

*Respecting the limits of
planet earth and the needs
for supporting sustainability*

JANEZ POTOČNIK
Co-chair UNEP International Resource Panel (IRP)
Partner SYSTEMIQ

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World

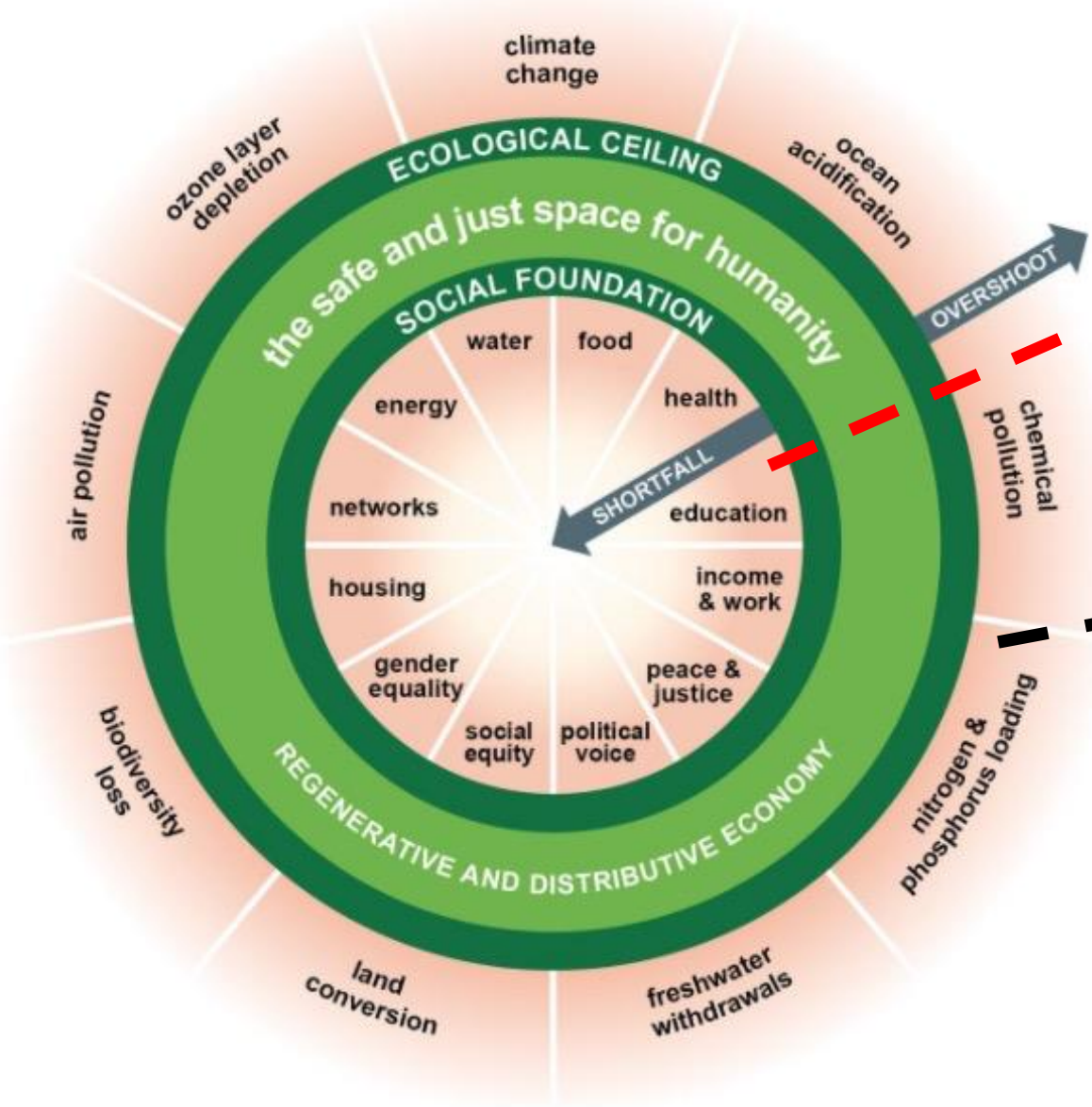
Quo Vadis Humanity

The taste of 21st Century

- **Population** growth (2050 – 9.7 billion)
- The world's **richest** 1% have more than twice as much wealth as 6.9 billion people and the 22 richest men have more wealth than all the 326 million women in Africa
- We **throw away** one third of the **food** we produce
- **More than 50% of urban fabric** expected to exist by 2050 still needs to be constructed. 2011-13 **China** has used more **cement** than **USA** in 20th century
- **Climate change** experts warned us that emissions need to be about halved by 2030 to limit warming to 1.5°C
- **Biodiversity:** Living Planet Index – 60% fall in just 40 years. Biomass of the mammals living in the nature has been reduced in recent decades for 82%
- A million of **plastic** bottles are bought every minute (9% of plastic recycled, 12% incinerated, 79% landfills).
- **Health:** COVID-19 forced world population and economy in a lock-down



