



World Academy of Art and Science



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## Transition to a New Society – Resource Efficiency Perspective

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*International conference*  
**Transition to a New Society**

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# Introduction



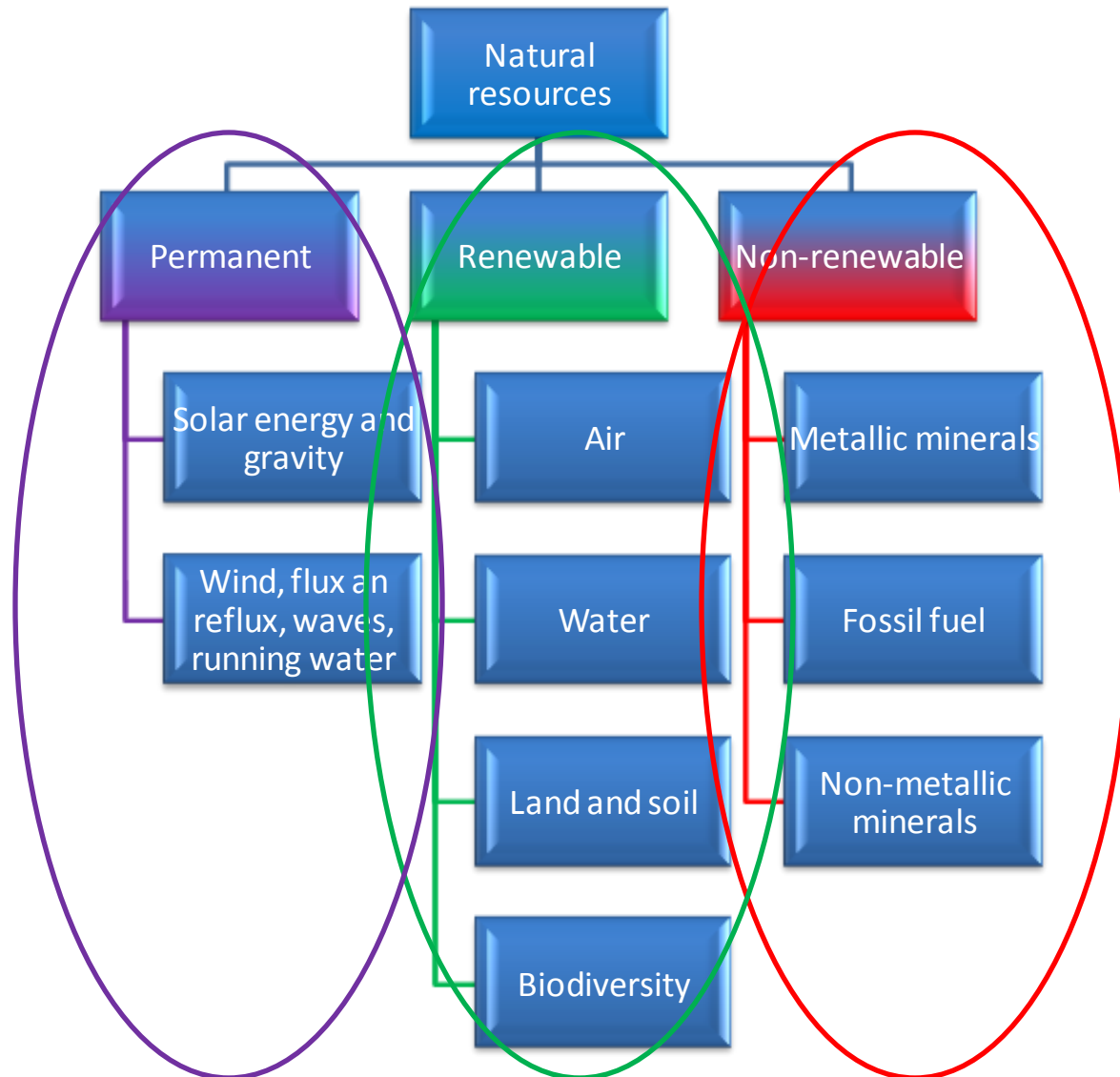
*"The really conflicting limits are not material or technological, but conceptual. The real barriers are the limits imposed by prevailing ideas and values. We are unwitting and unknowing prisoners of our own conceptions."*

