

# *How to live the “Laudato Si”*

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# Who are we?

*The **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*

Climate Change



Biodiversity Loss



Resource Efficiency





# *OUR WORLD*

*SOME FACTS ABOUT FUTURE RISKS*

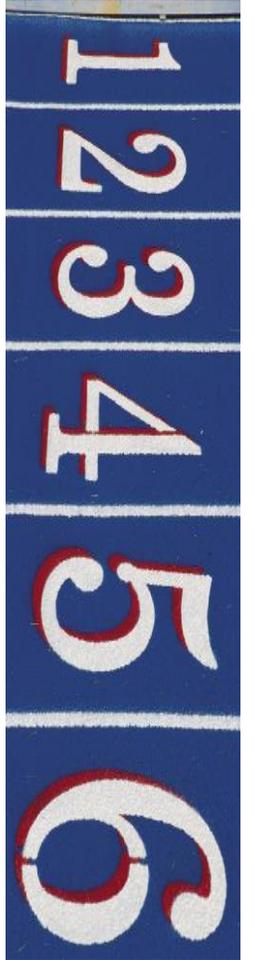
# THE TASTE OF 21<sup>ST</sup> CENTURY

- *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



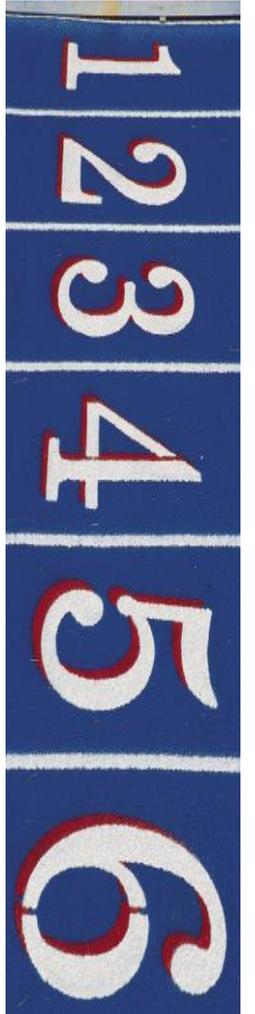
# THE TASTE OF 21<sup>ST</sup> CENTURY

- *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
- 85 % of the world's *fisheries* are at (beyond) biological limits
- 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
- We are the first generation more likely to die as a result of *lifestyle choices* than infectious disease



# THE TASTE OF 21<sup>ST</sup> CENTURY

- *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***



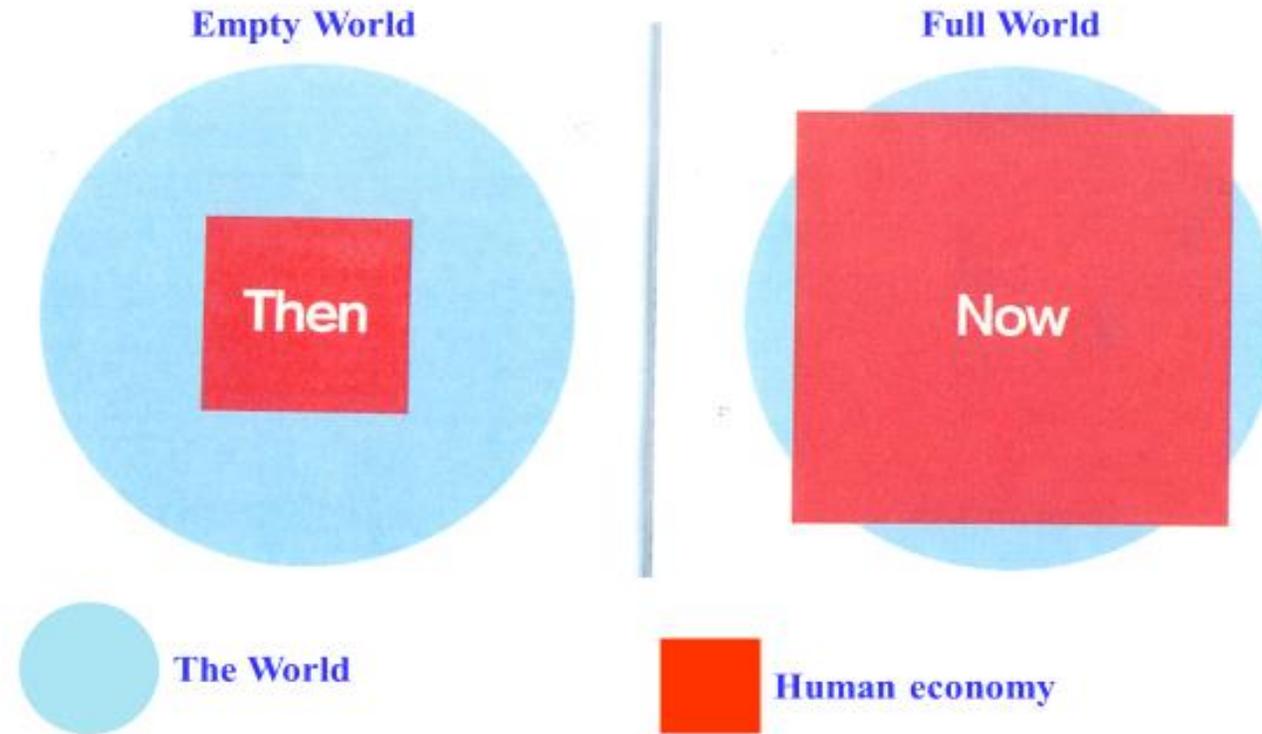


*For the first time in a human history we face the emergence of a single, tightly coupled human **social-ecological system of planetary scope.***

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

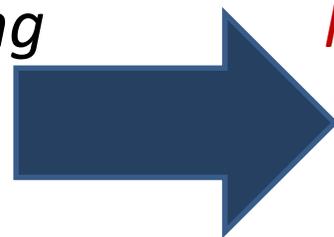
*Our individual and collective **responsibility** has enormously increased.*

# *Empty World and Full World*



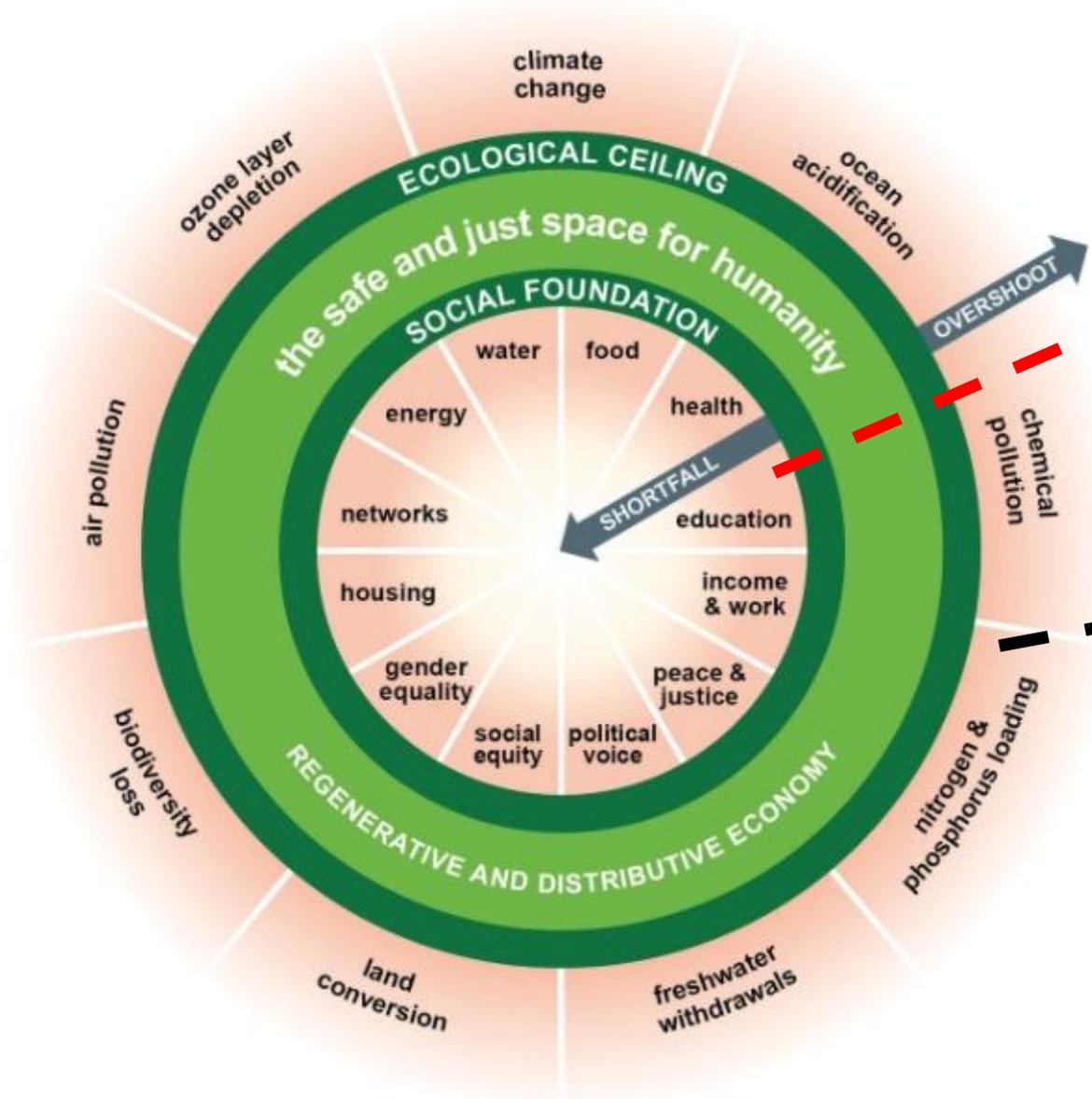
*Source: Club of Rome: Simplified after Herman Daly*

