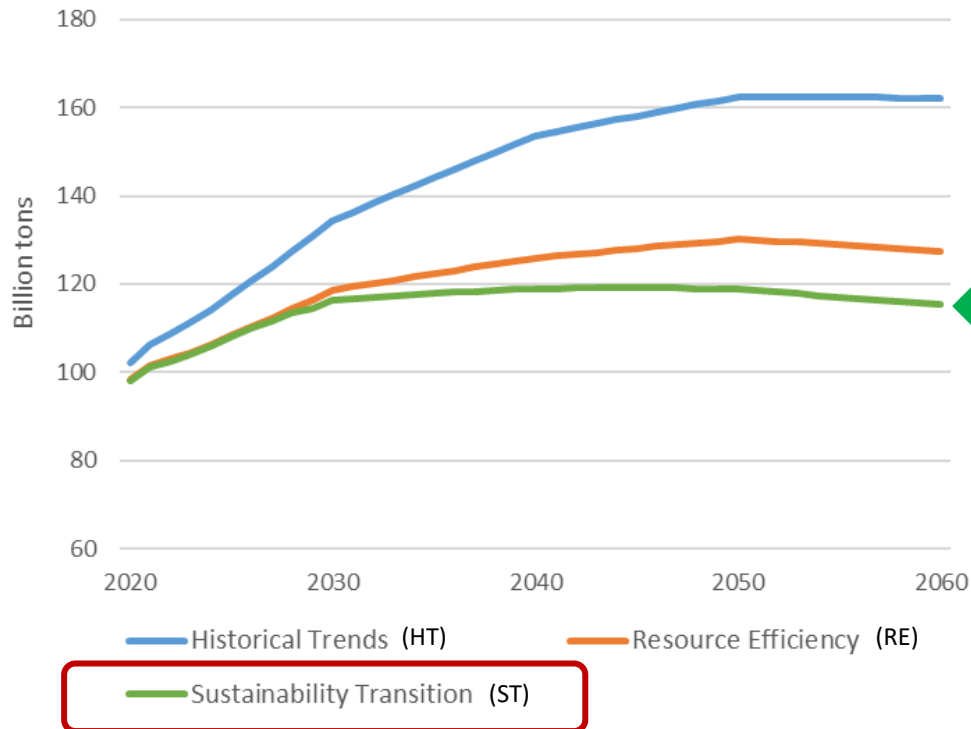
The Importance of Optimising the Baseline



GRO24 IRP modelling:

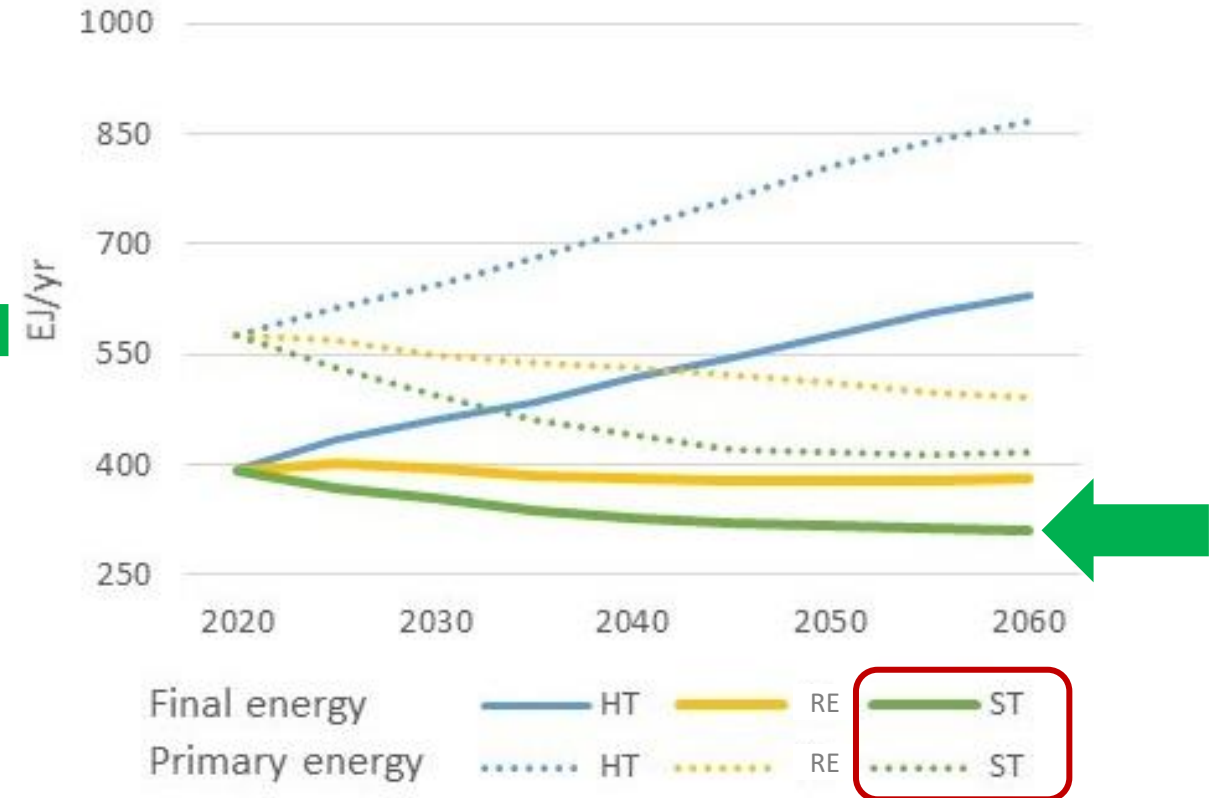
Decoupling is possible and benefits are important

