

# Europe's emerging transition agenda

Making sense of the Green, Blue, Circular, Resource Efficient, Low Carbon, Smart economy?



Budapest, 29 June 2016

Presentation by Dr. Hans Bruyninckx, Executive Director, EEA

European Environment Agency



# The European Environment Agency

SYNTHESIS  
REPORT

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The EEA is an EU agency that operates at the interface of science and policy.

With a network of more than 300 institutions in 39 European countries, the EEA provides timely, reliable and relevant information to support sustainable development.

EEA work is targeted at EU institutions, EEA member countries, civil society and the general public.



EEA coverage

Member countries

Cooperating countries

\*Kosovo under UNSCR 1244/99



# The key challenge for the 21st century

SYNTHESIS REPORT

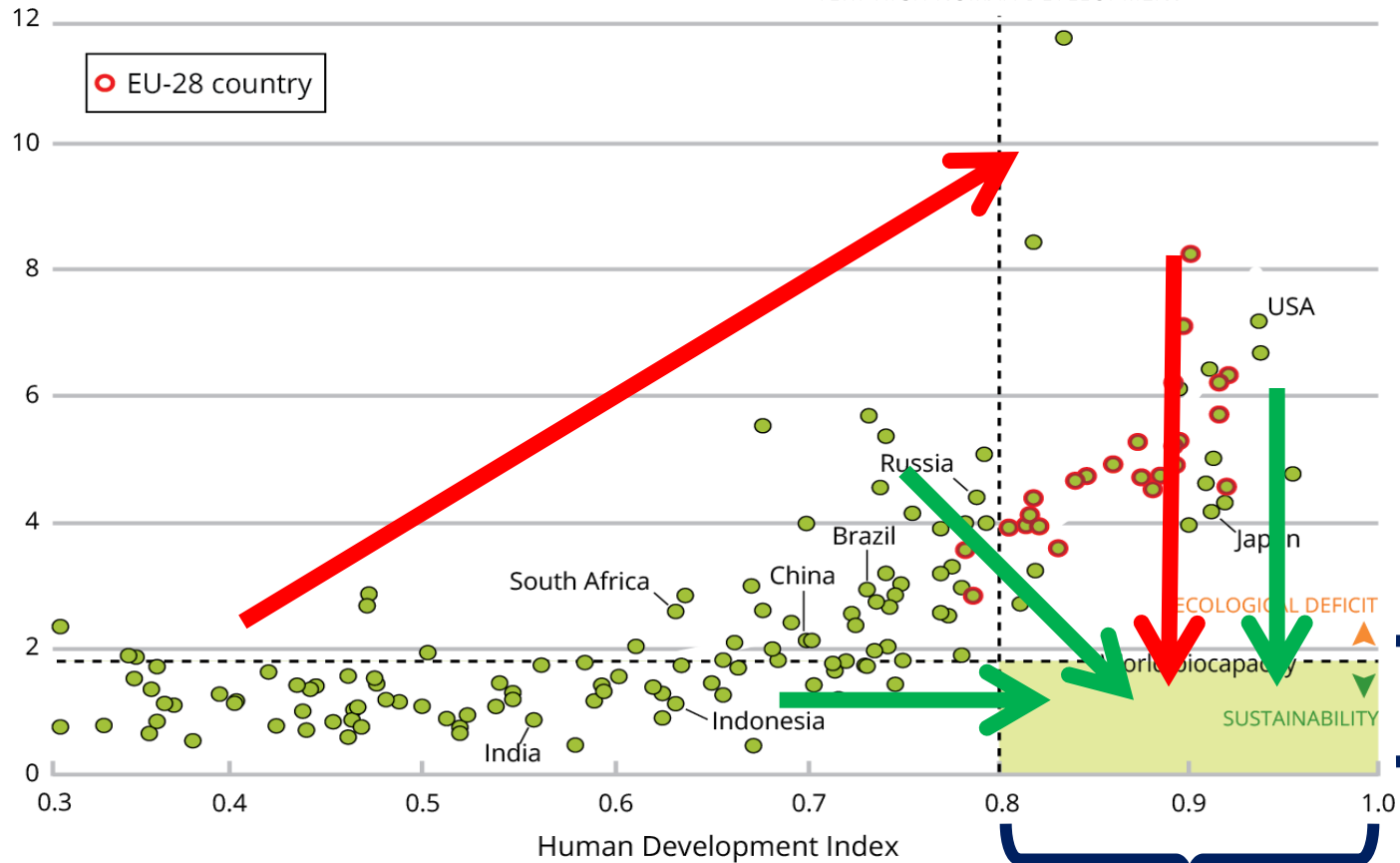
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Ecological footprint  
(hectares per person per year)



(Global Footprint Network, 2012; UNDP, 2014)

# Socio-economic advances, yet failing environmental action(?)



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“The Millennium Development Goals (MDGs) have been the most successful global anti-poverty push in history.”

Ban Ki Moon, MGD report 2013



“Our resource base is in serious decline, with continuing losses of forests, species and fish stocks, in a world already experiencing the impacts of climate change.”

Ban Ki Moon, MDG report 2013



# Institutional vs environmental developments

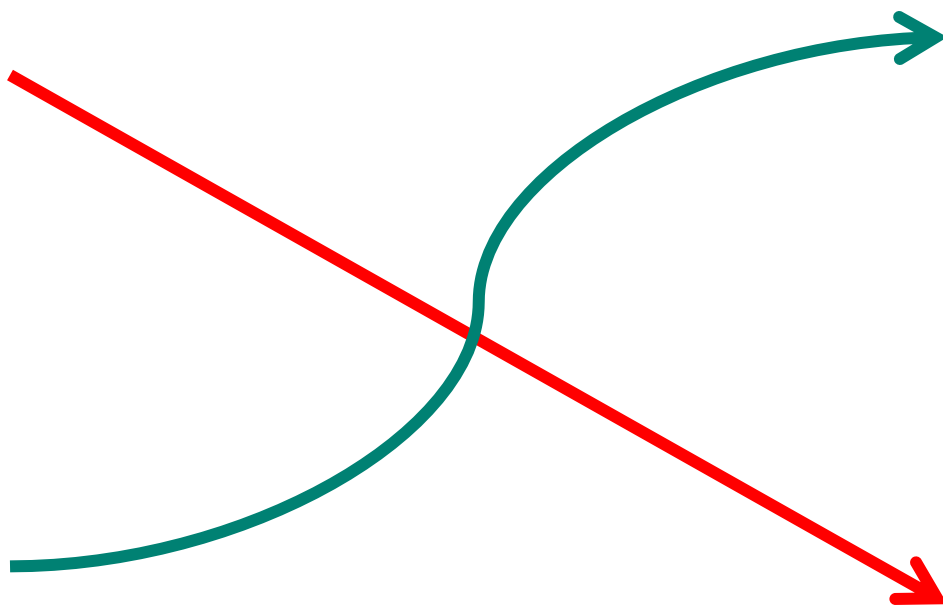
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Different explanations:

- Counterfactual
- Implementation GAP
- Improve regimes
- Time lag effect
- Institutional solutions don't address the core issues!



# The European environment – state and outlook 2015 (SOER 2015)

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A comprehensive assessment of past trends and future outlooks.

SOER 2015 informs policy implementation and reflects on opportunities to recalibrate policies, knowledge, investments and innovations in line with the 2050 vision of the 7th EAP.

