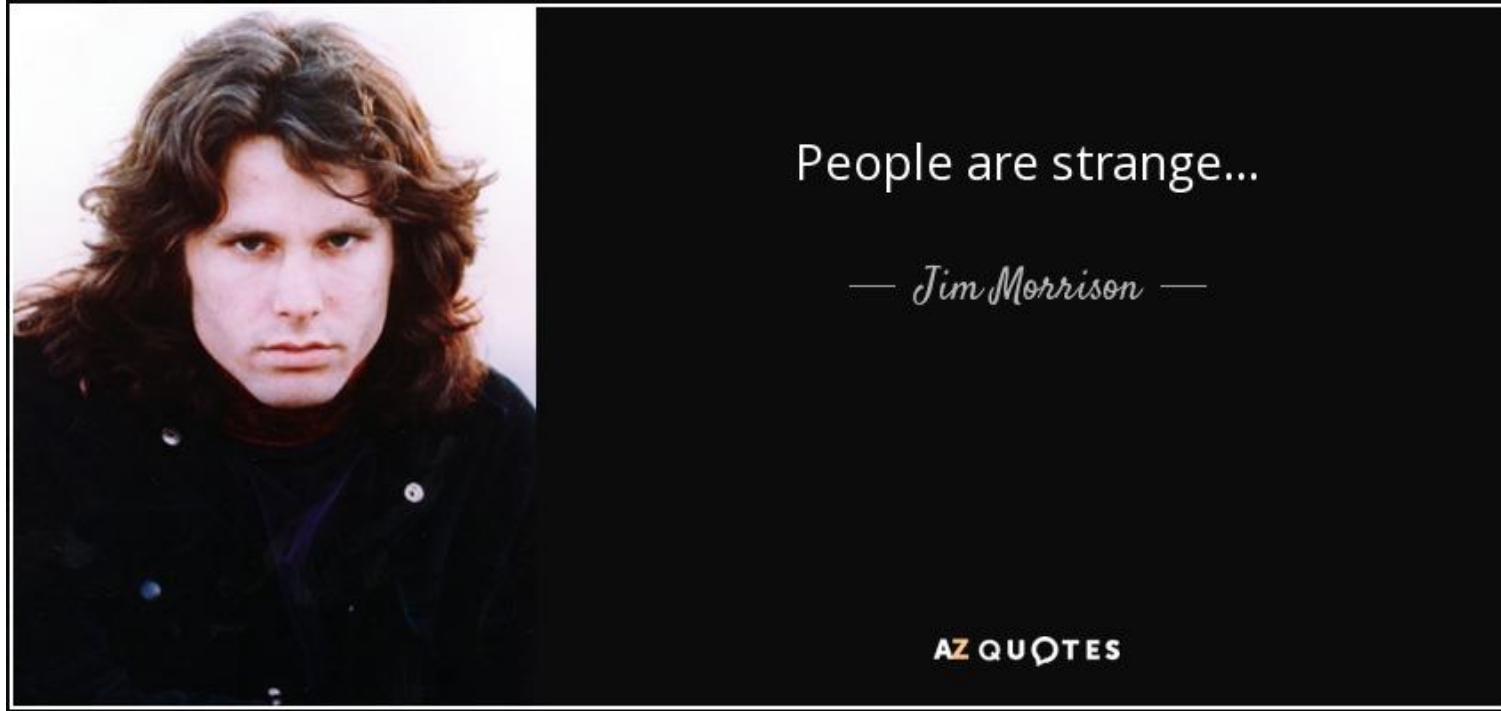




*Sustainable, Just and Competitive
Economy and Society
Towards Circular Economy
with a help of smart villages*

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

13th September 2019



We want changes ...
but we do not want to change

OUR WORLD

SOME FACTS ABOUT FUTURE RISKS

Let's start the 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.”*

THE TASTE OF "UTTER CHAOS"

- *Population* growth (2050 – 9.7 billion)
- *Per capita consumption* growth will increase - consumers moving from low to middle class consumption
- Few people own the same as the poorest half of the world and the richest 1% is more *wealthy* than the rest of the world
- 800 million people are *hungry*, over 2 billion suffer from micronutrient deficiencies, over 2 billion people are *obese*
- 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



THE TASTE OF "UTTER CHAOS"

- *Climate change* experts warned us that emissions need to be about halved by 2030 to limit warming to 1.5°C
- 60% of *ecosystems* already degraded or used unsustainably
- *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%
- 1/3 of *soils* is degraded or used unsustainably due to various reasons
- 7 millions premature deaths yearly globally *due to air pollution*
- A million of *plastic* bottles are bought every minute. 9% of plastic recycled, 12% incinerated, 79% landfills or environment
- If drinking only *bottled water one* consumes 130,000 *plastic particles* per year from that source alone, compared to 4,000 from tap water
- We are the first generation more likely to die as a result of *lifestyle choices* than infectious disease



THE TASTE OF "UTTER CHAOS"

- *Nearly half of all the **work** we do, will be able to be **automated** by mid of the century*
- *In 1997, DeepBlue beat Gary Kasparov – world Chess champion - using an algorithm conceived in the 1950s and lots of human data. In 2017, AlphaGo beat Ke Jie - world Go champion – discovering by itself the principles of the game and how to play it - **Era of artificial intelligence***



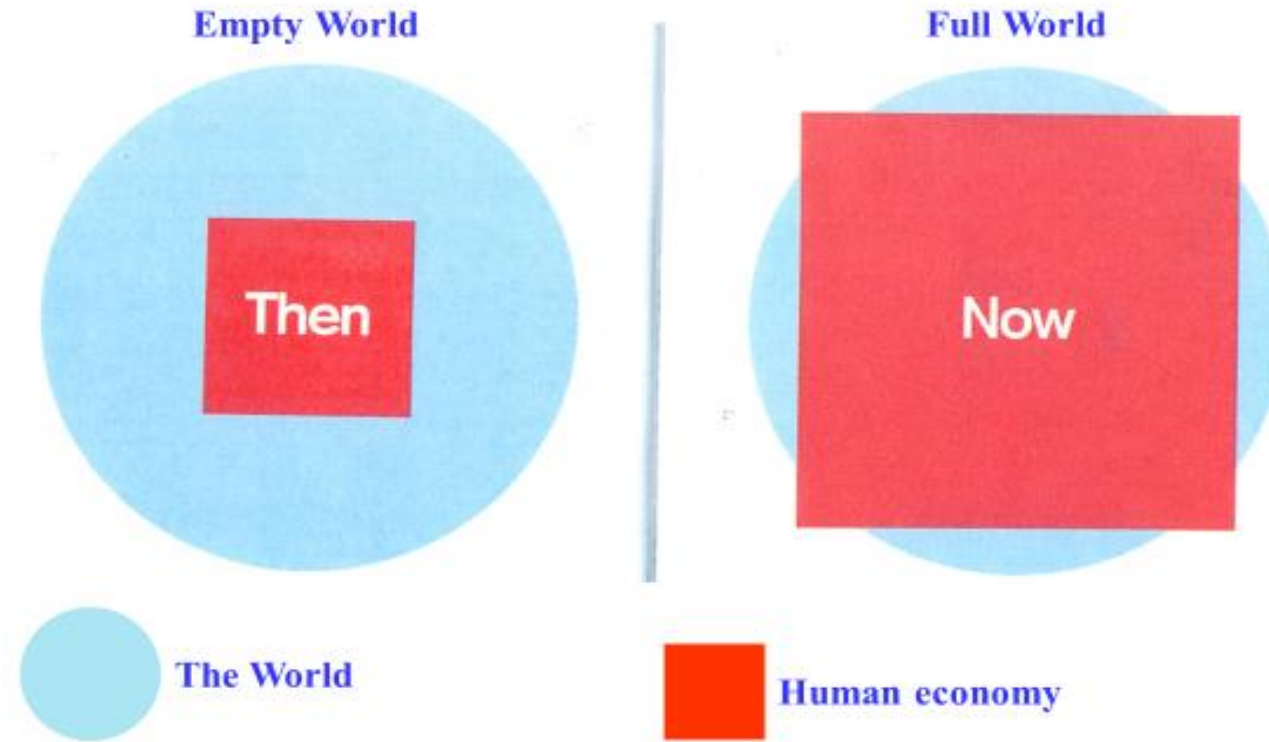


*For the first time in a human history we face the emergence of a single, tightly coupled human **social-ecological system of planetary scope.***

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

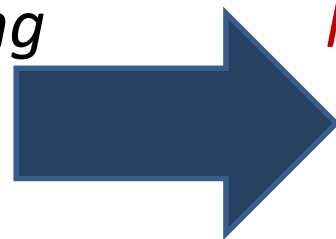
*Our individual and collective **responsibility** has enormously increased.*

Empty World and Full World

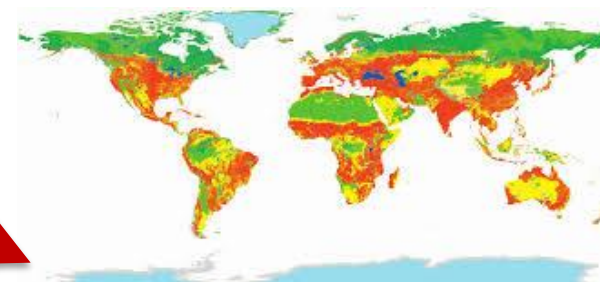
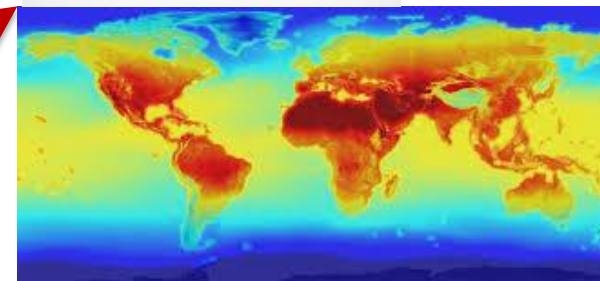
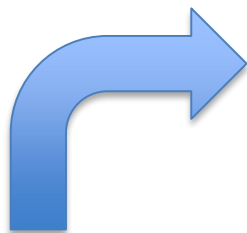


Source: Club of Rome: Simplified after Herman Daly

*Labour and Infrastructure limiting
factors of human wellbeing*



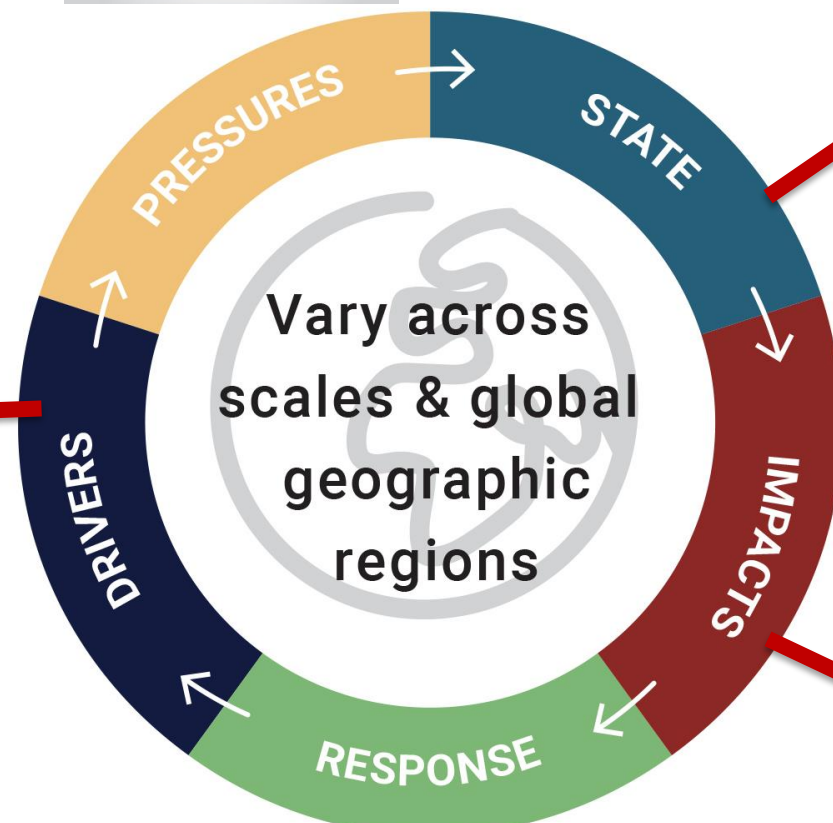
*Natural resources and Environmental
sinks limiting factors of human
wellbeing*



