GROWTH IN TRANSITION

RESOURCE CONFERENCE

VIENNA

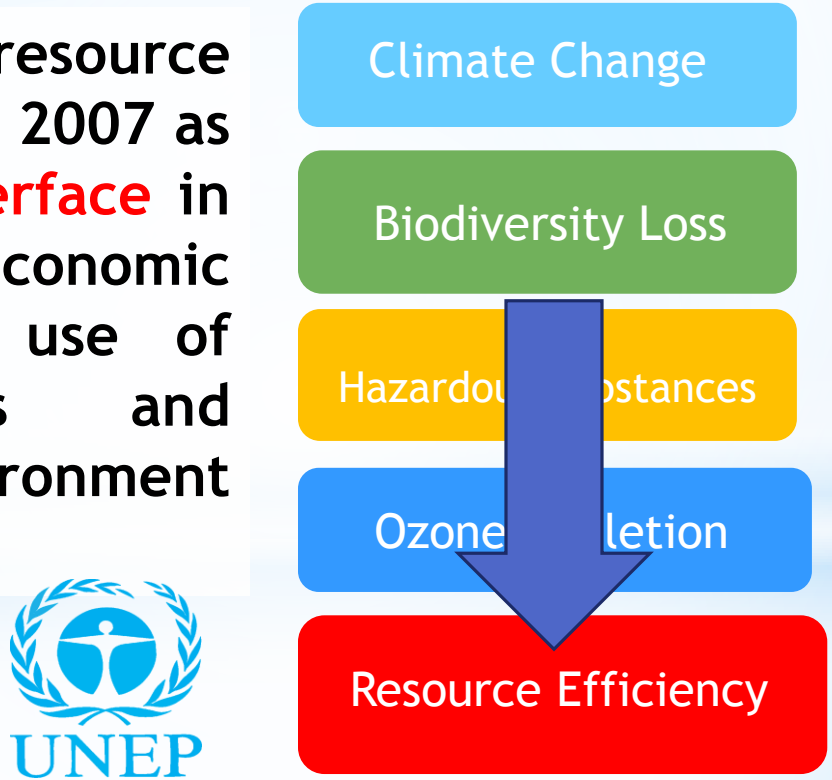
NOVEMBER, 21th 2016

Janez Potočnik

Co-Chair UNEP International Resource Panel (IRP)

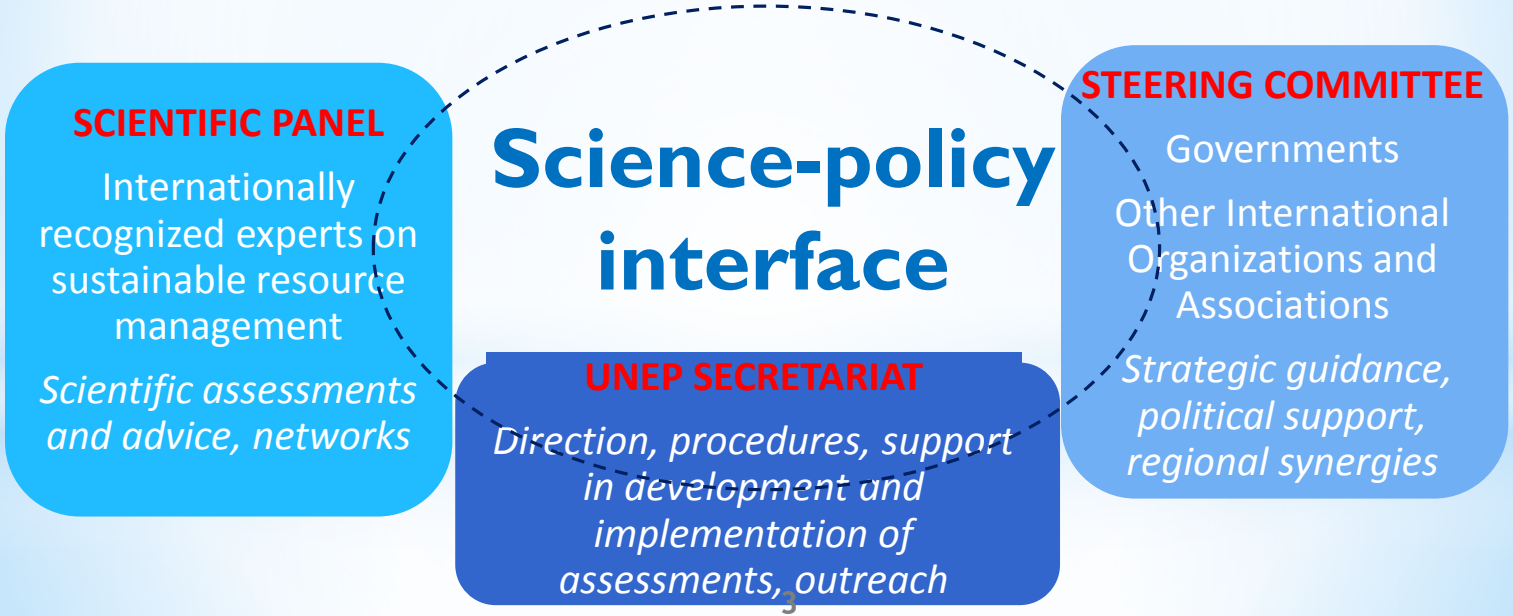
INTERNATIONAL POLICY NEEDS A SCIENCE BASE

The international resource panel was created in 2007 as a science-policy interface in responding to economic growth, escalating use of natural resources and deteriorating environment and climate change.



MISSION AND STRUCTURE

- INDEPENDENT AND AUTHORITATIVE **SCIENTIFIC ASSESSMENTS OF POLICY RELEVANCE** ON THE SUSTAINABLE USE OF NATURAL RESOURCES
- BETTER UNDERSTANDING OF HOW TO **DECOUPLE ECONOMIC GROWTH FROM RESOURCE USE AND ENVIRONMENTAL DEGRADATION**



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PUBLISHED REPORTS

Assessing biofuels: towards sustainable production and use of resources (2009)

Priority products and materials: assessing the environmental impacts of consumption and production (2010)

Metal stocks in society: a scientific synthesis (2010)

Recycling rates of metals: A status report (2011)

Decoupling natural resource use and environmental impacts from economic growth (2011)

Measuring Water Use in a Green Economy (2012)

City-level Decoupling: Urban Resource Flows and the Governance of Infrastructure Transitions (2013)

Metal Recycling: Opportunities, Limits, Infrastructure (2013)

Environmental Risks and Challenges of Anthropogenic Metals Flows and Cycles (2013)

Assessing Global Land Use: Balancing consumption with sustainable supply (2014)

Decoupling: Technological Opportunities and Policy Options (2014)

Managing and Conserving the Natural Resource Base for Sustained Economic and Social Development (2014)

Policy Coherence of the SDGs – A Natural Resource Perspective (2015)

International Trade in Resources: A biophysical assessment (2015)

10 Key Messages on Climate Change (2015)

Green Energy Choices: The Benefits, Risks and Trade-offs of Low Carbon Technologies for Electricity Production

Options for Decoupling Economic Growth from Water Use and Water Pollution (2016)

Rapid Assessment on Global resource efficiency prospects and economic implications (2016)

Food Systems and natural resources (2016)

Global Material Flows and Resource Productivity (2106)

Unlocking the Sustainable Potential of Land Resources (2016)