## SOER 2015 Synthesis report

## SOER 2015 Assessment of global megatrends

**Global  
megatrends**

11 briefings

**European  
briefings**

25 briefings

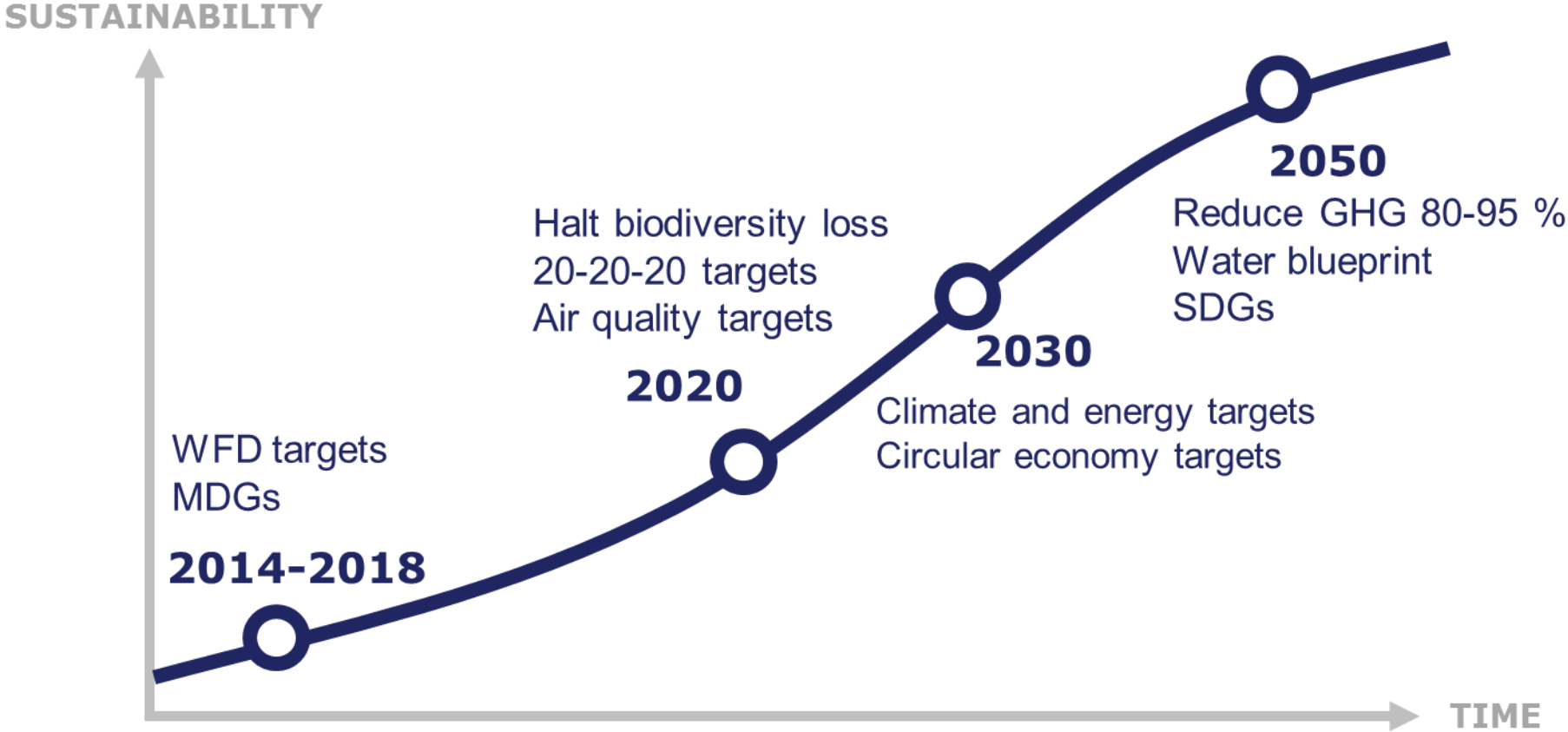
**Cross-country  
comparisons**

9 briefings

**Countries and  
regions**

39+3 briefings

# The policy context



# Vision of the 7th Environment Action Programme

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**‘In 2050, we live well, within the planet's ecological limits.**

Our prosperity and healthy environment stem from an innovative, **circular economy** where nothing is wasted and where natural resources are managed sustainably, and **biodiversity** is protected, valued and restored in ways that enhance our society's **resilience**. Our **low-carbon** growth has long been decoupled from resource use, setting the pace for a global safe and sustainable society.’

Source: 7th EU Environment Action Programme

European Environment Agency





# Sustainability revisited

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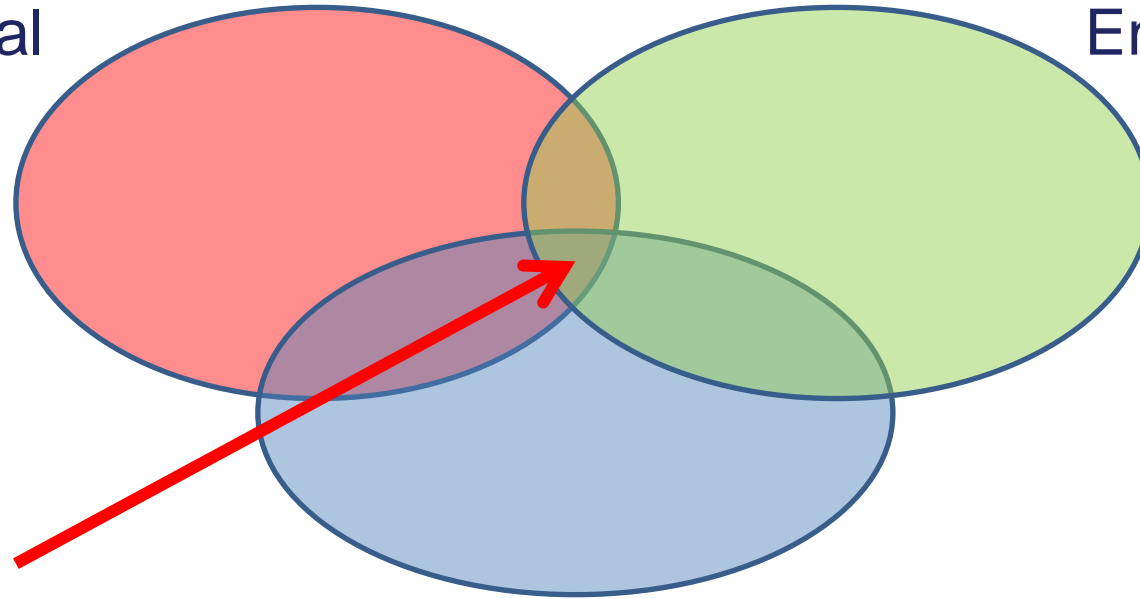
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Social

Environment



Sustainable  
development?

**Of course not!**

# Living well, within environmental limits

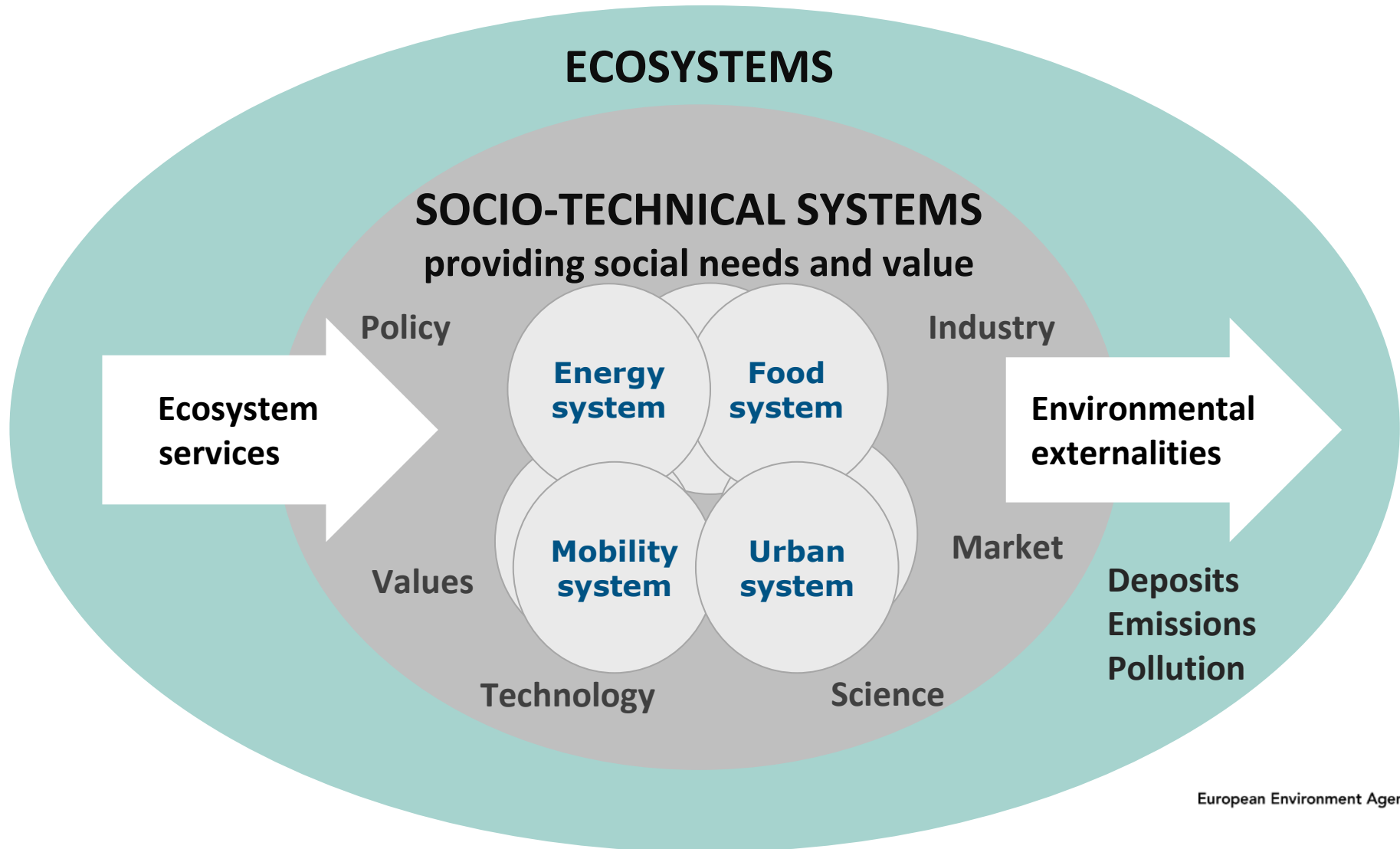
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# Key messages from SOER 2015