Convention on
Biological Diversity



ipbes
Science and Policy
for People and Nature



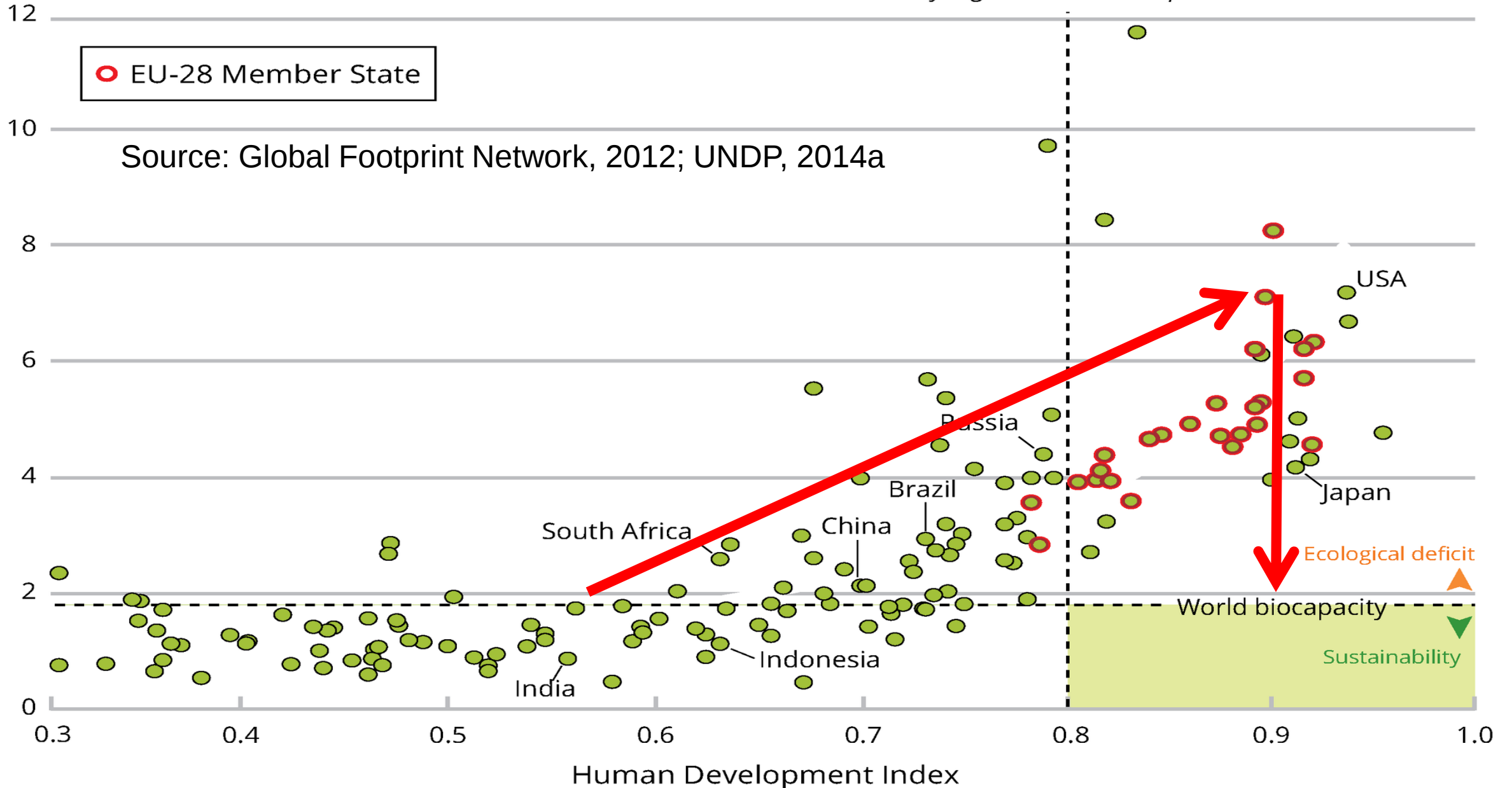
Our Economy



DEVELOPMENT TRAJECTORY ...

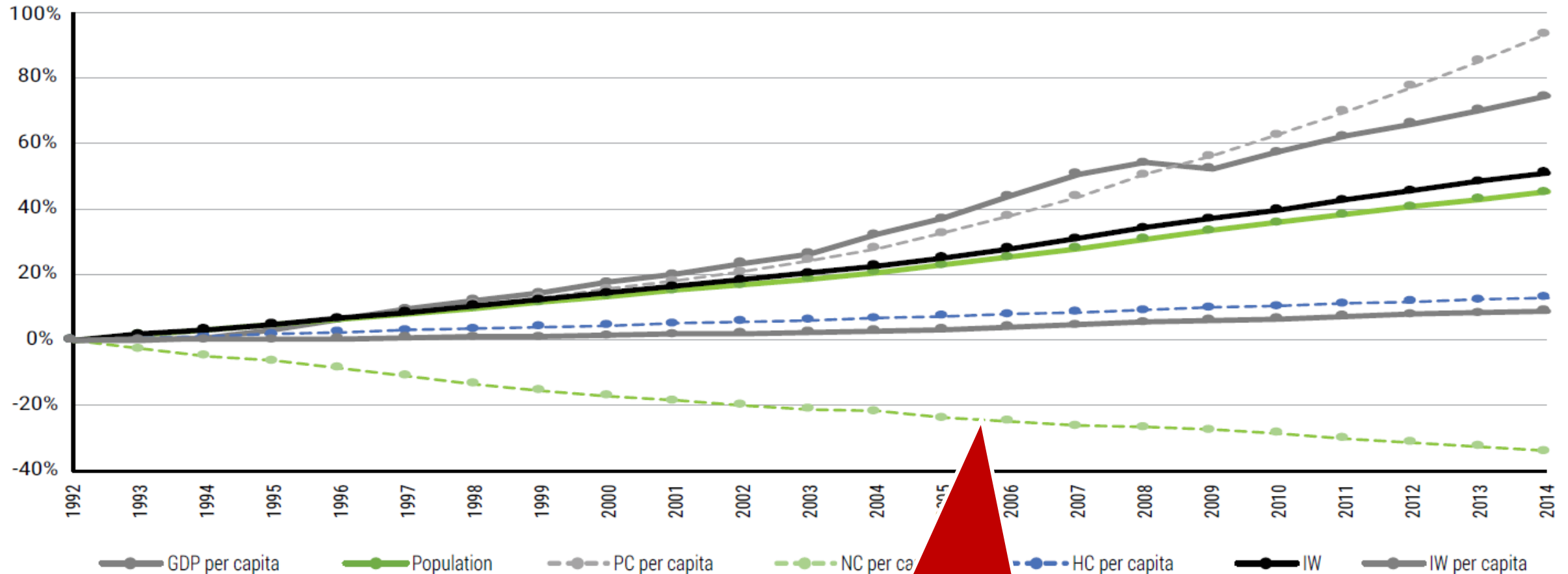
Ecological footprint
(hectares per person per year)

'Very high human development'



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

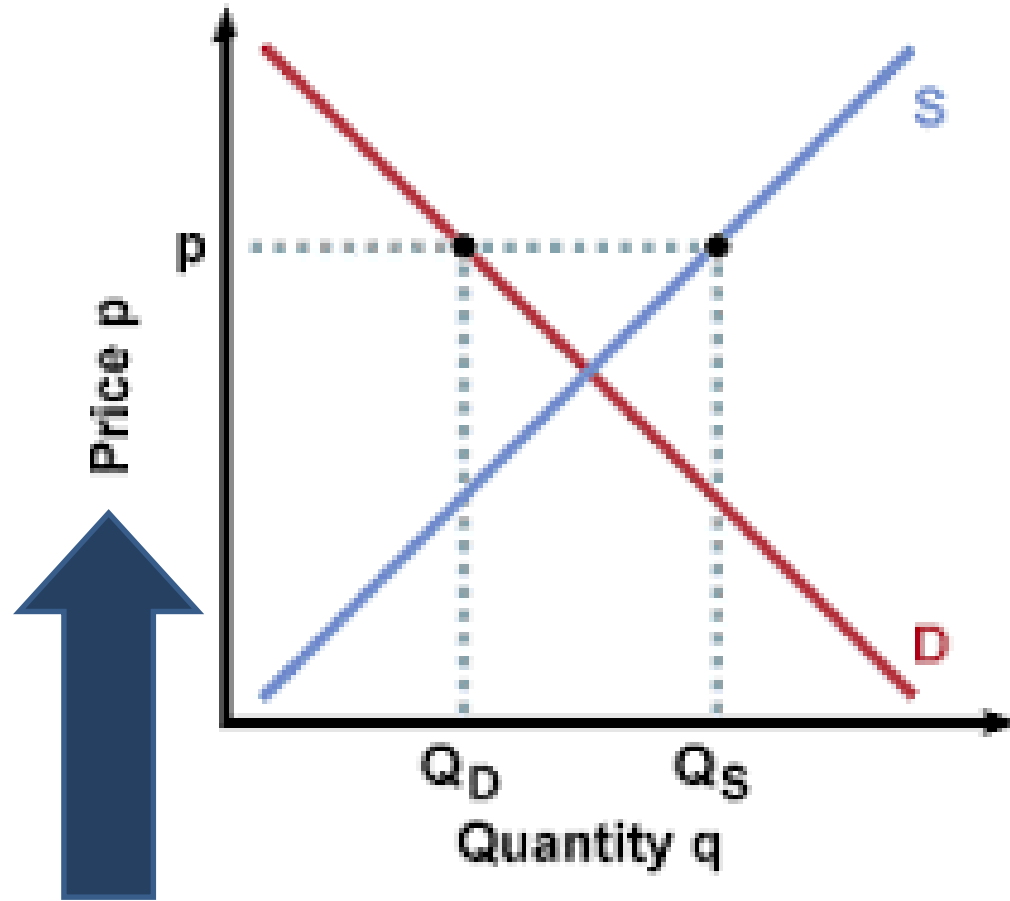
Source: UN, 2018 Inclusive Wealth Report 2018



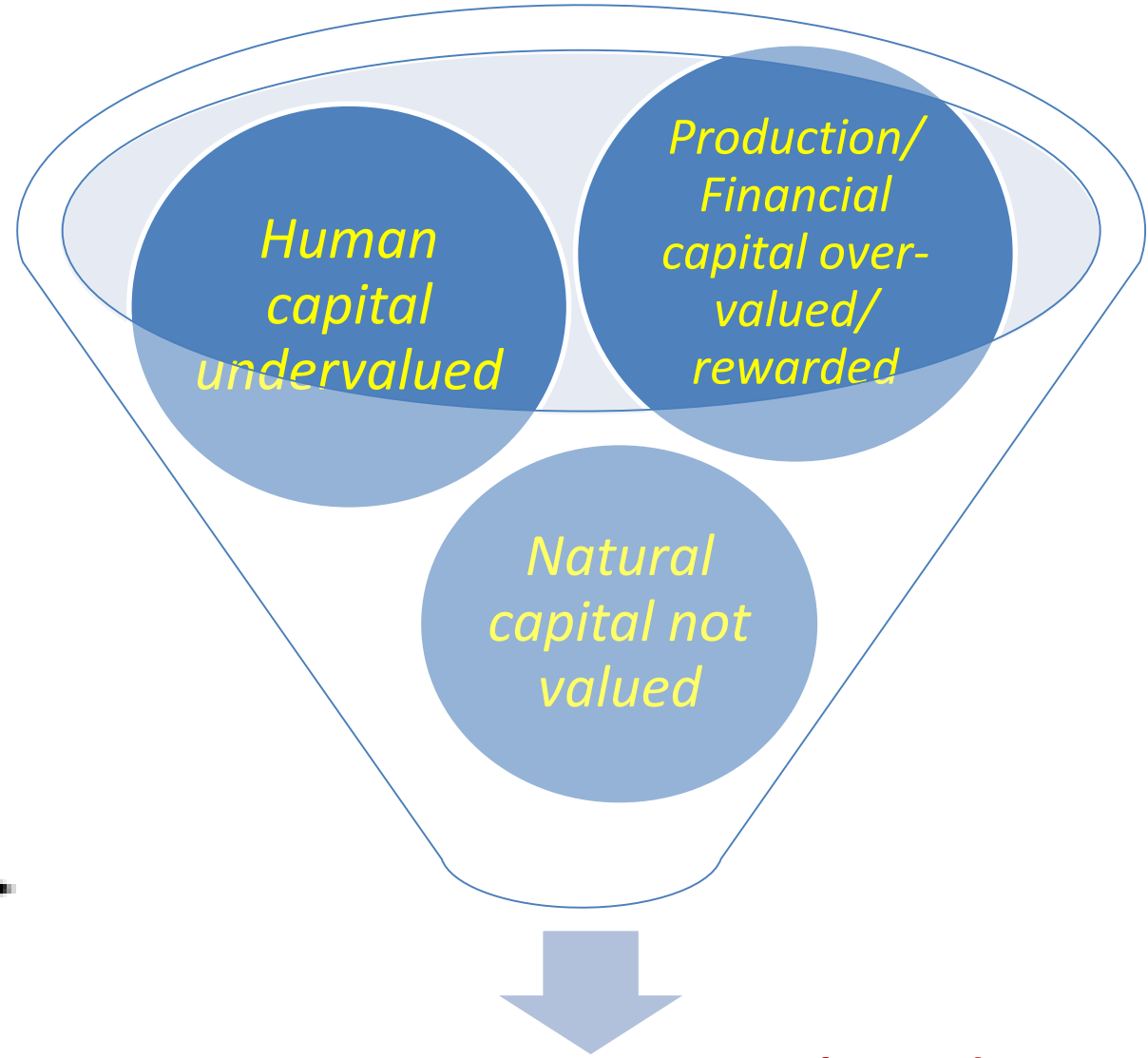
IW – Inclusive Wealth
PC – Production capital
HC – Human capital
NC – Natural capital