*Labour and Infrastructure limiting factors of human wellbeing*



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

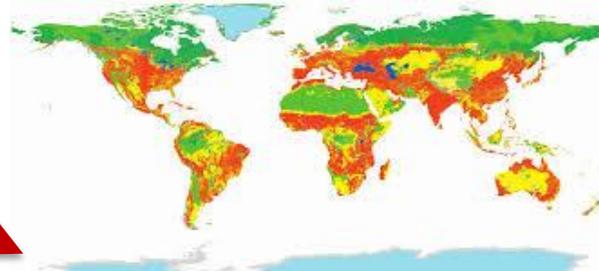
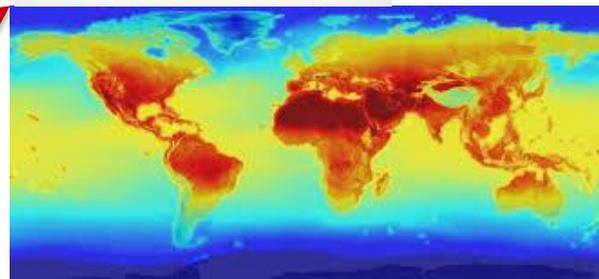
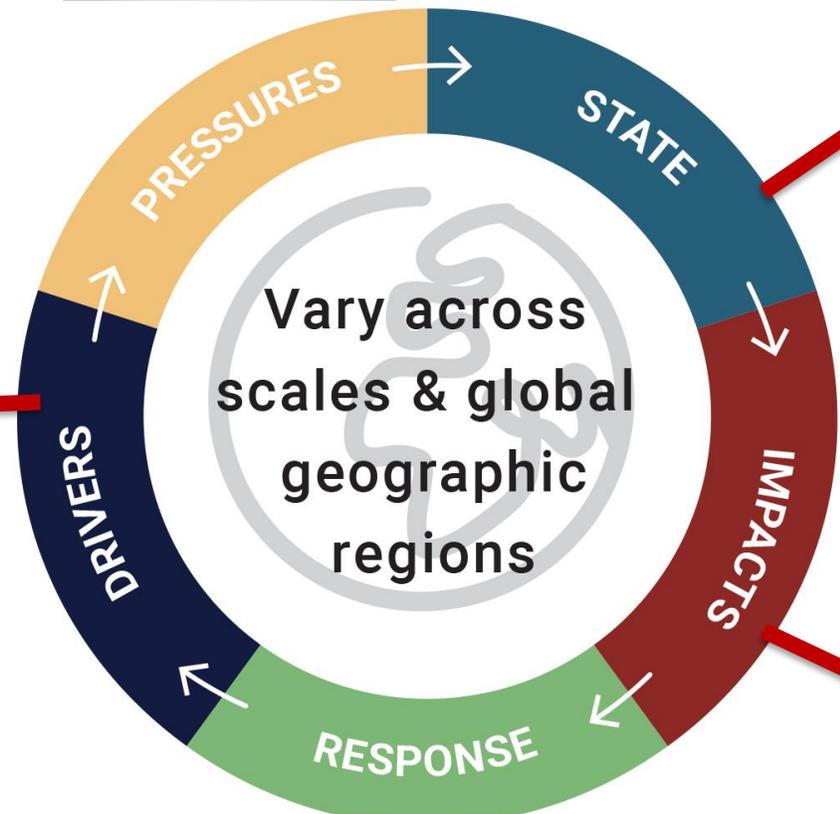
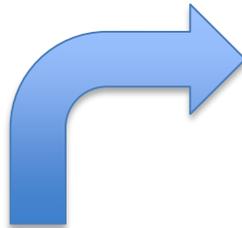
# Safe Operating Space - "doughnut" perspective