Ivo Šlaus, Orio Giarini & Garry Jacobs

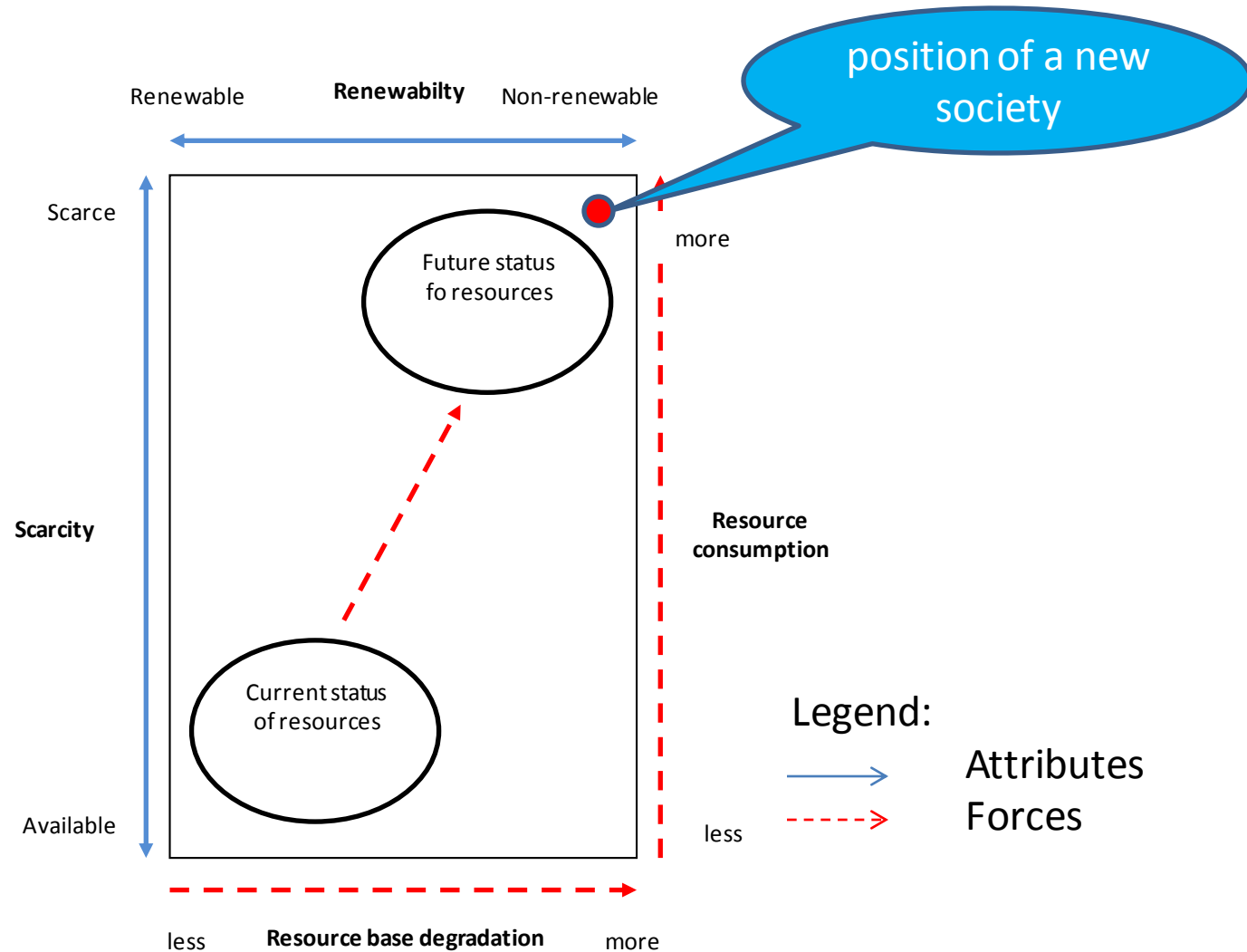
# Core issues

- Paradigm → concepts and notions → strategies and tactics of socio-economic development
- Limits of linear economy vs. benefits of circular economy