Global material extraction



*We can **mitigate material use** by **30%** by 2060, compared to continued historic trends...*

Global energy demand



*... and **reduce energy demand** by **25%** by 2060, compared to 2020 levels.*

EU Developments

Quo-Vadis Europe

Quo-Vadis European Union

EGD *kickstarted* EU-wide efforts for a very much needed whole economy and society transformation. The *direction set by the EGD* should remain the north star also in the future. Considering also *new geo-strategic reality*, increasing security threats and additional competitiveness and social pressures *keeping the appropriate and needed attention to environment in this changed European and global reality will be a challenge!*



Quo-Vadis European Union



*Europe is on a **strategic crossroad**. Broadly and simplifying, there are two alternative ways. **Going defensive**, more introverted, which is more likely. Focusing on security policy, for example arm ourselves to provide better capacity for self-defence, which is hardly avoidable, or putting political power behind speeding up the enlargement process to strengthen a safety belt around existing EU, which is needed and welcomed. But to become a well-recognised and listened **strategic power, more than that would be needed**. In decades spent in European policy space one of the complaints one could hear most is, that we are major economic power, important trade partner and leading the World in providing help to those in needs but not considered adequately in international geo-strategical relations. Building our strategic importance and power would require a higher level of integration in at least three areas, fiscal, external and yes, also defence policy.*

Quo-Vadis European Union



Global supply chains are becoming increasingly volatile. For years it is known that *Europe and our economy is very import dependent and fragile* when it comes to energy and materials. But ... the times were good and when the times are good, not many really care about that fact.

Competitiveness and strategic autonomy can only be based on responsible resource use and management, including fossil fuels. In short *Circular Economy* is a European quest for competitiveness.

Quo-Vadis European Union



Systems
Transformation
Hub



Clean Industrial Deal – Recommendations

The Clean Industrial Deal is of course competitiveness centered, but cross-siloed approach has great potential. It addresses both supply and demand, climate and circular economy are well integrated.

- 1. To boost competitiveness and lead on future technologies, the recommendations from the **Letta report could be better translated into existing proposals**. A well-functioning single market, including the introduction of the **“fifth freedom”**- ensuring knowledge flows freely across the Internal Market, should be an essential ingredient of the Clean Industrial Deal, as well as the implementation of industry 5.0 principles and a more innovative and flexible capital market.*