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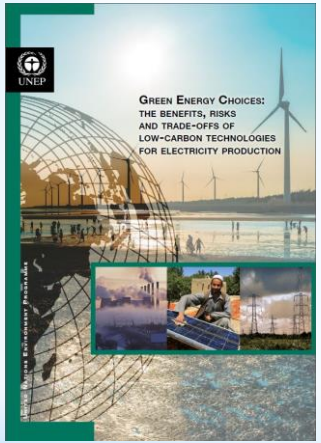
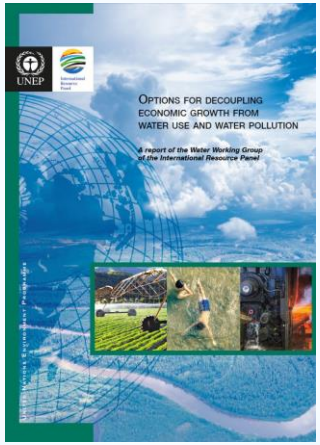
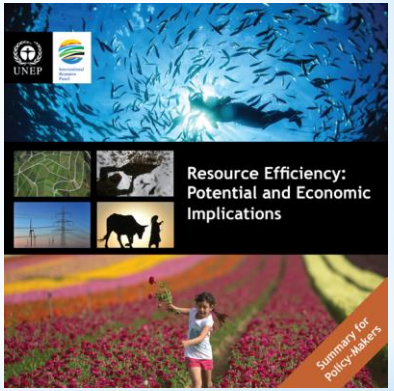
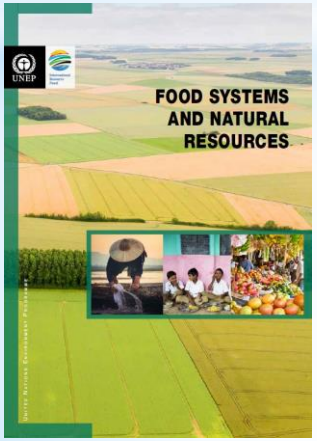
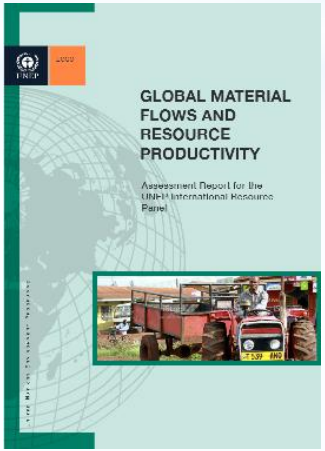
IN THE RECENT MONTHS …

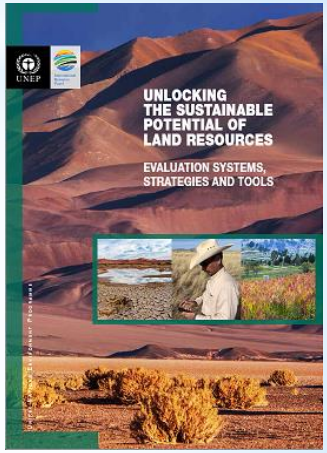












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WORLD

IN WHICH WE LIVE

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20th CENTURY
THE GREAT ACCELERATION

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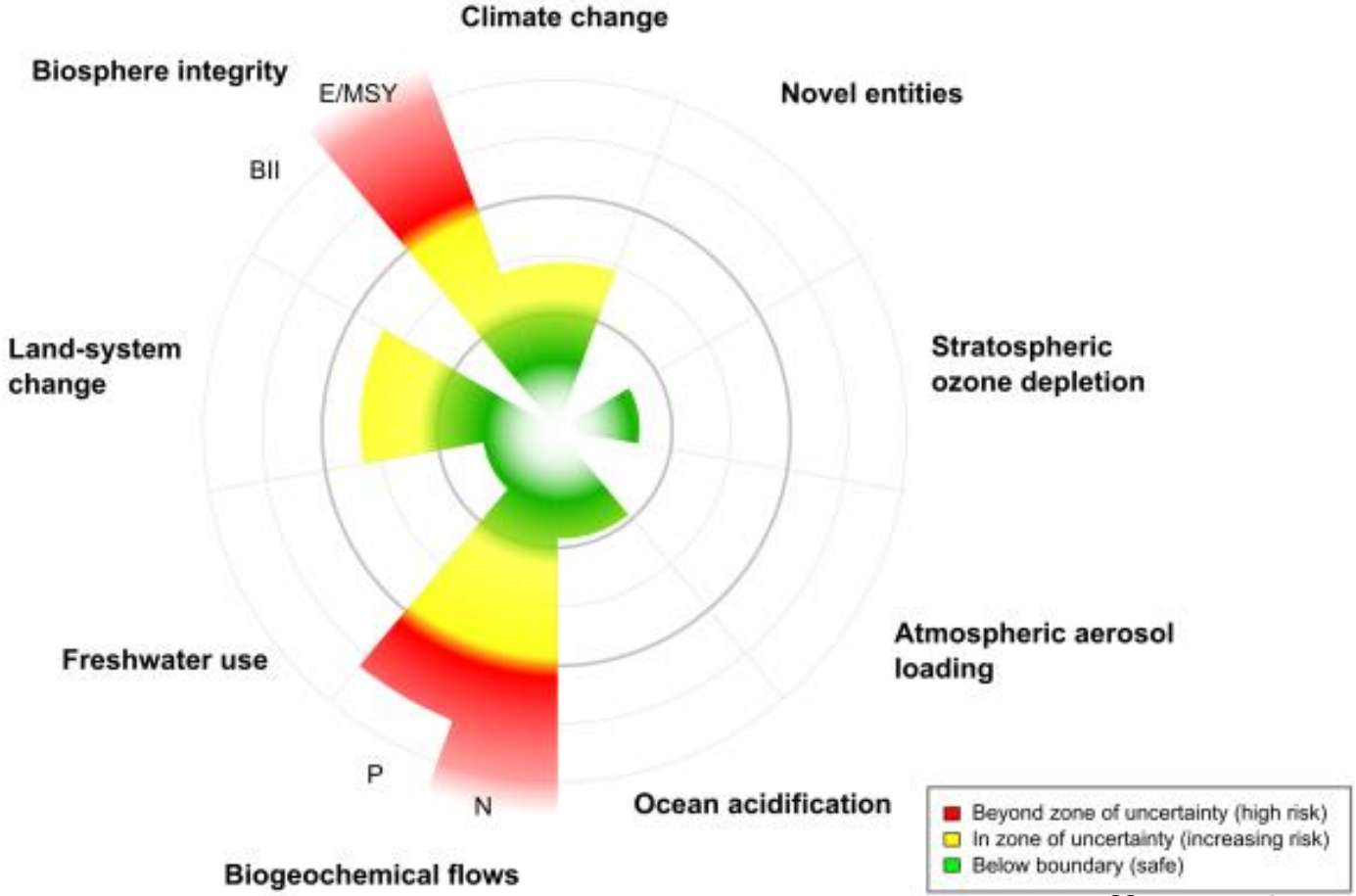
- *Growth of population by a factor 3.7*
- *Annual extraction of construction materials grew by a factor of 34, ores and minerals by a factor of 27, fossil fuels by a factor of 12, biomass by a factor of 3.6*
- *Total material extraction grew by a factor of 8*
- *GHG emissions grew by a factor of 13*
- *Globalisation*