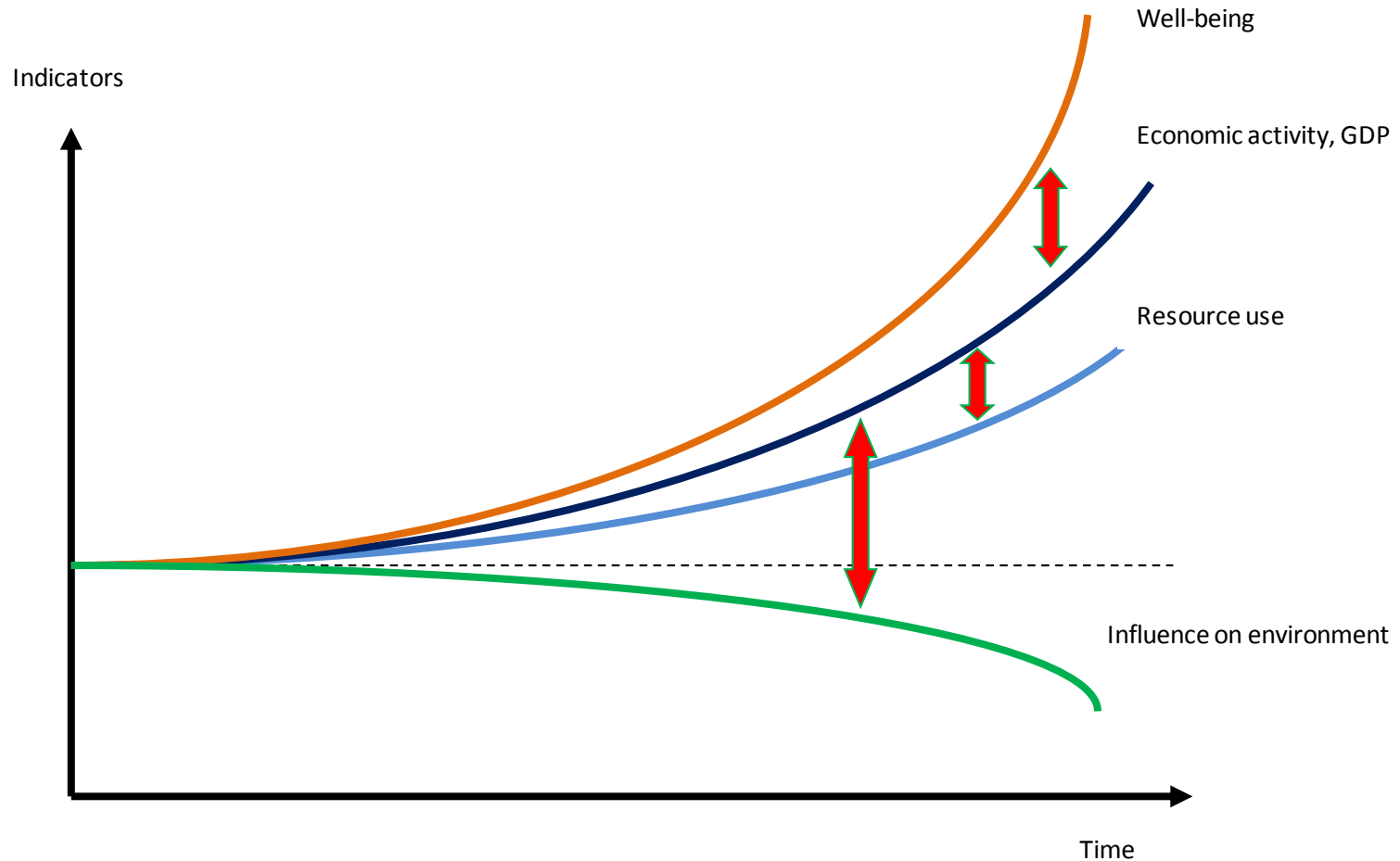
# Classification of natural resources



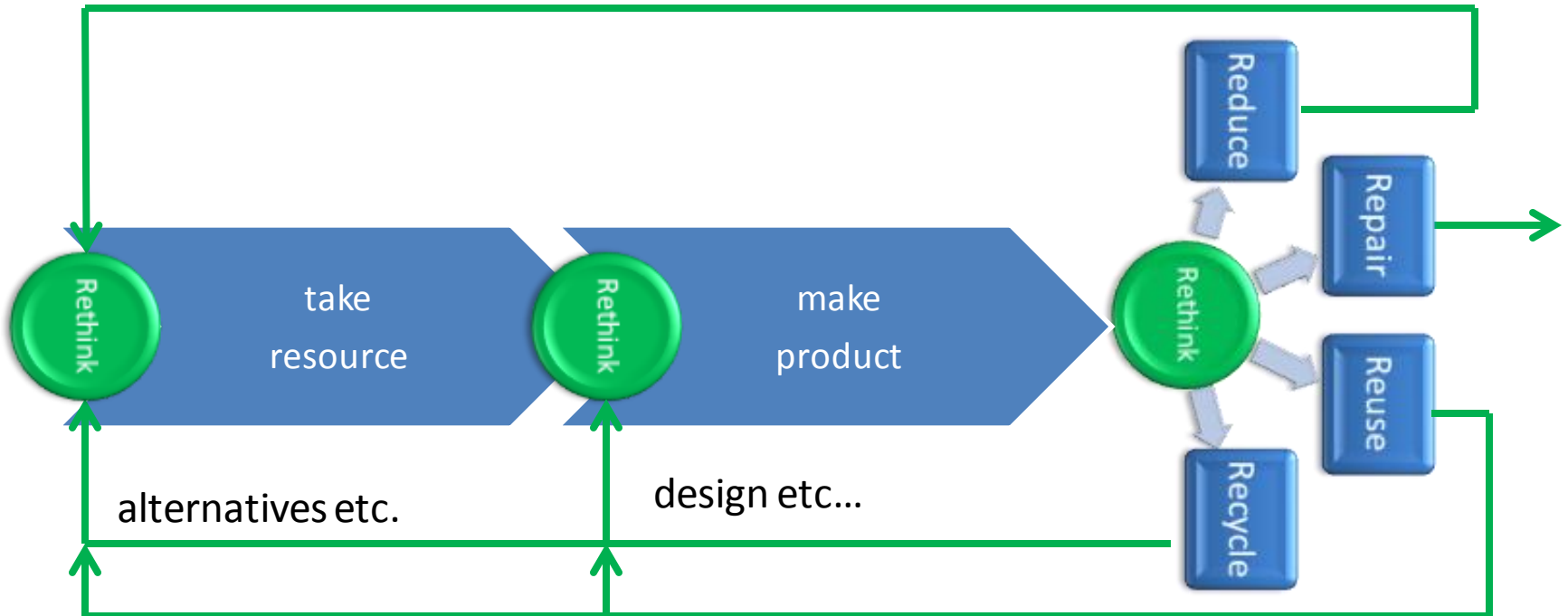
# Future status of natural resources



# Different types