Quo-Vadis European Union



Systems
Transformation
Hub

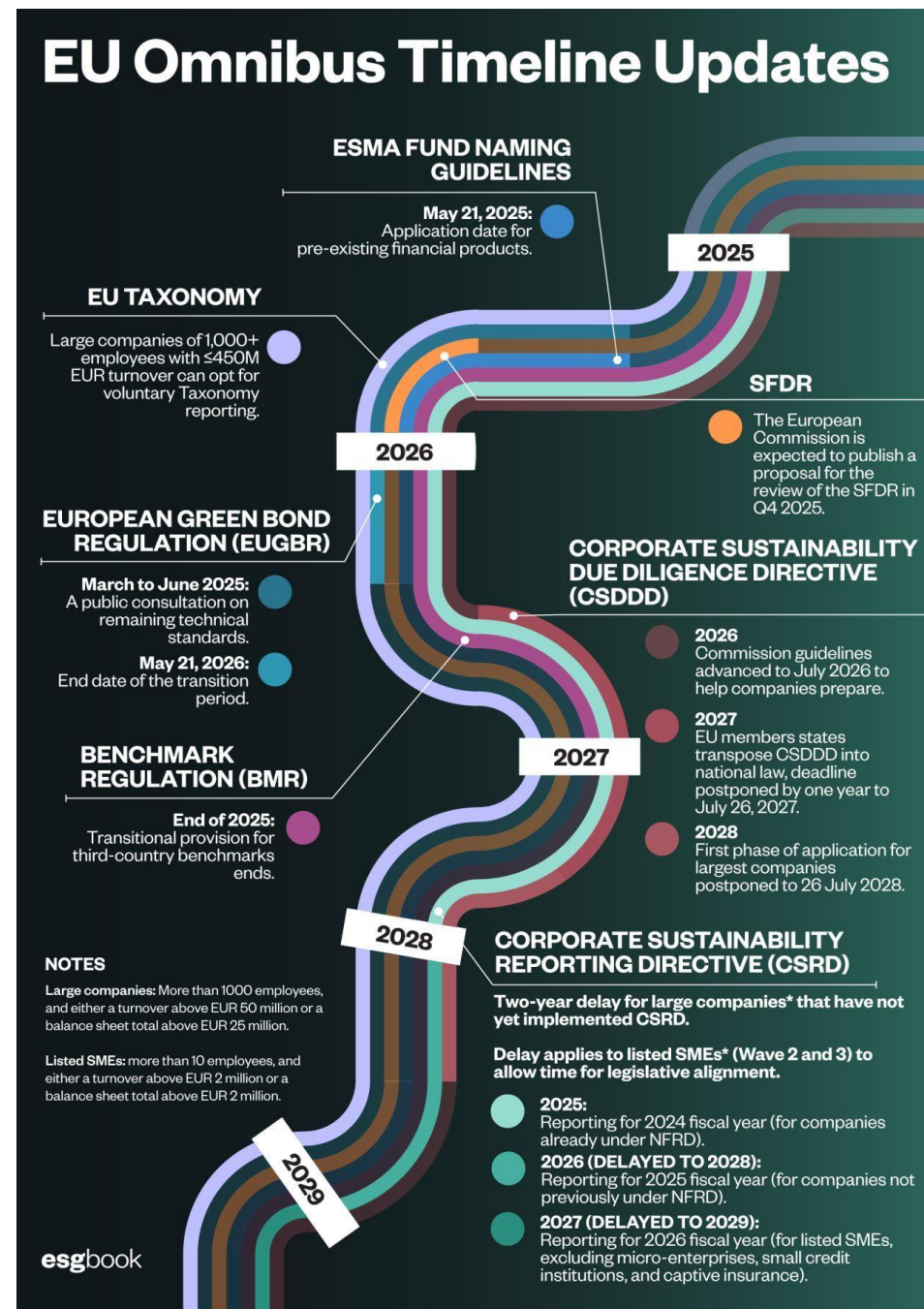


Omnibus, Clean Industrial Deal – Recommendations

2. Further strengthening the single market would involve *increased resources at EU level, and aligning market signals with regulatory signals through harmonised tax and subsidy policies*. It is important not to kill industry with kindness. State aid should support European industrial ecosystems to emerge, not to subsidise national champions or high carbon industries.
3. *Setting “net-zero” material targets* is essential to ensure sustainability targets as well as Europe’s strategic autonomy and competitiveness, taking into account the energy and raw-materials import dependency and fragility of European industry.
4. The inclusion of skills is correct. Yet, the *proposals fail to address the root problems of the European labour market, and the fact that new opportunities may not arise across the European Union equitably*. More is needed to ensure a thriving upskilled labour force and for the EU to be attractive for new talent.

Simplification versus Deregulation

*Process which needs
careful monitoring !*



Towards Circular Economy Act



Critical to remember

Sustainability is not in opposition to competitiveness, but a critical success factor for competitiveness, security, fairness and democracy, and for the coherence of the European project at large.

*And it is simply not good enough to constantly hear
the same answer*

Yes, you are right, but ...

To Conclude



It is not easy being green

Source: Disney.com

Sustainability Transition is a Major Business Opportunity

*It is **unavoidable!***

*And any transformation is a major business opportunity **for those who are innovative, those who dare and those who understand the essence of the challenges ahead of us.***

This System Change Transformation is also in the Interest of the Business

FIGURE C Global risks ranked by severity over the short and long term

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

Risk categories

- Economic
- Environmental
- Geopolitical
- Societal
- Technological

2 years

1 st	Misinformation and disinformation
2 nd	Extreme weather events
3 rd	State-based armed conflict
4 th	Societal polarization
5 th	Cyber espionage and warfare
6 th	Pollution
7 th	Inequality
8 th	Involuntary migration or displacement
9 th	Geoeconomic confrontation
10 th	Erosion of human rights and/or civic freedoms

10 years

1 st	Extreme weather events
2 nd	Biodiversity loss and ecosystem collapse
3 rd	Critical change to Earth systems
4 th	Natural resource shortages
5 th	Misinformation and disinformation
6 th	Adverse outcomes of AI technologies
7 th	Inequality
8 th	Societal polarization
9 th	Cyber espionage and warfare
10 th	Pollution

Source

World Economic Forum Global Risks
Perception Survey 2024-2025.