Safe Operating Space - "doughnut" perspective

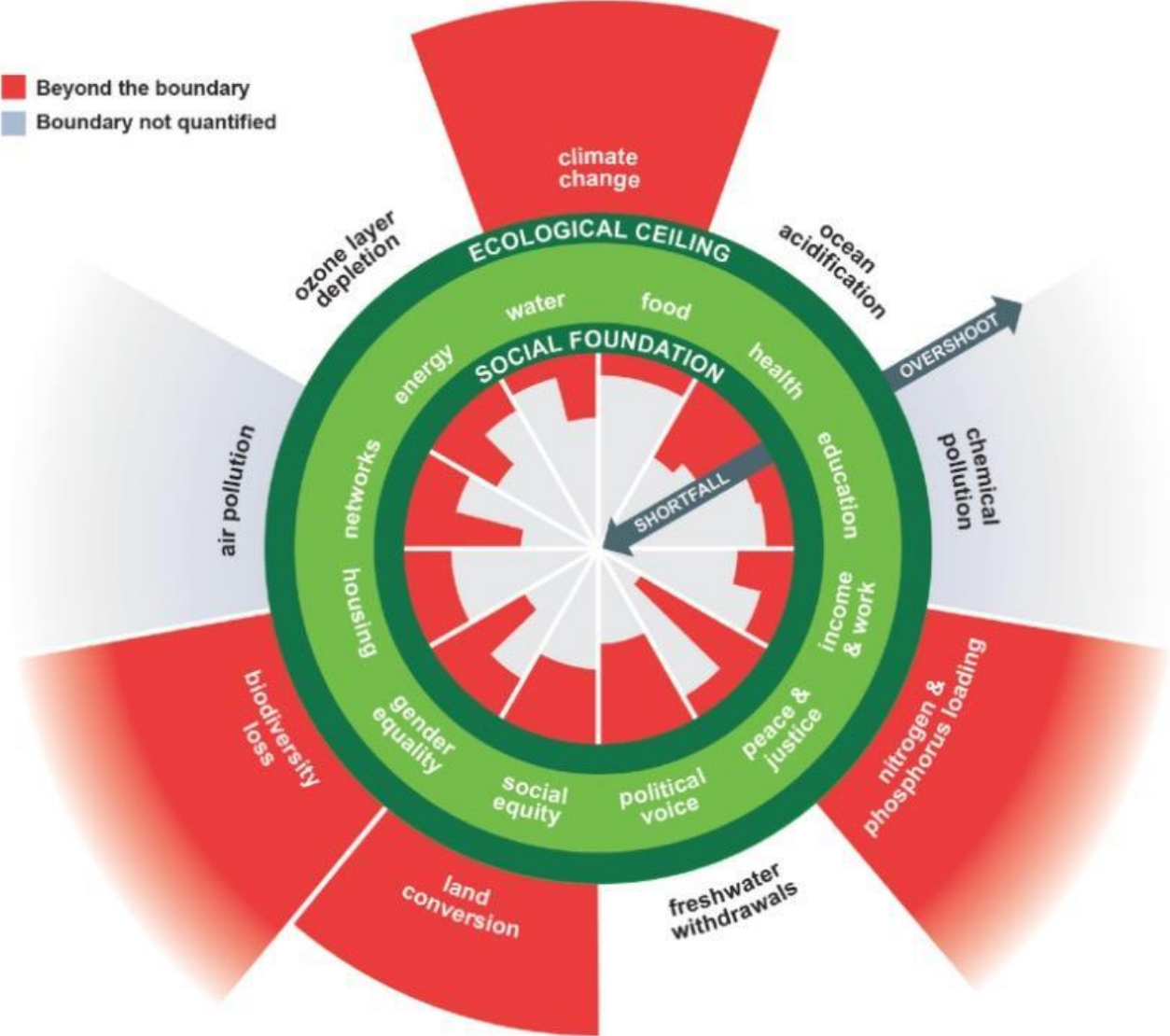


*Basis human needs
incl. minimum requirements
of resource supply*

*Outer limit by Planetary
Boundaries*

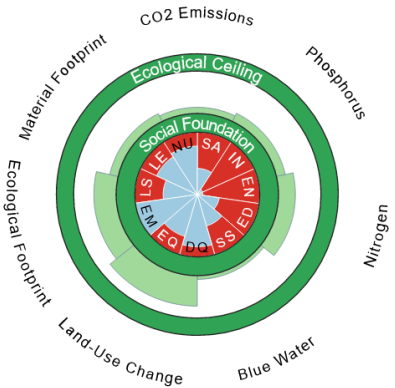
Adapted from Raworth 2017

Humanity is living far out of balance

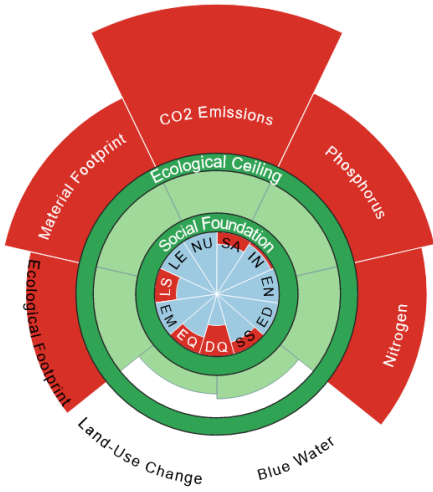


Divergent national contexts

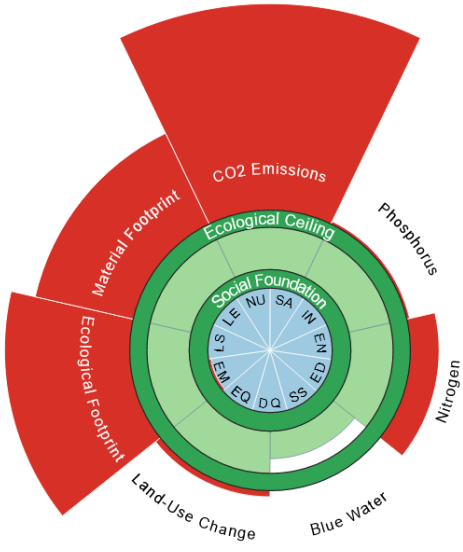
goodlife.leeds.ac.uk



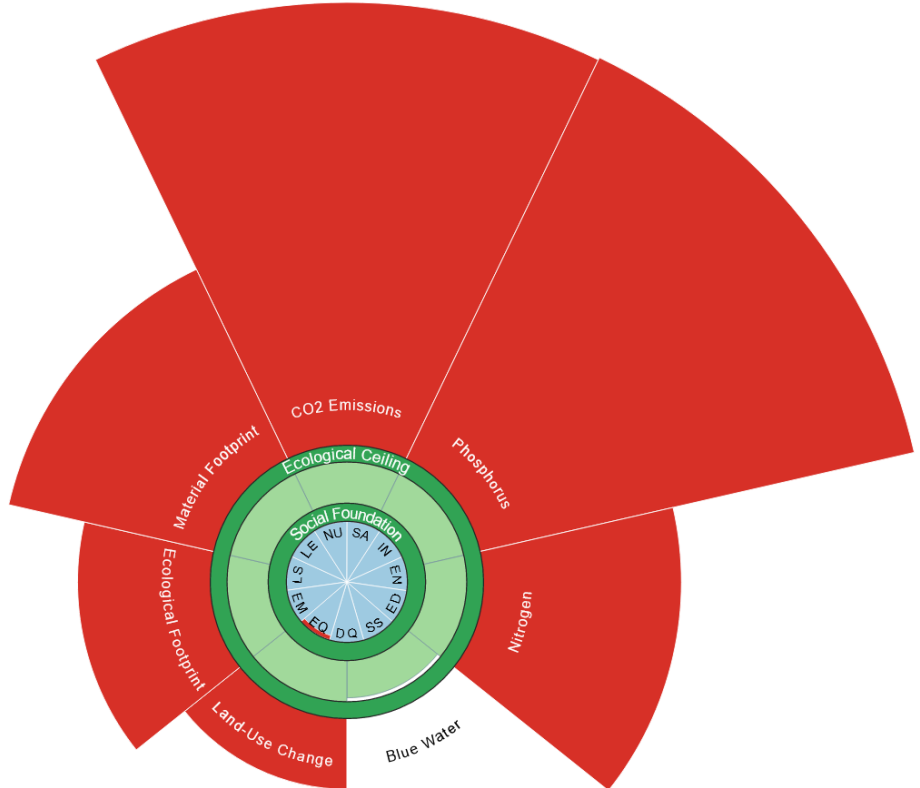
Malawi
\$1,000 pc



China
\$17,200 pc



Belgium
\$54,000 pc



Australia
\$54,900 pc

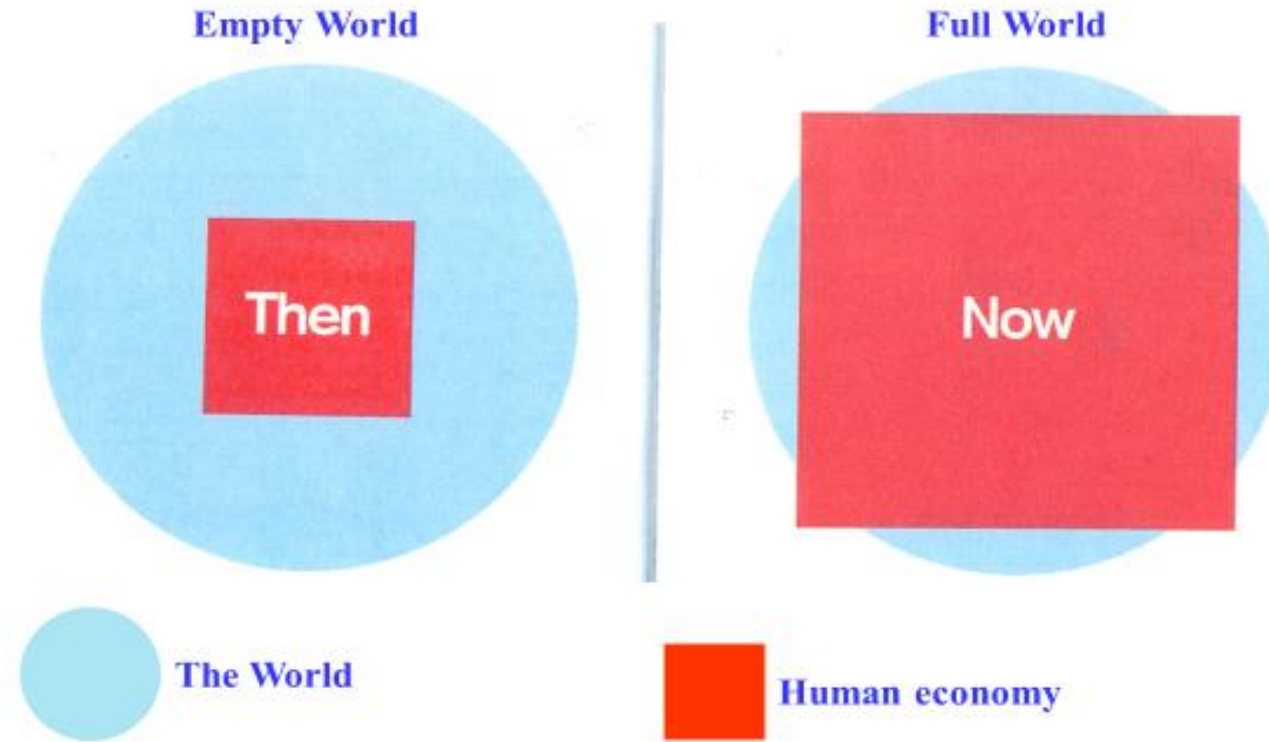


*For the first time in a human history we face the emergence of a single, tightly coupled human **social-ecological system of planetary scope.***