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

*Outer limit by Planetary  
Boundaries*

*Adapted from Raworth 2017*

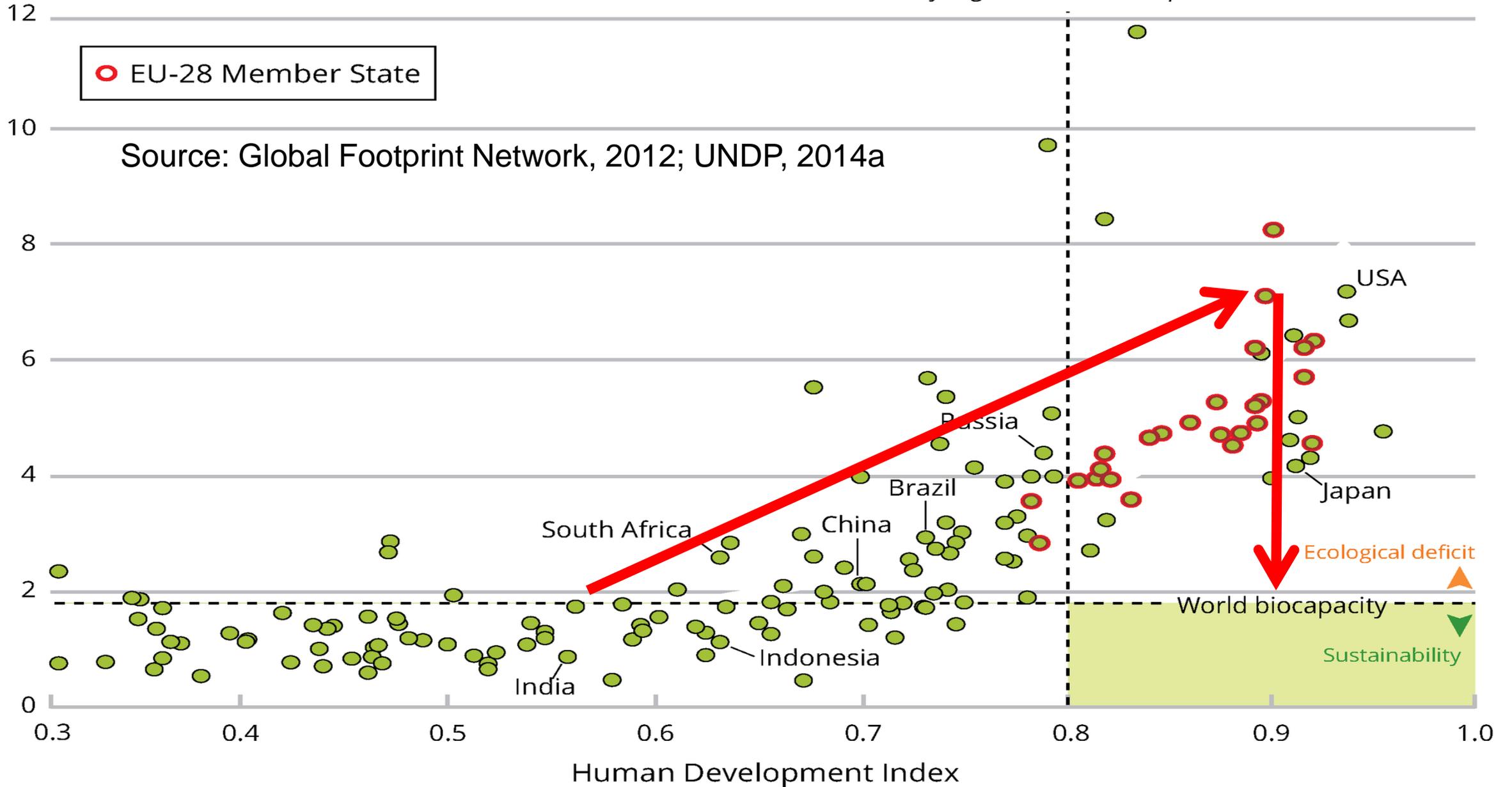


*OUR ECONOMY*

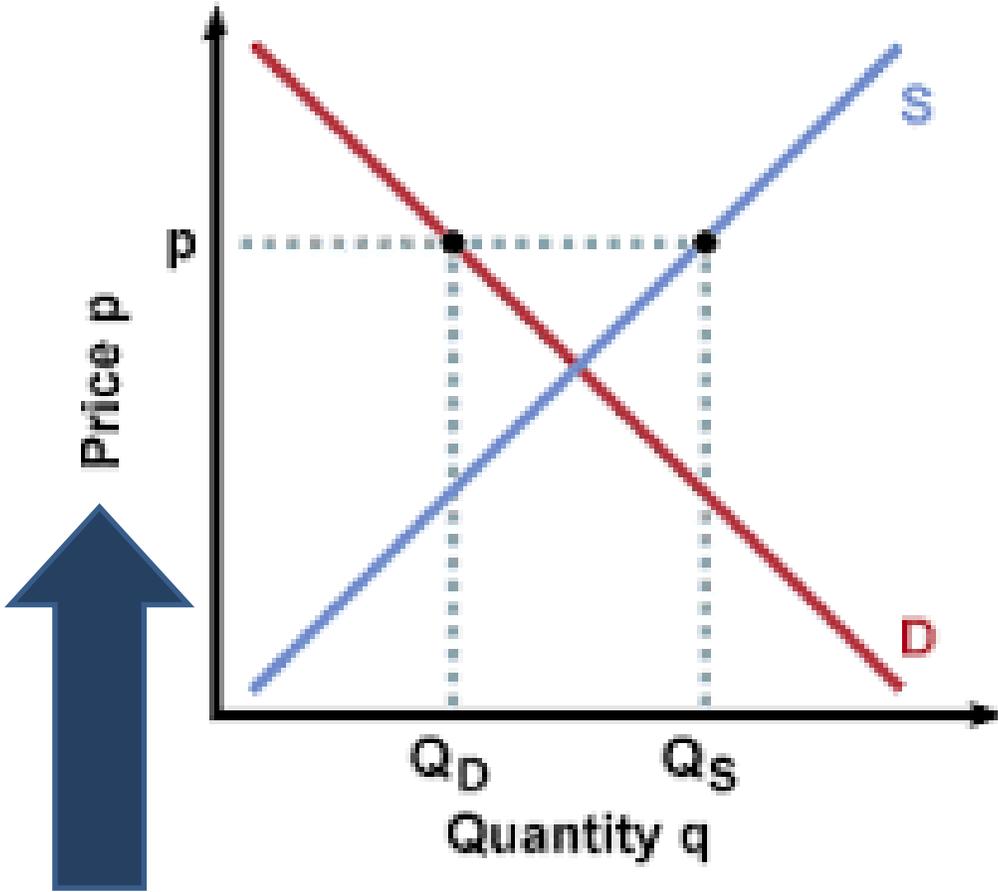
# DEVELOPMENT TRAJECTORY ...

Ecological footprint  
(hectares per person per year)

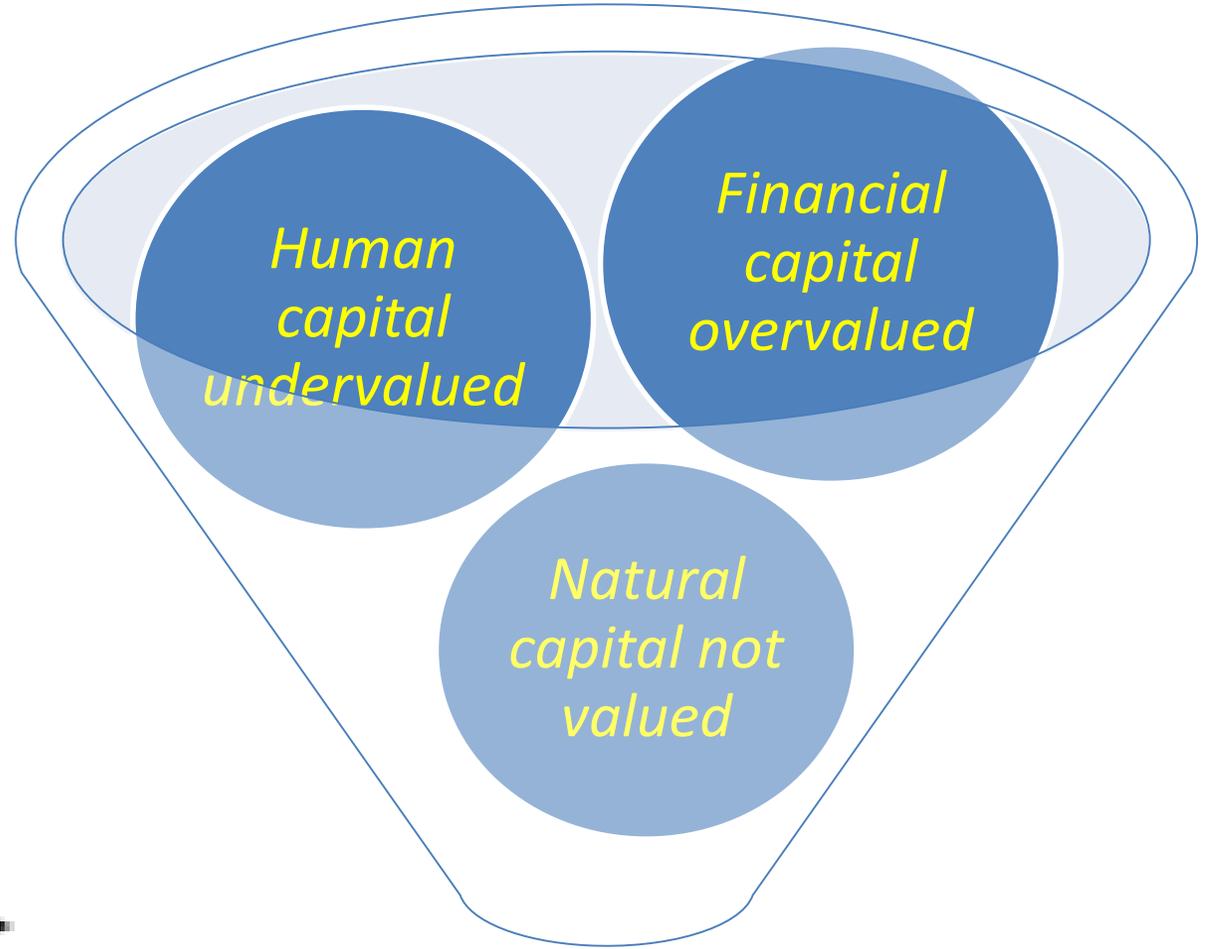
'Very high human development'