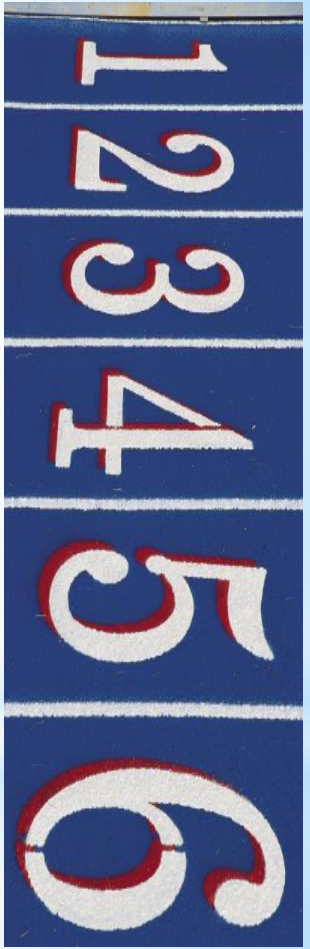
“PLANETARY BOUNDARIES”



Source: Steffen et al. 2015

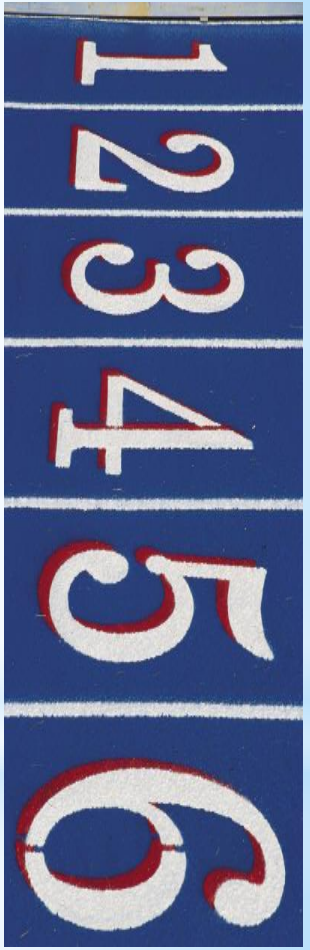
21th CENTURY
FACTS WE CAN NOT IGNORE

- *Population growth (2050 – 9.7 billion)*
- *Per capita consumption growth (a lot of consumers are expected to move from low to middle class consumption till 2030)*
- *Example: China used more cement in the three years 2011-2013 than the USA used in the whole 20th Century*

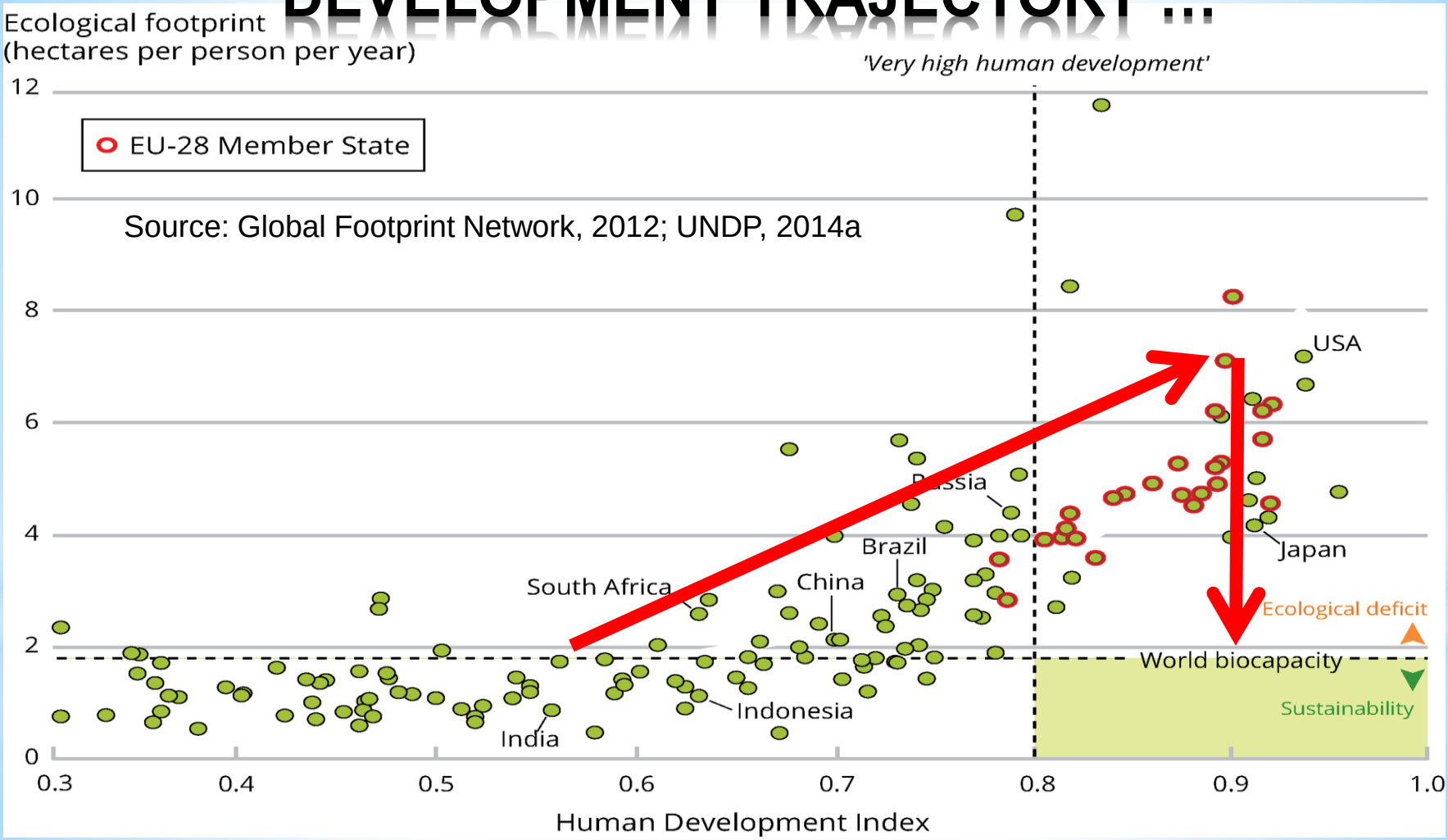


21th CENTURY
FACTS WE CAN NOT IGNORE

- *Poverty and social inequality (Oxfam Report: 62 people own the same as half of the world and the richest 1% is more wealthy than the rest of the world)*
- *60% of ecosystems already degraded or used unsustainably*
- *Increasing evidence of the climate change threat*



DEVELOPMENT TRAJECTORY …



INTERNATIONAL

DEVELOPMENTS

THE GLOBAL GOALS

For Sustainable Development

SDGs *offer unique opportunity to move to an integrated, universally relevant and potentially transformative Global Development Agenda.*

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12 SDGs ARE DIRECTLY DEPENDENT ON NATURAL RESOURCES

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Sustainable Consumption and Production is the most efficient strategy to avoid trade-offs and create synergies to resolve the development and environmental challenges articulated in the SDGs.