*We are more **interconnected** and **interdependent** than ever.*

*Our individual and collective **responsibility** has enormously increased.*

From “Empty” World to “Full” World



Source: Club of Rome: Simplified after Herman Daly

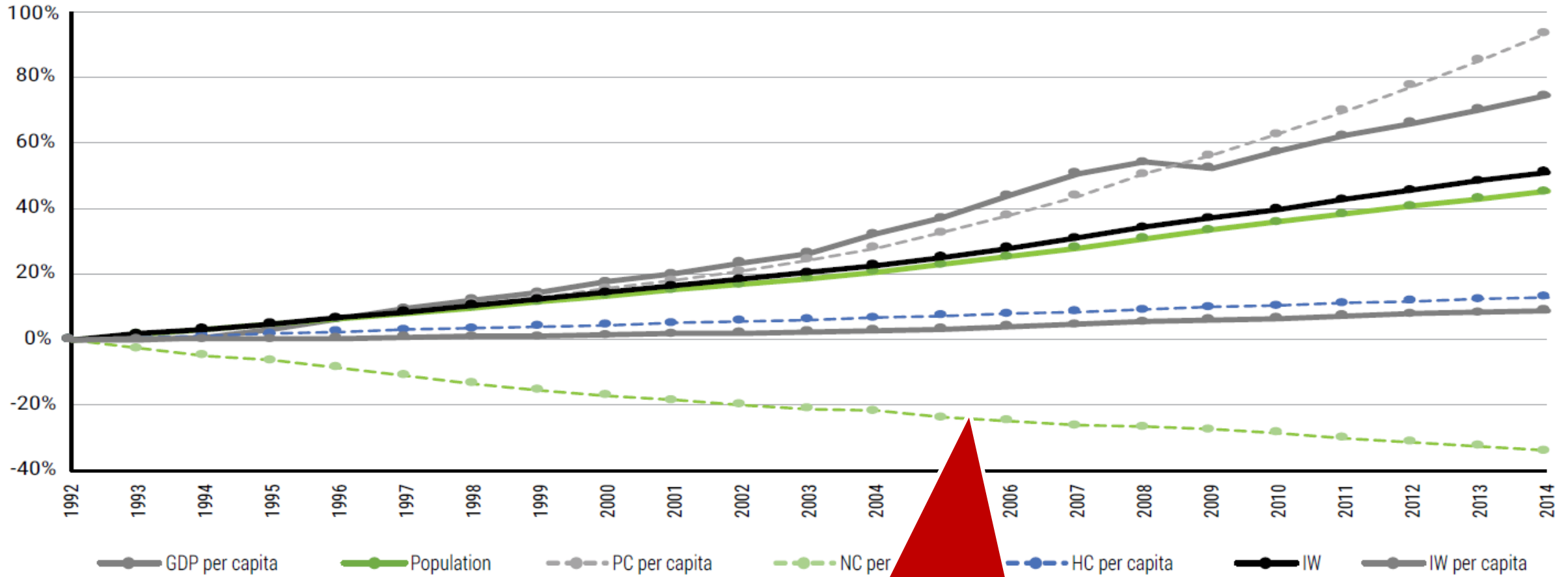
Labour and Infrastructure limiting factors of human wellbeing



Natural resources and Environmental sinks limiting factors of human wellbeing

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

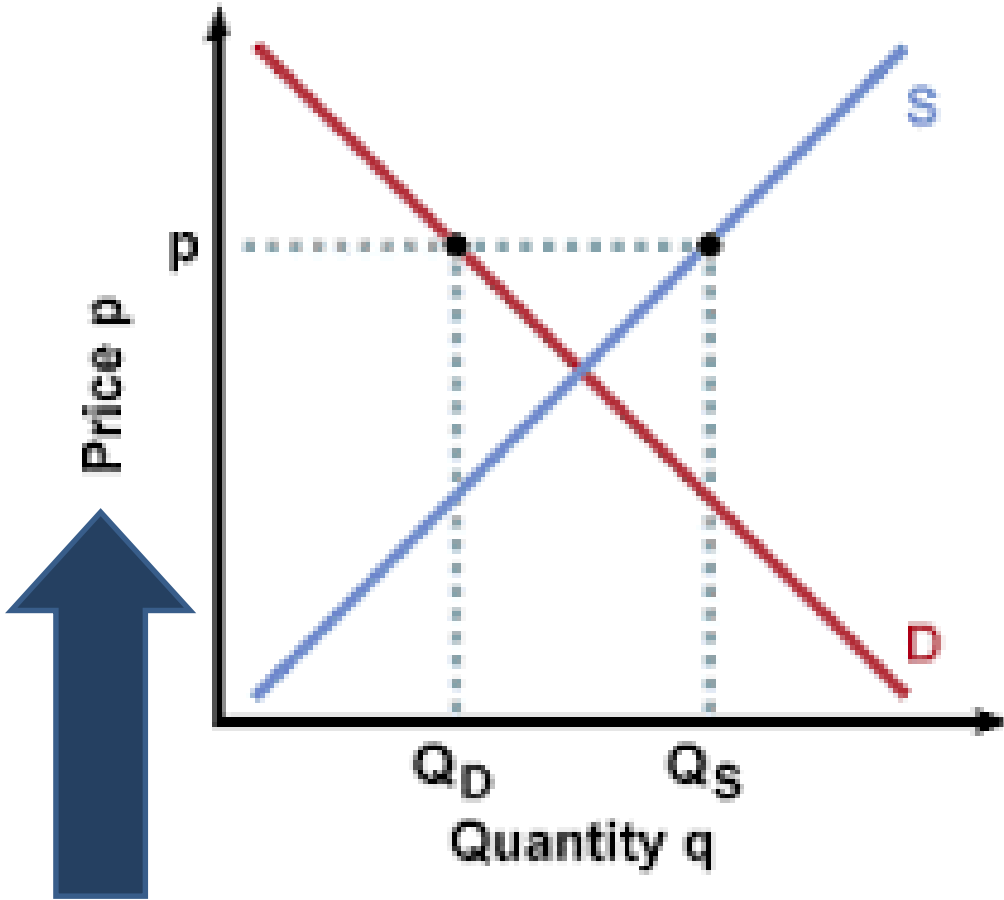
Source: UN, 2018 Inclusive Wealth Report 2018



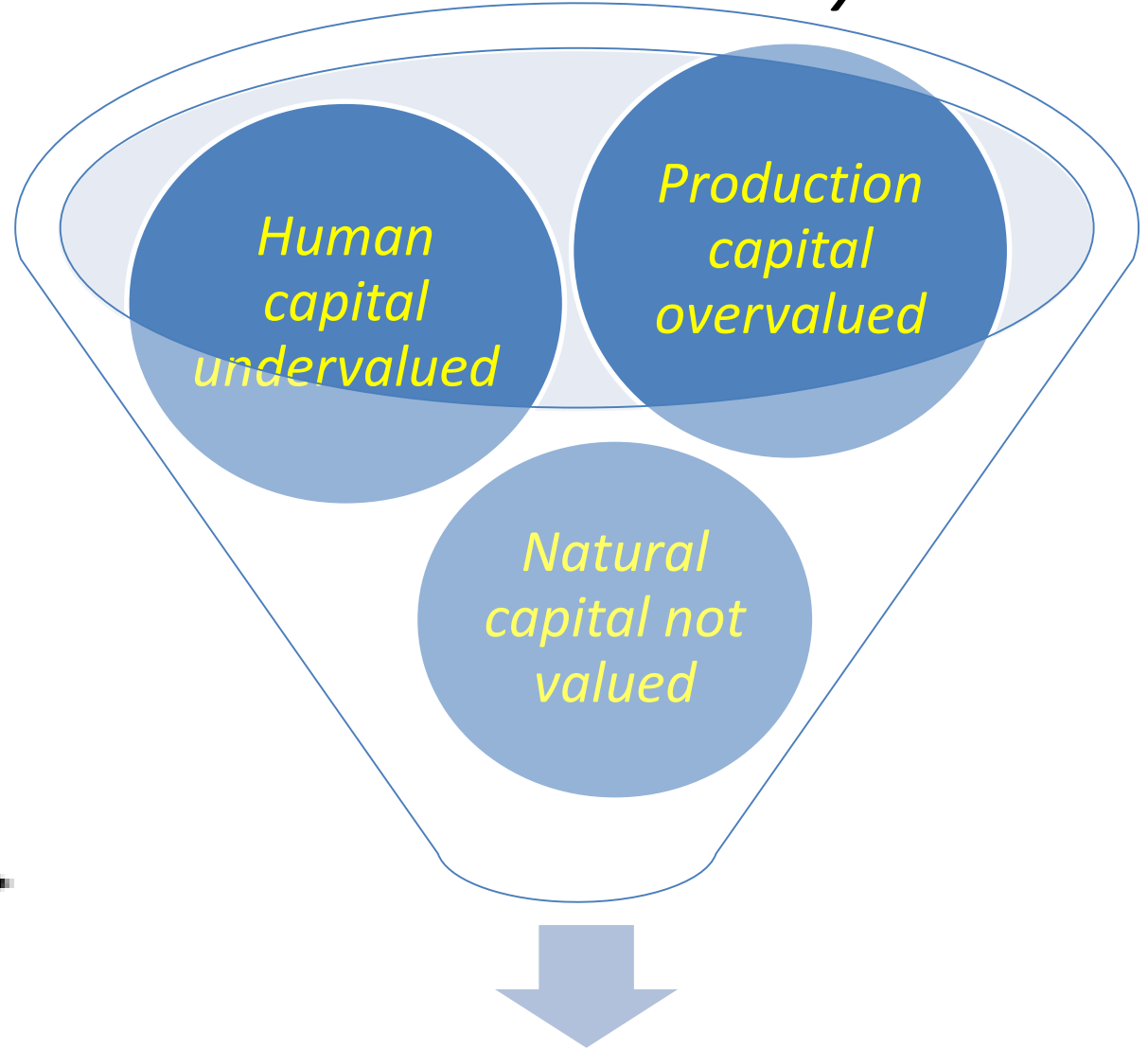
IW – Inclusive Wealth
PC – Production capital
HC – Human capital
NC – Natural capital