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- **Policies have delivered** substantial benefits for the environment, economy and people's well-being
- Europe faces persistent and emerging challenges linked to **production and consumption systems**, and the rapidly changing **global context**
- Achieving the 2050 vision requires system **transitions**, driven by more ambitious actions on policy, knowledge, investments and innovation
- Doing so presents major **opportunities** to boost Europe's economy and employment, putting Europe at the frontier of science and innovation



# Thematic priority objective 1: Protecting, conserving and enhancing natural capital

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	Past (5–10 year) trends	20+ years outlook	Progress to policy targets
➤ Terrestrial and freshwater biodiversity			☐
➤ Land use and soil functions			No target
➤ Ecological status of freshwater bodies			☒
➤ Water quality and nutrient loading			☐
➤ Air pollution and its ecosystem impacts			☐
➤ Marine and coastal biodiversity			☒
➤ Climate change impacts on ecosystems			No target

Improving trends dominate		Largely on track	
Trends show mixed picture		Partially on track	
Deteriorating trends dominate		Largely not on track	

Source: EEA. SOER 2015 Synthesis report.

# Thematic priority objective 2: Resource efficiency and the low-carbon economy

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	Past (5–10 year) trends	20+ years outlook	Progress to policy targets
➤ <b>Material resource efficiency and material use</b>	Yellow	Yellow	No target
➤ <b>Waste management</b>	Green	Yellow	□
➤ <b>Greenhouse gas emissions and climate change mitigation</b>	Green	Red	✓ / ✗
➤ <b>Energy consumption and fossil fuel use</b>	Green	Red	✓
➤ <b>Transport demand and related environmental impacts</b>	Yellow	Red	□
➤ <b>Industrial pollution to air, soil and water</b>	Green	Yellow	□
➤ <b>Water use and water quantity stress</b>	Yellow	Yellow	✗

Improving trends dominate



Trends show mixed picture



Deteriorating trends dominate



Largely on track



Partially on track



Largely not on track



Source: EEA. SOER 2015 Synthesis report.



# Thematic priority objective 3: Safeguarding from environmental risks to health

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	Past (5–10 year) trends	20+ years outlook	Progress to policy targets
➤ Water pollution and related environmental health risks	Improving trends dominate	Trends show mixed picture	Largely on track / Partially on track
➤ Air pollution and related environmental health risks	Trends show mixed picture	Trends show mixed picture	Partially on track
➤ Noise pollution (especially in urban areas)	Trends show mixed picture	/	Partially on track
➤ Urban systems and grey infrastructure	Trends show mixed picture	Trends show mixed picture	No target
➤ Climate change and related environmental health risks	Deteriorating trends dominate	Deteriorating trends dominate	No target
➤ Chemicals and related environmental health risks	Deteriorating trends dominate	Trends show mixed picture	Partially on track / Largely not on track

Improving trends dominate  
Trends show mixed picture  
Deteriorating trends dominate



Largely on track  
Partially on track  
Largely not on track



Source: EEA. SOER 2015 Synthesis report.



# The overall picture: Efficiency improvements have not secured long-term resilience

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Source: EEA. SOER 2015 Synthesis report.

# Understanding past trends and future outlooks

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Two major factors explain the uneven progress and prospects:

## 1. The changing global context

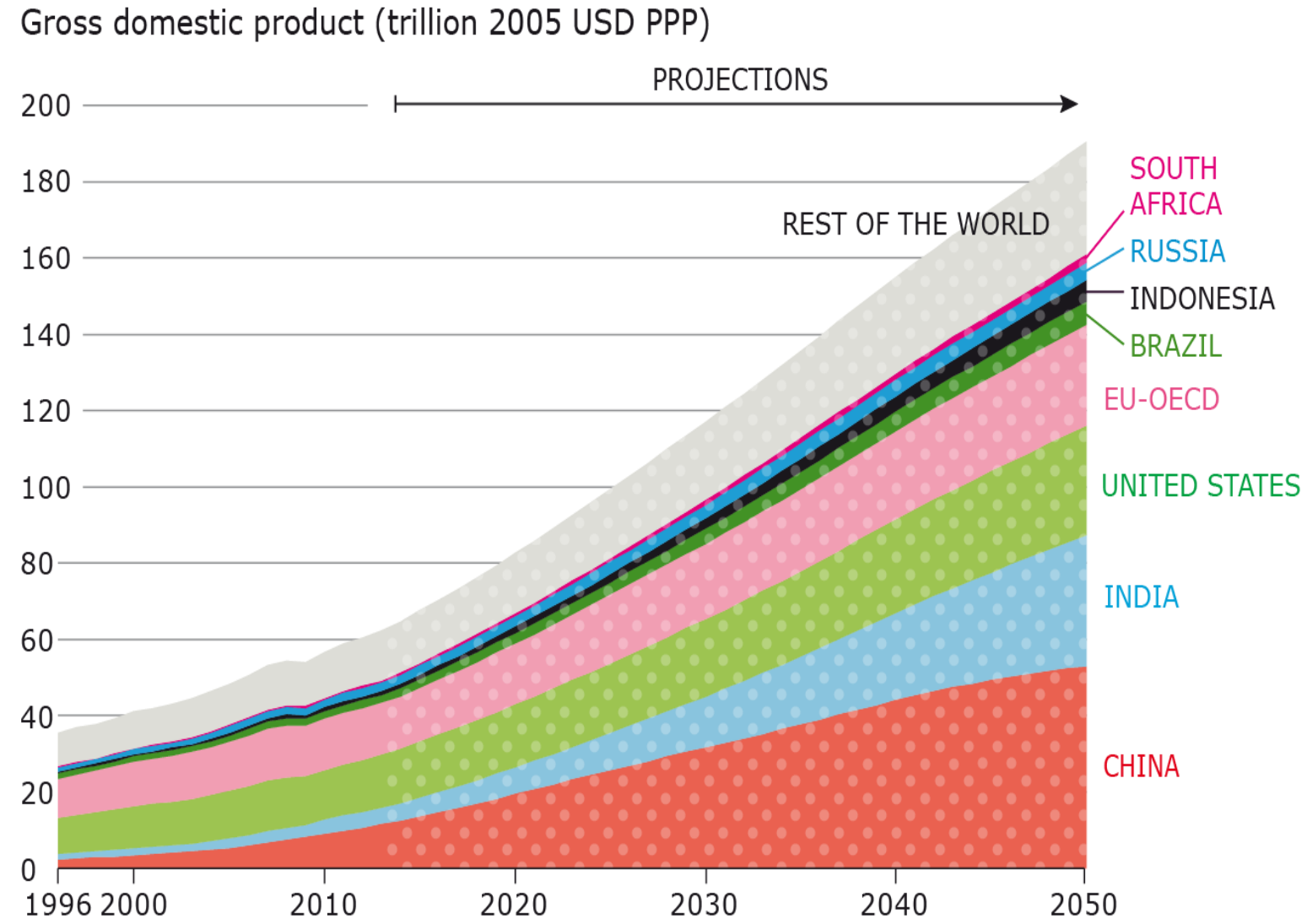
- Competition for resources
- Pressures from outside Europe
- Planetary boundaries

## 2. Systemic characteristics of environmental challenges

- Complexity
- Uncertainty
- Environmental, social and economic interdependencies



# World economic output has increased 25-fold since 1900 and may triple again by 2050



In the period 2010-2050, global GDP is expected to grow by...

