



# **SOCIAL IMPACT OF UNIVERSITIES**

*GHENT UNIVERSITY, 23th March, 2017*

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# *STRUCTURE*

- *THE WORLD WE LIVE IN AND CHALLENGES WE ARE FACING*
- *ECONOMIC MODEL DRIVING OUR LIVES*
- *SOCIAL IMPACT OF UNIVERSITIES*
- *LEADERSHIP, GOVERNANCE AND THE ROLE OF THE EUROPEAN UNION*

***THE WORLD WE  
LIVE IN  
AND CHALLENGES WE ARE  
FACING***



International  
Resource  
Panel

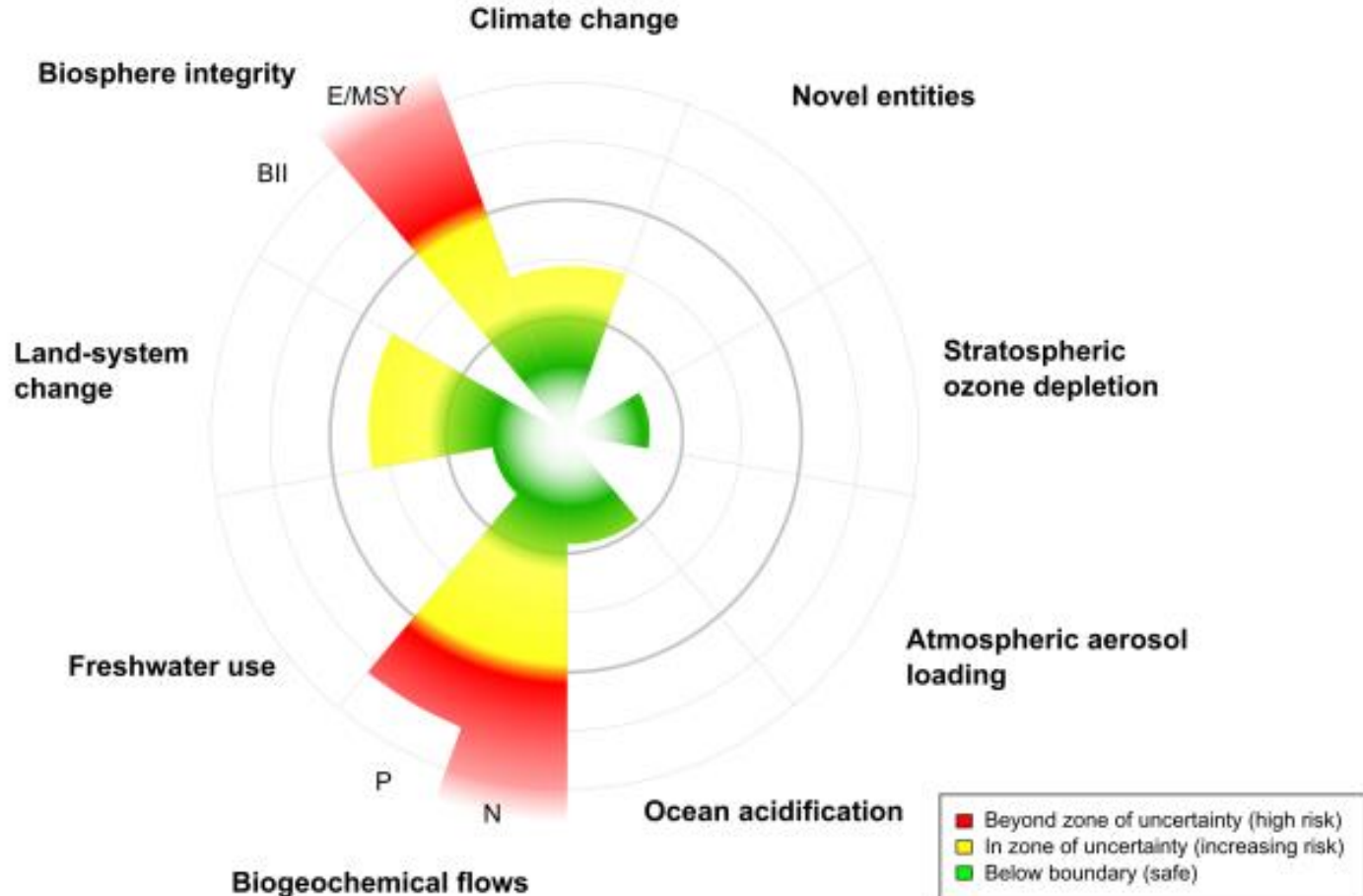
# 20<sup>th</sup> CENTURY

## THE GREAT ACCELERATION



- 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**

# “PLANETARY BOUNDARIES”



Source: Steffen et al. 2015

# 21<sup>th</sup> CENTURY

## FACTS WE CAN NOT IGNORE

### POPULATION

- *Population* growth (2050 - 9.7 billion)
- *Per capita consumption* growth (McKinsey estimates up to 3 billion consumers moving from low to middle class consumption till 2030)



# 21<sup>th</sup> 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)*
- *Nearly 800 million people are **hungry**, over 2 billion suffer from micronutrient deficiencies ... while over 2 billion people are **obese***
- *We **throw away** one third of the **food** we produce*



# 21<sup>th</sup> CENTURY

FACTS WE CAN NOT IGNORE

## ENVIRONMENT

- 60% of *ecosystems* already degraded or used unsustainably
- Increasing evidence of the *climate change* threat
- 33% of *soils* is moderately to highly degraded due to erosion, nutrient depletion, acidification, salinization, compaction and chemical pollution
- 467 000 premature *deaths* yearly in EU *due to air pollution* (7 millions globally)





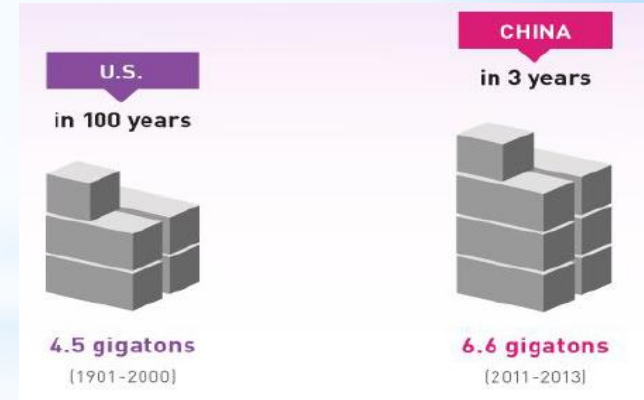


# 21<sup>th</sup> CENTURY

## FACTS WE CAN NOT IGNORE

### URBANISATION

- *Around 50% of urban fabric* expected to exist by 2050 still needs to be constructed
- Between 2000 and 2030 it is estimated that *developing countries* would have added *400,000 km<sup>2</sup> of built-up urban area*, equal to the world's built-up area in 2000
- In the three years period (2011-2013), *China* has used more *cement* than the *USA* during the entire 20th century