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



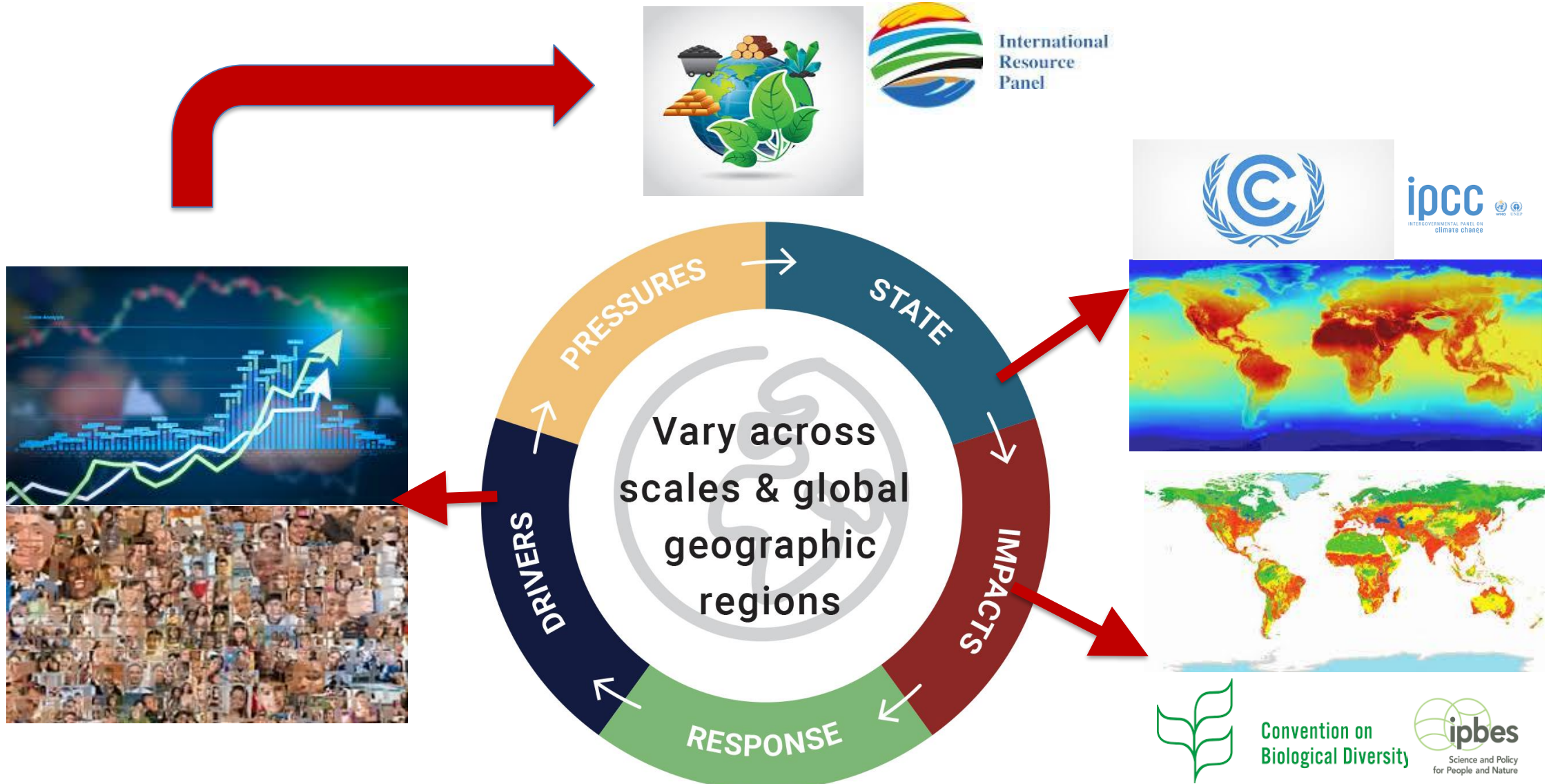
*Economic, social and environmental
(in)balance*



International
Resource
Panel

Global Resource Outlook

Natural resources are the **bridge** between economy and competitiveness on one hand and climate change, biodiversity loss, pollution and health implications on the other