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SDGs DIRECTLY DEPENDENT ON NATURAL RESOURCES

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AND …

SOLUTIONS

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DECOUPLING IS THE IMPERATIVE OF MODERN ENVIRONMENTAL AND ECONOMIC POLICY

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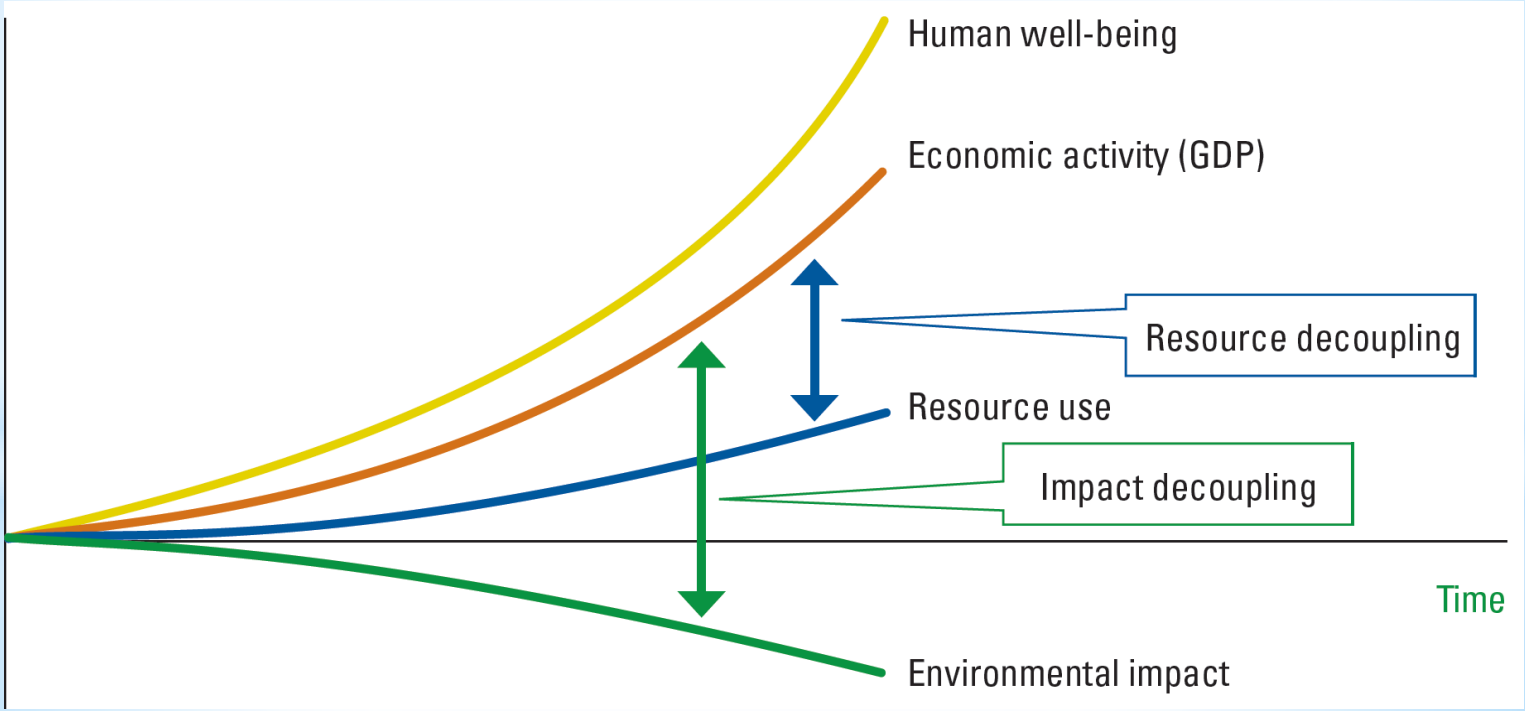

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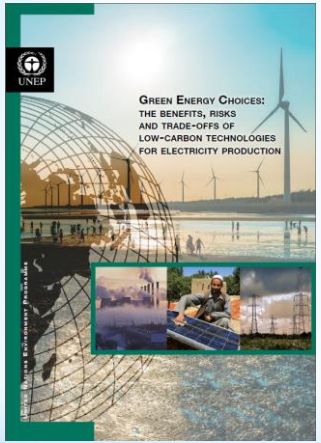
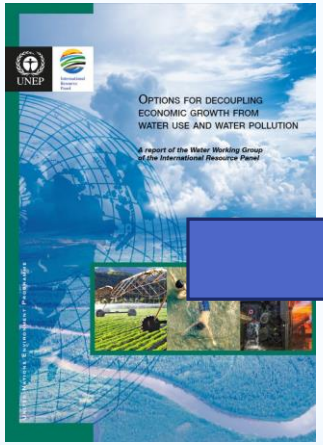
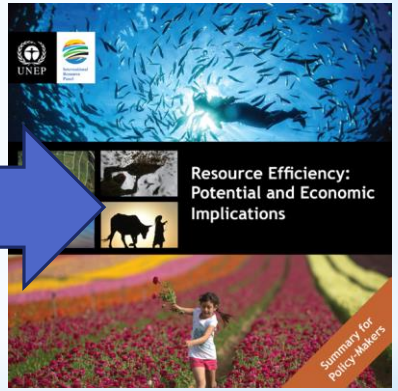
- *Developed economies will need to adopt strategies that bring their resource consumption down to globally sustainable levels (ABSULUTE DECOUPLING)*

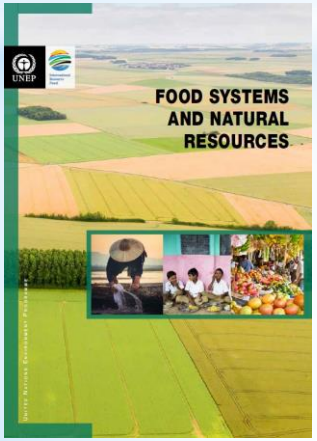
- *Developing nations must strive to improve resource efficiencies and cleaner production processes as their net consumption of natural resources increases for a period until they achieve a societally acceptable quality of life (RELATIVE DECOUPLING)*

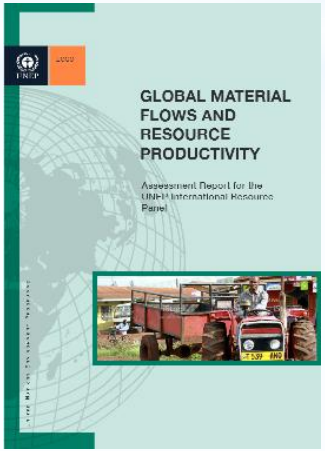
IN THE RECENT MONTHS …

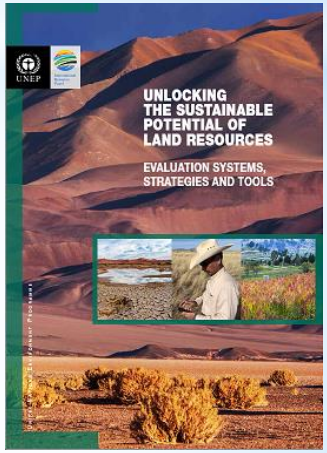












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DECOUPLING AND RESOURCE EFFICIENCY POTENTIAL

"With concerted action, there is significant potential for increasing resource efficiency, which will have numerous benefits for the economy and the environment"

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DECOUPLING AND RESOURCE EFFICIENCY POTENTIAL

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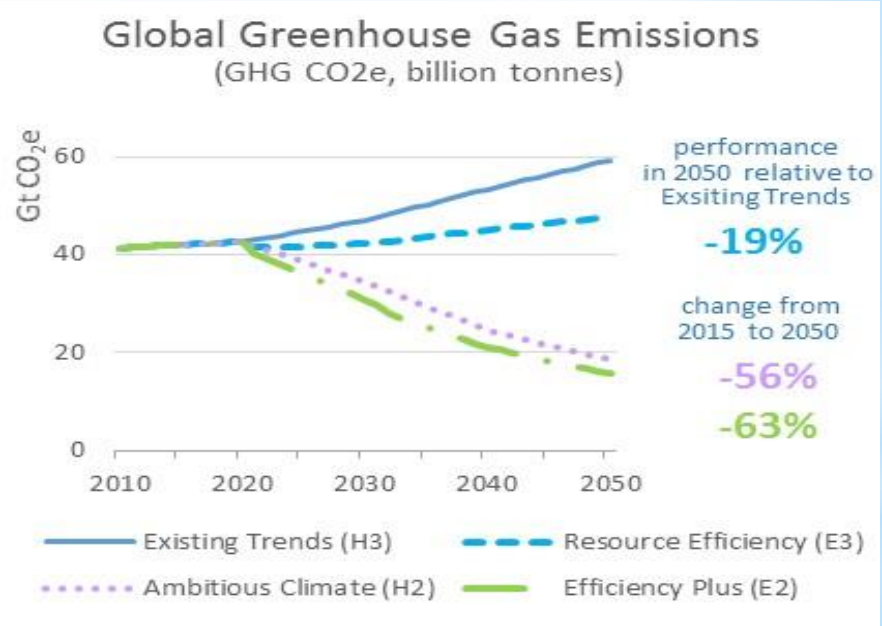
"Improving resource efficiency is indispensable for meeting climate change targets cost effectively"