**300 %**

(OECD, 2014)



European Environment Agency



# Global biodiversity loss will continue

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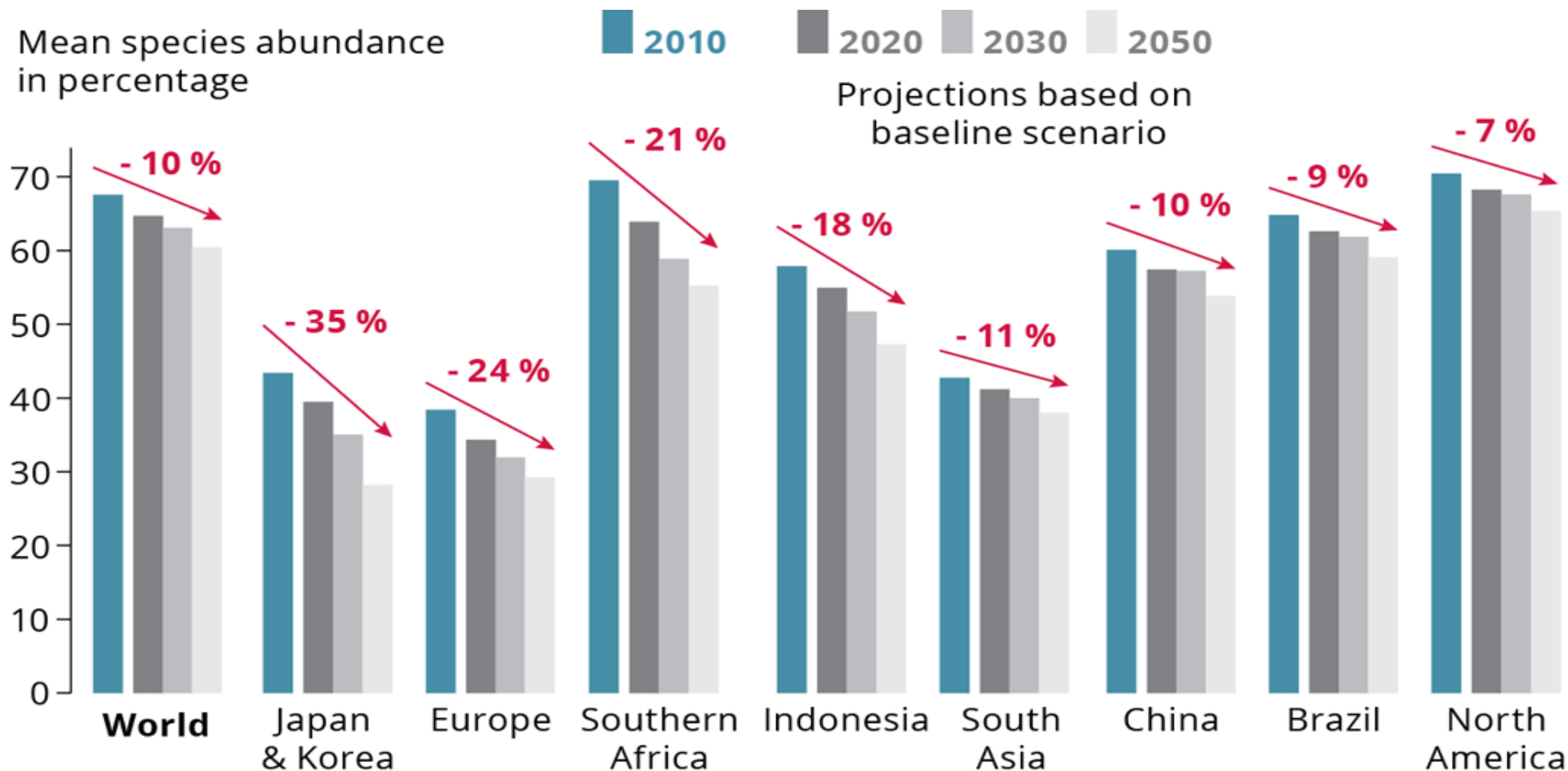
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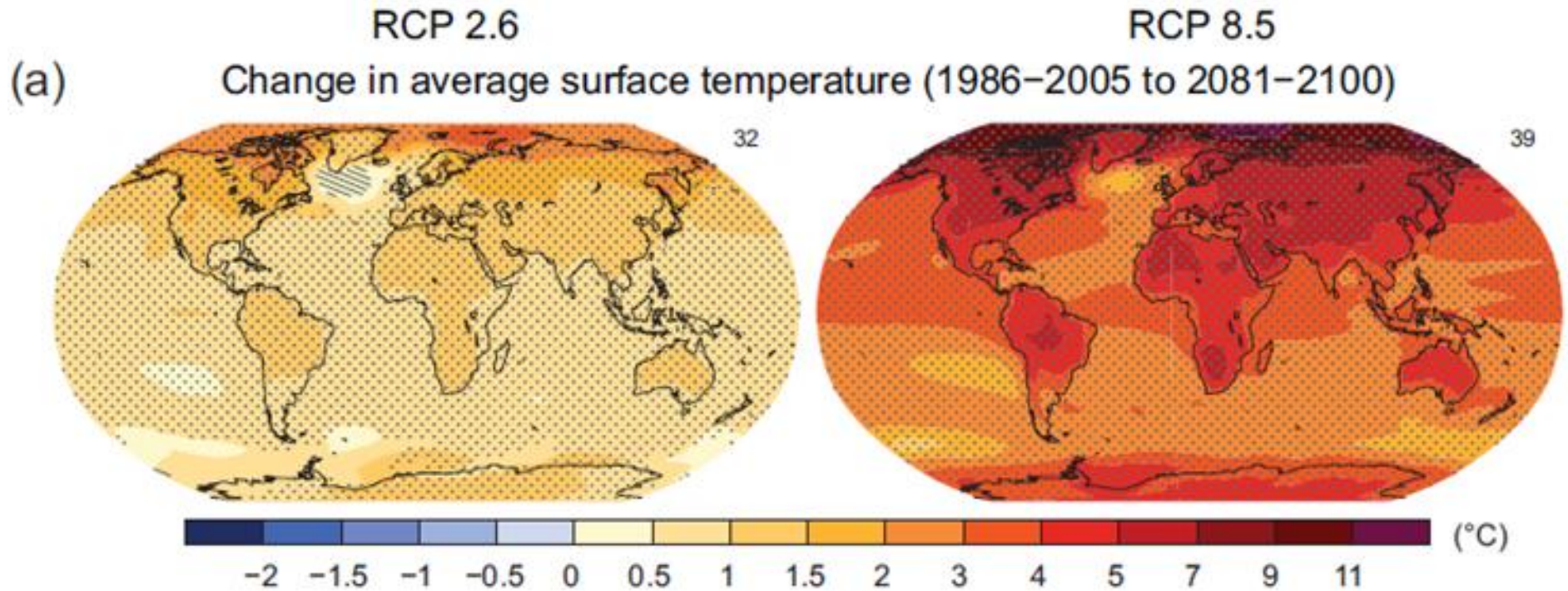
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Terrestrial mean species abundance, 2010–2050



# Impacts of climate change

Change in average temperature, 2081–2100 relative to 1986–2005



Data source: IPCC (2013)