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



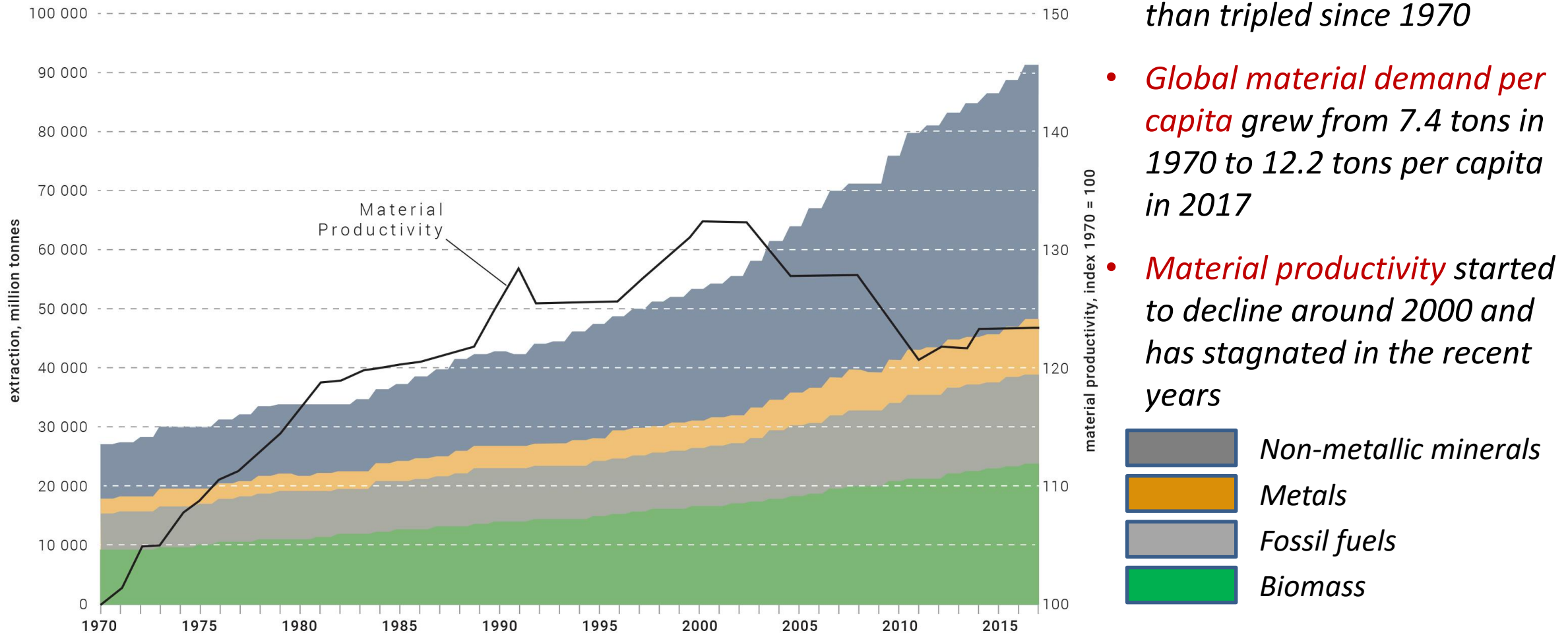
Water and Land



Global material use

Material demand per capita and Material productivity

Global material extraction and material productivity, 1970 - 2017



Environmental impacts in the value chain

extraction and processing phase

90% of global **biodiversity loss** and **water stress**

50% of global **climate change impacts**

1/3 of **air pollution health impacts**



Biomass



Metals



Non-metallic minerals



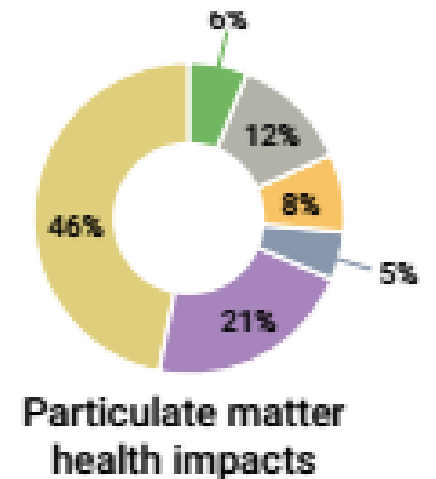
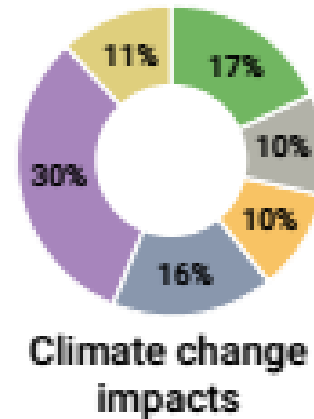
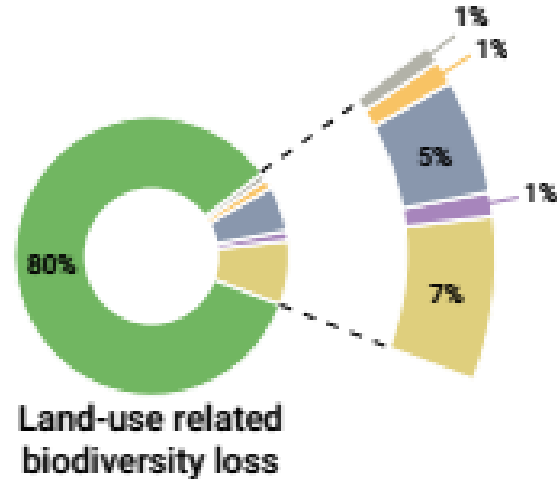
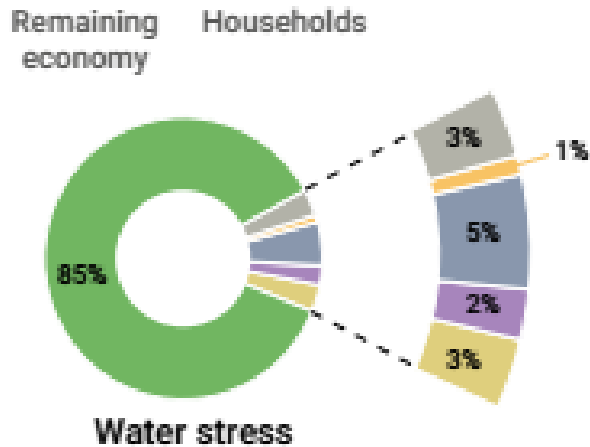
Fossil fuels



Remaining economy

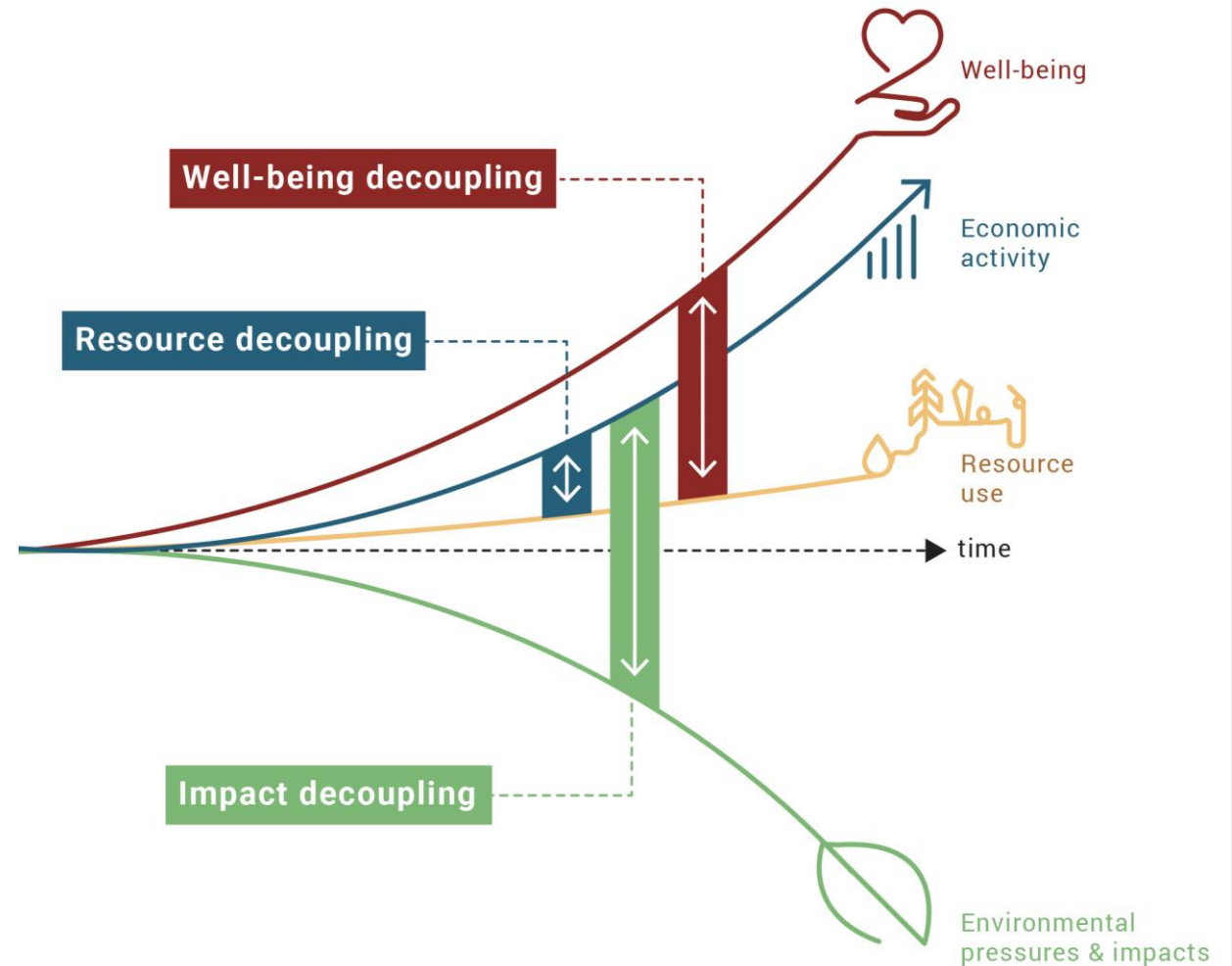


Households



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

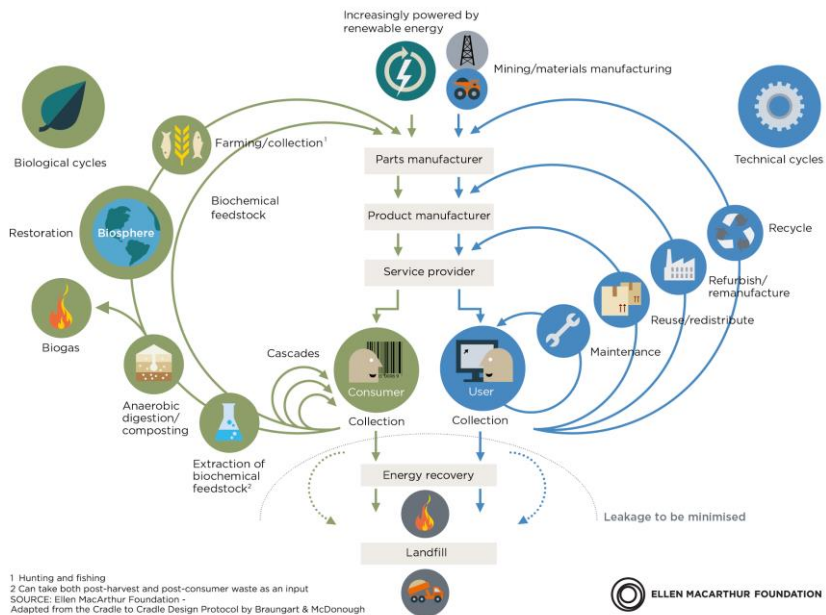
Decoupling



Circular Economy

What and Why

CIRCULAR ECONOMY - an industrial system that is restorative by design



It should be seen as an *instrument for deliver decoupling* of economic growth from resource use and environmental impacts and as a *part of the bigger picture of economic, societal and cultural transformation* needed to deliver the *SDGs*.