CLIMATE
CARBON MANAGEMENT
LAND
WATER
GHG
MATERIALS
DECOUPLING
RESOURCES
LOW CARBON RESOURCE EFFICIENT ECONOMY

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DECOUPLING AND RESOURCE EFFICIENCY POTENTIAL

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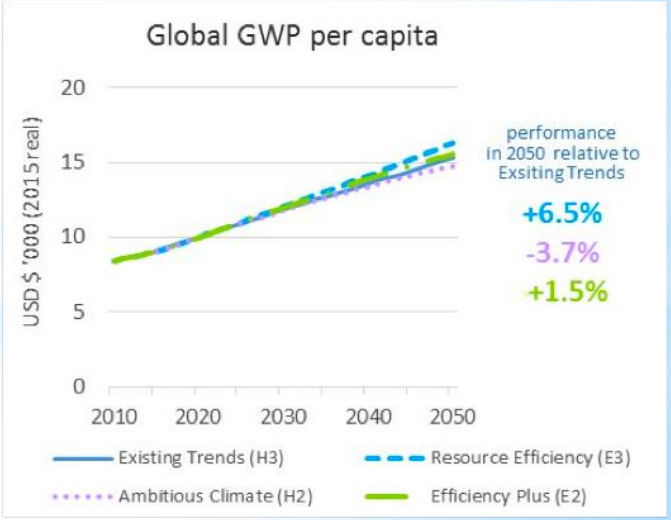
"Resource efficiency can contribute to economic growth and job creation"

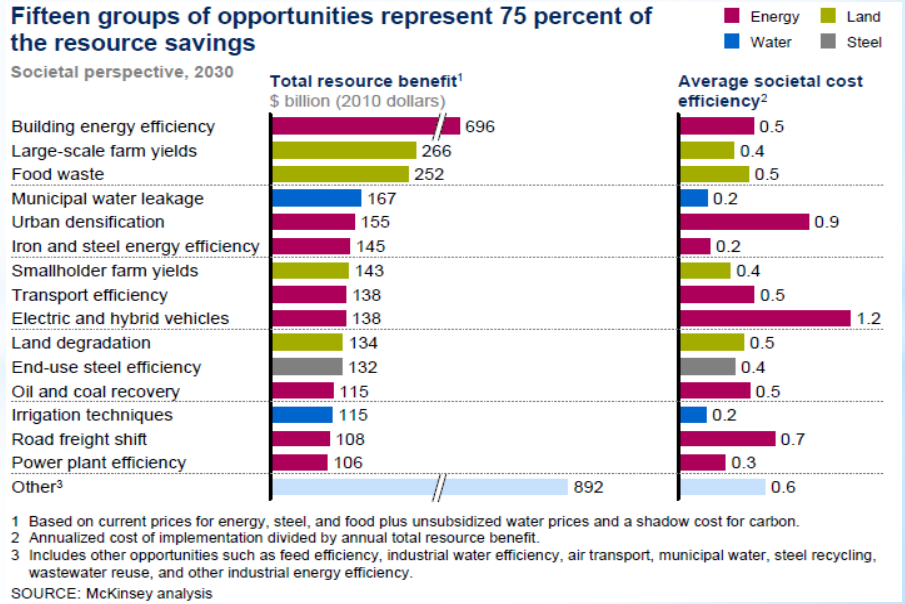
Modelling results differ in size, but all of them show that increasing resource efficiency can lead to higher economic growth and employment, often even when environmental benefits are not accounted.



DECOUPLING AND RESOURCE EFFICIENCY POTENTIAL

"There are substantial areas of opportunity for greater resource efficiency "

The top 15 categories of resource efficiency potential



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DECOUPLING AND RESOURCE EFFICIENCY POTENTIAL

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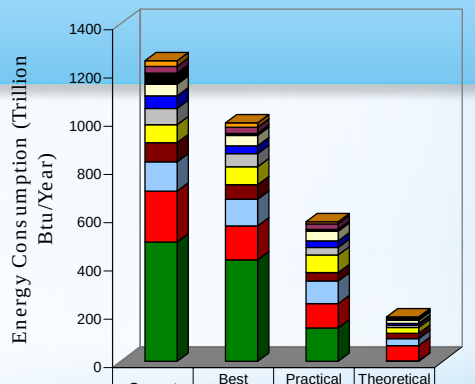
"Increased resource efficiency is practically attainable"

Energy consumption and saving potential by equipment type in US mining industry



	Current	Best Practice	Practical Minimum	Theoretical Minimum
Blasting	24	18	10	5
Dewatering	28	25	23	7
Separations	46	8	7	2
Electric Equipment	48	43	40	13
Crushing	52	32	27	8
Drilling	67	54	32	9
Ancillary Operations	75	75	72	24
Digging	79	60	35	22
Ventilation	122	111	94	29
Materials Handling-Diesel	211	141	101	63
Grinding	494	420	138	2

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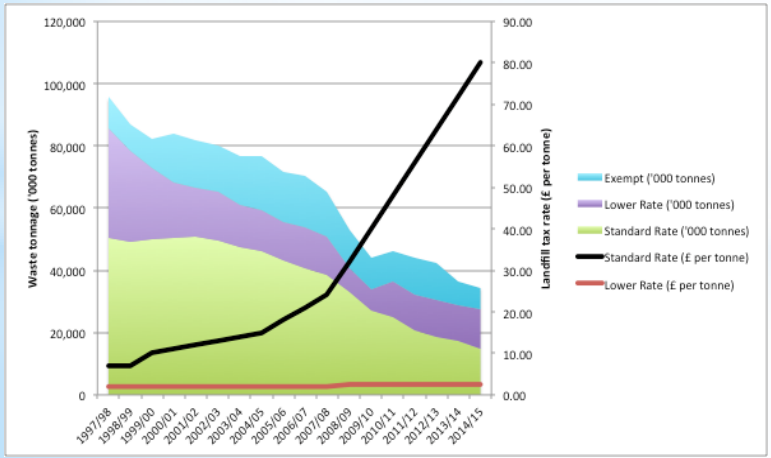
CONCLUSIONS FROM THE REPORT: REALISING THE POTENTIAL

- *Markets will not achieve higher rates of resource efficiency by themselves*
- *There are significant barriers to the increases in resource efficiency required, but they can be removed*
- *Public policy and political will be needed and countries required to take concerted action*
- *EU's Circular Economy Package (CEP), and G7 Alliance on Resource Efficiency, are steps in the right direction, but*
  - *Should be scaled up and intensified*
  - *CEP Action Plan needs to be made more specific, with targets and timescales*