*Producers/Consumers  
Rational Behaviour*



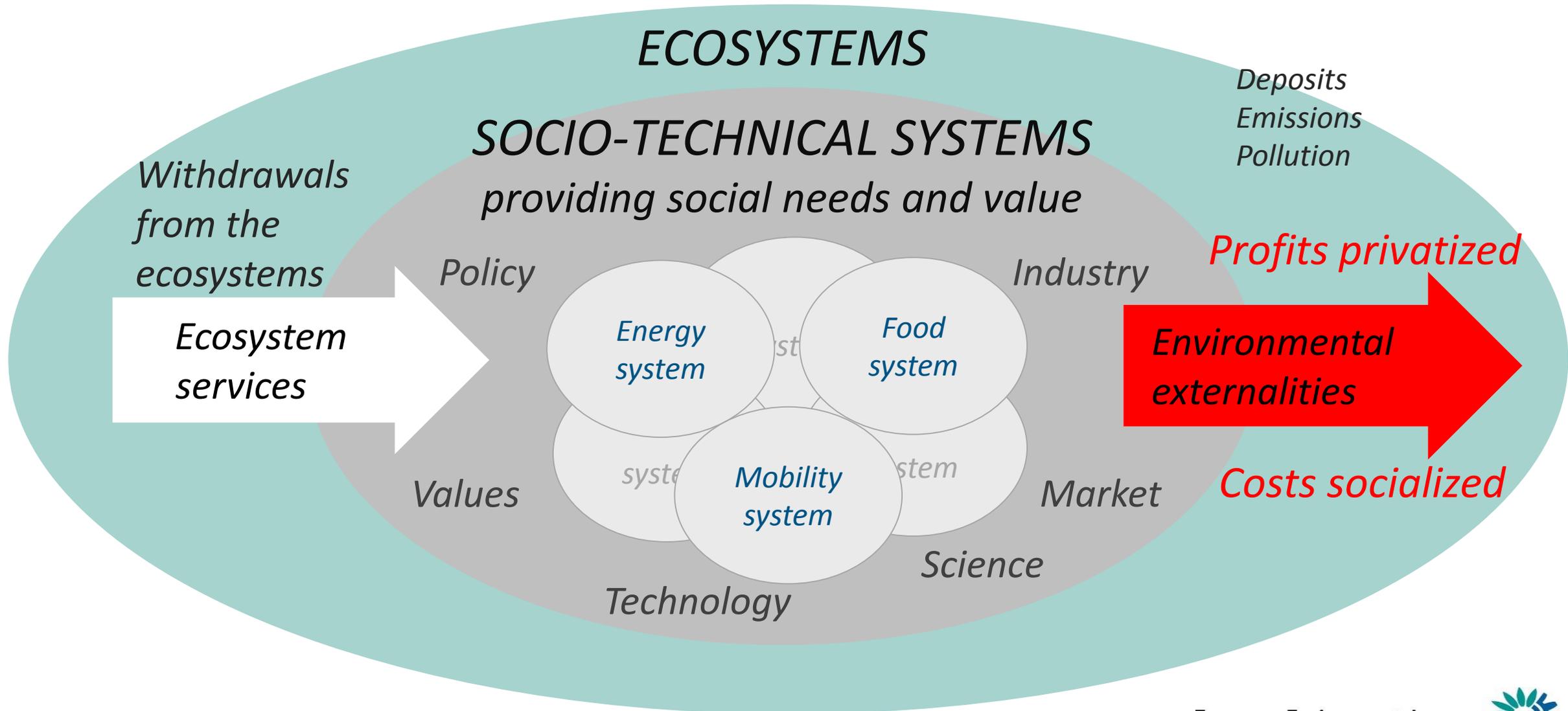
*Market Economy*



*Economic, social and  
environmental (in)balance*

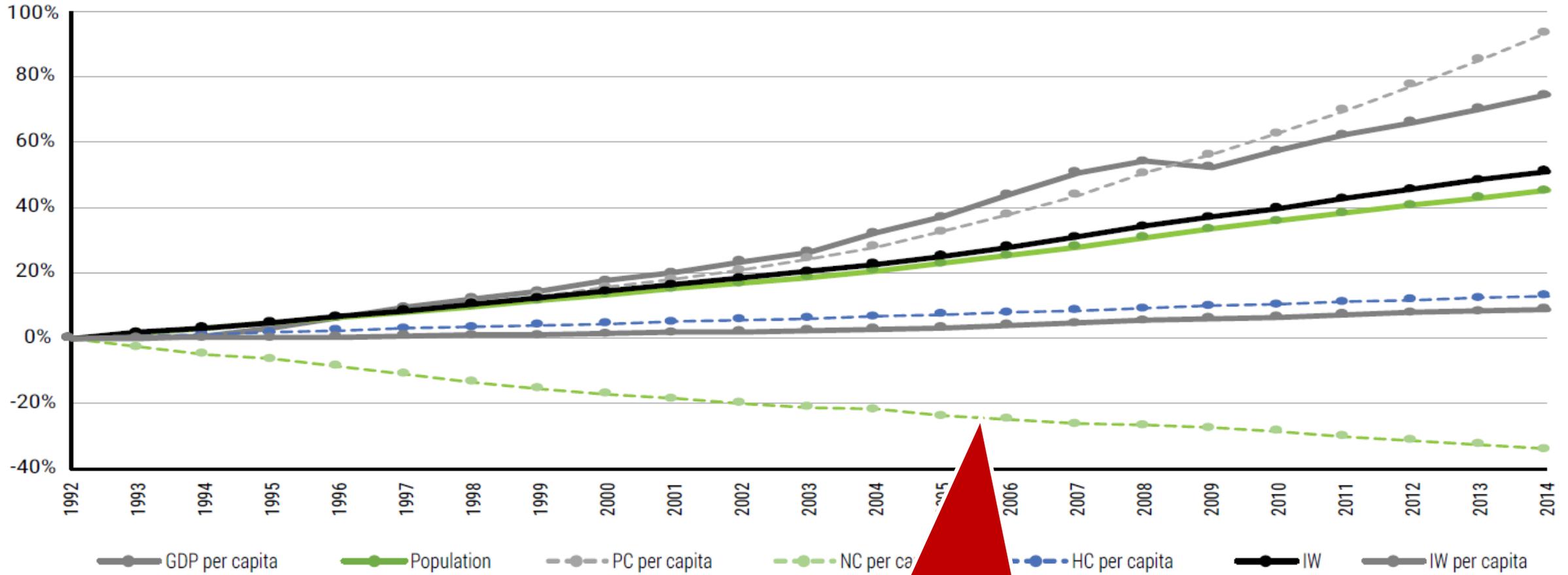
# LIVING WELL WITHIN ECOLOGICAL LIMITS

## ECONOMIC SYSTEM FUNCTION OF ECOSYSTEM



# 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 and social capital  
in the past decades has been  
achieved at the cost of depleting  
natural capital*