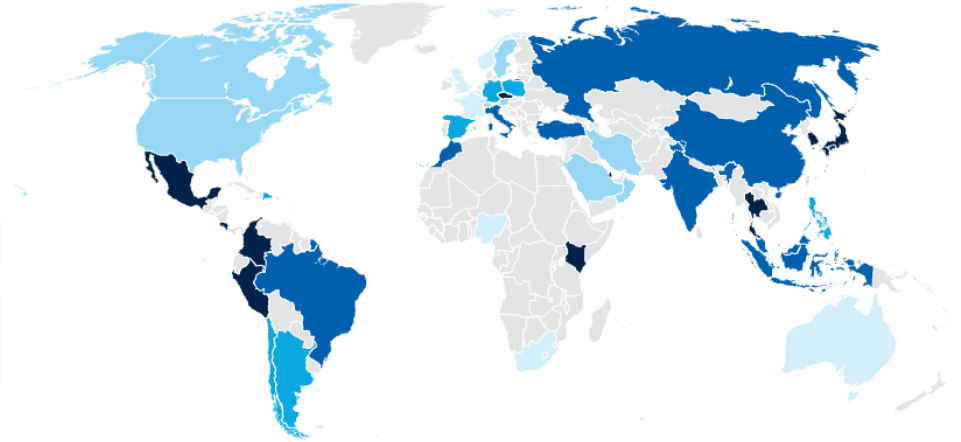
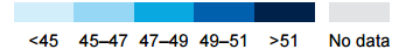
# 21<sup>th</sup> CENTURY

## FACTS WE CAN NOT IGNORE

### COMPUTERS AND ROBOTICS

- Nearly *half* of all the work we do, will be able to be *automated* by the year 2055 (McKinsey Global Institute)

Employee weighted overall % of activities that can be automated by adapting currently demonstrated technologies<sup>1</sup>

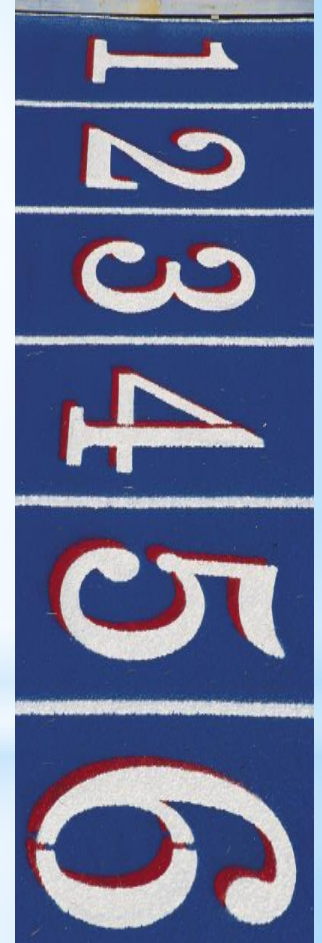


# 21<sup>th</sup> CENTURY

FACTS WE CAN NOT IGNORE

## GLOBALISATION

- 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.
- Increased **multi-polarity**, but not in a way developed world expected to happen
- Our individual and collective **responsibility** has enormously increased.



# ***SYNCHRONOUS FAILURE:***

## ***THE EMERGING CAUSAL ARCHITECTURE OF GLOBAL CRISIS***

*Ecology and Society* 28/08/2015

[Thomas Homer-Dixon](#), [Brian Walker](#), [Reinette Biggs](#), [Anne-Sophie Crépin](#), [Carl Folke](#), [Eric F. Lambin](#), [Garry D. Peterson](#), [Johan Rockström](#), [Marten Scheffer](#), [Will Steffen](#), [Max Troell](#)

In a world where external reserves of resources are limited and second chances are thus increasingly rare, humankind must develop the ability to proactively navigate away from this new kind of crisis - globally extensive and inter-systemic - that could otherwise irreversibly degrade the biophysical and economic basis for human prosperity.