# Limits to efficiency and technological gains



# Efficiency gains in energy

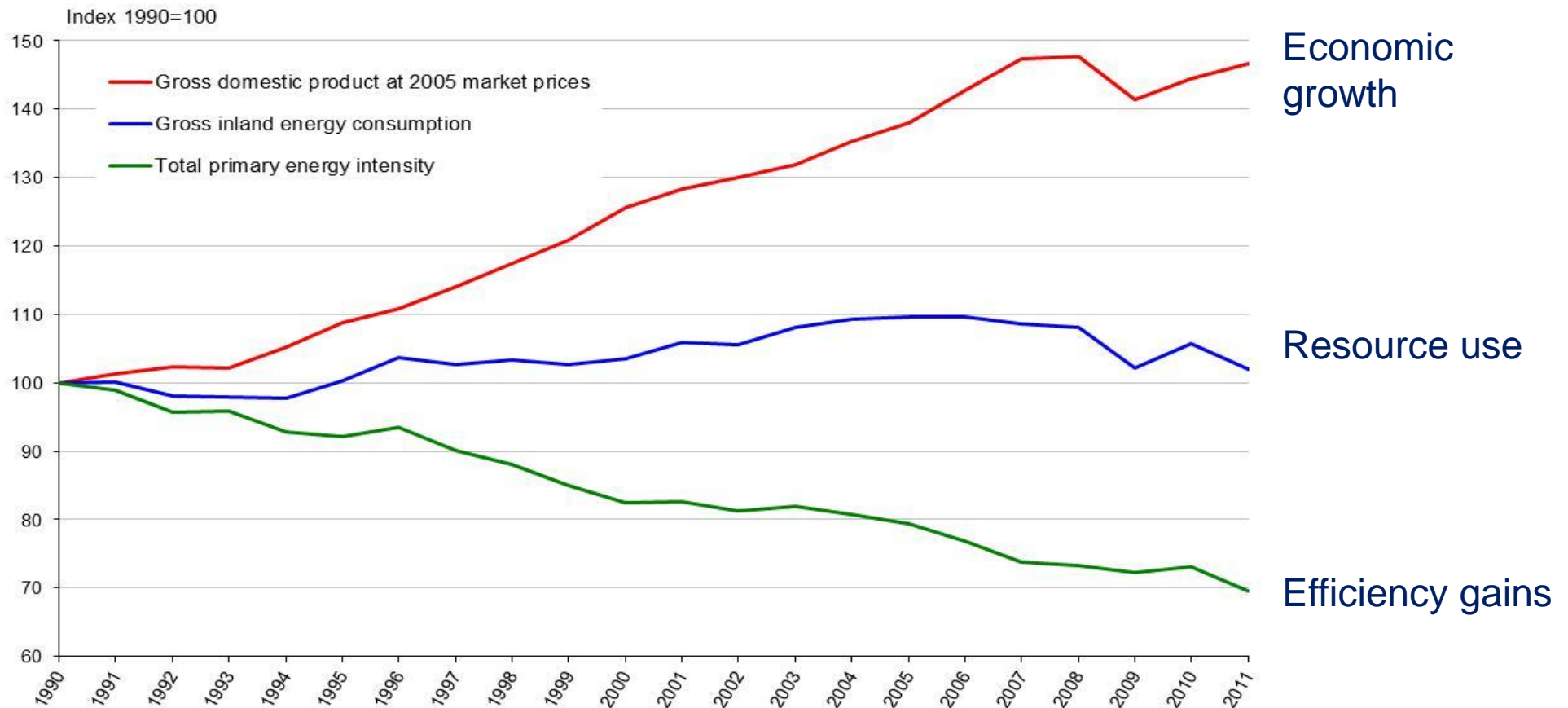
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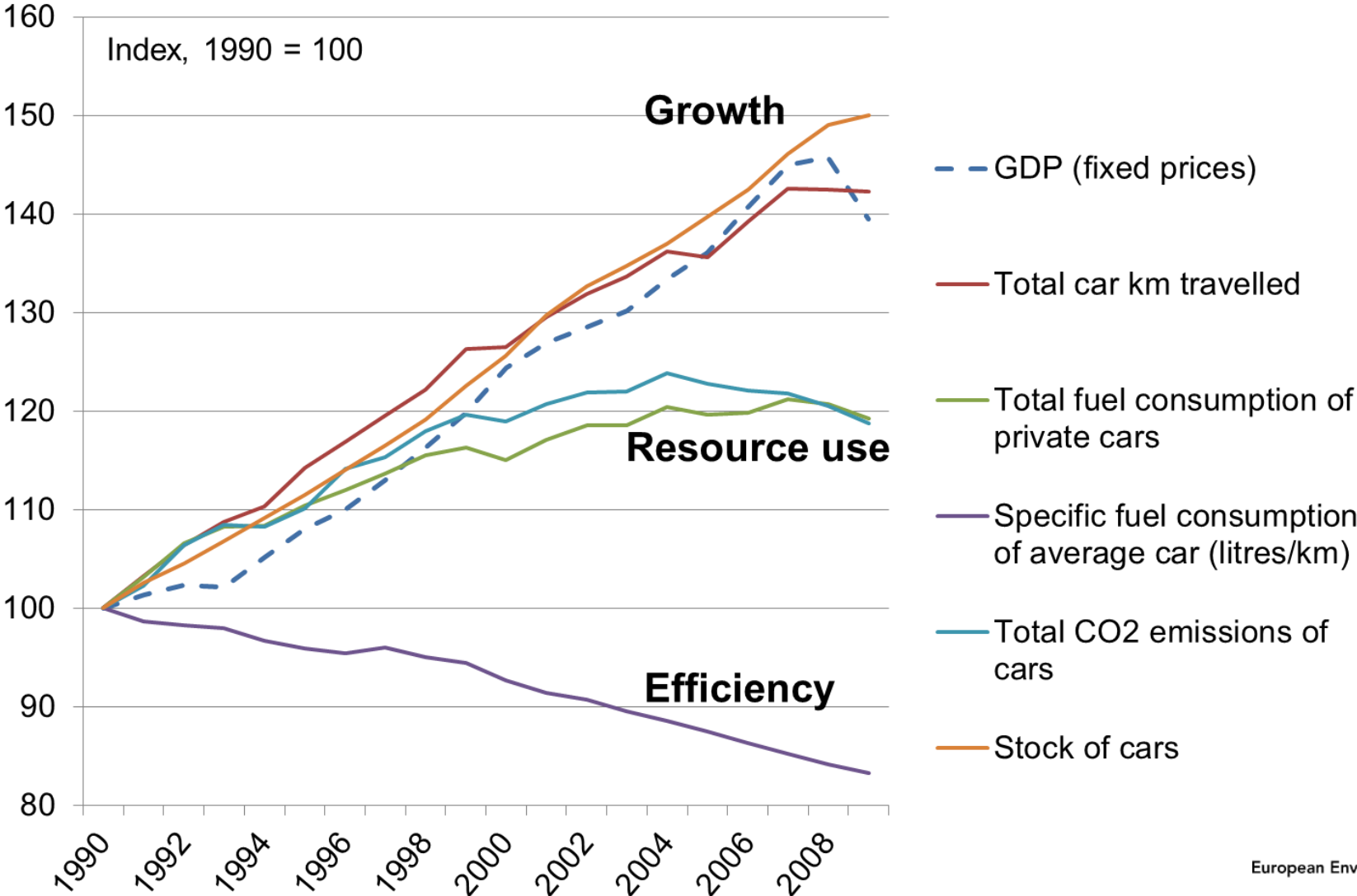
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# Efficiency gains in the transport system



# Efficiency gains in the home system

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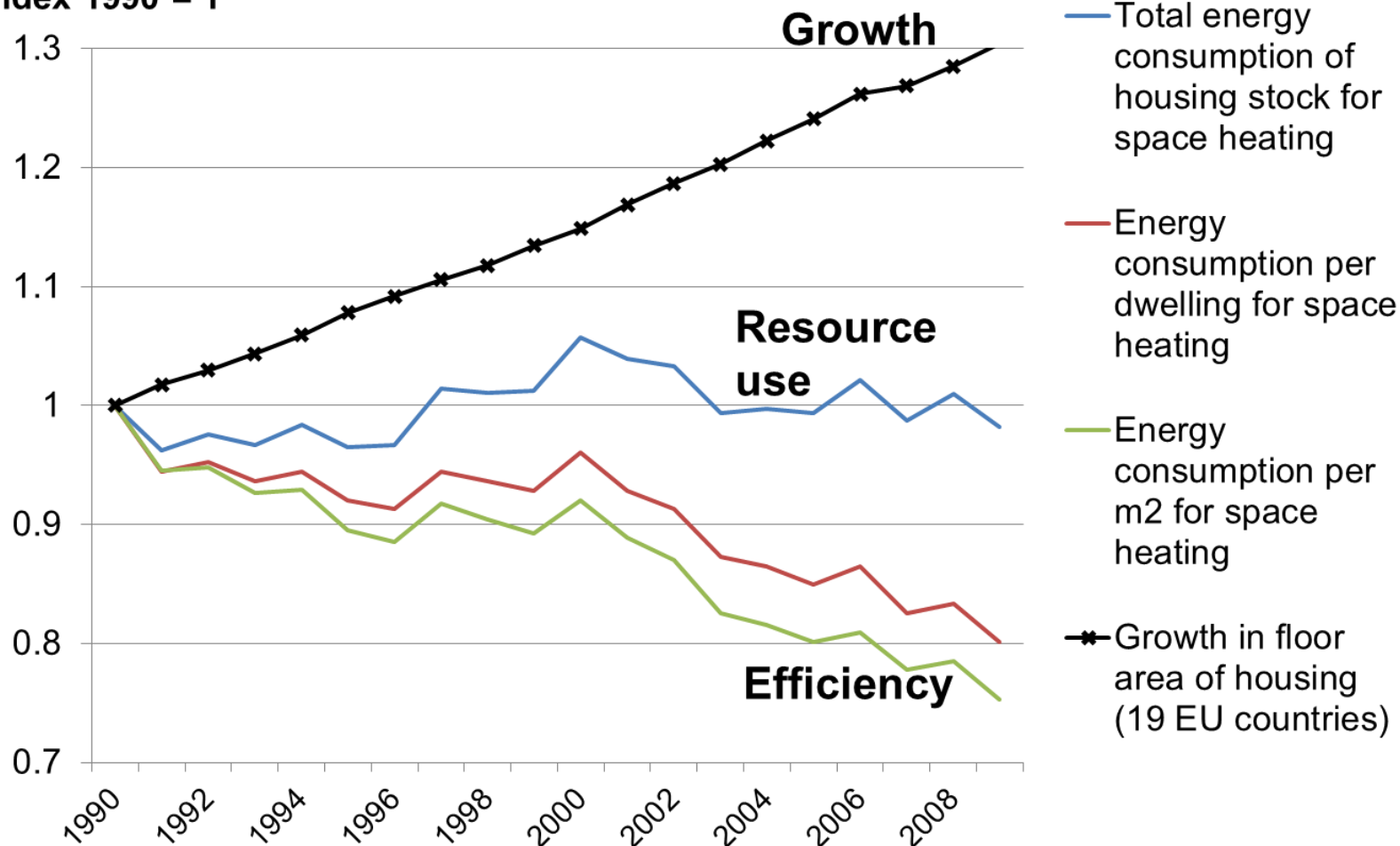
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Index 1990 = 1