Growth of GDP in the past decades has been achieved at the cost of depleting natural capital

Producers/Consumers Rational Behaviour



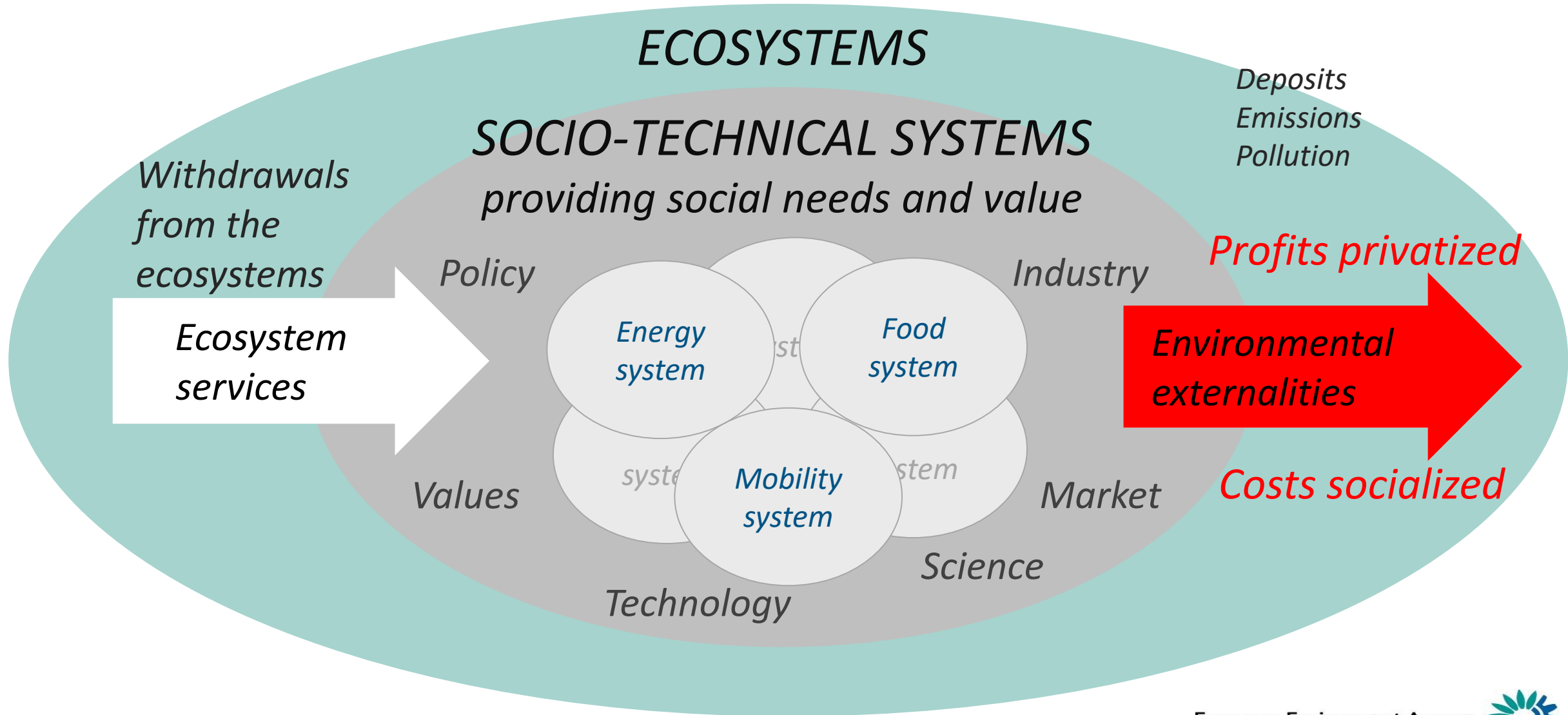
Market Economy



*Economic, social and
environmental (in)balance*

LIVING WELL WITHIN ECOLOGICAL LIMITS

ECONOMIC SYSTEM FUNCTION OF ECOSYSTEM





Gross Domestic Product

*You will not reach the
goal by walking faster,
if you are walking in the
wrong direction!*

RESOURCES

THE MISSING LINK



International
Resource
Panel

SDGs DIRECTLY DEPENDENT ON NATURAL RESOURCES





International
Resource
Panel



*Trade-offs among various SDGs are unavoidable.
Sustainable Consumption and Production is the most
efficient strategy to mitigate trade-offs and create
synergies to resolve the development and environmental
challenges articulated in the SDGs.*



International
Resource
Panel

FOCUS ON SUSTAINABLE PRODUCTION AND CONSUMPTION



GLOBAL RESOURCES OUTLOOK 2019

NATURAL RESOURCES FOR THE FUTURE WE WANT



UN
environment



International
Resource
Panel

UN
environment

*NATURAL RESOURCES FOR
THE FUTURE WE WANT*

Resources:

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



Biomass

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



Fossil fuels

Fossil fuels (coal, gas and oil)



Metals

Metals (such as iron, aluminum and copper...)



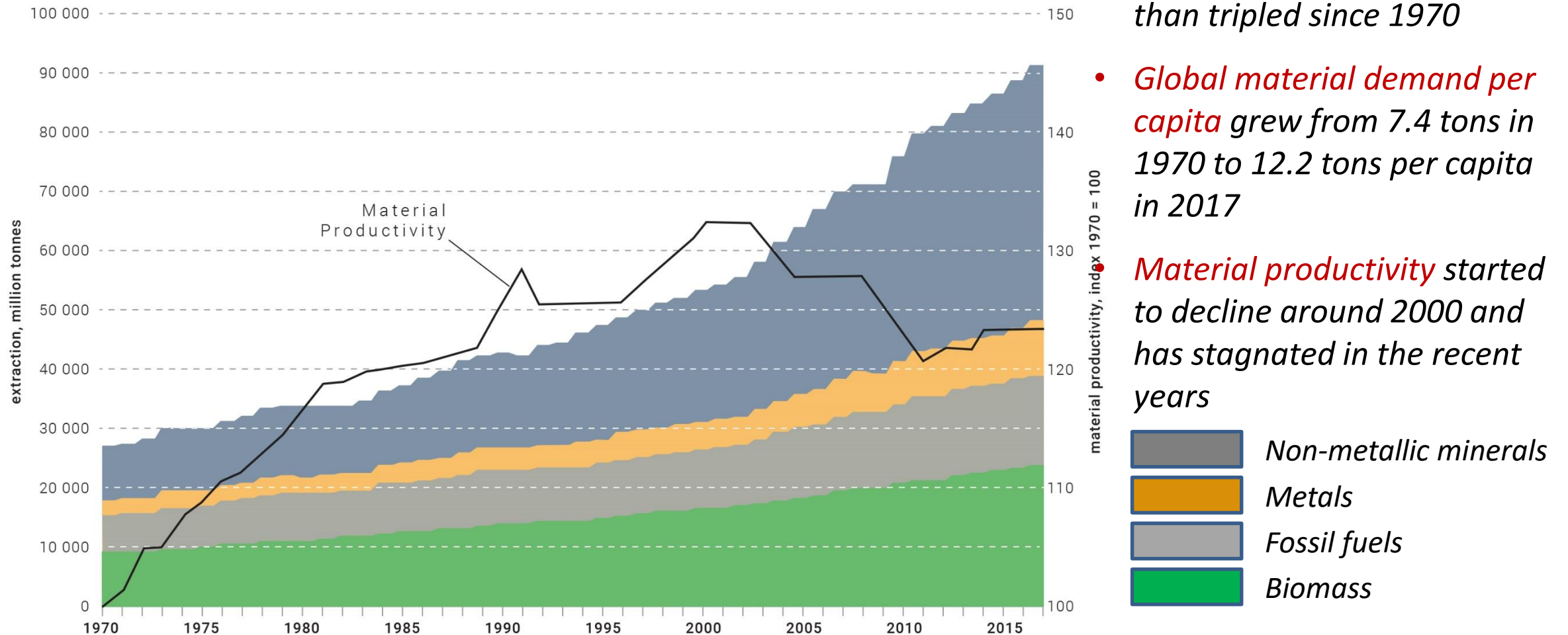
Non-metallic minerals

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

Per capita material footprint from High-Income Countries is 13x the level of the Low-Income Countries !!!

Relentless demand: Global resource use, Material demand per capita and Material productivity

Global material extraction and material productivity, 1970 - 2017



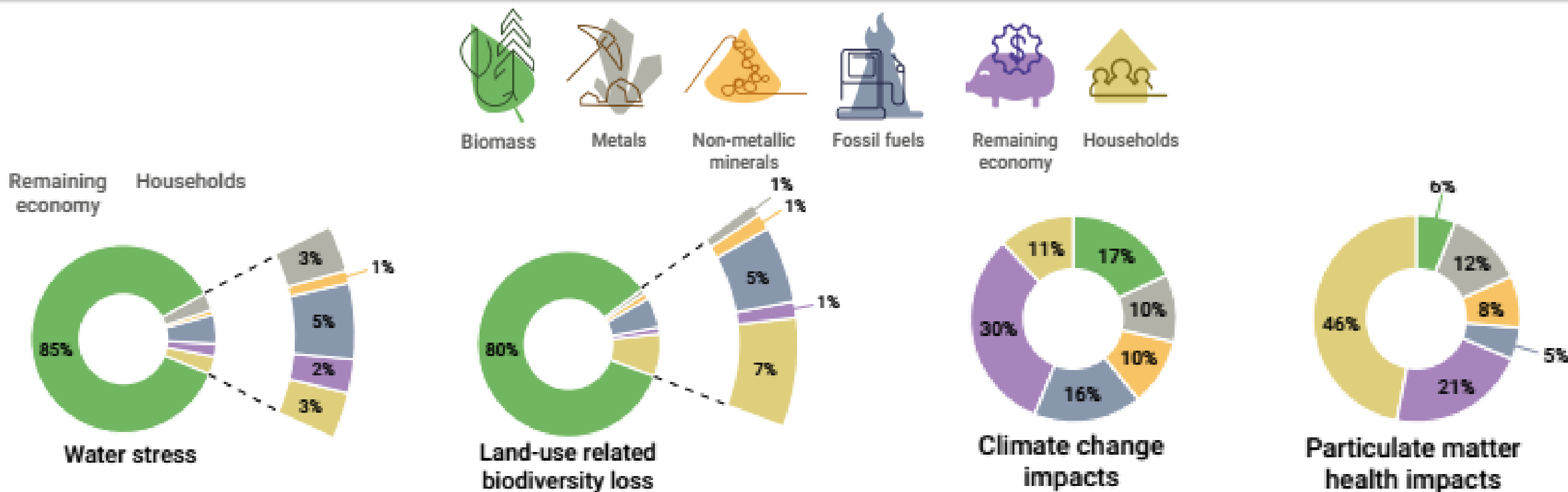
*Environmental impacts in the
value chain*