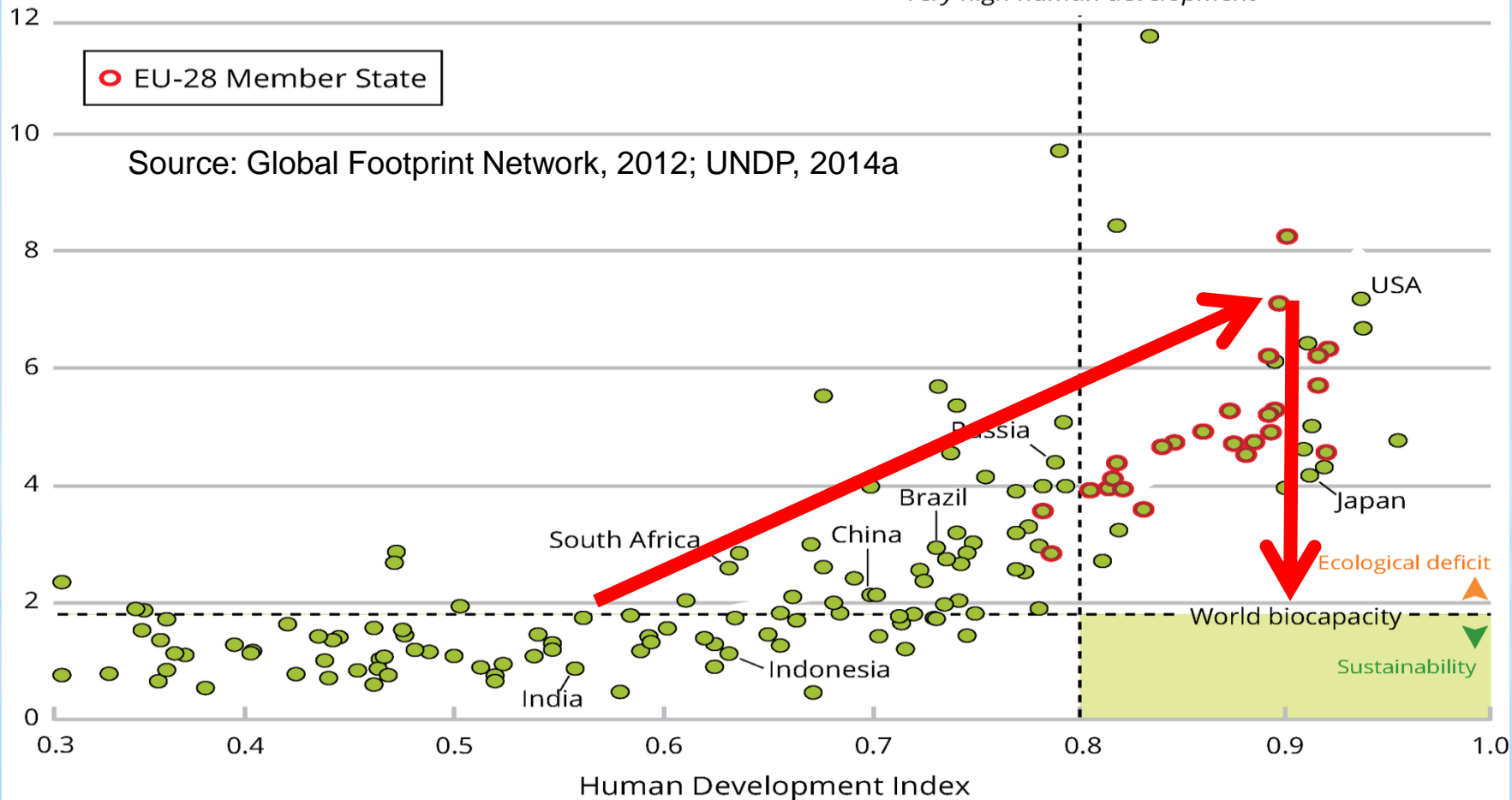
***ECONOMIC MODEL***

***DRIVING OUR LIVES***

# DEVELOPMENT TRAJECTORY ...

Ecological footprint  
(hectares per person per year)

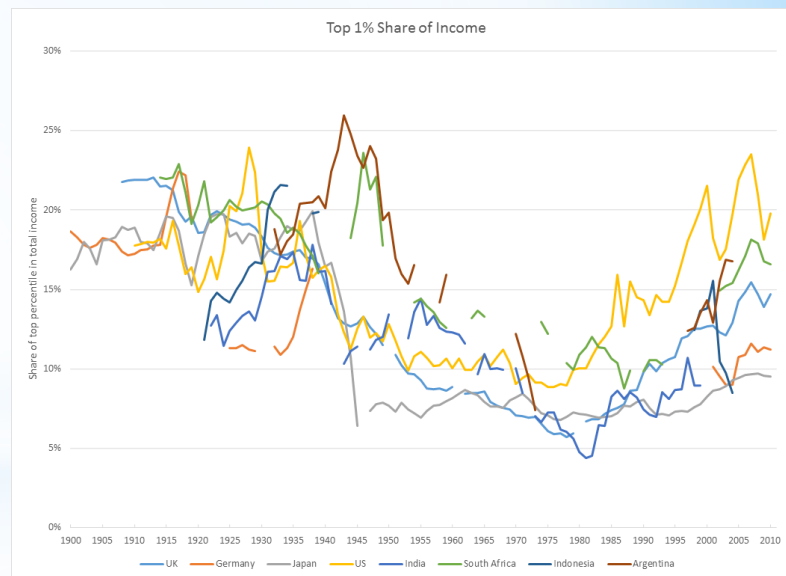
'Very high human development'



# THOMAS PIKETTY: CAPITAL IN THE 21<sup>ST</sup> CENTURY

August 2013

- Put the question of the great *inequality of wealth in the market economies* in the centre of public debate.
- What is the point of economic growth if it does not make most people better off - and worse, if growth is actually destroying things that many of us value?



# *SUSTAINABLE DEVELOPMENT: DEFINITIONS, PRINCIPLES, POLICIES*

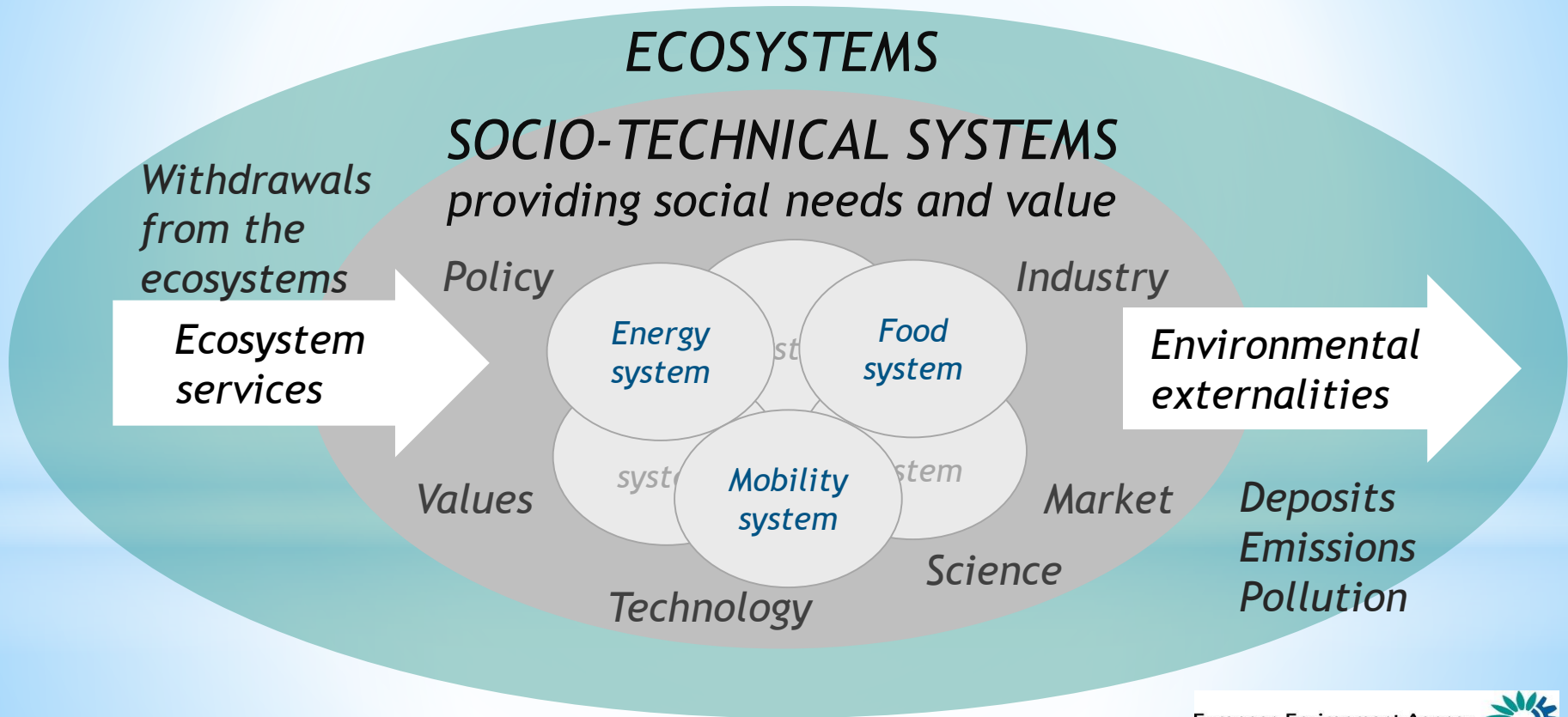
*Herman E. Daly: Invited Address, WB, 30/04/2002*