THE DISCONNECT BETWEEN RESOURCE EFFICIENCY AND ECONOMIC EFFICIENCY: THE RESOURCE-EFFICIENT OPTION MAY BE MORE EXPENSIVE

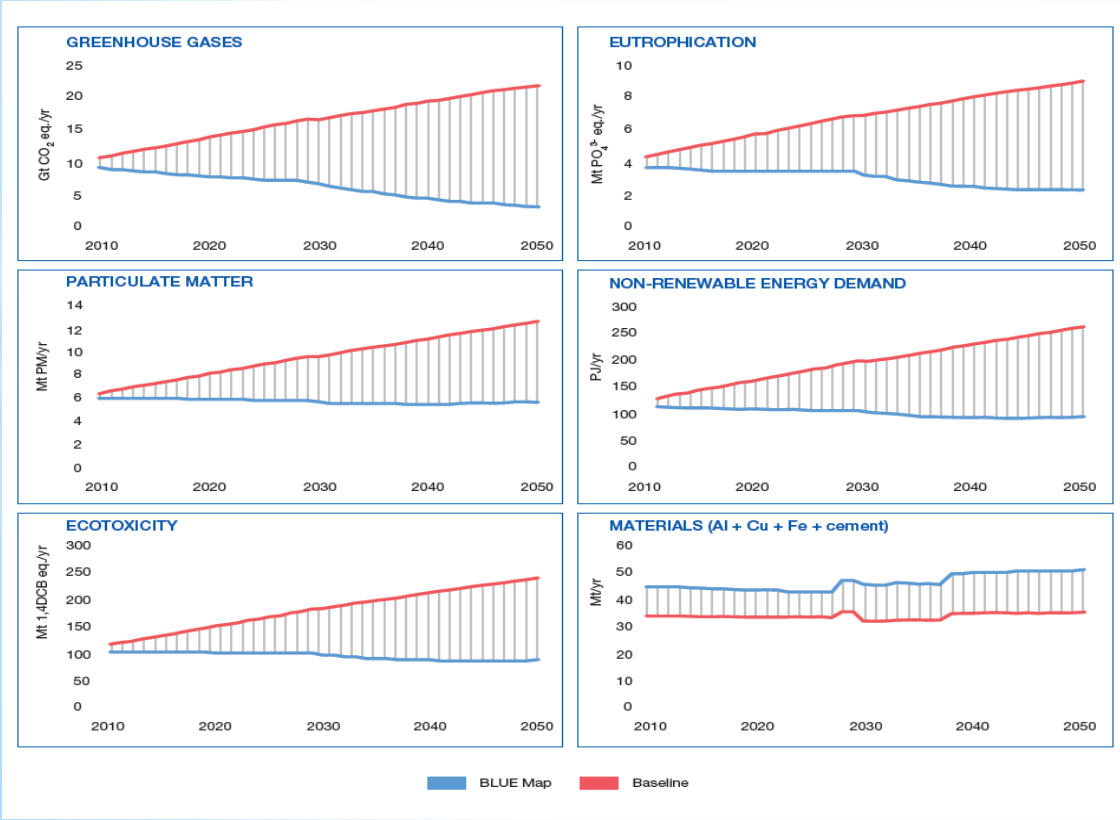
There is a need to rebalance the cost of labour, and the costs of resources and pollution by:

- *pricing externalities and using taxation to stimulate investment in resource-efficient alternatives*
- *using dynamic taxes to buffer price fluctuations, thereby reducing volatility and future uncertainty*
- *creating other incentives for actors to favour paying for labour to save materials, rather than for materials to save labour, such as reducing taxes on labour*



UK: Waste tonnage sent to landfill, and landfill tax rates

INCREASED RESOURCE EFFICIENCY WILL MAKE A LOW-CARBON ELECTRICITY SYSTEM PREFERABLE ACROSS THE BOARD



UNEP. (2015). Green Energy Choices: The benefits, risks, and trade-offs of low-carbon technologies for electricity production. E.G.Hertwich, T. Gibon, S. Suh, J. Aloisi de Larderel, A. Arvesen, P. Bayer, J. Bergesen, E. Bouman, G. Heath, C. Peña, P. Purohit, A. Ramirez. . Paris: International Resource Panel, United Nations Environment Programme

EU APPROACH

PRINCIPLE

1

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

PRINCIPLE

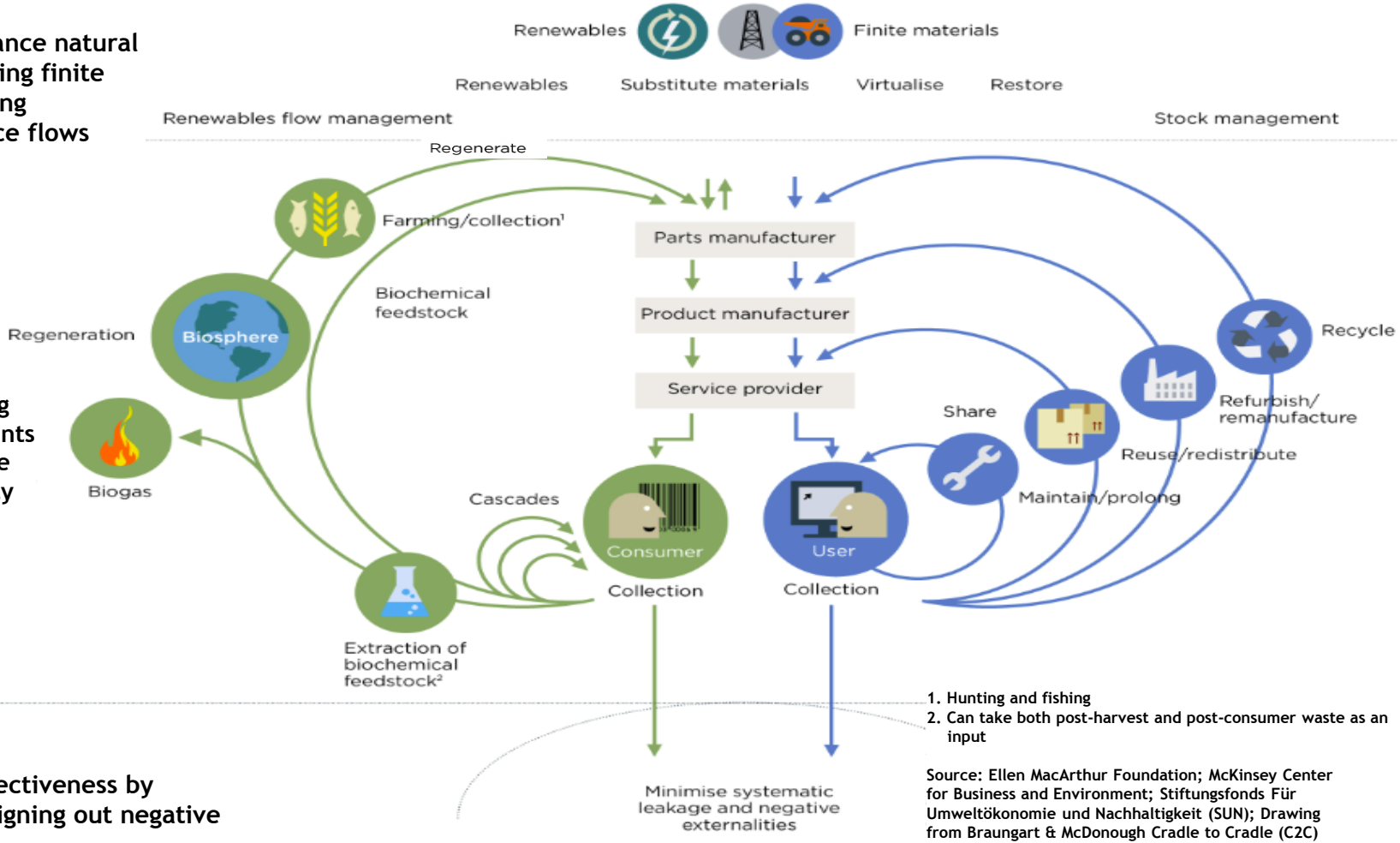
2

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

PRINCIPLE

3

Foster system effectiveness by revealing and designing out negative externalities