*resource extraction and
processing phase*

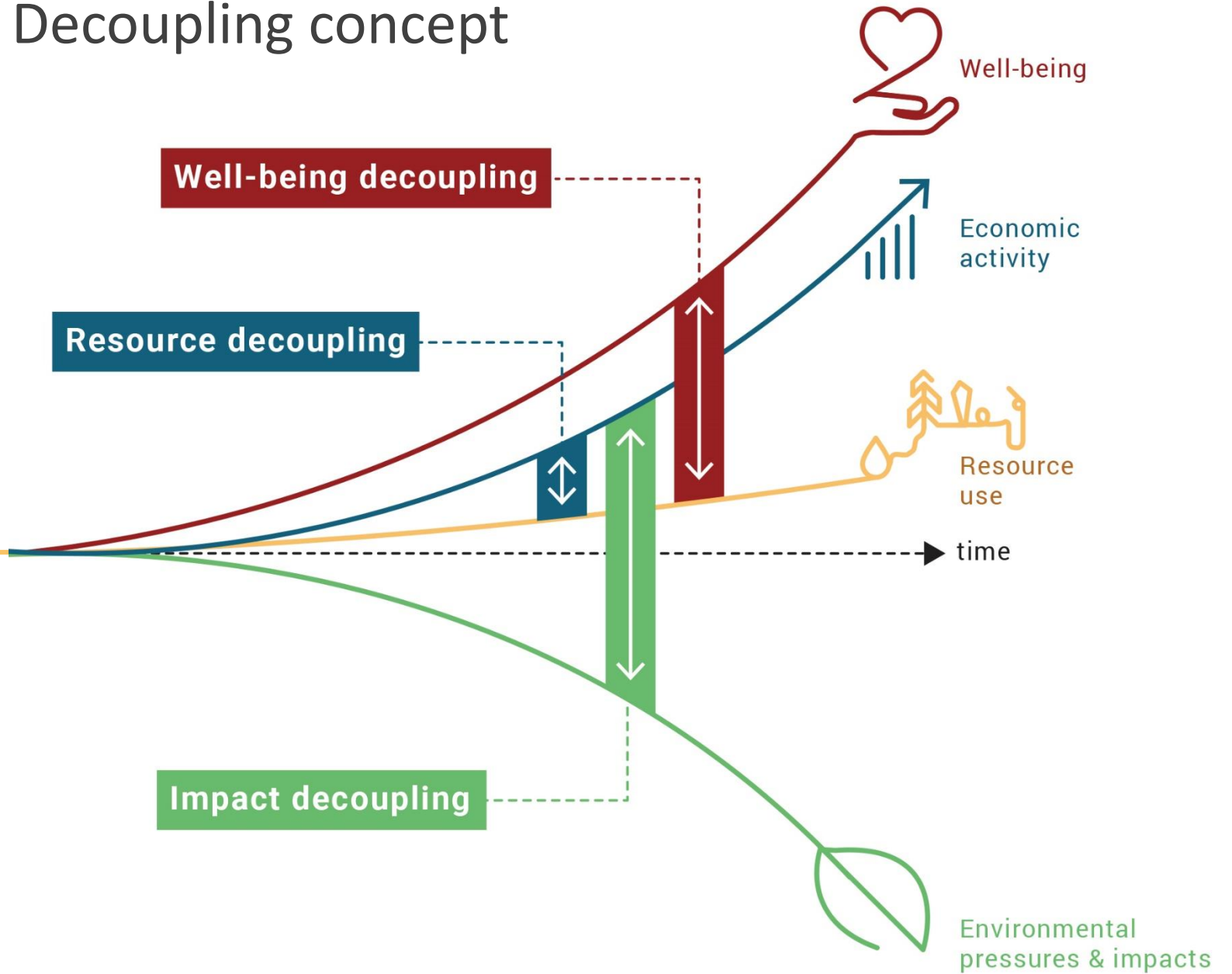
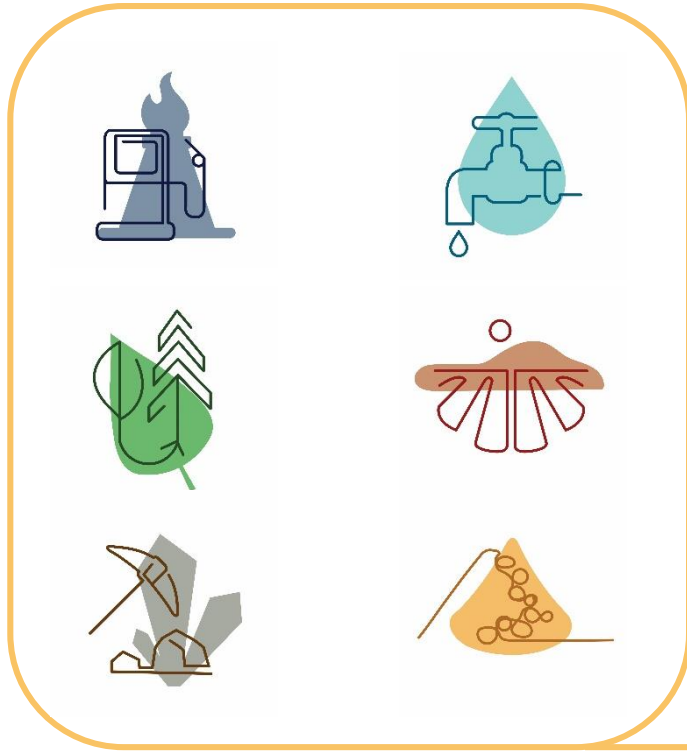
*90% of global biodiversity loss and
water stress*

*50% of global climate change
impacts*

1/3 of air pollution health impacts

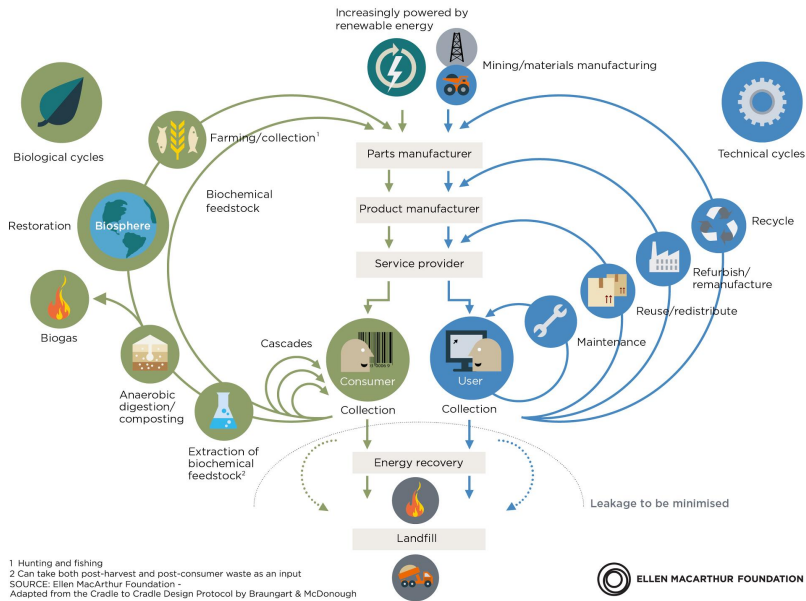


Decoupling concept



CIRCULAR ECONOMY

CIRCULAR ECONOMY - an industrial system that is restorative by design



Should be seen as an *instrument to deliver decoupling* and as a *part of the bigger picture of economic, societal and cultural transformation needed to deliver the SDGs*

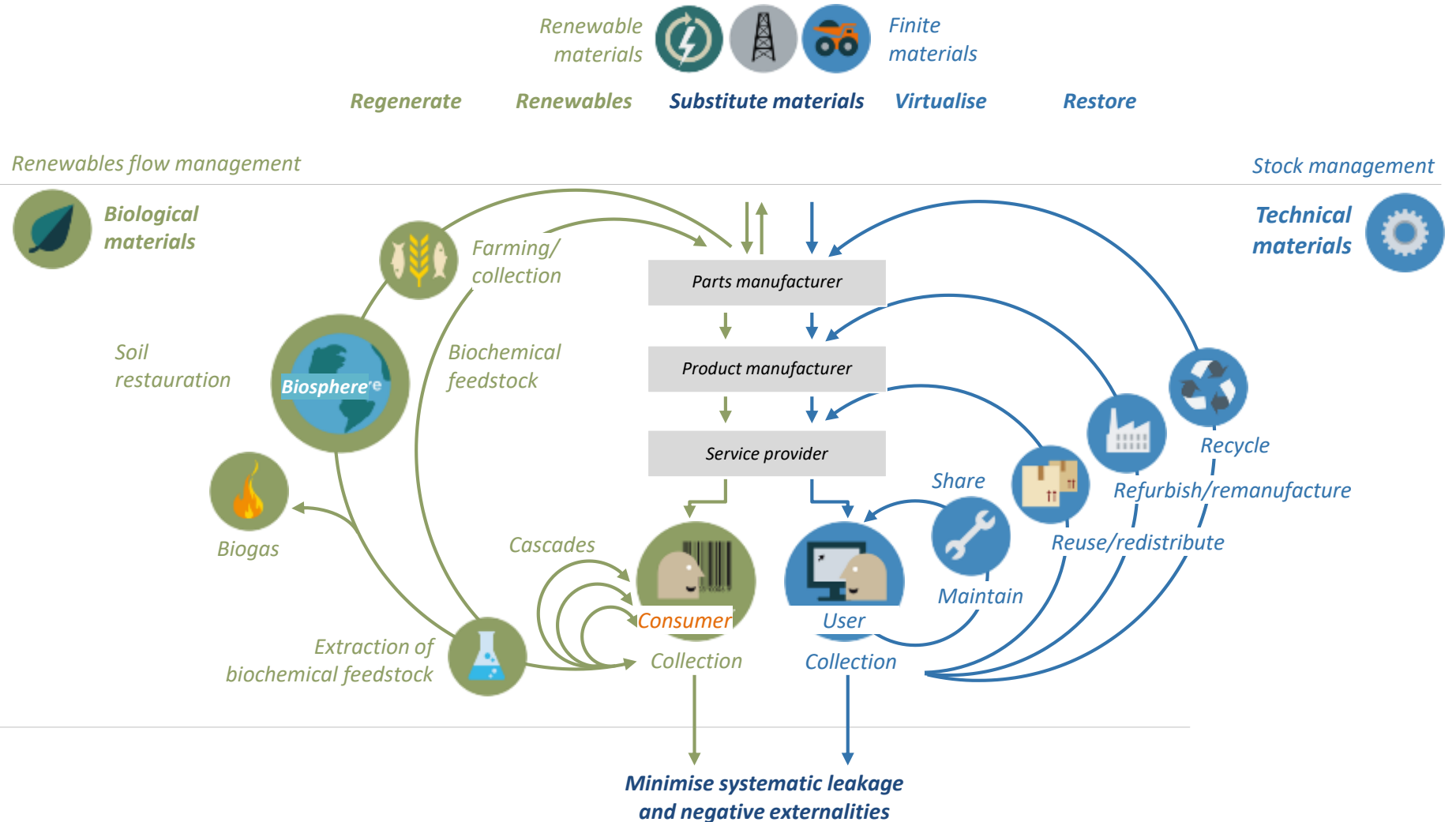
OUTLINE OF A CIRCULAR ECONOMY SYSTEM

Principles

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

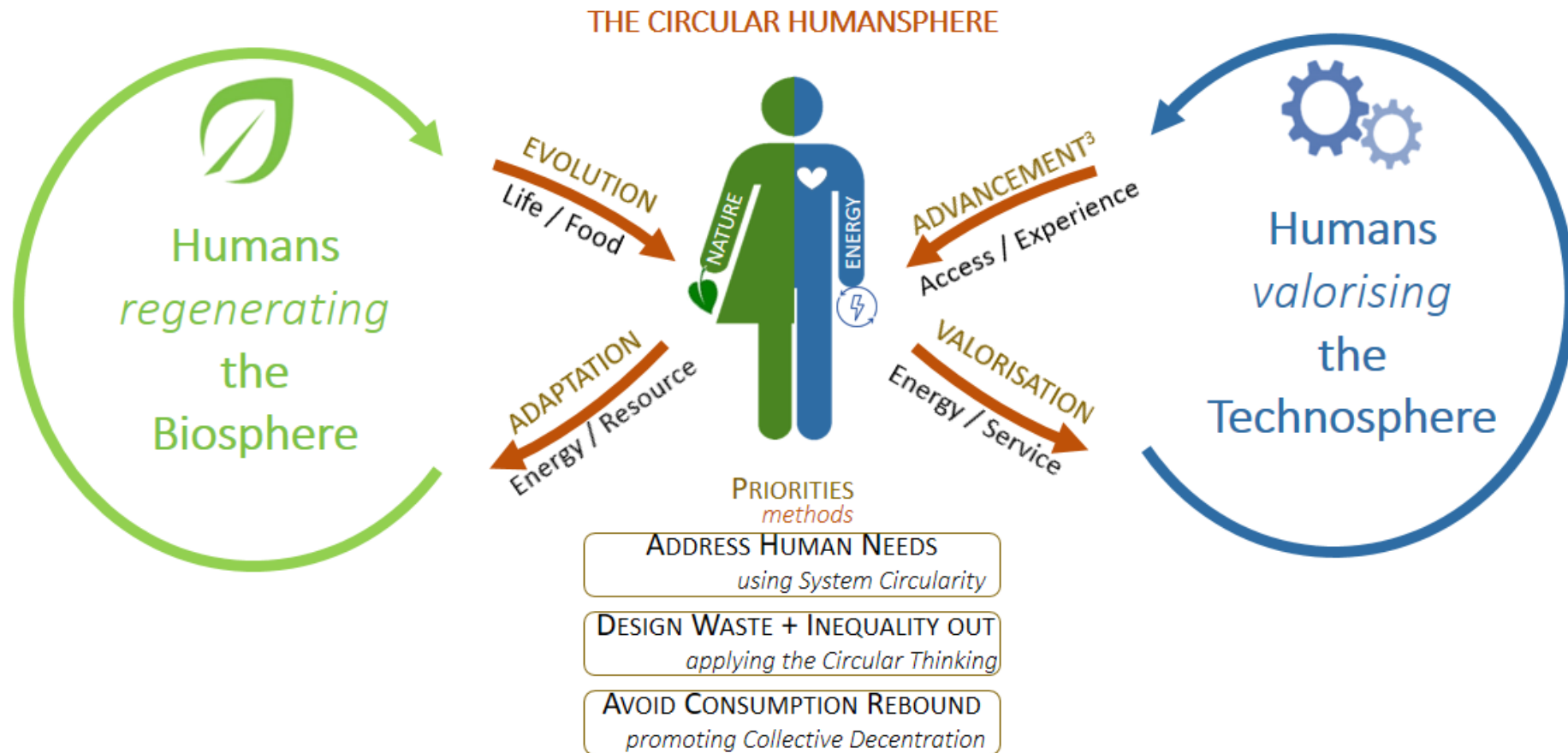
2 Optimise resource yields by circulating products, components and materials in use at the highest utility at all times in both technical and biological cycles