- *Macroeconomics has no “when to stop” rule. GDP is supposed to grow forever.*
- *The optimal scale of the macro-economy relative to its containing ecosystem is the critical issue to which the macroeconomics has been blind. This blindness to the costs of growth in scale is largely a consequence of ignoring throughput, and has led to the problem of ecological un-sustainability.*



# LIVING WELL WITHIN ECOLOGICAL LIMITS

## ECONOMIC SYSTEM FUNCTION OF ECOSYSTEM



# SUSTAINABLE DEVELOPMENT: DEFINITIONS, PRINCIPLES, POLICIES

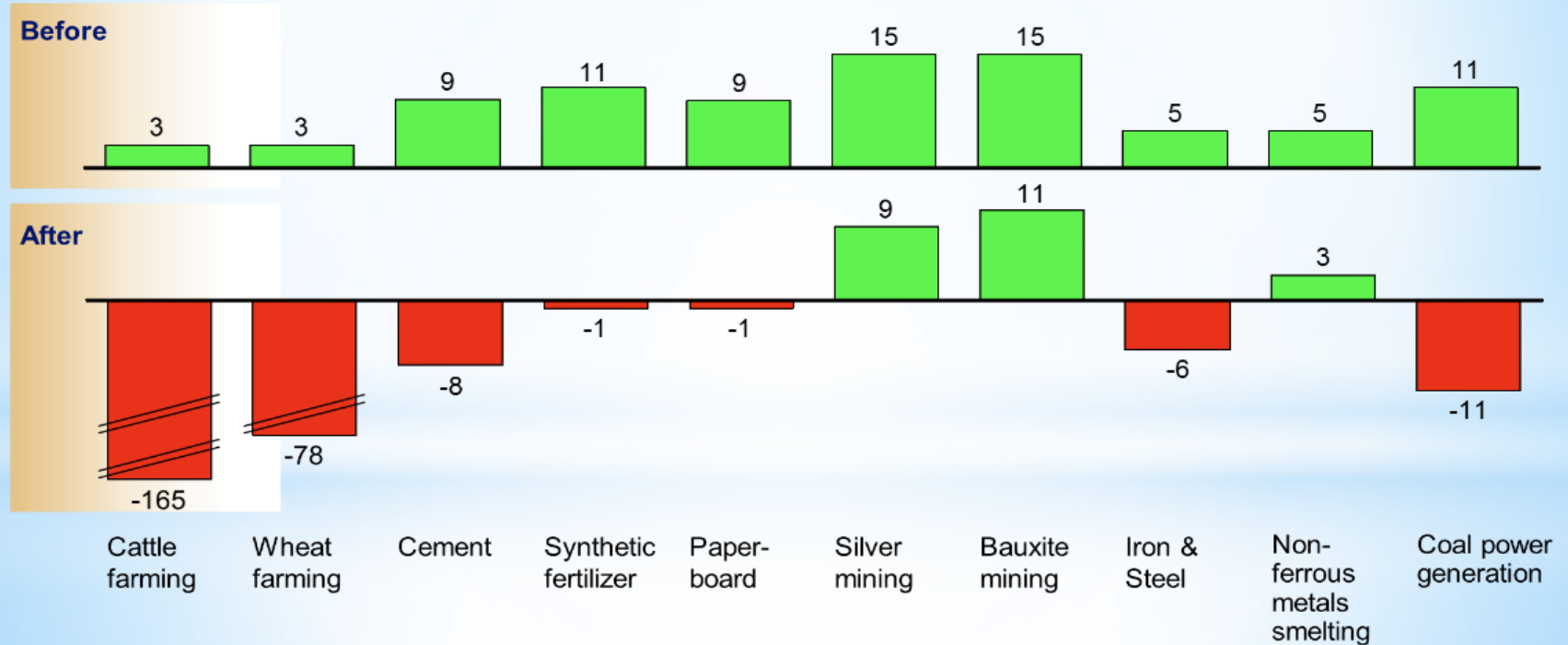
*Herman E. Daly: Invited Address, WB, 30/04/2002*

- *Throughput* - entropic physical flow from nature's sources through the economy and back to nature's sinks - *should be non-declining*. Natural capital should be kept intact.
- Bringing the concept of throughput into the foundations of economic theory does not reduce economics to physics, but it does force the *recognition of the constraints of physical law on economics*.
- How do we know that throughput growth, or even the GDP growth, is not at the margin *increasing illth faster than wealth*, making us poorer than richer?

# EXTERNALITIES - COSTS THAT EXIST, BUT WE DENY THEM

## Negative profit margins in most of the world's raw material industries if natural capital costs are included

Profit margin (EBIT) before and after natural capital costs, based on top-2 companies in each Morgan Stanley Composite Index category, Percent, 2012



# *SUSTAINABLE DEVELOPMENT: DEFINITIONS, PRINCIPLES, POLICIES*

*Herman E. Daly: Invited Address, WB, 30/04/2002*

- Failing to tax away the scarcity rents to nature and letting them accrue as unearned income to favoured individuals has long been a primary source of resentment and social conflict.*
- “Efficiency first” or “Frugality first”? ”Frugality first” induces efficiency as a secondary consequence, “efficiency first” does not include frugality - it makes frugality less necessary, nor does it give rise to a scarcity rent that can be captured and redistributed.*

- **Beyond GDP:** “Good” growth - “Bad” growth - How much of the “growth” in the past actually qualifies for growth?
- **GDP growth rates** - **GDP levels**
- Remember: 10% growth - **doubling** of everything in 7 years!