of decoupling effects



# Linear and circular model of economic activity



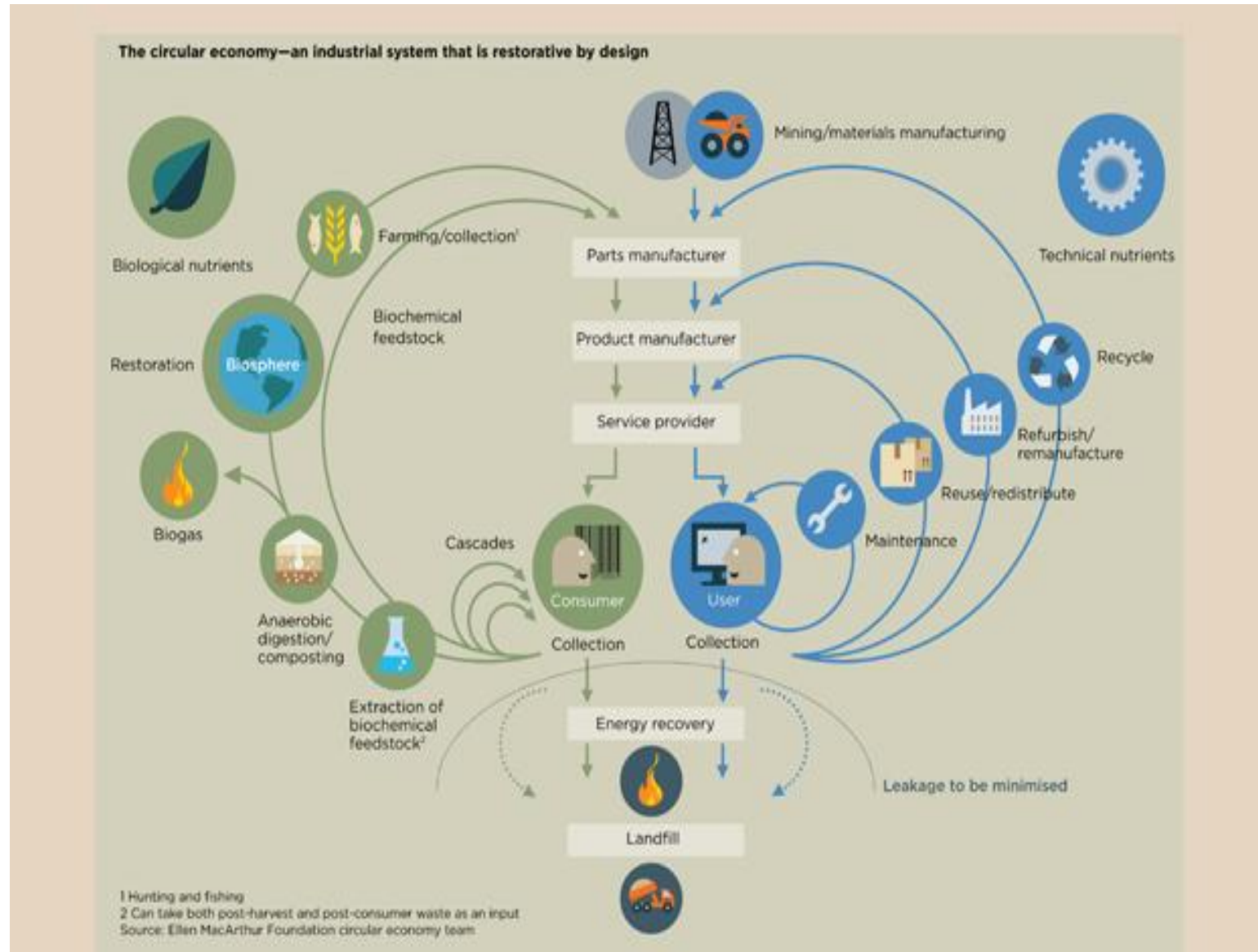
# Philosophy of CE and it's roots

- “...long-term goal compatible with economic growth, principle of sustainability and zero waste “ Kenneth Boulding, 1966
- Industrial Ecology
- Biomimicry
- Blue Economy
- Natural Step
- Cradle to Cradle