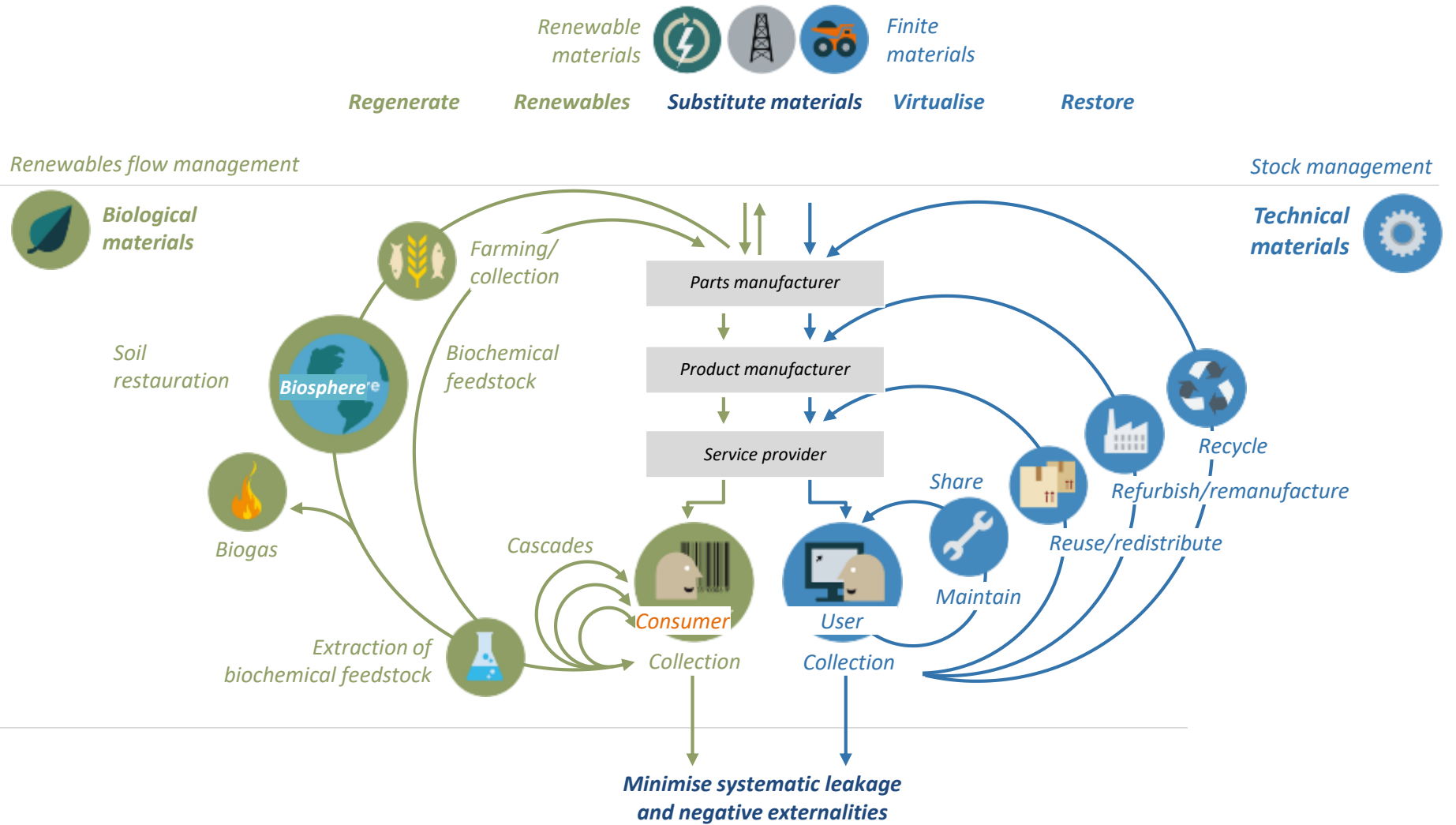
OUTLINE OF A CIRCULAR ECONOMY SYSTEM

Principles

1 Preserve and enhance natural capital by controlling finite stocks and balancing renewable resource flows

2 Optimise resource yields by circulating products, components and materials in use at the highest utility at all times in both technical and biological cycles

3 Foster system effectiveness by revealing and designing out negative externalities



Source: Ellen MacArthur Foundation; McKinsey Center for Business and Environment; Stiftungsfonds für Umweltökonomie und Nachhaltigkeit;

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

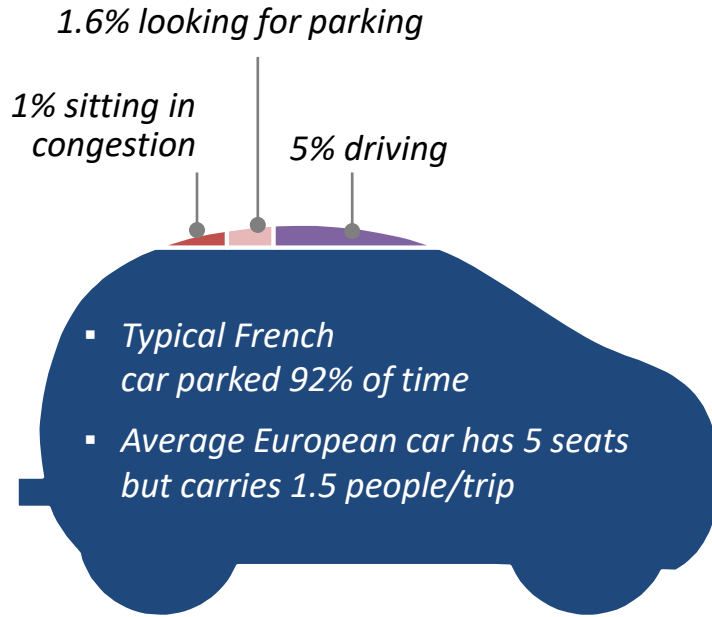
...