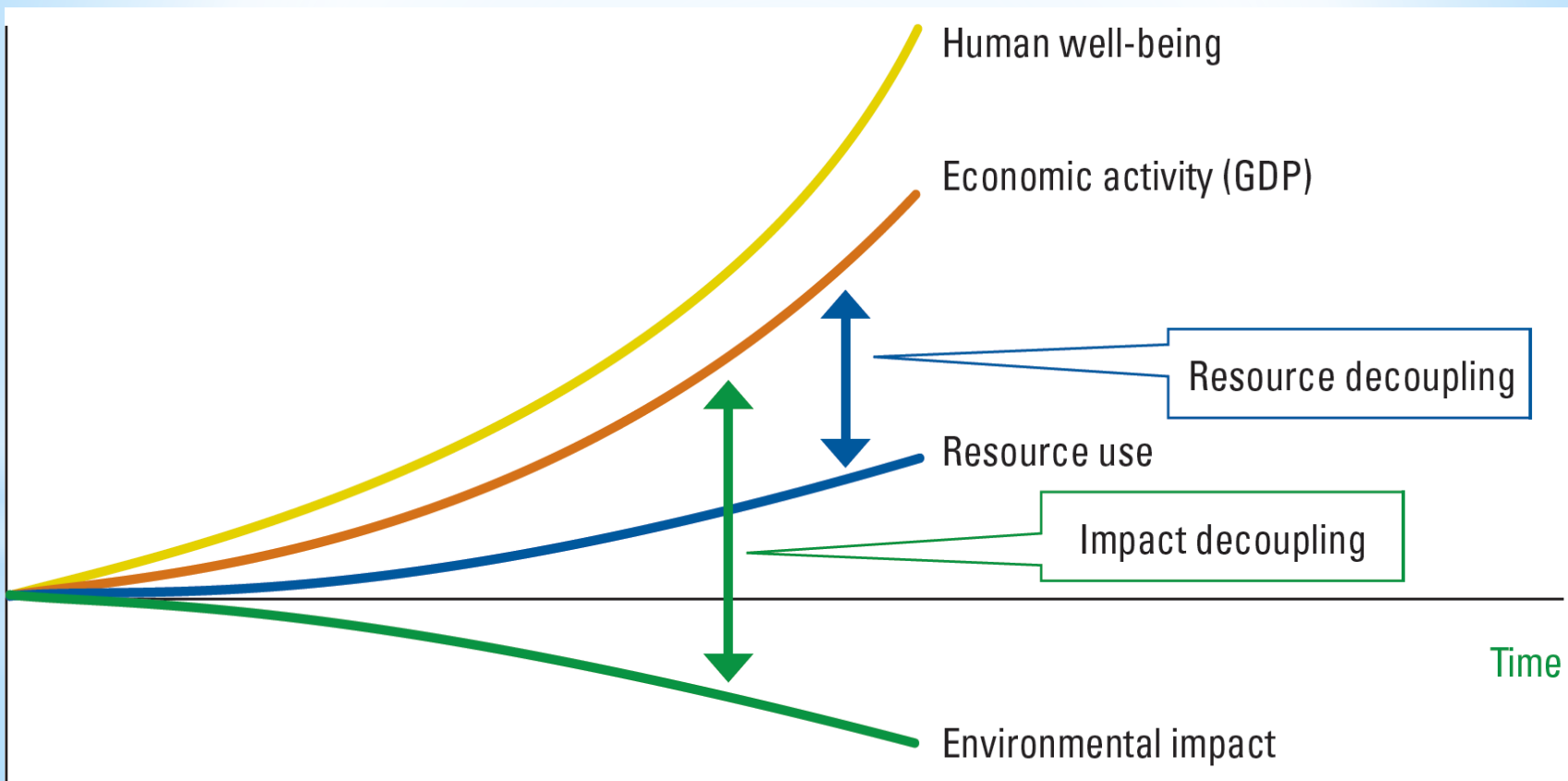


*In the mid-term, except in specific cases,  
resource shortage will not be the core  
limiting factor of our (economic)  
development ...*

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



# DECOUPLING IS THE IMPERATIVE OF MODERN ENVIRONMENTAL AND ECONOMIC POLICY



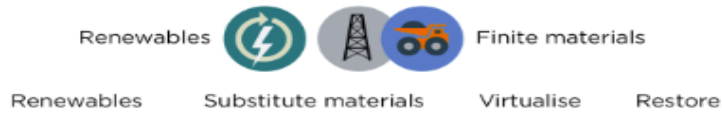


- *Developed economies* will need to adopt strategies that bring their resource consumption down to globally sustainable levels (**ABSOLUTE DECOUPLING**)
- *Developing nations* must strive to improve resource efficiencies and cleaner production processes as their net consumption of natural resources increases for a period until they achieve a societally acceptable quality of life (**RELATIVE DECOUPLING**)