# Model of circular economy

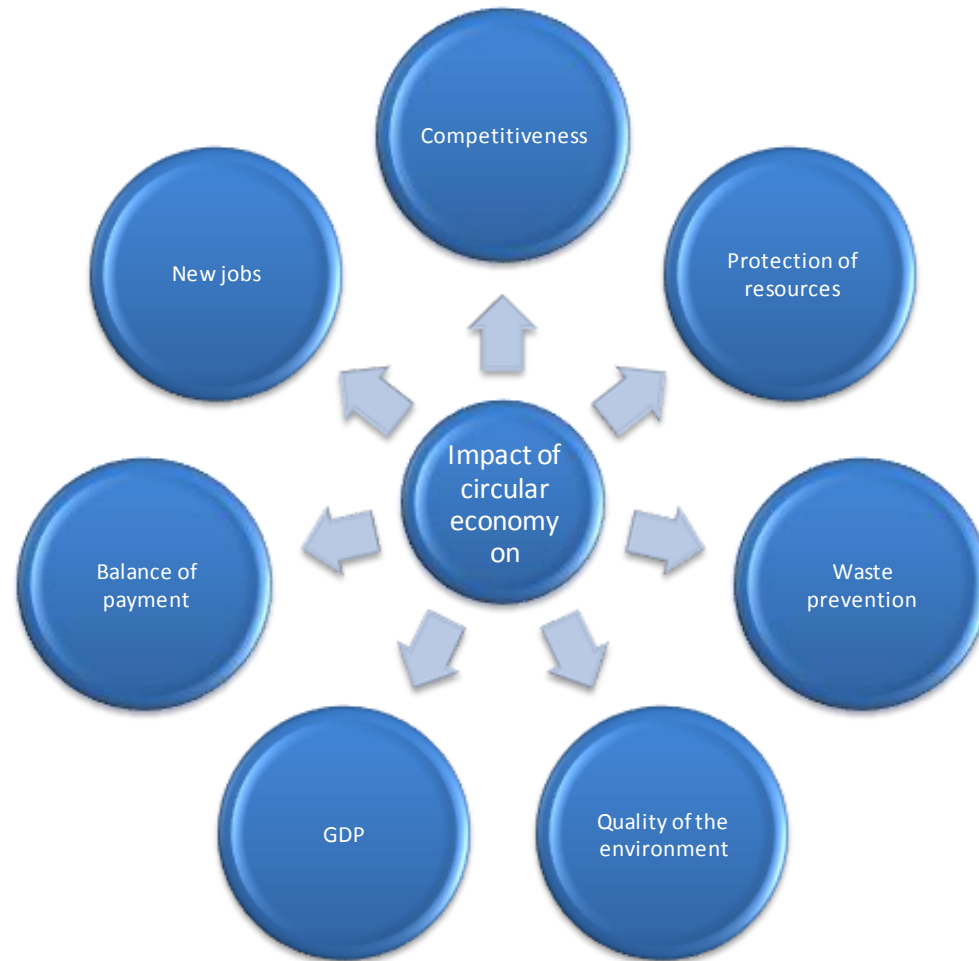
according to the *Ellen MacArthur Foundation*



# Comparative overview of the LE | CE

<b>LINEAR ECONOMY</b> 	<b>CIRCULAR ECONOMY</b> 
Current paradigm of economic growth	New paradigm of economic growth
Non-sustainable	sustainable
Rising use of primary resources	Falling use of primary resources
Unstable prices of resources	Stable prices of resources
Volatile resource supply chains	More stable resource supply chains
Waste production	Waste reduction
Rising production costs	Falling production costs (rebound effect?)