3 Foster system effectiveness by revealing and designing out negative externalities



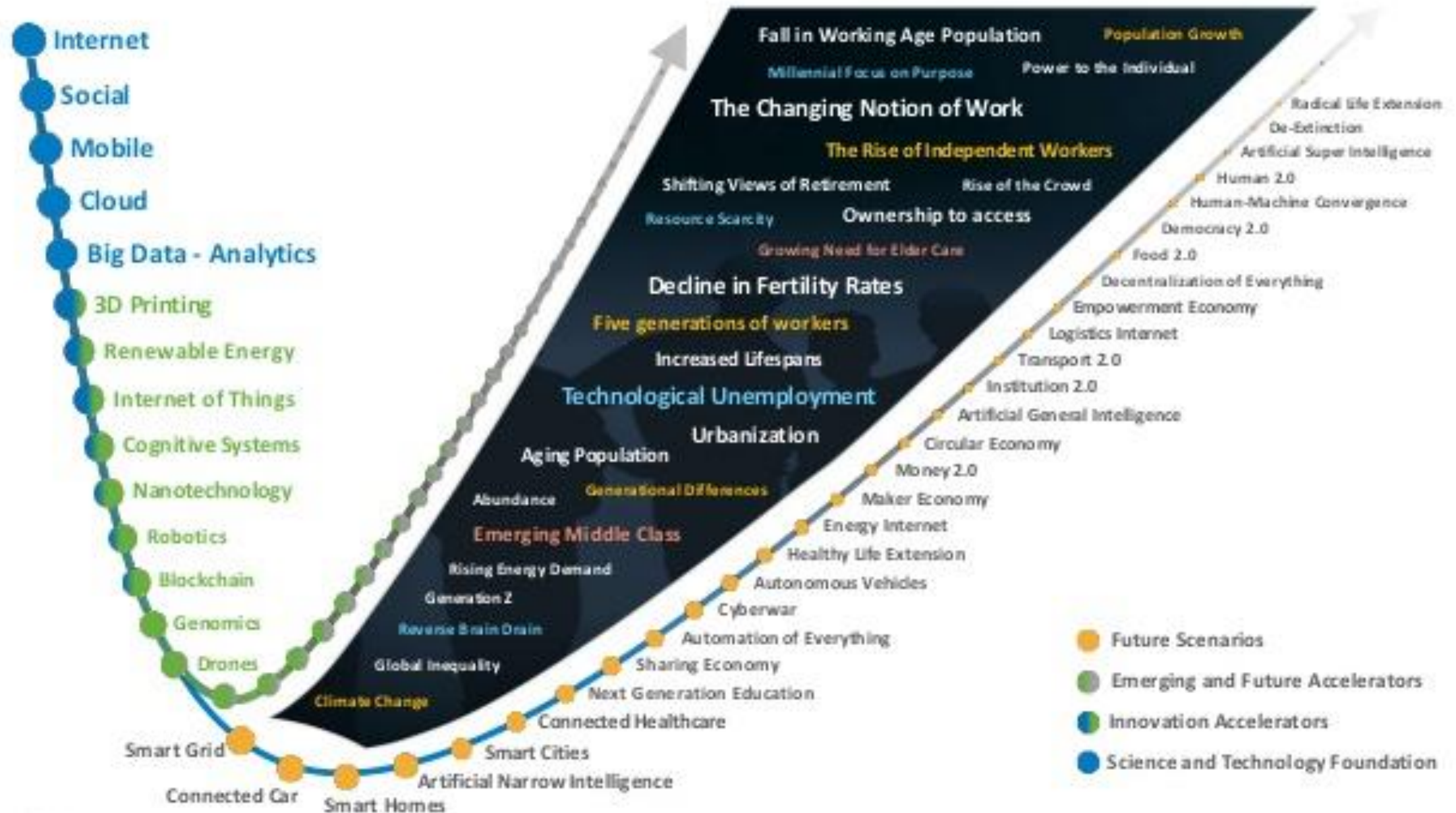
Source: Ellen MacArthur Foundation; McKinsey Center for Business and Environment; Stiftungs-fonds für Umweltökonomie und Nachhaltigkeit;

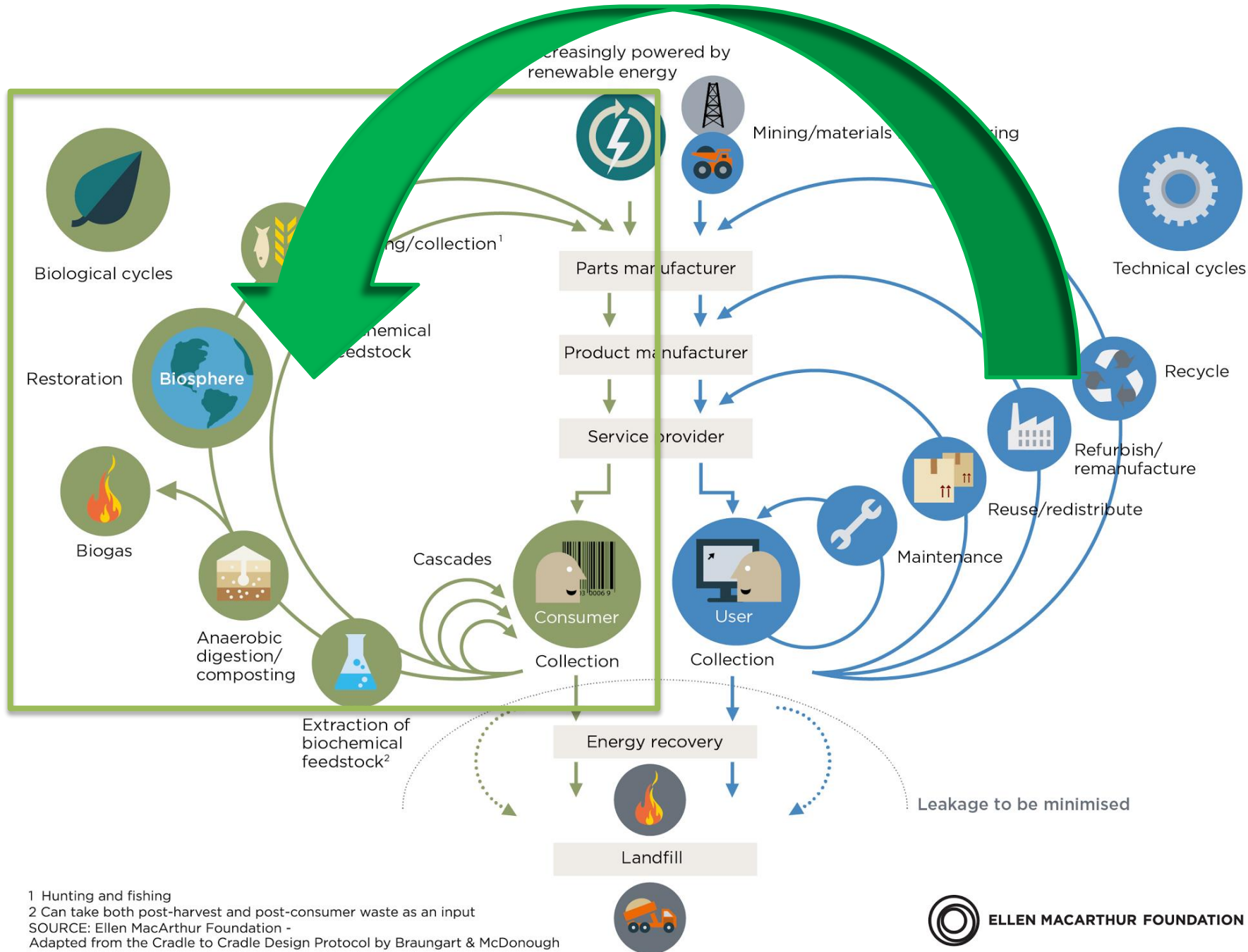
THE CIRCULAR HUMANSPHERE



Source: Alexandre Lamille, adapted from the "Butterfly Diagram" of the Ellen MacArthur Foundation