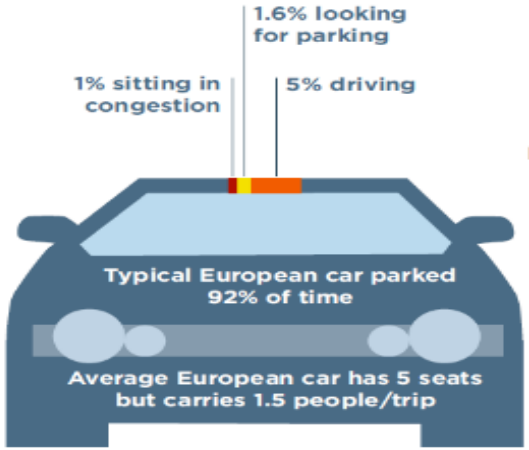


1. Hunting and fishing
2. Can take both post-harvest and post-consumer waste as an input

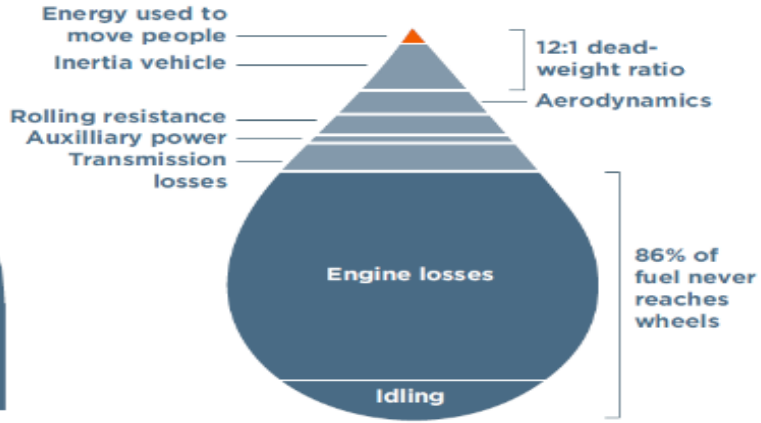
Source: Ellen MacArthur Foundation; McKinsey Center for Business and Environment; Stiftungsfonds Für Umweltökonomie und Nachhaltigkeit (SUN); Drawing from Braungart & McDonough Cradle to Cradle (C2C)

STRUCTURAL WASTE IN THE MOBILITY SYSTEM

CAR UTILISATION

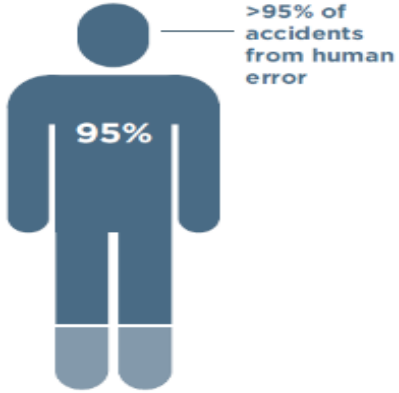


TANK-TO-WHEEL ENERGY FLOW - PETROL



DEATHS AND INJURIES/ YEAR ON ROAD

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



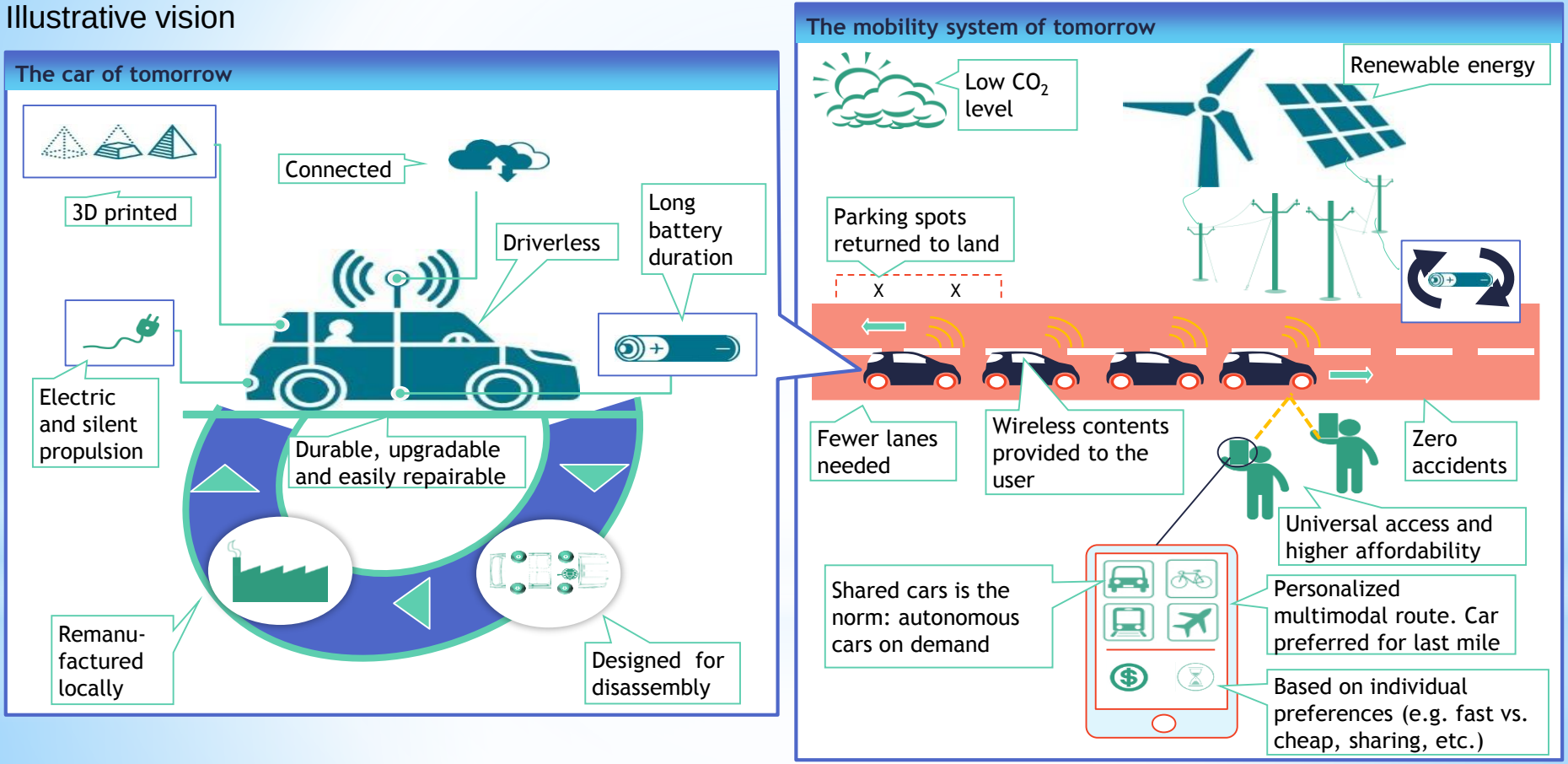
LAND UTILISATION:

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 FUTURE END-STATE COULD LOOK VERY DIFFERENT FROM TODAY'S MOBILITY SITUATION