The role of Markets:

Stop Sending Confusing Market Signals

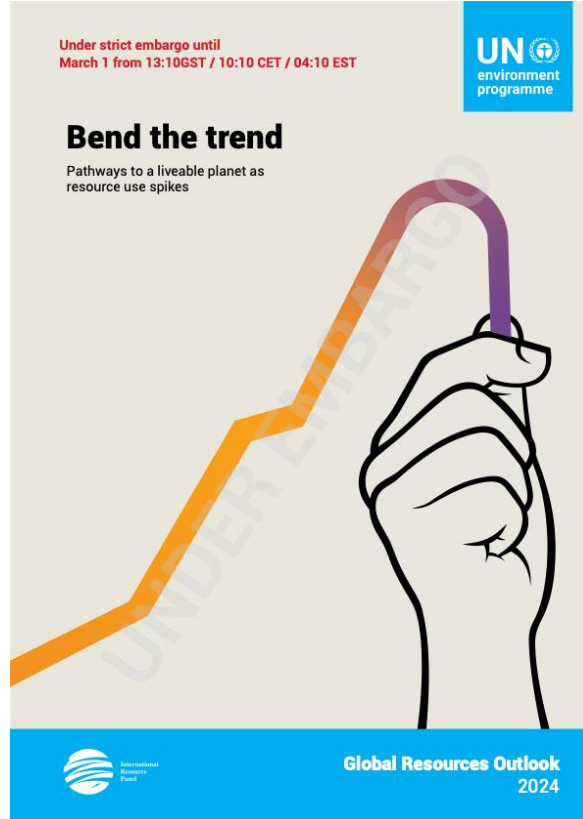
MARIO QUINTANA



Source: Instituto Moreira Salles

*Don't waste your time chasing butterflies.
Mend your garden, and the butterflies
will come.*

*Do not kill industry with kindness. We have tried that in
last decades and almost succeeded. Industry needs
clear agreed strategic direction, predictability, support
for the agreed travel direction and as good level playing
field as it gets. All based on a clear vision designed by
policy makers based on science and public interest.*



*We are **indebting** future generations, financially and by depleting the Nature. This is simply wrong.*

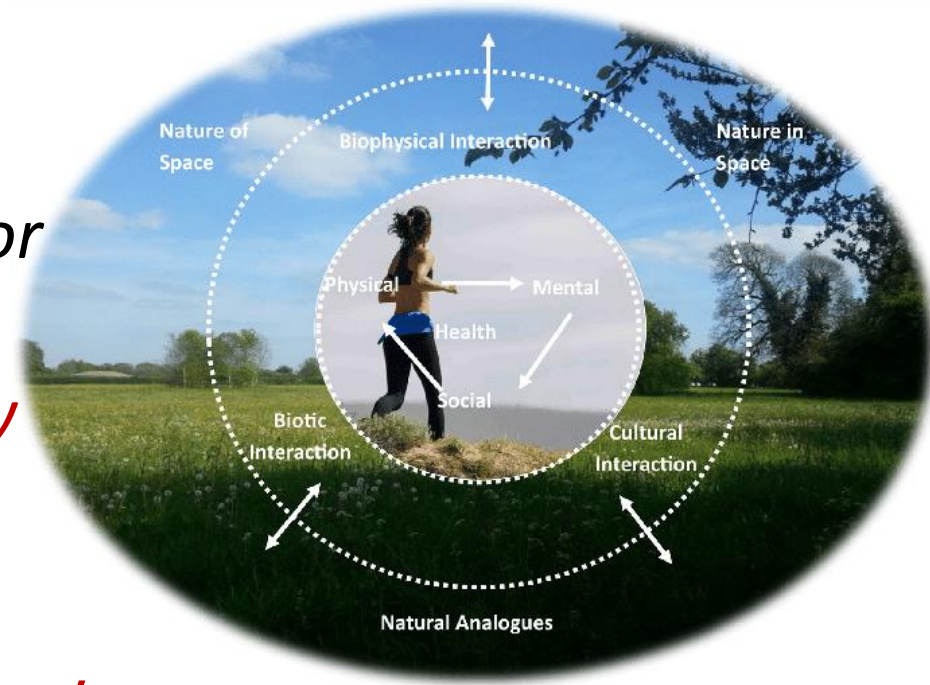
Apparently, we humans are the most intelligent species on this planet. It is high time to prove it.

More than an economic or a technological choice, this is a moral choice.

Changing our Relationship with (the rest of) Nature, is ultimately an Economic, Equity and Security Imperative to strengthen collective Resilience

*The lessons learned recently (war, pandemic, the hottest summer) are more than convincing to understand that. 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, pandemics, migration ...)*

The future will be green and fairer and more equal ... or there will be no future.



And finally, with the most important advice from the famous Belgian, country hosting me last two decades

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!