# Positive effects of CE



# Problems with implementation of CE

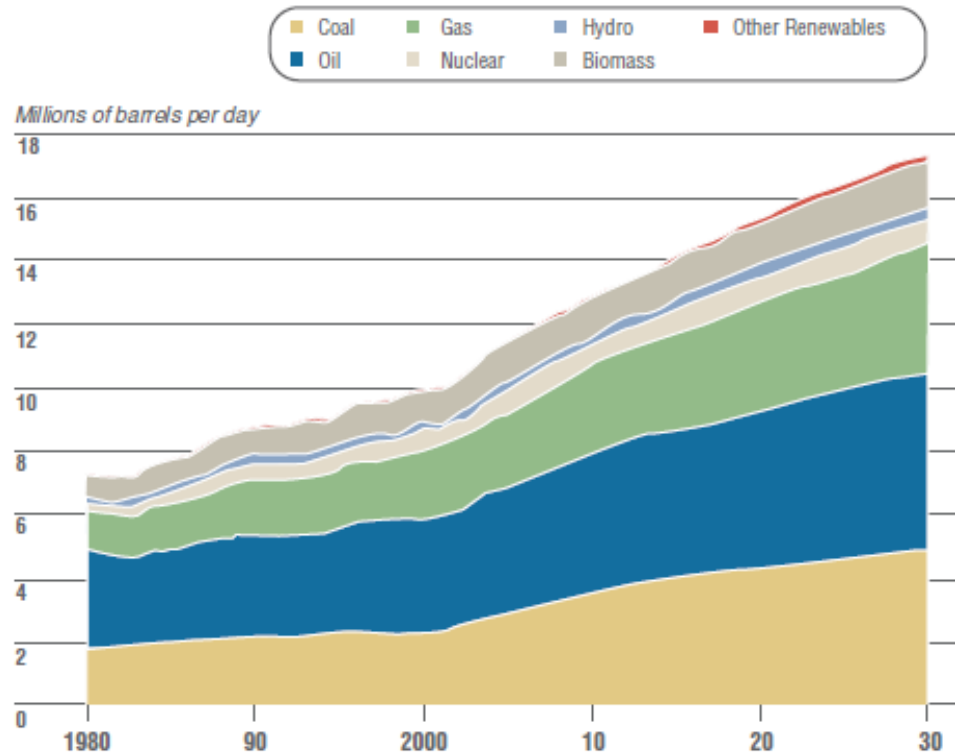
- Incoherent concept,
- Inadequate policies,
- Unstable recycilate markets,
- Characteristics of recyclates,
- Transitional costs,
- Lack of consumers enthusiasm.

# Some data...

- Total demand for resources is growing at a concerning speed due to the increase in the size of population and improvement of the standard of living. In the 20<sup>th</sup> century the size of the global population increased about 4 times, consumption of fossil fuels increased about 12 times, consumption of water 9 times; the extraction of ore and minerals 23 times and overfishing even 35 times. Data from the *Analysis for Preparation of the Roadmap for Resource-Efficient Europe, part I* (Commission Staff Working paper SEC(2011) 1067 final, *Analysis associated with the Roadmap to a Resource Efficient Europe, Part I*)
- Global Trends 2025: A Transformed World, National Intelligence Council, November 2008