We want healthy plants

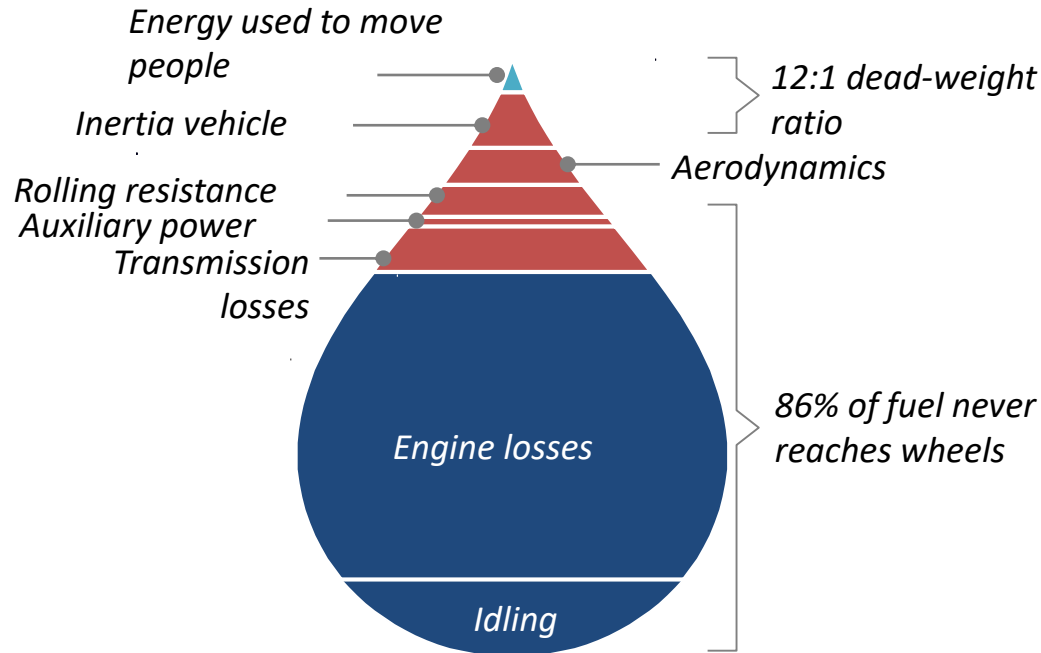


Our mobility system is plagued by structural inefficiencies

Car utilisation

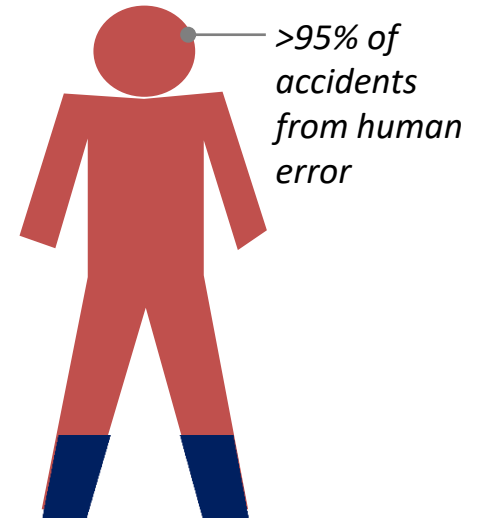


Tank-to-wheel energy flow - gasoline



Deaths & injuries/year on road

30,000 deaths in accidents and 4x as many disabling injuries



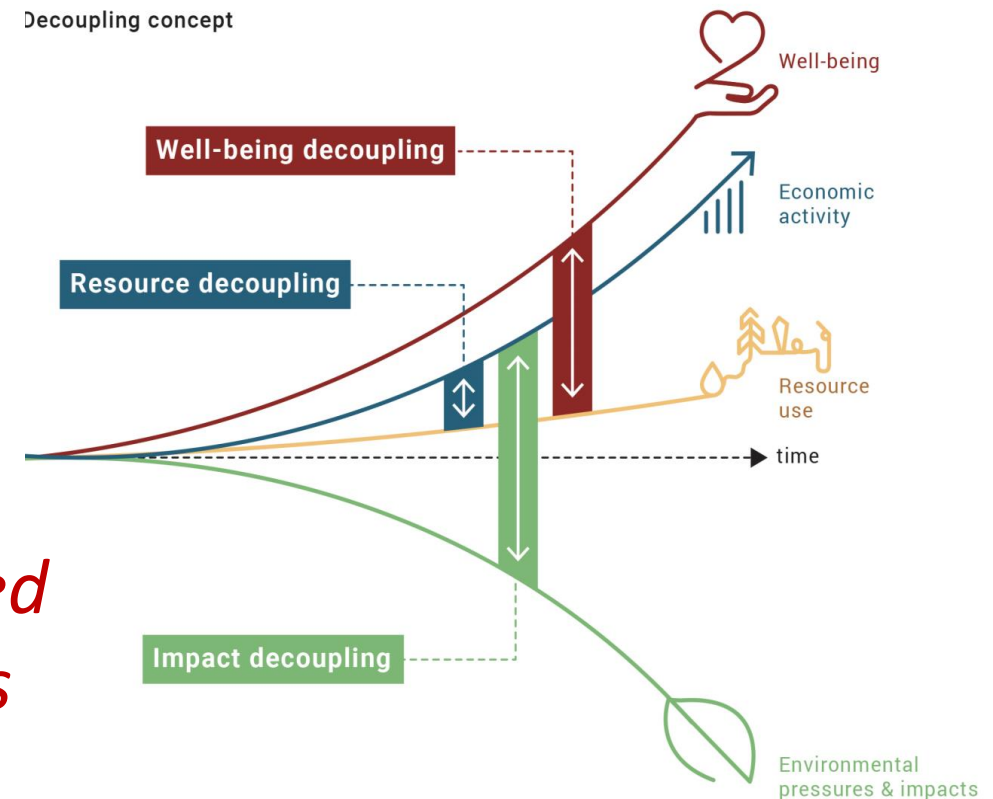
LAND UTILISATION:

- Road reaches peak throughput only 5% of time and only 10% covered with cars then
- 50% of most city land dedicated to streets and roads, parking, service stations, driveways, signals, and traffic signs

Ownership and product (under)utilisation - Consumer

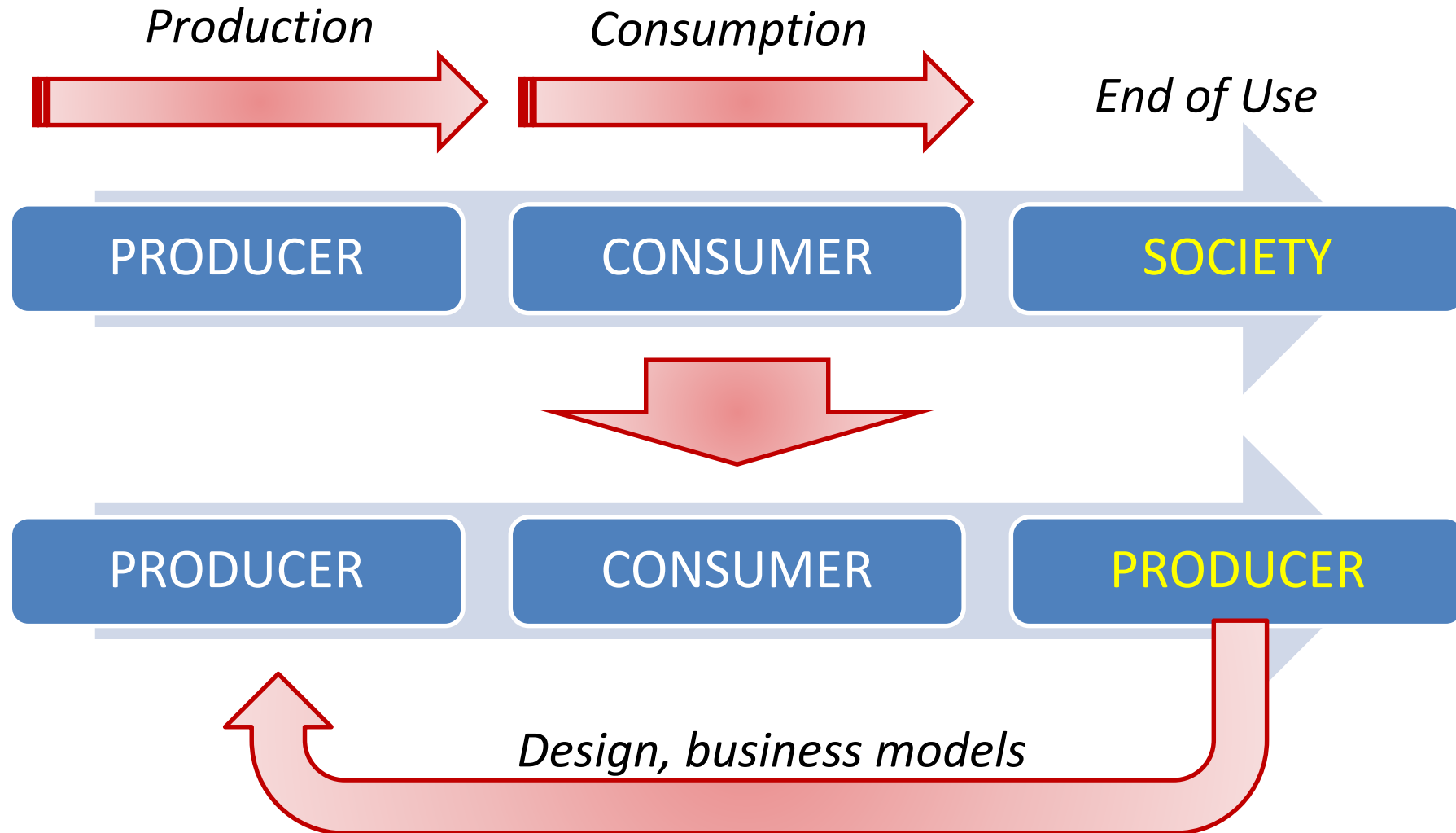
It is not not about owing it is about using

- **Problem:** Preferences from consumers to own products like houses, cars, refrigerators, cloth ... are driving consumption in a massive lock-in in underutilization
- **Solution:** Explore the opportunity that the young generation has less ownership biased constraints and provide alternative options



Ownership and resource (under)utilisation - Producer

Better Connecting Producer with his Product



Retaining the Value, Rethinking Ownership, aligning Incentives with Regulation

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SUPPLY SIDE SOLUTIONS

CARBON MANAGEMENT

LAND

WATER

ENERGY

MATERIALS

DECOUPLING - CIRCULAR ECONOMY

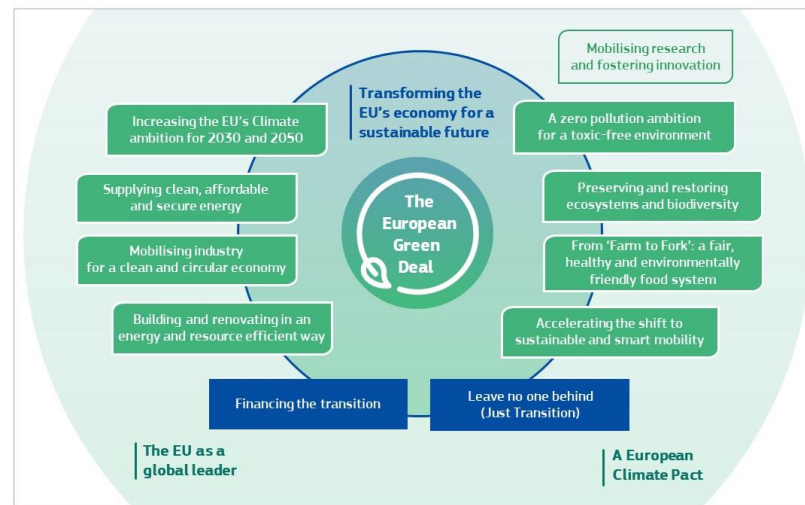
DEMAND SIDE SOLUTIONS

ECO-SYSTEM SERVICES, ENVIRONMENTAL SINKS

NATURE BASED SOLUTIONS

European Green Deal

Why it is so important?