Source: SCP023 indicator (draft)





# Societal challenges as 'persistent problems' (Loorbach 2007)

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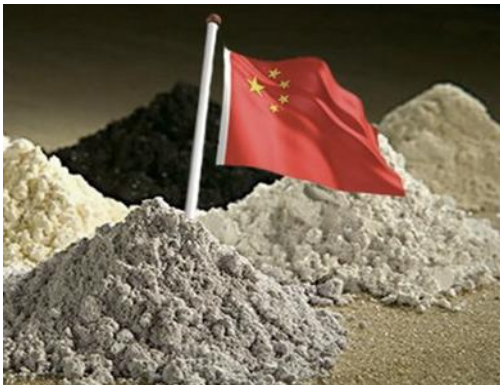
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[Also: (super)wicked problems; interconnected problems; global complexity]

- complex
- interdependent
- uncertain
- deeply embedded in societal structures
- difficult to formulate solutions, manage or steer



# Transitional perspective

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## Persistent problems demand fundamental solutions

- Regular policy offers no solutions
- Market creation and commodification is not a solution
- Incremental institutionalism is not sufficient

## Transitions

= fundamental shifts in the systems that fulfill societal needs, through profound changes in *dominant* structures, practices, technologies, policies, lifestyles, thinking ...

# System innovation and transitions: stylised optimism

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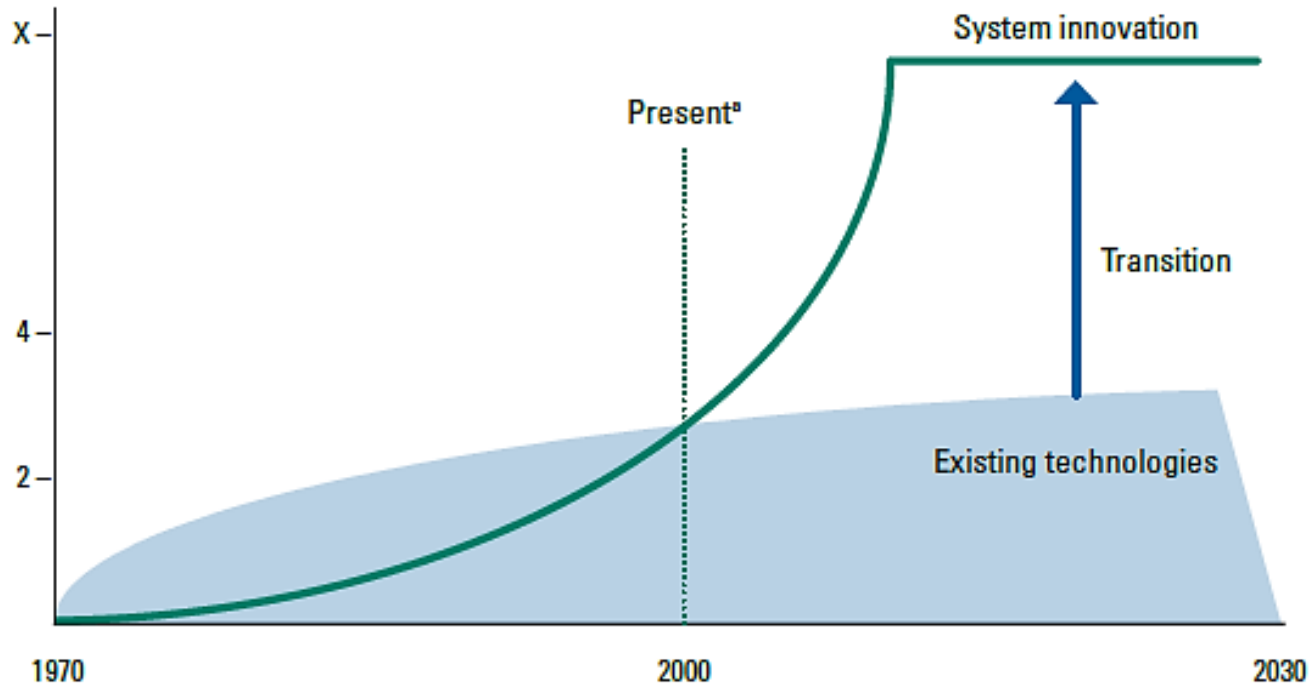
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Improvement in eco-efficiency  
Factor



Source: UNEP (2011)

# System innovation and transitions: qualified optimism

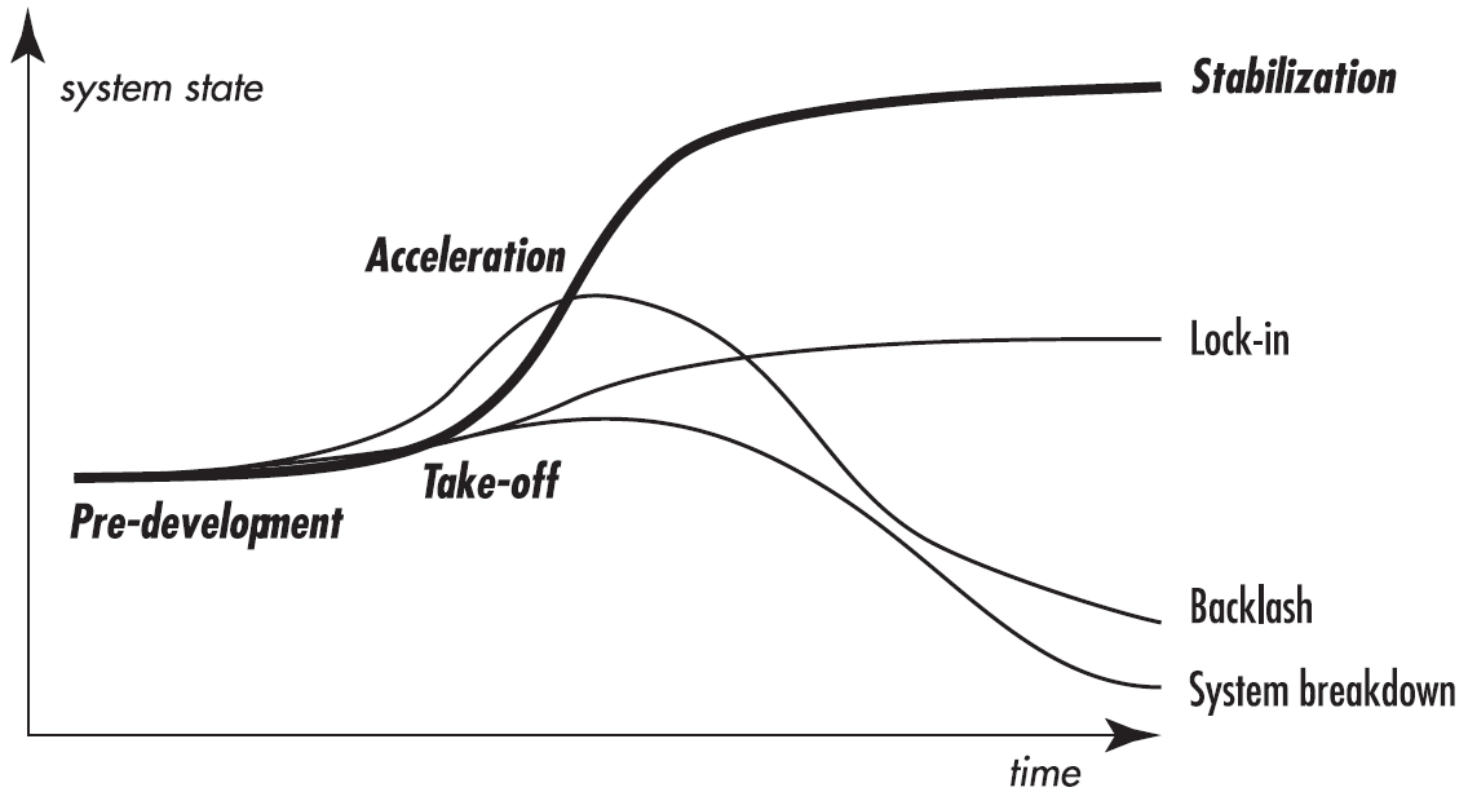
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Source: van der Brugge & de Haan (2005)