CIRCULAR AND DIGITAL ARE ON THE SAME DEVELOPMENT CURVE





1 Hunting and fishing

2 Can take both post-harvest and post-consumer waste as an input

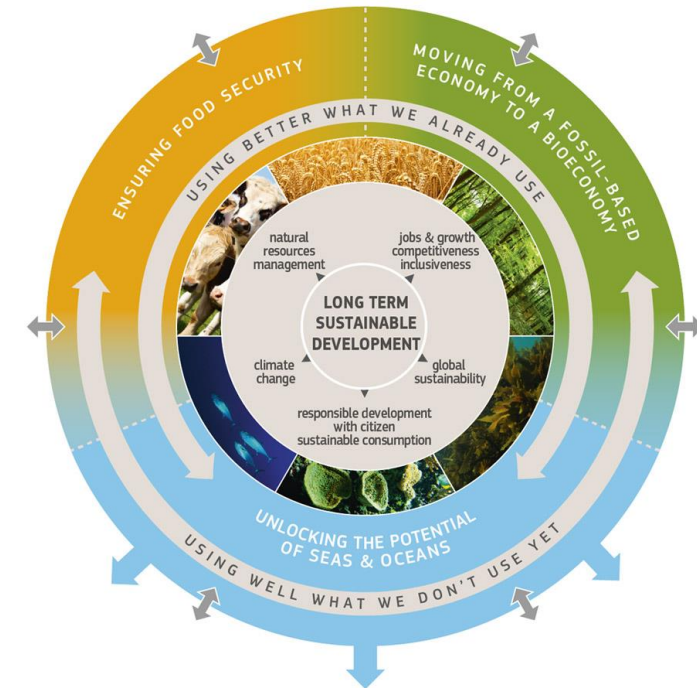
SOURCE: Ellen MacArthur Foundation -

Adapted from the Cradle to Cradle Design Protocol by Braungart & McDonough



ELLEN MACARTHUR FOUNDATION

BIOECONOMY AND CIRCULAR ECONOMY



CLIMATE

CARBON MANAGEMENT

LAND

WATER

ENERGY

MATERIALS

DECOUPLING

RESOURCES

PILLARS FOR EFFICIENT CLIMATE CHANGE POLICY

*SUPPLY SIDE
SOLUTIONS*

*Energy,
Carbon management*

*DEMAND SIDE
SOLUTIONS*

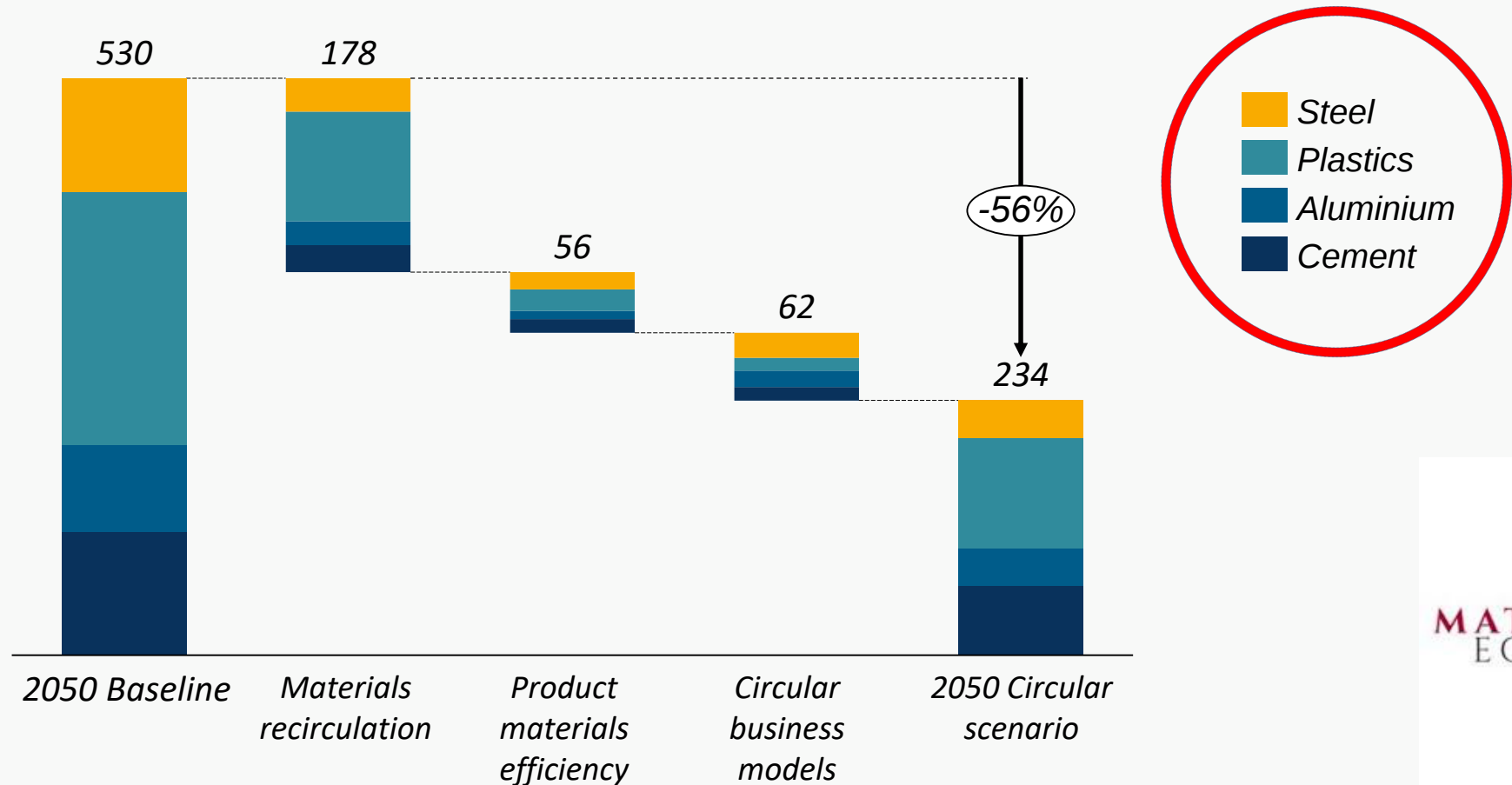
*Circular Economy,
Land, Water,
Materials
Management*

*NATURE BASED
SOLUTIONS*

*Eco-system services
Environmental sinks*

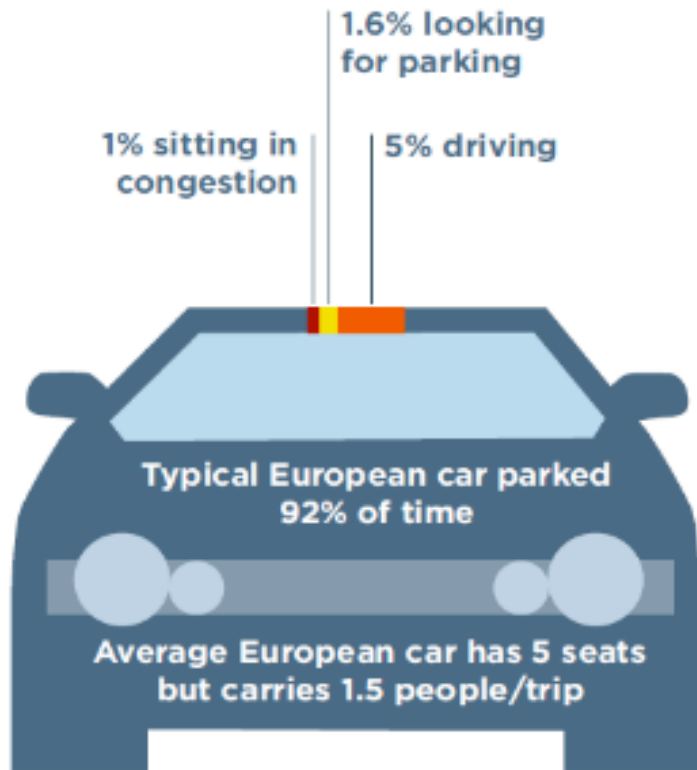
A MORE CIRCULAR ECONOMY CAN REDUCE EU EMISSIONS FROM **MATERIALS** BY 56%

EU emissions reductions potential from a more circular economy, 2050
Mt CO₂ per year

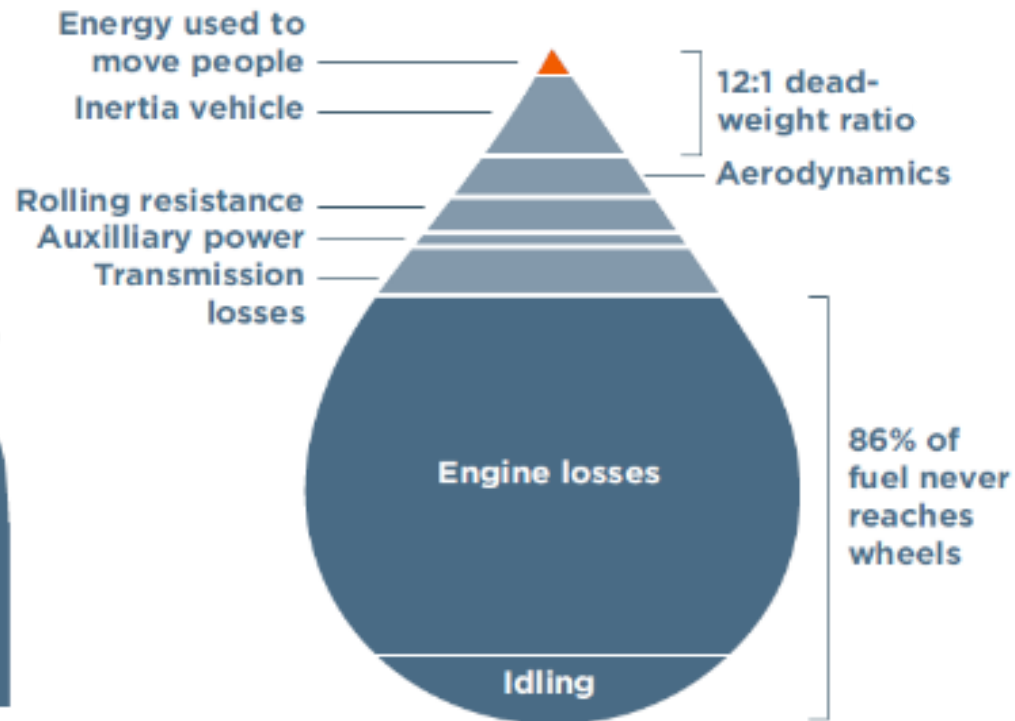


STRUCTURAL WASTE IN A **MOBILITY SYSTEM**

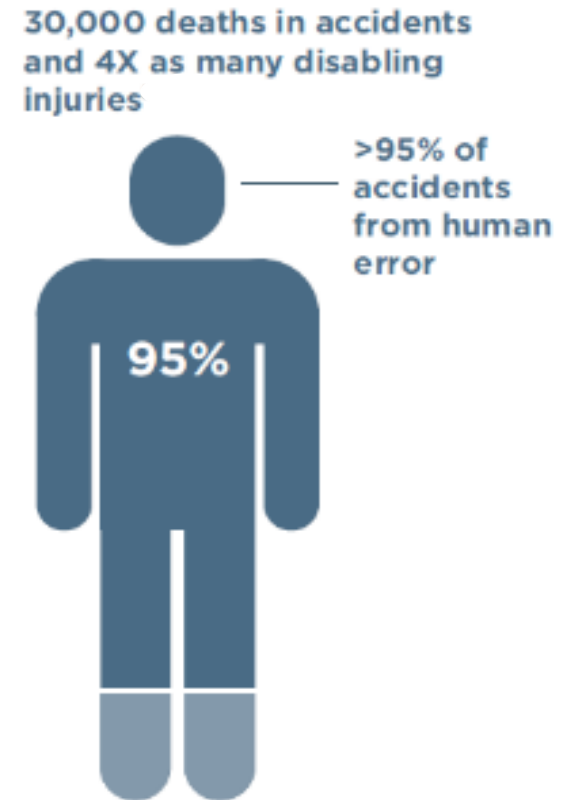
CAR UTILISATION



TANK-TO-WHEEL ENERGY FLOW - PETROL



DEATHS AND INJURIES/ YEAR ON ROAD



LAND UTILISATION:

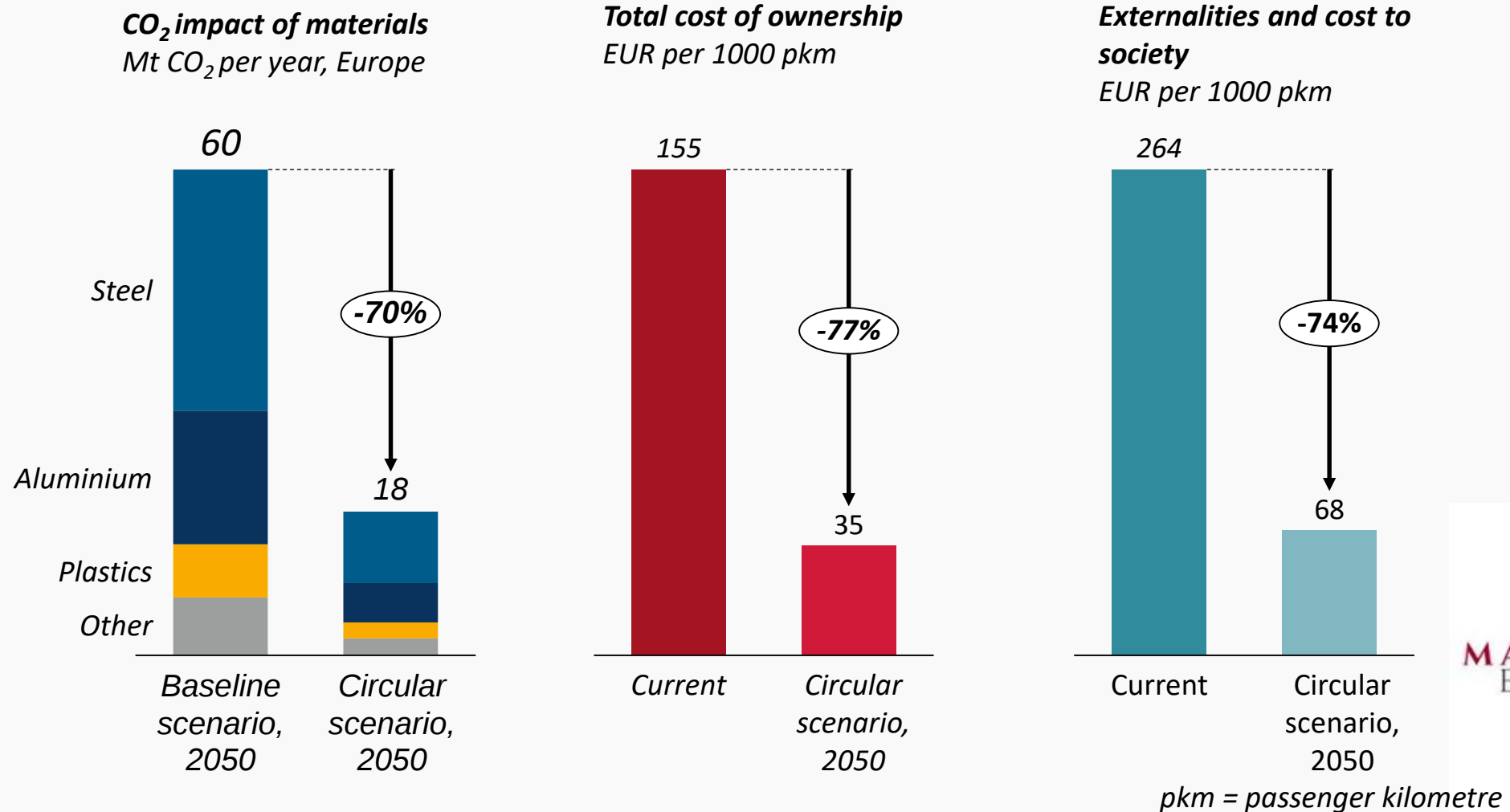
5%

Road reaches peak throughput only 5% of time and only 10% covered with cars then

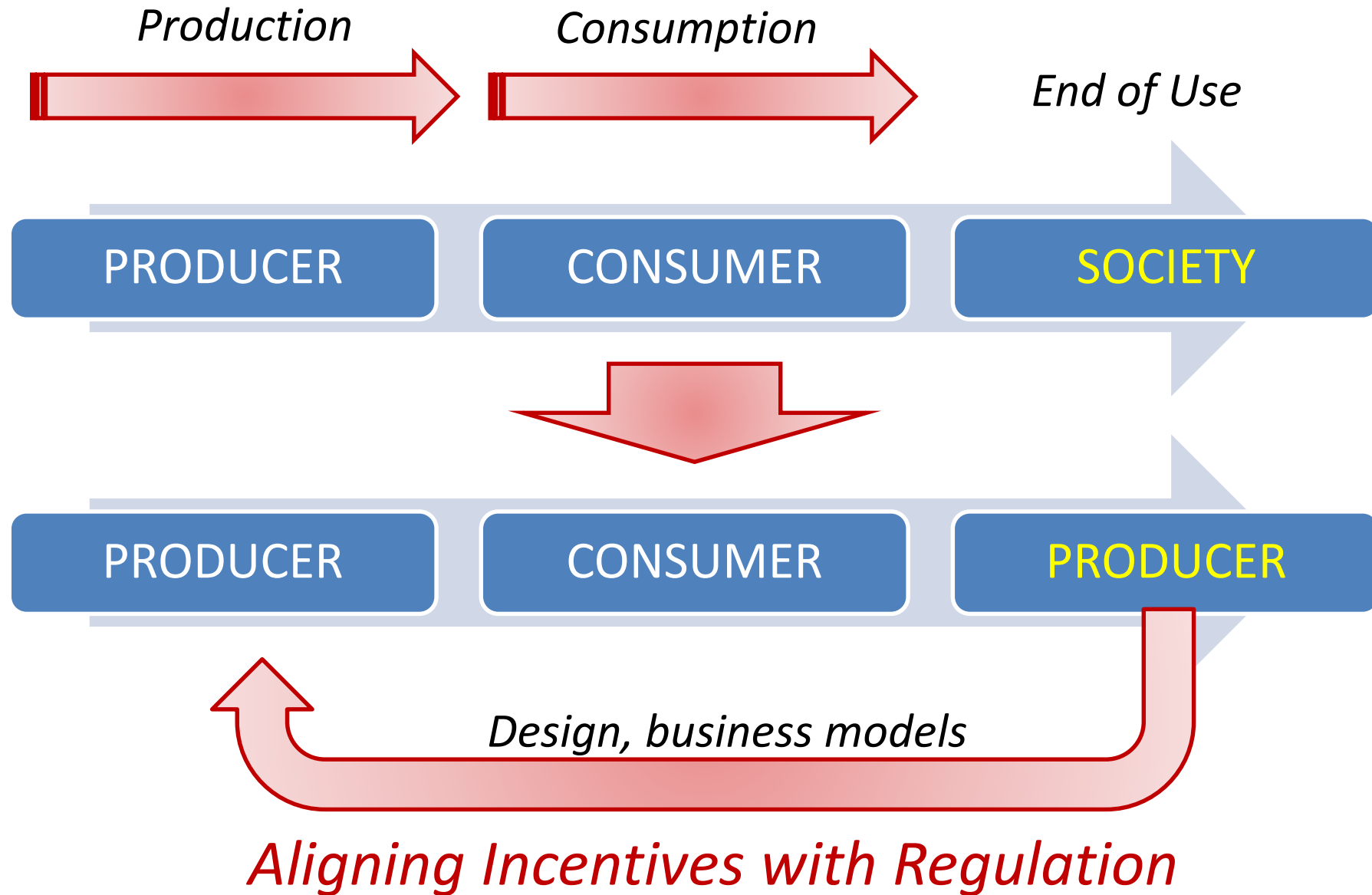
50%

50% of most city land dedicated to streets and roads, parking, service stations, driveways, signals, and traffic signs

A **SHARED MOBILITY** SCENARIO IS A HIGHLY ATTRACTIVE VISION FOR **PASSENGER CARS**



EXTENDED PRODUCER RESPONSIBILITY



ALIGNING INCENTIVES WITH REGULATION

AGRICULTURE - FROM PRODUCT TO SERVICE BASED CROP PROTECTION

- Digitalisation is allowing *targeted approach to individual plant protection - precision farming* is an already known instrument, but producers are still quantity based driven.
- Instead of selling pesticides, chemical companies could sell *services* to protect (hectares of) plants from pests. This would incentivise them to increase profits through minimising the costs of resources used, including pesticides.



THE BIG DISRUPTION

*WORLD IS CHANGING IN FRONT OF OUR EYES
AND WE SHOULD USE THE RIGHT OPTICS*



LARGEST SHOP DOES NOT HAVE STORES

(Aliababa)

LARGEST TAXI COMPANY DOES NOT HAVE CARS

(Uber)

LARGEST LODGING PROVIDER DOES NOT HAVE ROOMS

(AirBnb)

LARGEST MOVIE HOUSE DOES NOT HAVE CINEMA

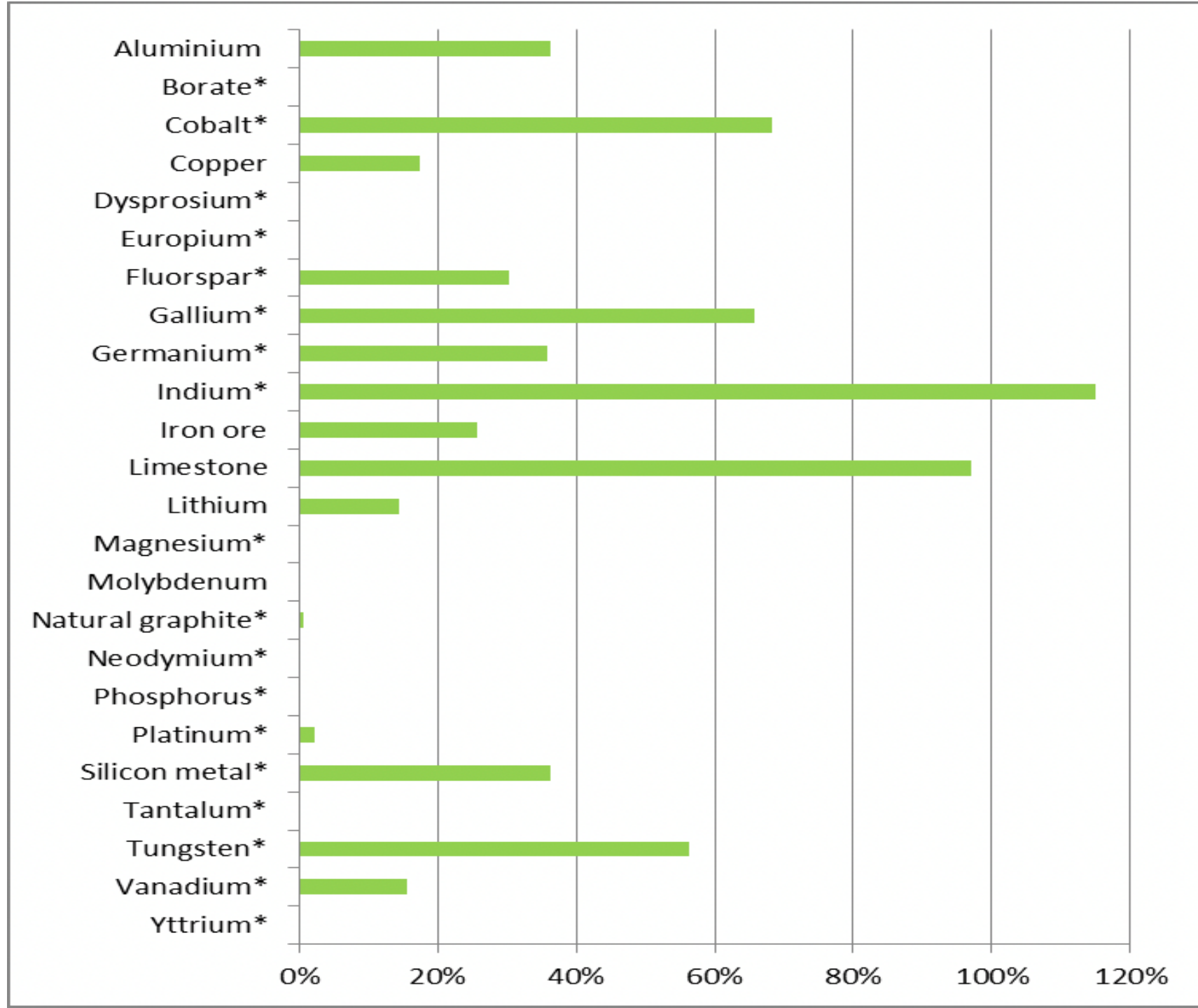
(Netflix)

LARGEST PHONE COMPANY DOES NOT OWN WIRE

(Skype)

*RESILIENT AND SUSTAINABLE
ECONOMY AND SOCIETY
EU CASE*

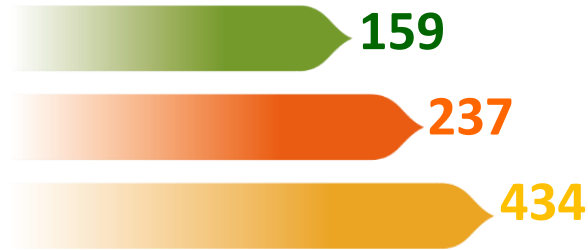
*European Union
Self-Sufficiency Rate
for a selection of raw
materials in 2016*



Source: EC, Key indicators, January 2018

EU - RAW MATERIAL IMPORTS AND EXPORTS

EU-28 exports (2014)



EU-28 imports (2014)



- Biomass
- Manufactures (finished man. products)
- Fuels and mining products (fossil energy, metal ores and non-metallic minerals)

European Union (EU-28)

Total trade

EU-28 to ROW

In 2004: 455 million tones

In 2014: 640 million tones

Rest of the world (ROW)