# Are trends our friends?

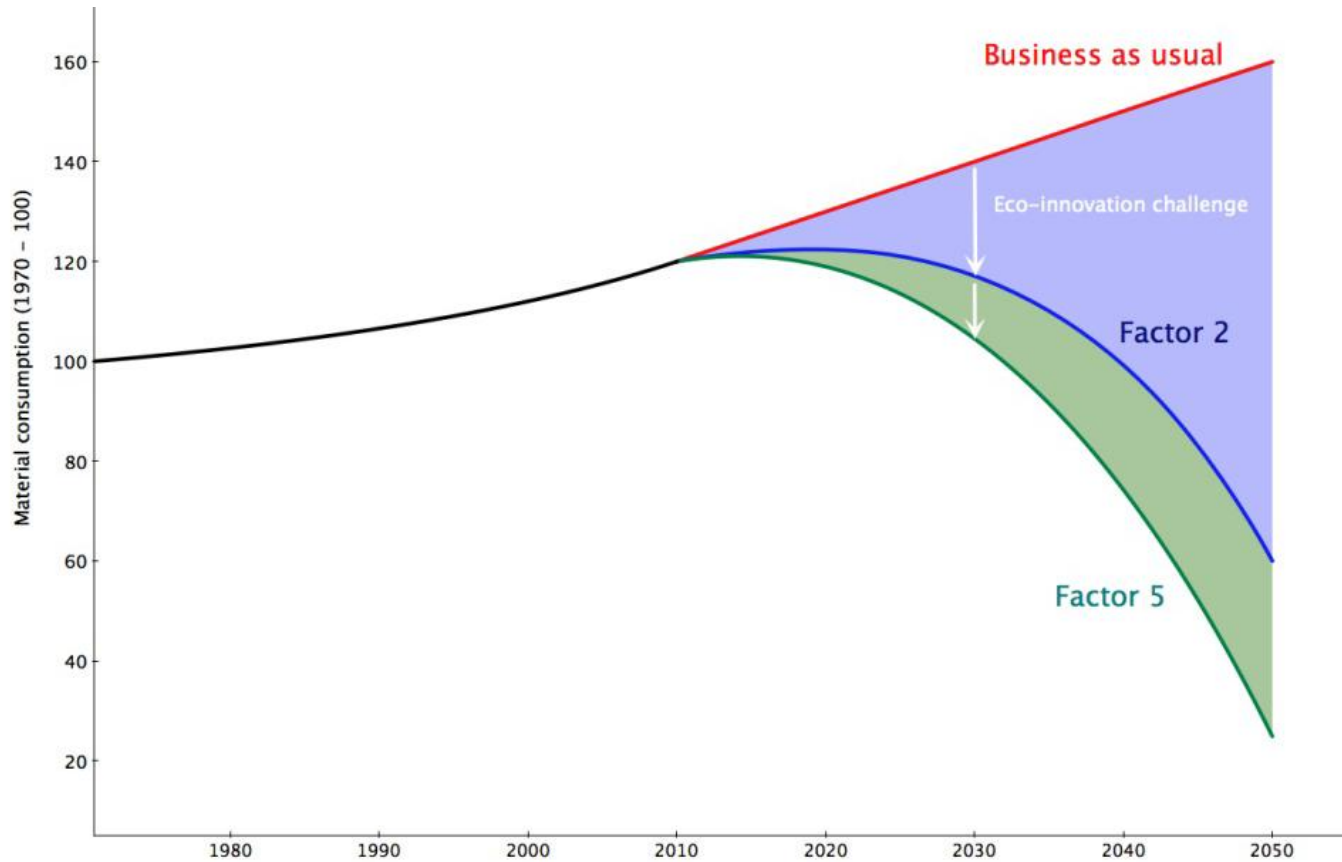
Breakdown of Likely Energy Sources



Note: Global demand grows by more than half over the next quarter of a century, with coal use rising in absolute terms.

Source: PFC Energy International.

# Are trends our friends? Cont...



# Targets

## Material use, DMC

- 2020: -30%
- 2050: -70%

## EMC

- 2020: > -30%
- 2050: > -70%

## Energy use and climate

### Gross Inland Energy Consumption\*

- 2020: -20%
- 2050: -50%

### GHG emissions\*\*

- 2020: -20%
- 2050: -95%

### Water use Water Abstraction (indicator development) Water Exploitation Index

- 2020: <20%
- 2050: <10%

## Land use Actual Land Demand

- 2020, 2050: zero net demand offoreign land

### Human Appropriation of Net Primary Production

- 2020: stabilisation at 50%
- 2050: reduction to 40%



# Conclusions

- New development paradigm(non-linear)
- GDP not adequate measure of socio-economic development
- Psychological decoupling – well-being vs. money
- Resource scarcity – quantitative and qualitative aspects
- Circular economy and resource efficiency