# System innovation and transitions: complex and malleable reality

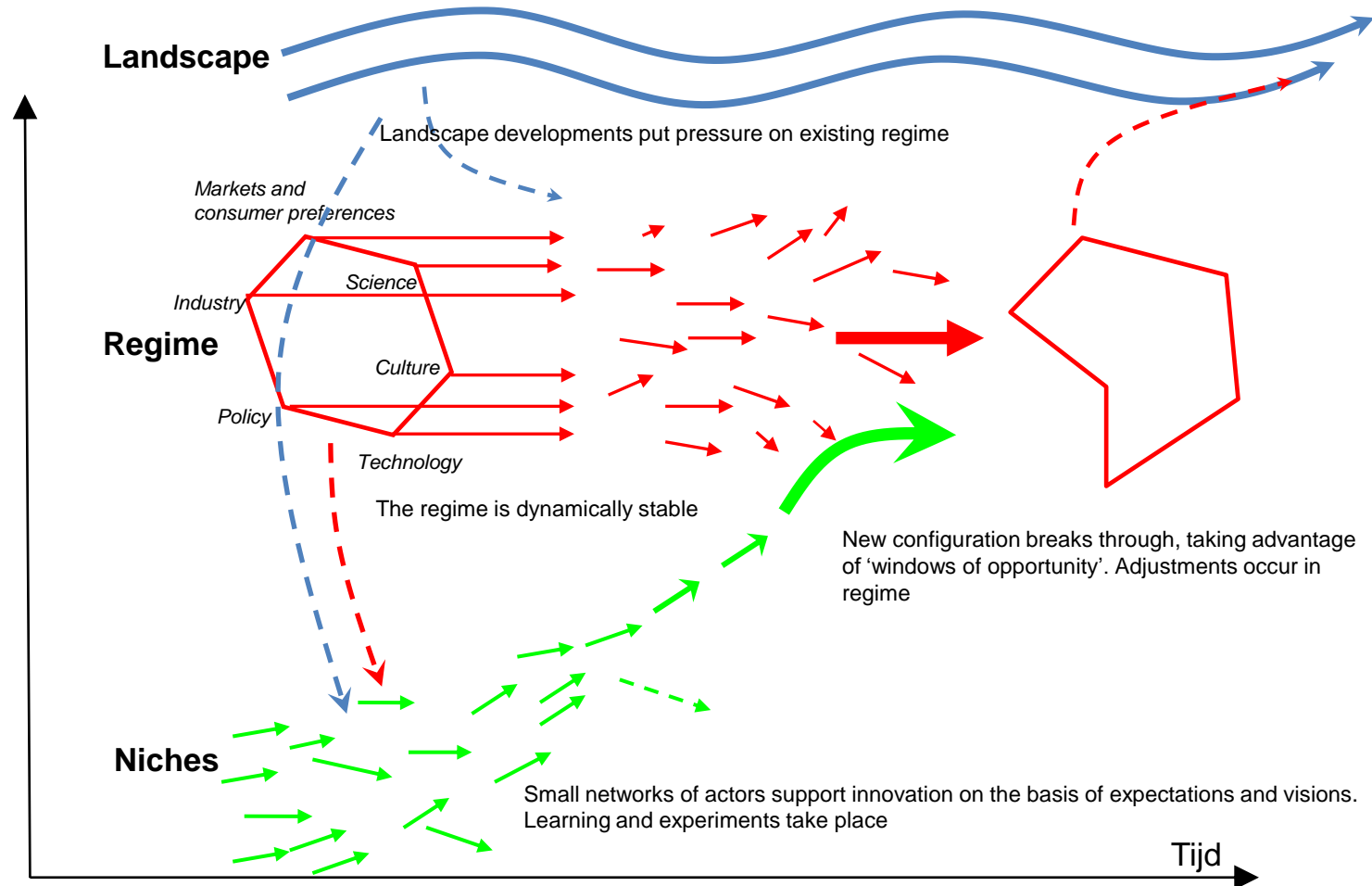
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Source: based on Geels & Schot (2007)