Total trade

ROW to EU-28

In 2004: 1664 million tones

In 2014: 1534 million tones

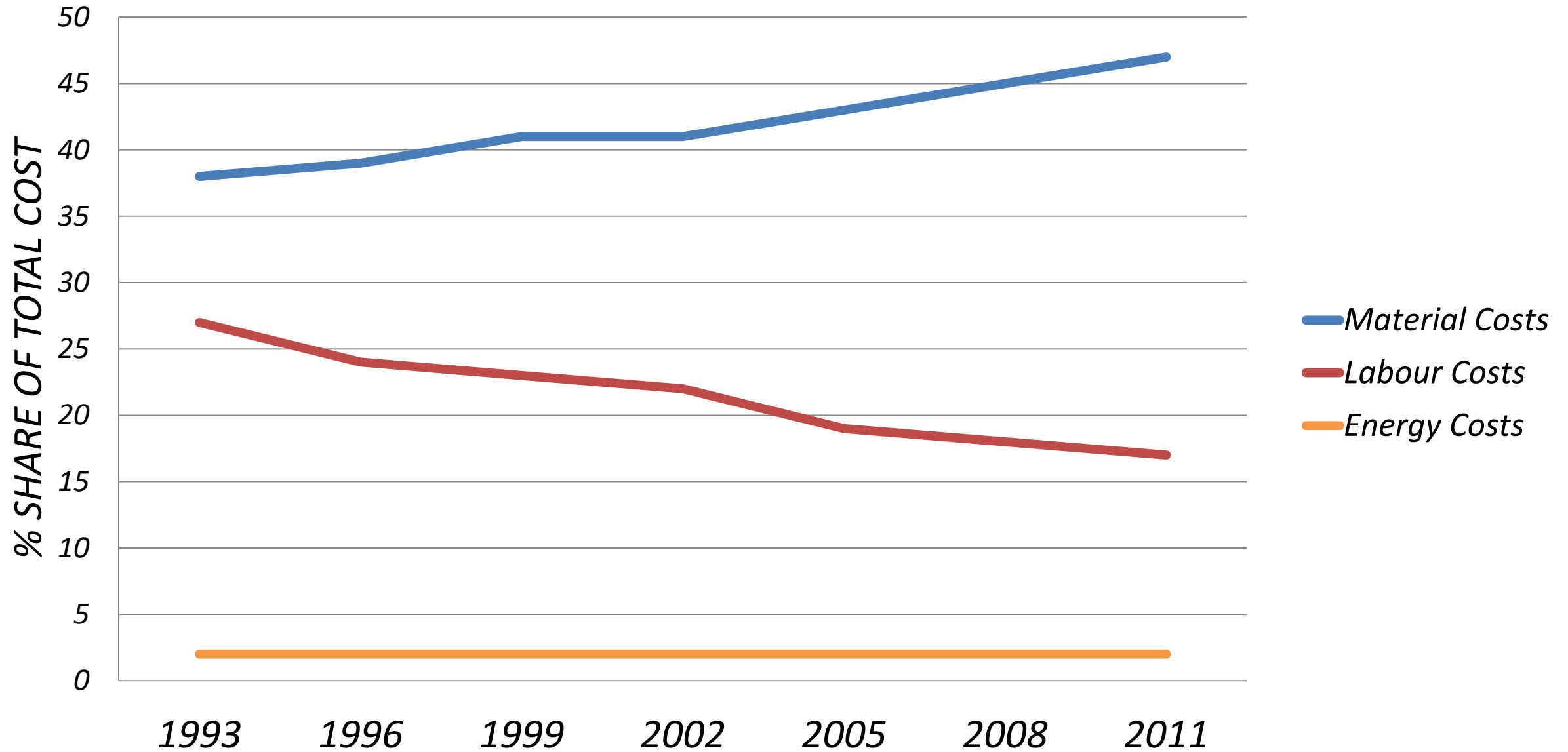
*For **54** scarce and economically important raw materials, Europe in its entirety depends **90%** on raw materials imported from outside Europe*

(European Commission, 2014)



COSTS SHARE GERMAN MANUFACTURING SECTOR 1993-2011

VDI GERMAN AGENCY FOR MATERIAL EFFICIENCY





MORE OR LESS REGULATION?

*We should continue working actively to bringing together the leading business actors. Many businesses express that they are **not afraid of more regulation but of unfairness, free riders and uncertain risk**. If we make policies fair, consistent and reliable – we can work together across policy and business actors for a real transition.*

ALL LEVELS DO MATTER

Cities and Regions



*A lot could be done on that level due to **relative autonomy** of the governance and many **concentrated CE related problems and opportunities***

Sharing Models, Mobility systems, Waste Recycling, Sustainable Buildings, Energy Efficiency ...

RURAL AREAS AND COMMUNITIES

Smart Cities

Smart Village is a new concept in the field of EU policies. 'Smart and Competitive Rural Areas' is one of the broad themes of the European Network for Rural Development (ENRD) in the 2014-2020 programming period. Smart Villages is one of the sub-themes of the EU Rural Development policy's.



Smart Villages are “rural areas and communities which build on their existing strengths and assets as well as on developing new opportunities”, where “traditional and new networks and services are enhanced by means of digital, telecommunication technologies, innovations and the better use of knowledge”

Rural areas and communities are facing *specific transition challenges*. Smart Villages is a *unique concept* designed to help *spreading the circular economy solutions* in rural areas through new forms of cooperation, active search for specific solutions, where digitization, like in all circular economy area, plays an important enabling role.



ALL LEVELS DO MATTER

National Level



Encourage *governments* to strategically approach Circular Economy as an agenda for change to the the *SDG compliant economy transformation*. Many EU Member States have already prepared *Circular Economy Roadmaps or/and Action Plans*. EC should propose that they are prepared by *all EU Members states* (make it a request included in the European Semester Country Reports)

ALL LEVELS DO MATTER

European Union

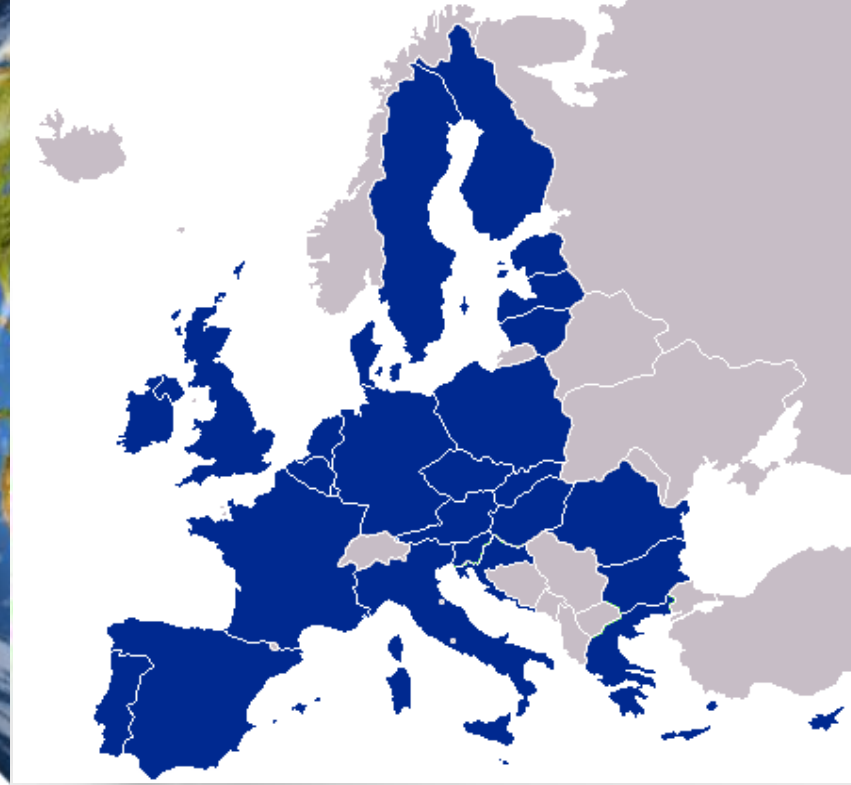


- Circular Economy should be a *clear priority of the next European Commission*
- Establish a credible, mutually reinforcing *link between circular economy/SDGs and competitiveness.*
- *Build new coalitions for CE change* by broadening ownership of the CE idea - partnering with those dealing with climate change, bio-economy, health, digital transformation, regional policy, research and innovation, international relations, enlargement & neighbourhood, development aid, trade ...
- Continue working on *plastics* but add also the *product groups* beyond the plastics (textile, food ...) into future CE programmes, improve the *extended producer responsibility and eco-design* to deliver the whole potential and focus on *economic signals and drivers* – taxes, subsidies, public procurement.
- Continue working on *data, reporting*, and on *greening the financing*. Focus on *retaining value* in the CE process and on *social aspects of CE transition*.



- *The challenge seems to not be one of not inadequate scientific evidence anymore; rather it is one of **cooperation and implementation**.*
- ***Complexity and scale of these challenges requires** a space that allows actors with responsibility for those environmental governance mechanisms to be able to consider and experiment with both **new forms of collaboration and more „systemic“ approaches** ... through promoting multi stakeholder cooperation, more agile governance (including sub-state actors, such as cities, states and provinces), the use of new technologies, and enhanced accountability and transparency.*

We need more “Circularity ” even in the
GLOBAL GOVERNANCE



Sharing sovereignty instead of owing sovereignty

*Europe is not only
blue with yellow stars*



It is a rainbow

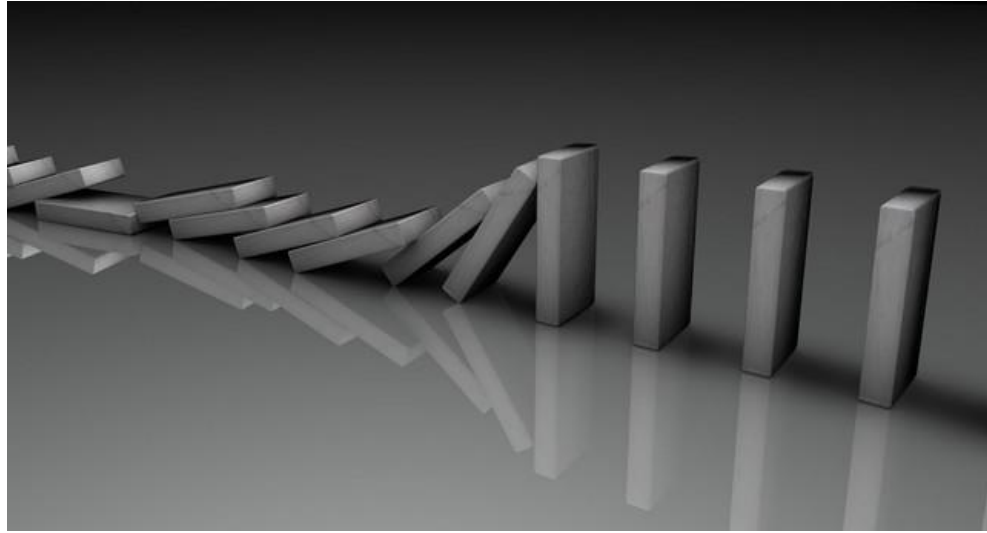
- *blue for freedom and democracy*
- *red for social values*
- *green for the protection of environment*
- *yellow for the culture*

*We can hardly picture Europe as the center of the World,
but we should do everything that Europe remains the
center of the dreams of all the people of the World*

TO CONCLUDE

WHY AND HOW?

Transition to a more sustainable economy and society

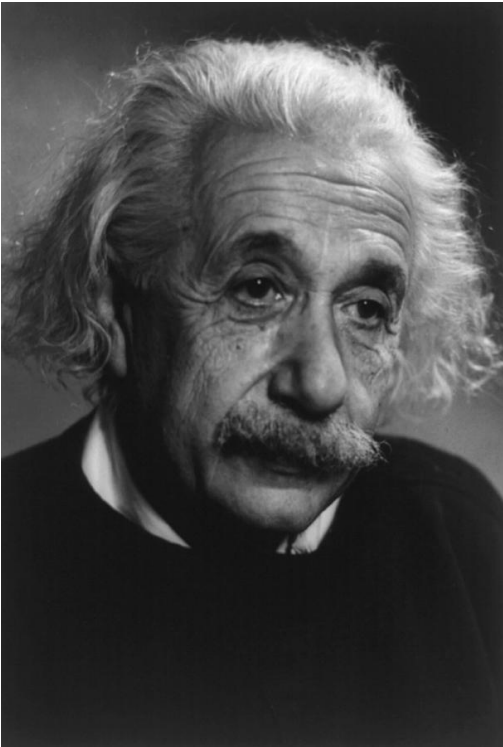


IS UNAVOIDABLE!

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

WILL IT BE EASY?

ALBERT EINSTEIN



When asked why it is that mankind has stretched so far as to discover the structure of the atom, but we have not been able to devise the political means to keep the atom from destroying us he replied:

“That is simple, my friend. It is because politics is more difficult than physics”

Why the changes are so difficult in practice?

- Political cycles, public and financial institutions, have inbuilt **short term focus and logic**. The challenges we face require a real deep system change and rethinking of the the way how we govern our society.
- Production and consumption systems are based on the logic of **consumerism fuelled by growth based on quantities and measured by GDP**. There is a lack of clear identification of future risks and of an appropriate **effective risk management** and there is a clear lack of understanding what really matters for our safe future.
- **Transition** to a more sustainable economy and society will be only possible if it is **just, fair and inclusive**. We are currently failing to deliver. We need to make our societies more equitable and do more in the fight against poverty. Social unrest is growing even in the high-income countries and it is high time to hear the echo of the streets and the voice of frustrated young generation.



“North Star” guiding our policies and behaviour

INTER-GENERATIONAL AGREEMENT

A Program for the Future Generations

“Sustainability First”

Circular Economy is not a new concept



*It is the oldest concept on the earth. All **nature is organized based on the principles of the circular economy.** Nothing is lost and everything has its purpose.*

*That is why it would make common sense to **embrace it** and finally start to **behave accordingly.***

*In essence there is only question we have to answer:
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 advise 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 myself, it is very important to establish a healthy distance to himself.



Advise of Prof. Guy McPherson:

"If you think the economy is more important than the environment (and health), try holding your breath while counting your money".



International
Resource
Panel

S Y S T E M I Q

UN
environment



THANK YOU

For more information

Contact IRP Secretariat at resourcepanel@un.org

Visit our website at <http://resourcepanel.org/>