- 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.”
- It also “aims to **protect, conserve and enhance the EU's natural capital, and protect the health and well-being of citizens from environment-related risks and impacts. At the same time, this transition must be just and inclusive.**”
- Is an “integral part of this **EC's strategy to implement the UN's 2030 Agenda and the SDGs**”

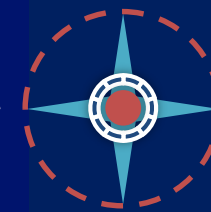
The System Change Compass contributes to the implementation of the ambitions of the European green Deal



Ambition of the EGD is high...



...but implementation is uncertain



The System Change Compass guides action on all levels of the system

- **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**
- **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**

What would all this mean in policy terms?

- *Redefining consumption from owning to using;*
- *Redefining production from mass sales to providing efficient functionalities;*
- *Redefining core economic incentives such as taxation, subsidies, and public procurement;*
- *Integrating wellbeing as the objective across all policies;*
- *Measuring sustainability with a lifecycle perspective, harmonising across policy areas;*
- *Activating existing financial potential to enable transition;*
- *Looking at innovation in categories of economic ecosystems that provide societal functions, rather than in categories of production sectors;*
- *etc ...*

*EGD and Post-Covid
Recovery*

Two sides of the Same coin

Why we should be worried?



01

We haven't **listened to science**. Warning that pandemic could happen existed, but we have not prepared ourselves appropriately. And when it happened, although epidemiologists have been abundant and explicit with warnings and recommendations to act early and decisively, politicians from only few countries (mostly centralized east-Asian) have acted as science would dictate. The result were actions too little, too late.

02

We haven't **cooperated** as needed, not even among EU member states or even their nations, let alone globally. Every step of the pandemic, we have experienced clear optimization of short-term self-interest as in a game theory text-book – be it the distribution of scarce masks, respiratory machines, vaccines or rules how they should be used.

03

We haven't shown **global solidarity**. While vaccination rates approach saturation defined by public acceptance, in many developed countries, vaccination campaigns have barely started in less affluent parts of the world. New, more aggressive strands of the virus now wreak havoc in entirely unprotected populations.

Why we should be worried?



04


We haven't shown **individual solidarity**, at a collective level. The vaccination rates in western countries are not plateauing for lack of vaccines, but for lack of acceptance by a shockingly large proportion of society. Their individual, self-interested behaviour contributes to the continued status of crisis and endangers lives of those who can't protect themselves.

05

We haven't focused on the one primary issue: **saving human lives**. All in all, the above facts have led to millions of deaths across the globe, many of which might have been avoidable. But rather than putting protecting human lives at the center of action, (short term) protection of economic or particular interests has driven decisions – at a terrible human cost.

Change COVID to CLIMATE and it should make you worried

Why we can be optimistic?



*Our socio-economic and political systems have joined forces at hitherto **unforeseen speed and scale to mobilize capital and technological ingenuity** at developing solutions. In record breaking time, several vaccines were developed and are being produced at ever accelerating pace. If we were able to replicate such decisive action on complicated challenges of the climate and biodiversity crises, much more ambitious action and faster systems change may be feasible.*

EGD and COVID-19

Basic Lessons



World after Covid-19: will be the same. We will hopefully just better understand it. Very likely the **frequency and severity** of health-related outbreaks, climate related extreme weather events ... will in the future increase. We need to **rethink the way we are managing the risks**, as individuals and collectively, as private companies and public policy makers, locally and globally. We need to **collaborate** more to built **resilient societies** and be **better prepared**.



Role of science: one thing is clear - **policy making** and adopted decisions should be in the future more **science-based**



Precautionary principle: is written in EU Treaties. Maybe trying to **better implement it in practice** is not a bad idea. It can save our jobs ... and lives.

EGD and the post-COVID Recovery

Two Sides of the same Coin



01

The economic policy designed by the EGD, and related documents is the most convincing **competitiveness policy** for the European Union - According to the Raw Materials Scoreboard of the EC, the EU was in 2018 between 75% and 100% reliant on imports for most metals and more than half of EU's energy needs are met by net imports. Prices for raw materials are extremely volatile and resources constitute the largest share of industry input costs.



02

EGD already provides convincing answers to some COVID-19 related concerns in relation to **reconsidering globalisation** effects - Building a clean and circular economy promises to reduce our dependence on imported materials, lower our environmental, climate and health impacts, and create more local jobs. It can also help improve self-sufficiency and resilience exposed by Covid-19 in relation to the global supply chains.

EGD and the post-COVID Recovery

Two Sides of the same Coin



03

Both EGD and post-Covid-19 call for an **inter-generational solidarity and agreement** - In the past decades, GDP has grown at the expense of depleting natural capital, passing on the costs of replenishing this capital to future generations. The billions in financial debt being mobilised by countries and institutions to combat Covid-19 are adding to the environmental debt. At minimum we should provide them a safer, more sustainable and resilient world than is the current one.



04

COVID-19 is providing the necessary **missing urgency** to the EGD and climate related financial efforts - We have seen that determined global actions in facing a crisis are possible if the crisis is perceived as imminent. Until now, the fight against environmental challenges has never been seen as sufficiently urgent to attract enough funding. Funds committed to Covid-19 recovery (in EU almost doubled budget capacity) create an opportunity to reshape an economy on a transformative scale.



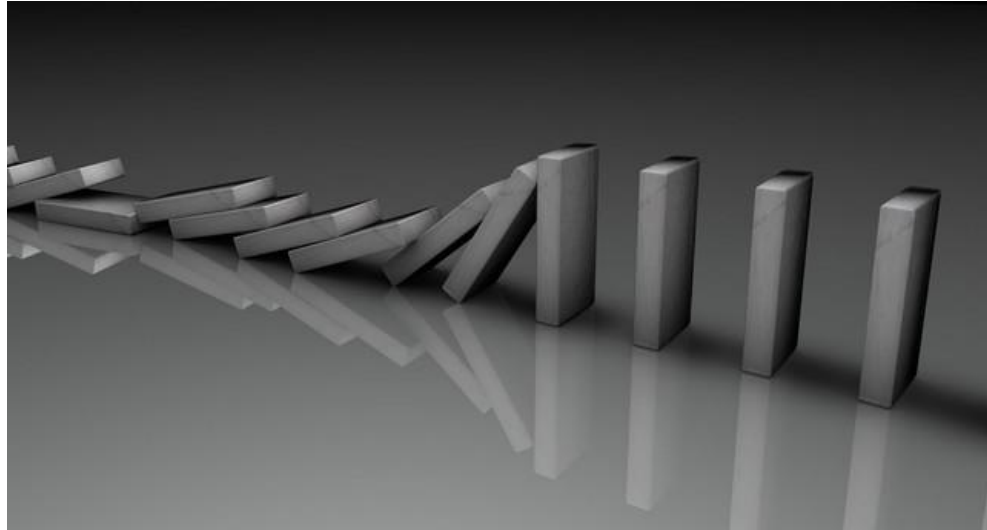
05

Both COVID-19 and EGD related challenges require a **new approach to governance**, in particular on the global level

To Conclude

*Science is Convincing and the Change
is Unavoidable*

Transition to a more sustainable economy and society



IS UNAVOIDABLE!

*Humans are supposed to be **intelligent**. It is high time to prove it.
We have to fix a broken **compass!***

Environmental and Social Transformations are Interconnected



Startovercoder.com

*Acknowledging the value of the natural capital by markets would almost inevitably, at least in a foreseeable future, lead to some price increases and worsen the already unenviable social situation. This would be of course unacceptable. Without **simultaneously addressing all the sustainable development goals spectrum**, we have no real chance to succeed with this transition.*

And the Role of Universities of Technology ...

- Like all universities ... teaching, research, engagement. Contribute to rational and timely critical view in areas of public policy and social and economic life.*
- Focus on very much needed technology innovation, industry related research and transfer of knowledge to those in demand.*
- Connect and cooperate not only with technological universities, but also with social science-based universities to better understand and contribute to the complexity of system change.*

*Johann Wolfgang
Goethe*



imdb.com

*Knowing is not enough; **we must apply.**
Willing is not enough; **we must do.***

There has never been a better moment for

Europe to move from the history of “resource-driven imperialism” into an era of responsible use of natural resources, mitigating its resource fragility and strengthening preparedness and resilience

This would also clearly position EGD and give it a real historic and strategic weight in our efforts to for the global circular economy and implementing SDGs

Circular Economy is not a new concept



It is the oldest concept on the earth.

Nature is a “bio-economy” organized on the principles of the circular economy.

Nothing is lost and everything has its purpose.

It makes sense to embrace it and finally start to behave accordingly.



The Dasgupta Review, published earlier this year, is clear about the main reasons for the current situation - it highlights *institutional failure and the failure of contemporary economics* to acknowledge that we are embedded in, and not external to nature, and to act accordingly.

*So, for the beginning we would need to answer only one question:
Do we agree that we humans are part of the nature too?*

To answer this question, we probably do not need the help of the most famous Belgium detective, but his advice is always useful

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