# PRINCIPLE

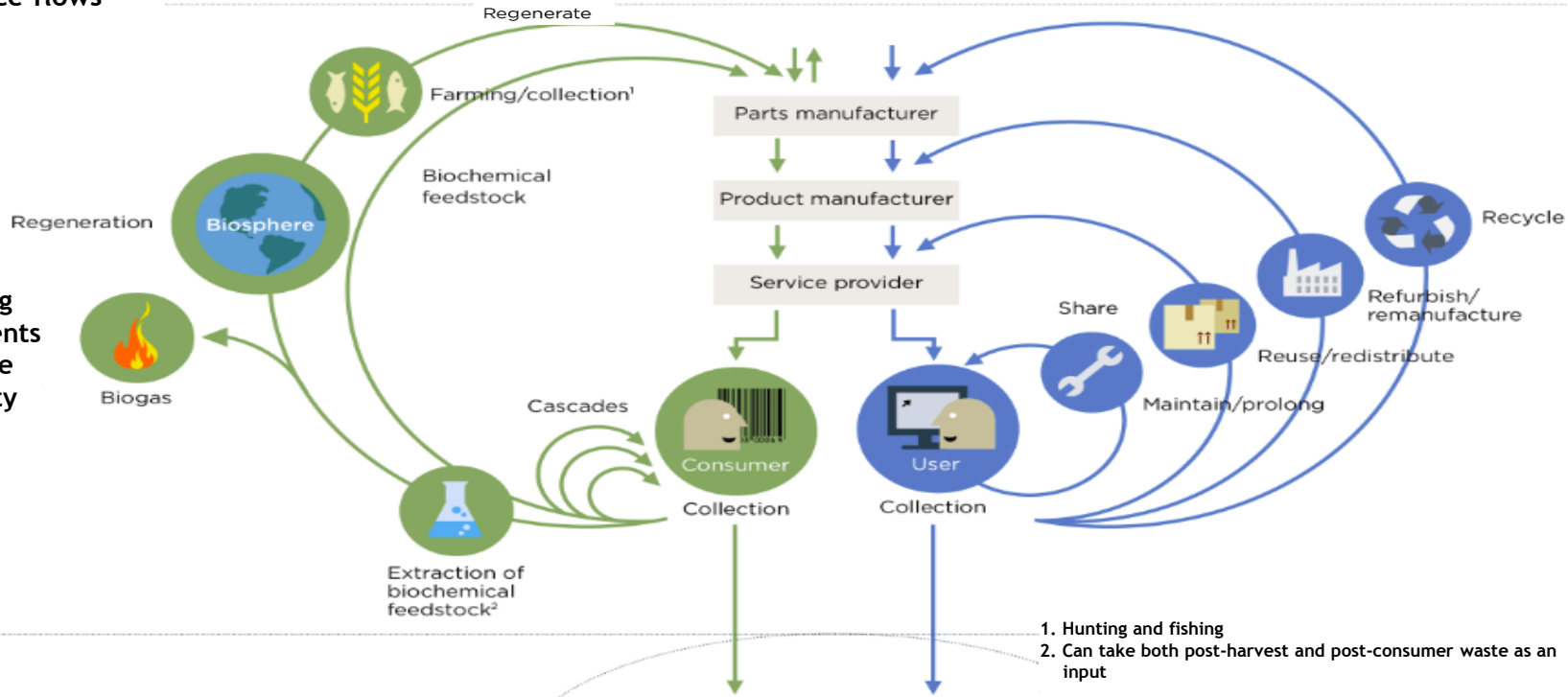
**1**  
 Preserve and enhance natural capital by controlling finite stocks and balancing renewable resource flows



Renewables flow management Stock management

# 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

Minimise systematic leakage and 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)

*SUSTAINABLE, INCLUSIVE, EQUITABLE, 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 PILLARS OF  
SUSTAINABILITY IS**

**NECESSARY  
AND UNAVOIDABLE**



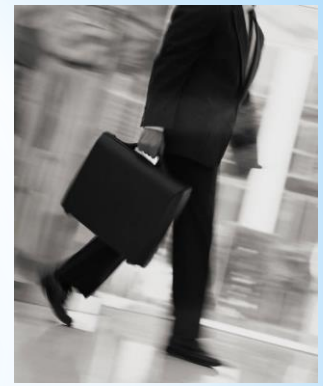
*Any global transition is a major new opportunity for the innovation, new development opportunities, new jobs*

*And alternative ...*

*I would rather not think and talk about it!*

# 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 (financial 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 ...*
- *Example: Recent reaction of financial markets on the announcement of president Trump to relax the financial market rules*

## ***Better regulation***

*is not about less regulation, it is about taking responsibility for public good and creating the conditions for confidence to invest in technologies for the markets of the future*

# UNDERSTANDING SUSTAINABLE PROSPERITY



ESRC Centre for the  
Understanding of  
Sustainable Prosperity



*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.*

***SOCIAL IMPACT***  
***OF UNIVERSITIES***



# SCIENCE

*Steven Senne: Nature - editorial (21/02/2017)*

- *It is right that more scientists should tell stories of the good their research can do (“It is economy, stupid”). But it is more important and urgent than ever that researchers should question **how these stories really end** - and whether too many of the people they claim to act for, don't really get to live happily ever after.*

# SOCIETAL IMPACT OF RESEARCH

Lutz Bornmann: *EMBO Reports* (2012) 13

- The problem actually begins with **defining** the “societal impact of research”
- Most of the research is **primarily concentrated with economic impact**.  
Systematic measurements and indicators of the impact on the social, cultural, political, and organisational dimensions are almost totally absent from the literature - societal impact is rather postulated than demonstrated
- **Research into societal impact is still in the early stages** - there is no distinct community with its own series of conferences, journals or awards
- **Danger** is that readily available indicators will be used for evaluations, even if they do not adequately measure societal impact
- Until reliable and robust methods to assess impact are developed, it makes sense to use **expert panels with relevant experience** like in the peer review process evaluating academic work

# *SUSTAINABLE UNIVERSITY: BEYOND THE THIRD MISSION*

*Jurgis Kazimieras Staniskis: Institute of Environmental Engineering, KTU, 28/09/2016*

## *DIMENSIONS OF PERFORMANCE MANAGEMENT IN THE 'OLD' AND THE 'NEW' ACADEMIA*

### *“OLD” ACADEMIA*

- Few indicators, no individual level measuring*
- Development measurement*
- “Humboldtian”*
- Collegial Ethos*

### *“NEW” ACADEMIA*

- Quantitative indicators, measuring at all organizational levels*
- Judgmental measurement, control*
- “Market oriented”*
- Competitive Ethos*

# CO-CREATION FOR SUSTAINABILITY: SUSTAINABLE UNIVERSITY

*Jurgis Kazimieras Staniskis: Institute of Environmental Engineering, KTU, 28/09/2016*

*The universities should place an explicit emphasis on the process of co-creating physical and permanent transformations as opposed to the creation of scientific knowledge, which per se, doesn't necessarily guarantee action or transformation. „Co-creation for sustainability“ is a systematic synergising of many previously established research and social engagement paradigms and are used to drive any combination of technological, social or environmental transformation to sustainability in a specific location, region or societal sub-system.*

# KEY PROPERTIES OF CO-CREATION FOR SUSTAINABILITY

*Jurgis Kazimieras Staniskis: Institute of Environmental Engineering, KTU, 28/09/2016*

## **RESEARCH AND SOCIAL ENGAGEMENT PARADIGMS**

*Technology Transfer,  
Trans-disciplinary,  
Cooperative Extension  
System,  
Service Learning,  
Regional Development,  
Urban Reform,  
Living Laboratories*

**MERGING OF  
PARADIGMS AND  
INTEGRATION OF  
SUSTAINABLE  
DEVELOPMENT  
VALUES**

## **CO-CREATION FOR SUSTAINABILITY**

*Collaborating with diverse social actors to create societal transformations in the goal of materializing sustainable development in a specific location, region of societal sub sector*