## *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

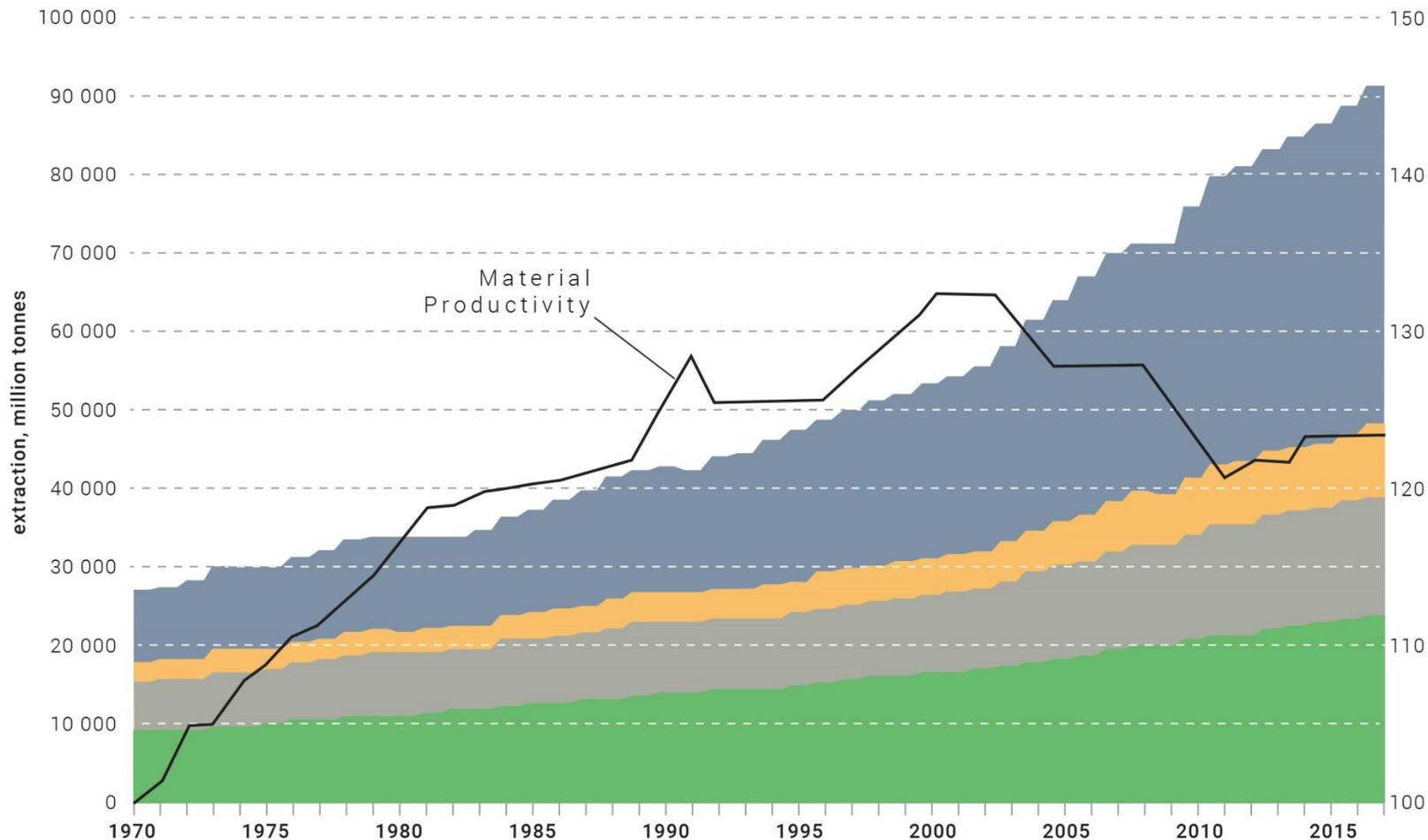
UN  
environment

# *NATURAL RESOURCES FOR THE FUTURE WE WANT*

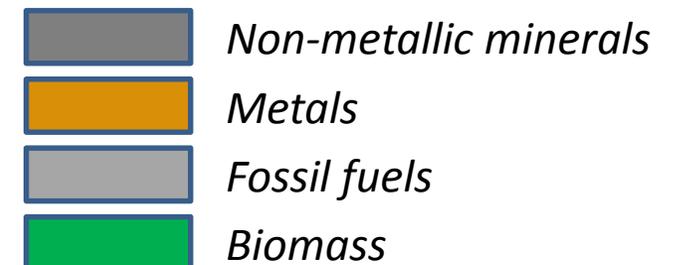
*Biomass, Fossil Fuels, Metals, Non-metallic  
Minerals, Land, Water*

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

Global material extraction and material productivity, 1970 - 2017



- *Global resource 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*





*In the mid-term, except in specific cases, resource shortage will not be the core limiting factor of our (economic) development ...*

*... but the environmental and health consequences caused by this excessive and irresponsible use of resources will be!*

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



Biomass



Metals



Non-metallic minerals



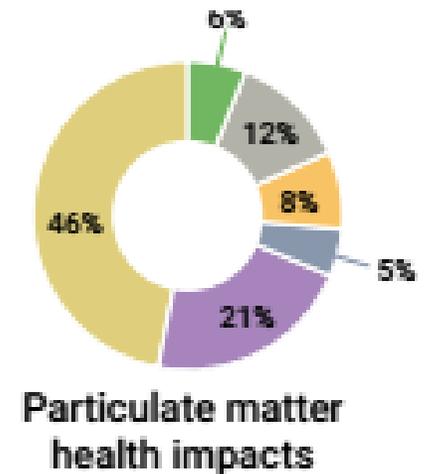
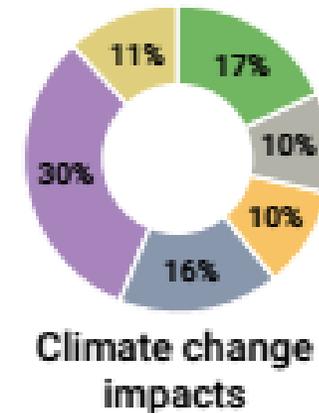
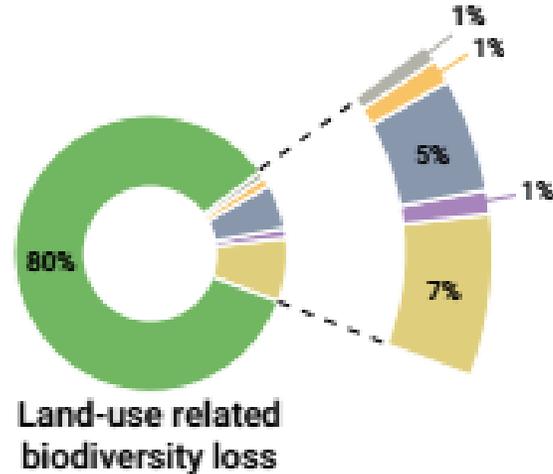
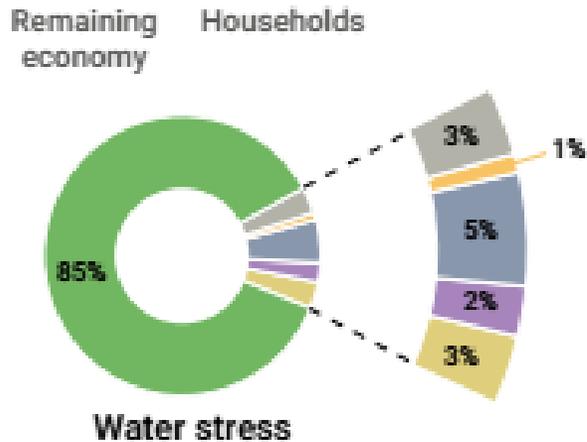
Fossil fuels



Remaining economy

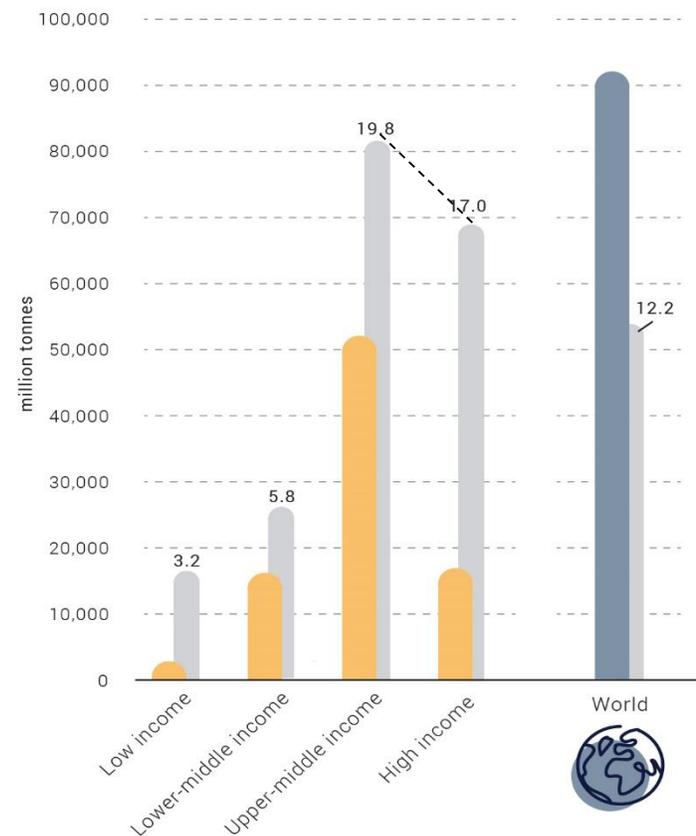


Households

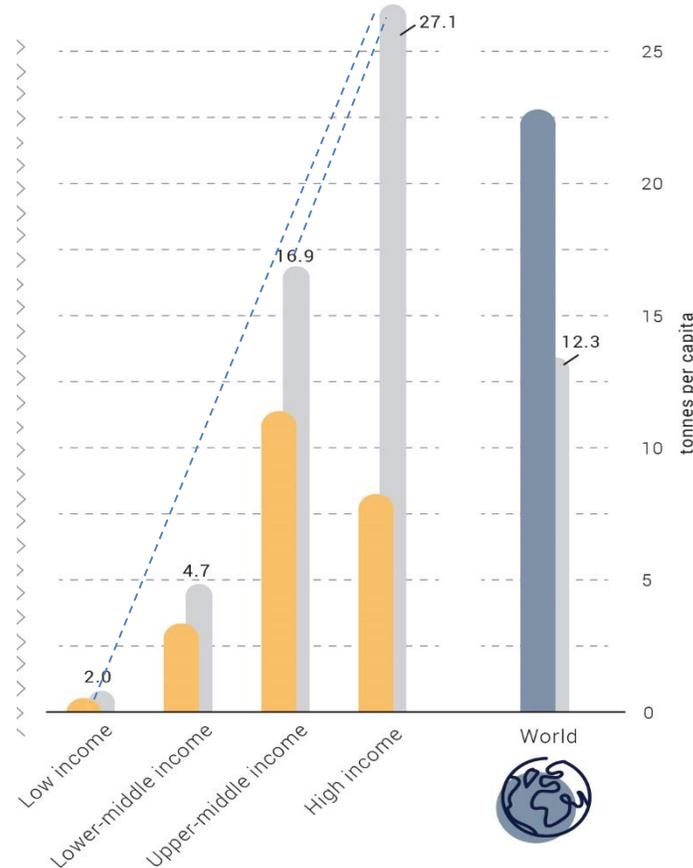


**Unequal consumption:** per capita material footprint from high-income countries is **60% higher** than the upper-middle-income group, **13x** the level of the low-income groups.