Illustrative vision



SOURCE: SUN, ELLEN MACARTHUR FOUNDATION AND MCKINSEY & COMPANY: TEAM ANALYSIS

CONCRETE ACTIONS

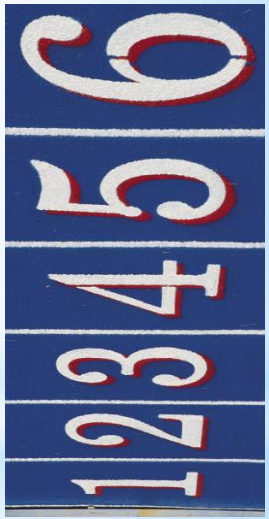
- *ECO-DESIGN to include reparability, durability, recyclability*
- *Legislation on FERTILISERS, including organic and waste-based fertilisers*
- *Minimum requirements for the REUSE OF WASTEWATER*
- *Actions on GREEN PUBLIC PROCUREMENT*
- *FUNDING of €650 million for 'industry 2020 in the circular economy'*
- *Quality standards for SECONDARY RAW MATERIALS*
- *STRATEGY ON PLASTICS, including marine litter*
- *Interface CHEMICALS, PRODUCTS AND WASTE LEGISLATION*

GROWTH IN TRANSITION

GROWTH … IN TRANSITION

- *LEADING EU POLITICAL GOAL: FROM GROWTH AND JOBS TO JOBS AND GROWTH*
- *GROWTH RATES IN EU BY DECADES - OECD DATA:*

Sixties	*5.4%*
Seventies	*3.8%*
Eighties	*3.1%*
Nineties	*2.3%*
First decade of this century	*1.4%*

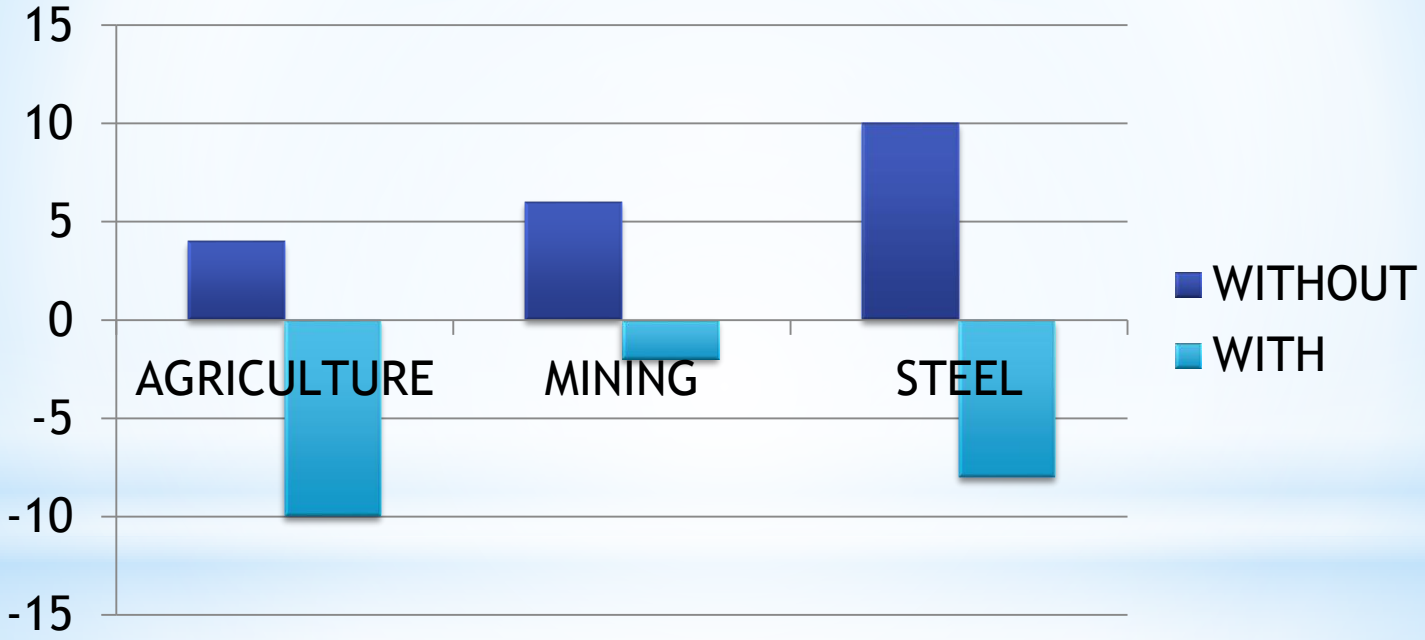


GROWTH … IN TRANSITION

- *Growth is generally considered as a positive phenomena*
- *Growth expressed as GDP – Beyond GDP agenda*
- *"Good" growth -"Bad" growth (externalities) - how much of the "growth" in the past actually qualifies for growth?*

EVALUATION OF EXTERNALITIES

PROFIT MARGINS WITHOUT NATURAL CAPITAL COSTS INCLUDED AND WITH NATURAL CAPITAL COSTS INCLUDED



SOURCE: TRUECOST STUDY - 2013

GROWTH … IN TRANSITION

- *Growth as a future political priority (developed and developing countries)*
- *10% growth – doubling in 7 years*
- *Viable economy - building resilience or improving efficiency?*

TO CONCLUDE …

SUSTAINABLE, LOW-CARBON, CIRCULAR, GREEN, RESOURCE EFFICIENT, ENERGY EFFICIENT, DECOUPLING, 3Rs, ECOLOGICAL CIVILISATION, C2C, BIOECONOMY, ECO-ECONOMY, BLUE …

- *What we actually talk about*

WE HAVE TO FIX A BROKEN COMPASS

(PAVAN SUKHDEV)

NEW ECONOMIC MODEL BASED ON SCP INTEGRATING ALL THREE PILLARS OF SUSTAINABILITY IS

NECESSARY AND UNAVOIDABLE

MARKETS
CANNOT ENSURE EFFICIENCY IN THE ALLOCATION AND USE OF RESOURCES …

- *If prices do not reflect the true value and costs of resources,*
- *If rewards to capital are disproportionate to other inputs (finacial capital is overvalued, human capital is undervalued and natural capital in many cases not valued at all)*
- *If managers on annual contracts are induced to make short term investment decisions overly influenced by bonuses based on short term share price,*
- *If …*

Better regulation

is not about less regulation, it is about creating the conditions for confidence to invest in technologies for the markets of the future

- *KNOWLEDGE (Creation)*
- *INNOVATION (Incentives)*
- *PRODUCTS (Design)*
- *CONSUMERS (Behaviour)*
- *BUSINESS MODELS (Sharing Products to services)*

NECESSARY CONDITIONS

1. *SCP SHOULD BE PRIORITY OF THE GOVERNMENT (NOT ONLY ENV): Defined in the strategic documents, supported by indicators, monitoring, reporting and linked to the core economic policy decisions.*

2. *ALL ECONOMIC POLICIES SHOULD BE SYSTEMATICALLY ADJUSTED: Beyond GDP, natural capital accounting, corporate sustainability reporting, tax policy, state aid, public procurement, product design, use of banking potential, R and D and innovation, investments in infrastructure, education, consumers awareness, new business models, support to SMS, etc.)*

3. *ACTIVE DIALOGUE WITH ALL STAKEHOLDERS IS NECESSARY: Transition is only possible if we actively involve those loosing in the process of transition*

ENVIRONMENT
ECONOMY

UNDERSTANDING SUSTAINABLE PROSPERITY

ESRC Centre for the Understanding of Sustainable Prosperity

CUSP

arts

politics

society

meanings

mapss

FRAMEWORK

systems

Prosperity transcends material concerns. It resides in our sense of identity, our pursuit of meaning. It rests in our ability to participate in the life of society. Prosperity consists in our ability to flourish on a finite planet.

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UNEP

THANK YOU

www.unep.org/resourcepanel