# “GOOD” AND “BAD” UNIVERSITIES?

- *Is the focus on highly-cited and international papers reinforcing the division of universities in Europe in ‘good’ and ‘bad’ and **undermining the crucial role of educating students**, and creating a disincentive for the professors and students to be involved in social innovation, societal impact beyond start-ups?*
- *If yes, than it would be necessary to **revise the indicators used for evaluating and ‘rank’ what is a ‘good’ and ‘bad’ university***

# UNIVERSITIES AND THE ROLE OF EU

- ***Social innovation** is moving up the policy agenda. Also linked to the importance of intangibles and Living Labs for new innovative solutions. Universities could have a key role here, if professors and students are incentivized.*
- *Luc Soete launched a powerful idea to offer **universities in Europe** a possibility to apply for a **European Statute**. At a voluntary basis, a university could apply for such a Statute showing its engagement in implementing European policies, such as mobility, openness, social and economic outreach, etc. The EU (RTD and EAC) could then actively engage in an institutional partnership.*

***LEADERSHIP,  
GOVERNANCE***

***AND THE ROLE OF EUROPEAN UNION***



# THE DAWN OF THE SYSTEM LEADERSHIP

*Peter Senge, Hal Hamilton, John Kania*

*Stanford Social Innovation Review, Winter 2015*

- We face a host of **systemic challenges beyond the reach of existing institutions and their hierarchical authority structures**. Problems like climate change, destruction of ecosystems, growing scarcity of water, youth unemployment, embedded poverty and inequity require unprecedented collaboration among different organisations, sectors and even countries.
- We are at the **beginning of the beginning** how to catalyse and guide systemic change at a scale commensurate with the scale of problems we face, and all of us see but dimly.

# AT LAST, LIBERALS ARE WAKING FROM A LONG DREAM

Yuval Noah Harari: FT, 06/01/2017

- The fact that *western elites are waking from their dream* of the end of the history may actually increase our chances of confronting global problems successfully. Part of that dream was the notion that these elites knew best what is good for the humanity.
- The coming years might well be characterised by *intense soul-searching* and by attempts to formulate new social and political visions.

# *THIS IS THE MOST DANGEROUS TIME FOR OUR PLANET*

*Stephan Hawking, The Guardian 21/12/2016*

- *This was a **cry of anger** of people who felt they had been abandoned by their leaders.*
- *What matters now, far more than the choices made by these two electorates, is **how the elites react**. Should we, in turn, reject these votes as outpourings of crude populism that fail to take account of the facts, and attempt to circumvent or circumscribe the choices that they represent? ... This would be a terrible mistake.*
- *The concerns underlying these votes about the economic consequences of globalisation and accelerating technological change are **absolutely understandable**... We are living in a world of widening, not diminishing, financial inequality, in which, many people can see not just their standard of living, but their ability to earn a living at all, disappearing.*

# *THE DAWN OF THE SYSTEM LEADERSHIP*

*Peter Senge, Hal Hamilton, John Kania*

*Stanford Social Innovation Review, Winter 2015*

*Three core capabilities that system leaders develop in order to foster collective leadership*

- Helping people see the larger system and build a shared understanding of complex problems.*
- Fostering reflection and more generative conversations*
- Shifting the collective focus from reactive problem solving to co-creating the future*

# GOVERNANCE

Marco Steinberg

- *Governments should be structured around the problems* (Integration of policies, for example sustainable food chain)
- *We need to move policy from innovative parts to innovative wholes* (Many innovative parts do not create innovative wholes and no one in the government is looking at the big picture)
- *Administrative endeavour should be changed to a creative endeavour* (Danger of administrative approach - one might improve the wrong things)
- *Embedding a new capability, engaging everybody and the ownership* (We should replace the complaints box with ideas box, we should aim at "impossible" projects and force ourselves to rethink the principles)
- *We need a new structure, a new logic, a new culture, a new social contract*

# THE GLOBAL GOALS

For Sustainable Development





International  
Resource  
Panel



***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.*



International  
Resource  
Panel

# SDGs DIRECTLY DEPENDENT ON NATURAL RESOURCES





*Implementation of SDGs*

*Societal Challenges*



*Defining Research Agenda*

*Monitoring Delivery of the SDGs*

*Innovation and Business Case*

# EUROPEAN UNION

*EPC, Janis A. Emmanouilidis and Fabian Zuleeg:*

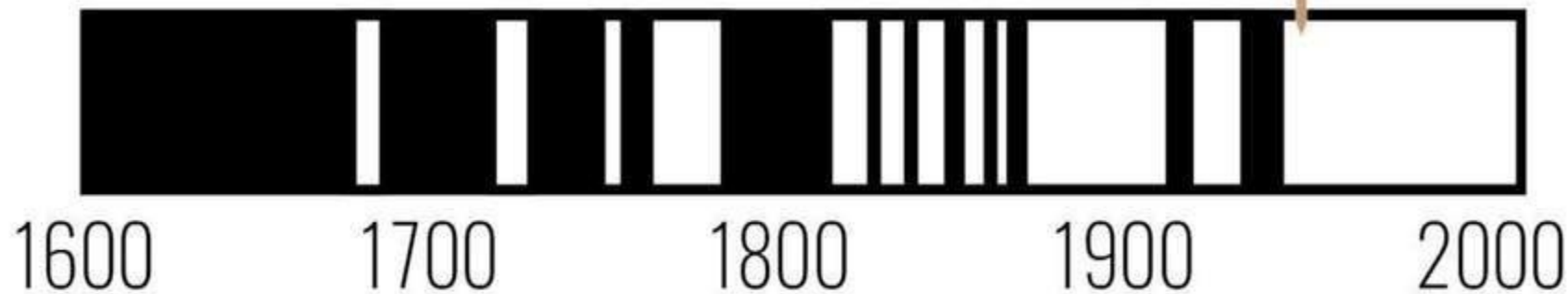
*EU@60 - Countering a regressive and illiberal Europe, 10/2016*

- *Despite **some remarkable steps forward and resilience**, which would have been unthinkable before the storm struck, none of the complex and interlinked crises that have buffeted the Union have been structurally resolved and the **EU and its members are suffering from the collateral damage caused by the poly-crisis**: fragmentation, distrust, increased divergence, social and political cleavages, inability to fairly balance national interests, reputational damage, as well as frustration with today's Union.*