Domestic material consumption by country income, 2017



Material footprint by country income, 2017



- Measured in **Domestic Material Consumption (DMC)**, upper-middle income countries are the largest per-capita material consumers
- Measured in **Material Footprints (MF)**, high-income countries are by far the largest consumers per capita and are increasing their resource import dependence by 1.6 % per year
- **Two Key Drivers:** New infrastructure buildup in developing countries, outsourcing of material & resource intensive production from high-income countries

■ million tonnes per income group  
■ million tonnes world  
■ tonnes per capita

\*measured in Material Footprints

# “Historical Trends”

## “Towards Sustainability” scenario assumptions

### Resource Efficiency

*Reduction in materials use in manufacturing and construction through innovation, increased demand and recycling*

*Assumed policies: regulations, technical standards, public procurement, shifts in taxation*

### Landscape and Life-on-land protection

*Bio-diversity in bio-sequestration solutions, reducing crop-based biofuels and limiting agricultural land*

*Assumed policies: biodiversity conditions on GHG sequestration sinks, and policies to conserve native vegetation and key biodiversity areas*



### Climate Mitigation and Removal

*Bio-sequestration and carbon dioxide removal technologies*

*Assumed policies: Support of innovations through public investments, carbon levy for the financing of carbon sinks*

### Shifts in Societal Behaviour: Healthy Diets and Reduced Food Waste

*Halving the current meat consumption (less in regions of low-meat diets) and halving food waste by 2050*

*Assumed policies: Including public education*

# Achieve the SDGs through concerted SCP measures: Boost the economy by 8%, converge incomes, and reduce environmental impacts

## The GRO provides new scenarios

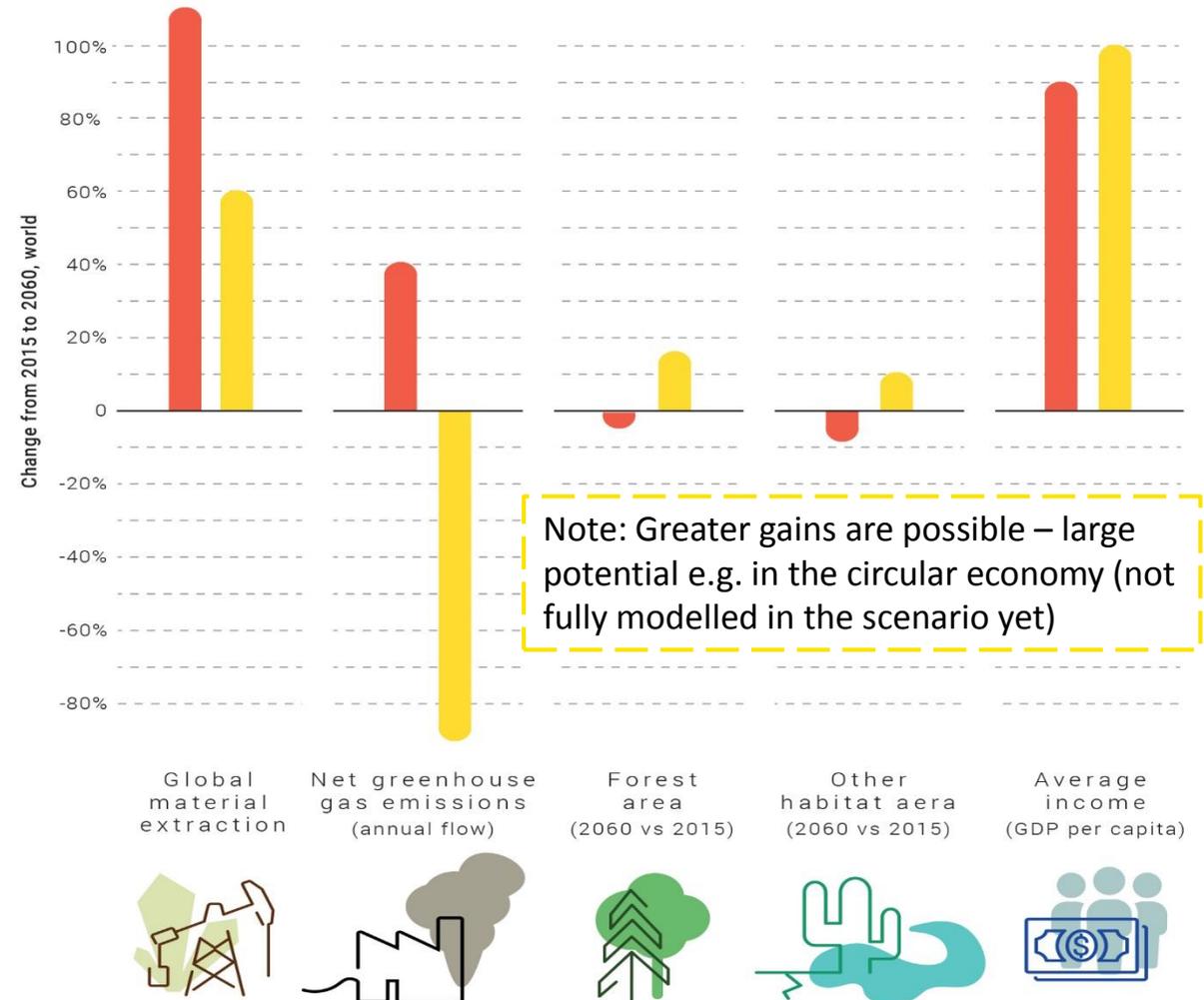
### Historical Trends

- Continuing past economic trends would more than double global material use to 190 billion tonnes by 2060
- This would quickly exceed the planetary boundaries and prevent achieving the SDGs