# European History



□ Peace    ■ War



Major conflicts of original EU members

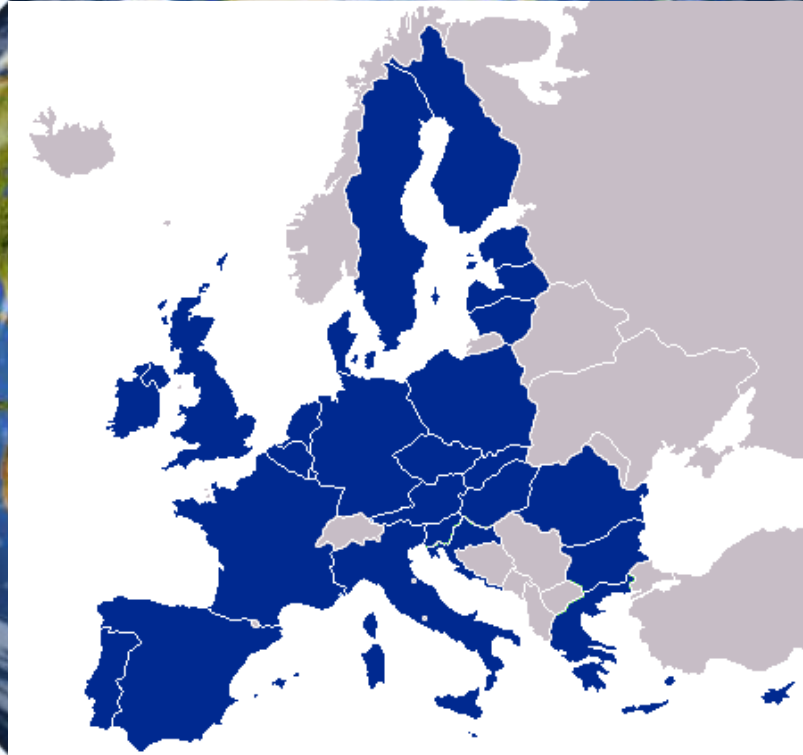
# EUROPEAN UNION

*EPC, Janis A. Emmanouilidis and Fabian Zuleeg:*

*EU@60 - Countering a regressive and illiberal Europe, 10/2016*

- *Democratic forces committed to an open, values-driven Europe need to **find ways to protect citizens from the negative aspects of globalisation** while abiding by Europe's fundamental principles and values when dealing with the outside world*
- *At the end of day, it is not about the EU but **about something much more significant**: it is about our way of life; it is about being open, cooperative, inclusive, free, and internationalist societies.*

# *GOVERNANCE*





***TO CONCLUDE ...***

# *SUSTAINABLE UNIVERSITY: BEYOND THE THIRD MISSION*

*Jurgis Kazimieras Staniskis: Institute of Environmental Engineering, KTU, 28/09/2016*

## *PARADOX OF TIME*

- We've write more, but learn less, we plan more, but accomplish less;*
- We have learned to rush, but not to wait;*
- We have multiplied our possessions, but reduced our values. We talk too much, love too seldom and hate too often.*

# UNIVERSITIES SUMMARY

- Science shall be *free*, as stipulated in the EU charter of fundamental rights.
- Being free should not prevent science from *being relevant and deliver positive impact to society* as long as the *scientific method* is respected.
- *Framing* research and innovation *through societal challenges* is a promising way of promoting better and more relevant science.
- There is clearly *no shortage of societal challenges*.



# UNIVERSITIES SUMMARY

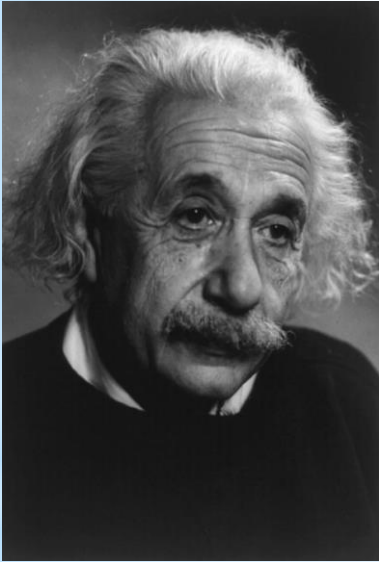
- The **SDGs** present a new opportunity, a global framework but also a moral call to take this forward. STI is central to the implementation of the 2030 agenda.
- The **nature of STI**, also in response to SDGs, **is changing: more systemic** aiming at economic and societal transformation, more **transdisciplinary** (co-design of agendas with citizens, co-creation of solutions with end-users etc.).
- The SDGs are an invitation for **international scientific collaboration**. Europe is a pioneer of collaborative, challenge-driven, solutions-oriented research.

# UNIVERSITIES SUMMARY

- *Universities* should be the **vanguard of such excellent, socially relevant science and innovation**. This will require the development of **new metrics** for monitoring research output and quality (beyond publications) and **alternative reward schemes** for researchers. This is part of the EU's **open science agenda**.
- *If universities can drive innovation in science to make it socially relevant and impactful, then we can be (more) confident that a **sustainable future is possible**.*

# SCIENCE - POLICY RELATION

**ALBERT EINSTEIN**

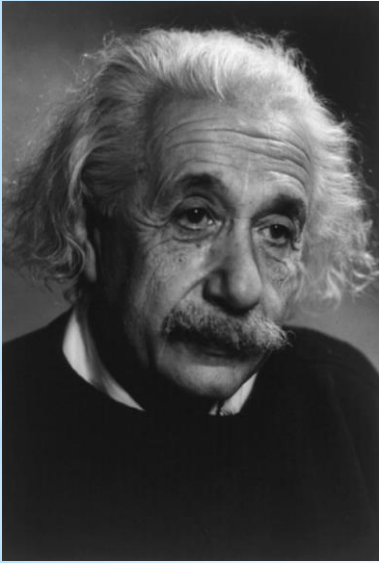


*When asked why it is that mankind has stretched so far as to discover the structure of the atom, but we have not been able to devise the political means to keep the atom from destroying us he replied:*

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

# ABOUT OUR TIME ...

ALBERT EINSTEIN



*We can not solve our problems with the same thinking we used when we have created them*

*Insanity - doing the same things over and over again and expecting different results*

**EVERYTHING HAS TO CHANGE TO REMAIN THE SAME**

*The future has already arrived,  
and it is called present!*



International  
Resource  
Panel



# THANK YOU

[www.unep.org/resourcepanel](http://www.unep.org/resourcepanel)