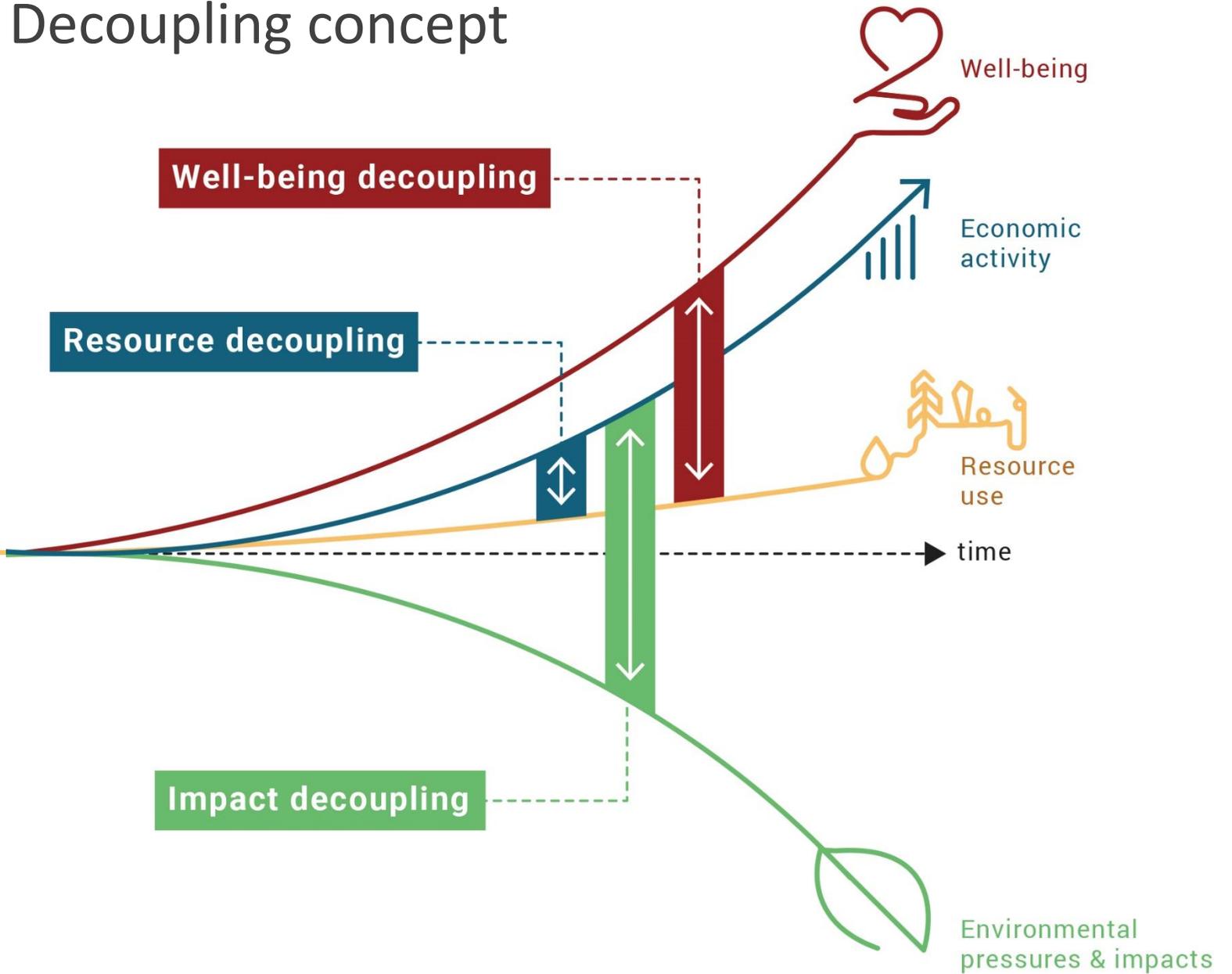
### Towards Sustainability

- **Resource efficiency and innovation are key tools** to achieve economic development while reducing climate change, biodiversity and health dangers

Summary of selected benefits of concerted resource efficiency and sustainable consumption and production (SCP) measures modelled in the 'Towards Sustainability' scenario vs environmental pressures if 'Historical Trends' scenario continues

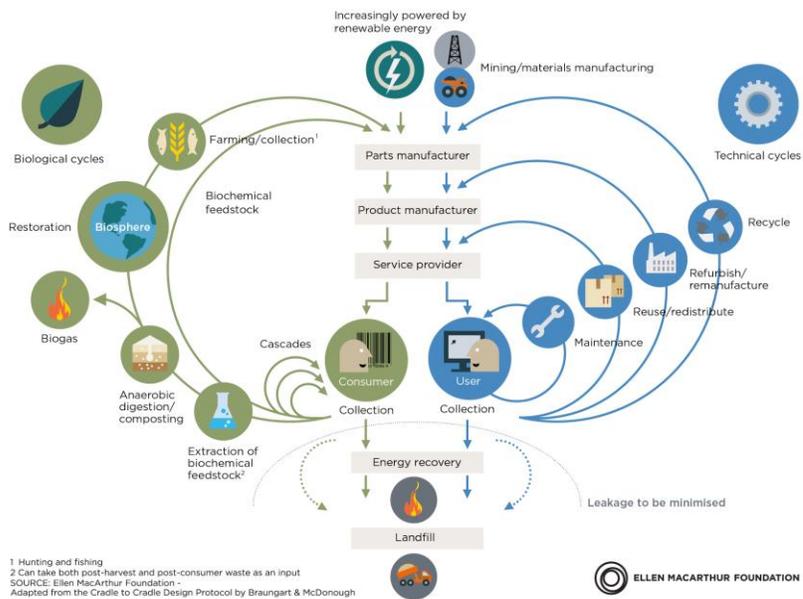


# Decoupling concept



# 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 societal and cultural transformation needed to sustain the humanity and its prosperity central to SDG delivery.*



*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.*

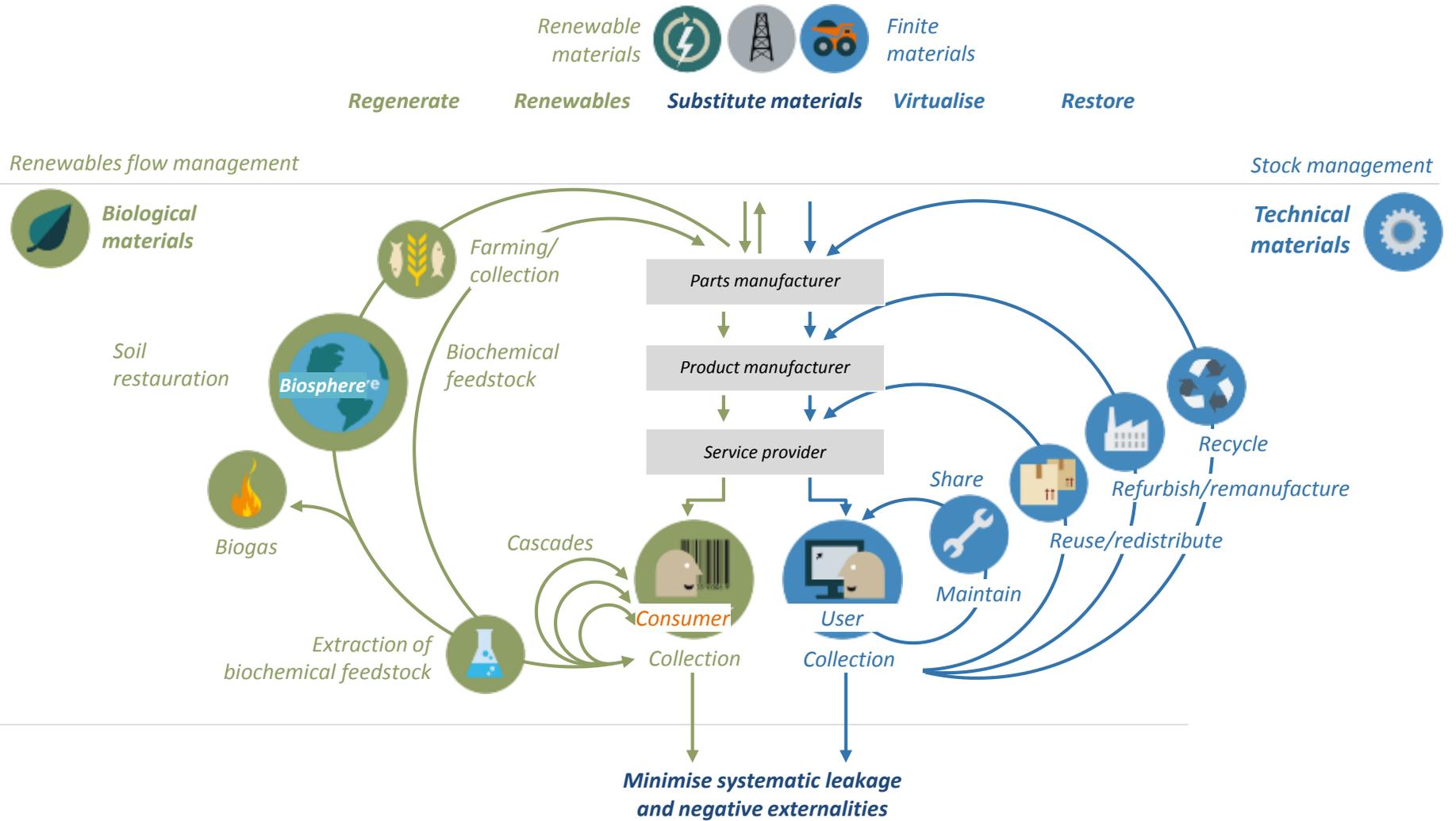
# OUTLINE OF A CIRCULAR ECONOMY SYSTEM

## 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;



# *CIRCULAR ECONOMY*

*AS AN ESSENTIAL INGREDIENT IN A  
FIGHT AGAINST CLIMATE CHANGE*

*CLIMATE*

*CARBON MANAGEMENT*

*LAND*

*WATER*

*ENERGY*

*MATERIALS*

*DECOUPLING*

*RESOURCES*

# *PILLARS FOR EFFICIENT CLIMATE CHANGE POLICY*

*SUPPLY SIDE  
SOLUTIONS*

*DEMAND SIDE  
SOLUTIONS*

*NATURE BASED  
SOLUTIONS*

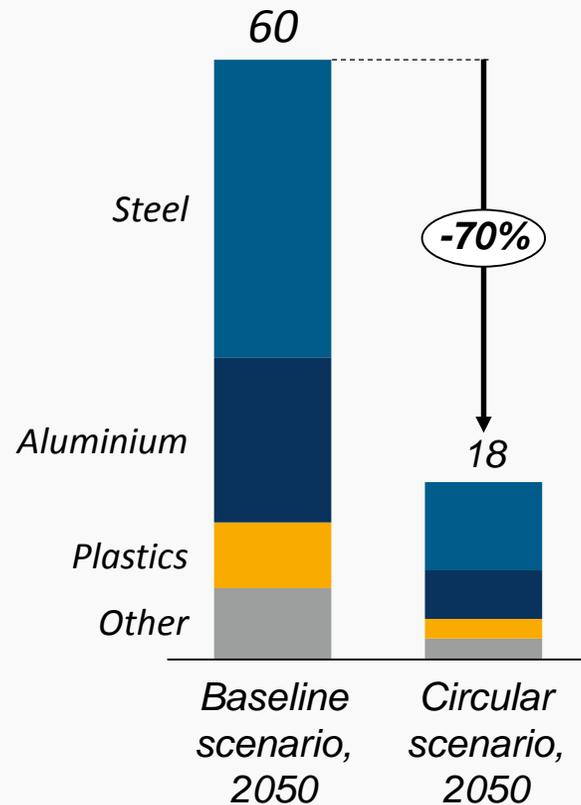
*Energy,  
Carbon management*

*Circular Economy,  
Land, Water,  
Materials  
Management*

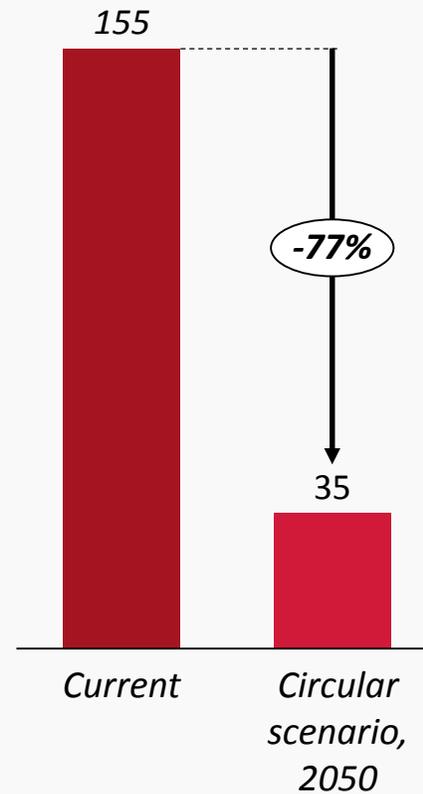
*Eco-system services  
Environmental sinks*

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

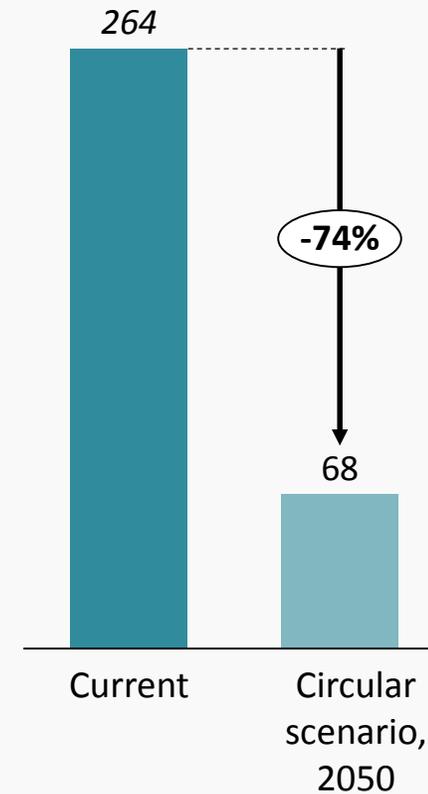
**CO<sub>2</sub> impact of materials**  
Mt CO<sub>2</sub> per year, Europe



**Total cost of ownership**  
EUR per 1000 pkm



**Externalities and cost to society**  
EUR per 1000 pkm



pkm = passenger kilometre



## *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.*



- *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.*

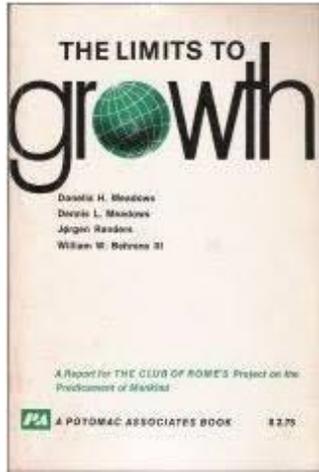
*We need more “Circularity” even in the*  
***GLOBAL GOVERNANCE***



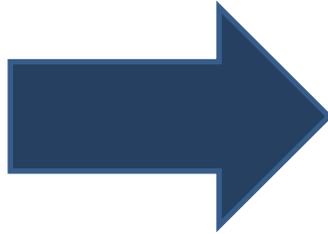
*Sharing sovereignty instead of owing sovereignty*

*TO CONCLUDE*

*WHY AND HOW?*



From  
*Limits to growth*



To  
*Growth of Limits*



- *Those that will be best able to cope with these limits (i.e. those that will create most value with least virgin or finite resources) should/will also be most competitive*
- *We need more creative destruction rather than destructive creation*

# Main points to remember

- We need a *new dialogue about how we are shaping the future of our planet*. We need a *conversation that includes everyone*, since the environmental challenge we are undergoing, and its human roots, concern and affect us all.
- Degree of *human intervention*, often in the service of business interests and consumerism, is actually *making our earth less rich and beautiful*.
- The effects of imposing this model on reality as a whole, human and social, are seen in *deterioration of the environment*, but this is just one sign of reductionism which *affects every aspect of human and social life*.
- Interdependence obliges us to think of *one world with a common plan*.
- We urgently need a *humanism* capable of *bringing together the different fields of knowledge*, including economics, in the service of a more *integral and integrating vision*.
- I suggest that we now consider some elements of an *integral ecology*, one which clearly respects its human and social dimensions.

# *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 and GDP and quantities fuelled growth**. 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.*

*We have to fix a broken **compass!***

*In essence this means the **development of new economic model** based on sustainable consumption and production integrating all pillars of sustainability. Changes are **unavoidable** and humans are supposed to be **intelligent**. It is high time to prove it.*

**SDGs**

*northern star guiding our policies and behaviour*

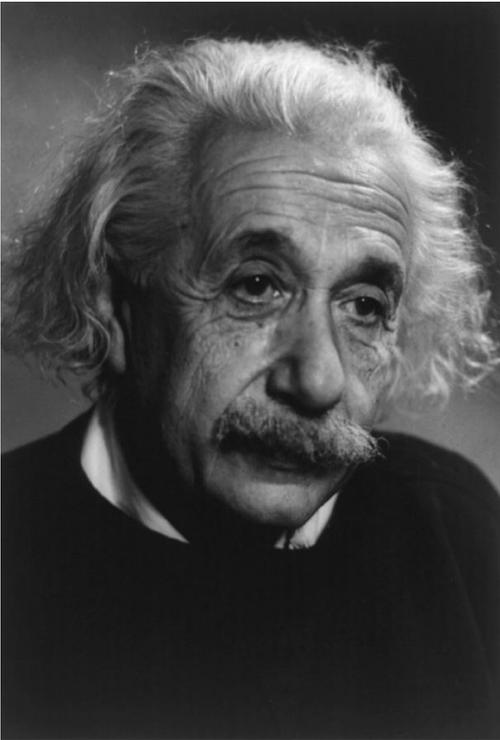
**INTER-GENERATIONAL AGREEMENT**

*A Program for the Future Generations*

*“Sustainability First”*

# 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”*



*Advice 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".*



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# *THANK YOU*

*For more information*

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