# From challenge to response

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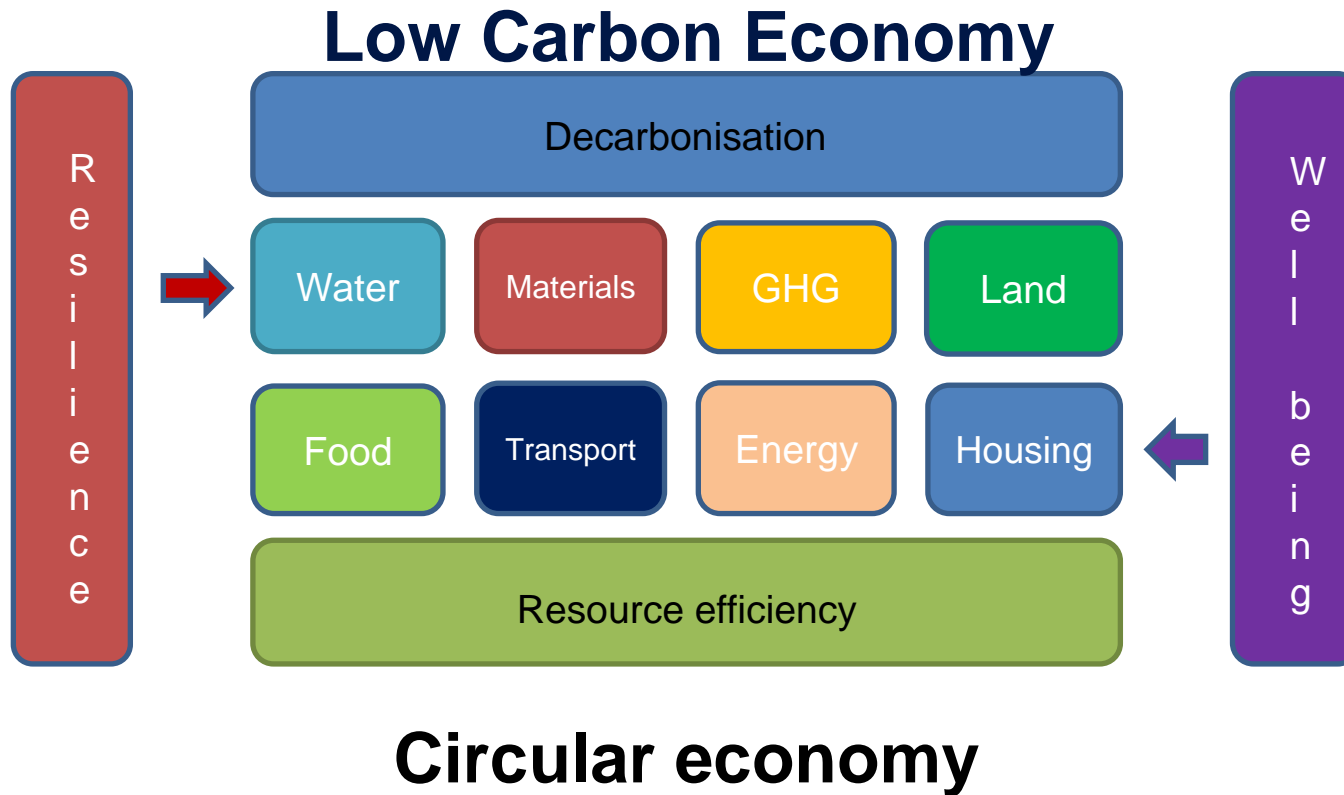
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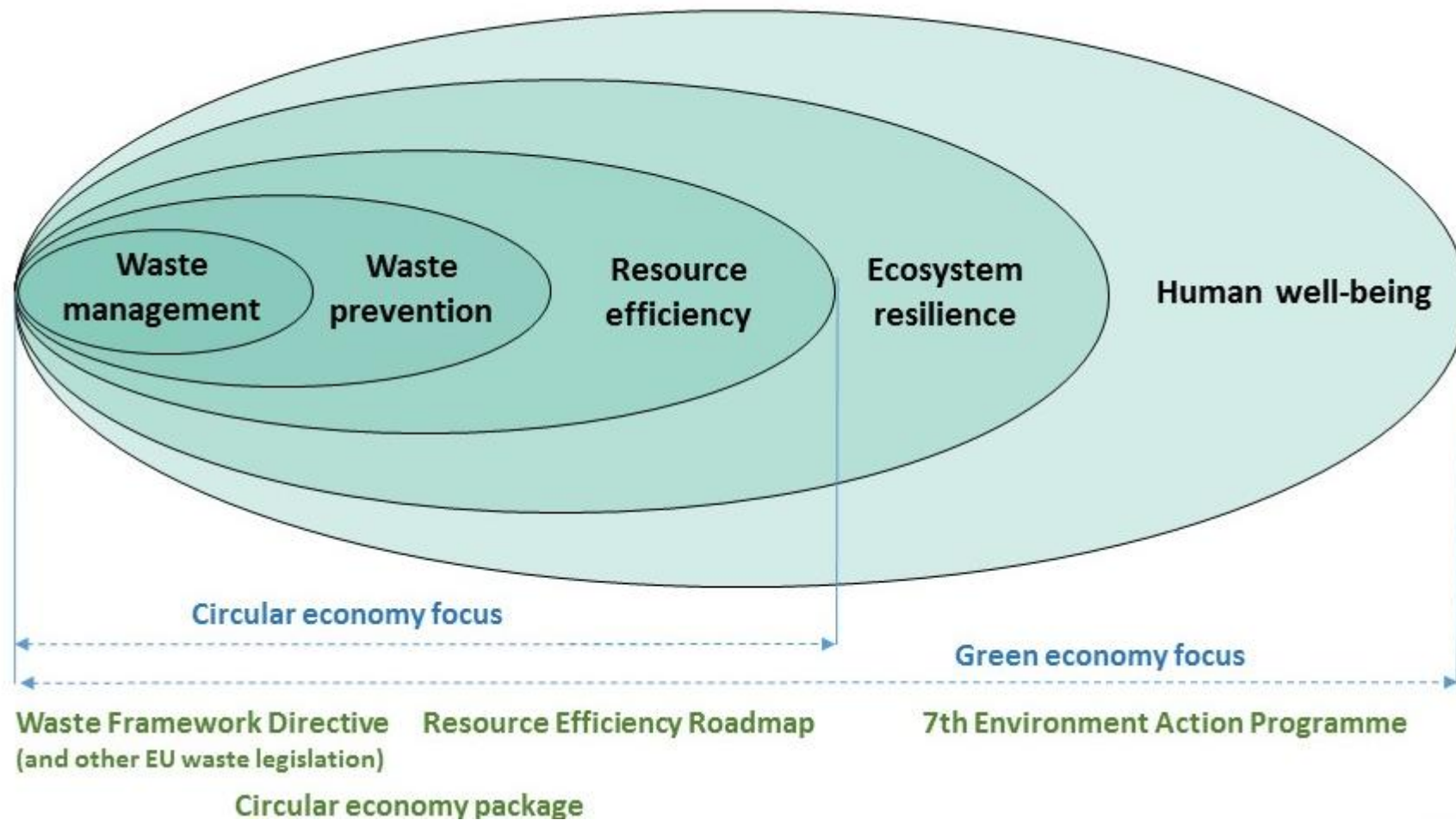
The EU policy and related activities offer a strong basis for action:

- 7EAP enabling objectives (implementation, innovation, investment, information)
- Circular economy package
- EU climate and energy package
- Energy Union
- Sustainable Development Goals
- Also: decarbonising transport, urban agenda, H2020, ...

# An increasingly integrated, systemic policy setting



# Logic of responses





# Looking ahead: necessary/enabling policy conditions

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- Consistency
- Coherency
- Implementation with sense of urgency
- Visionary and engaging
- Adequate knowledge base



# Looking ahead: Investing today for the long term

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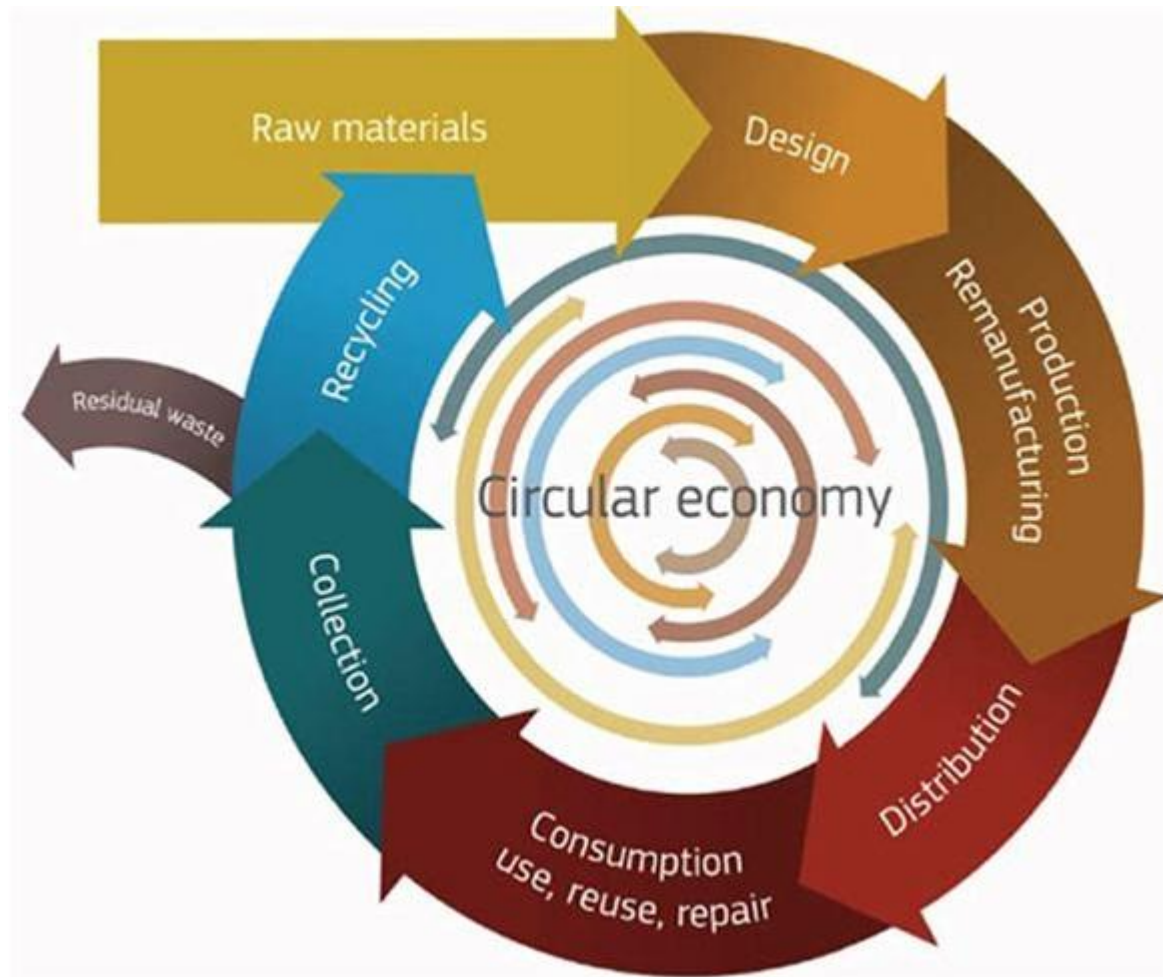
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- Key **criteria** for future investments in a green transitional economy:
  - decarbonisation of society
  - circular economy
  - ecosystem services and planetary limits
  - human health and well-being
- European investment needs are large.
- Need to **avoid** investments that **lock in** existing patterns and limit options.
- **Shifting taxation** and phasing out **environmentally harmful subsidies** can stimulate needed investment and innovation.

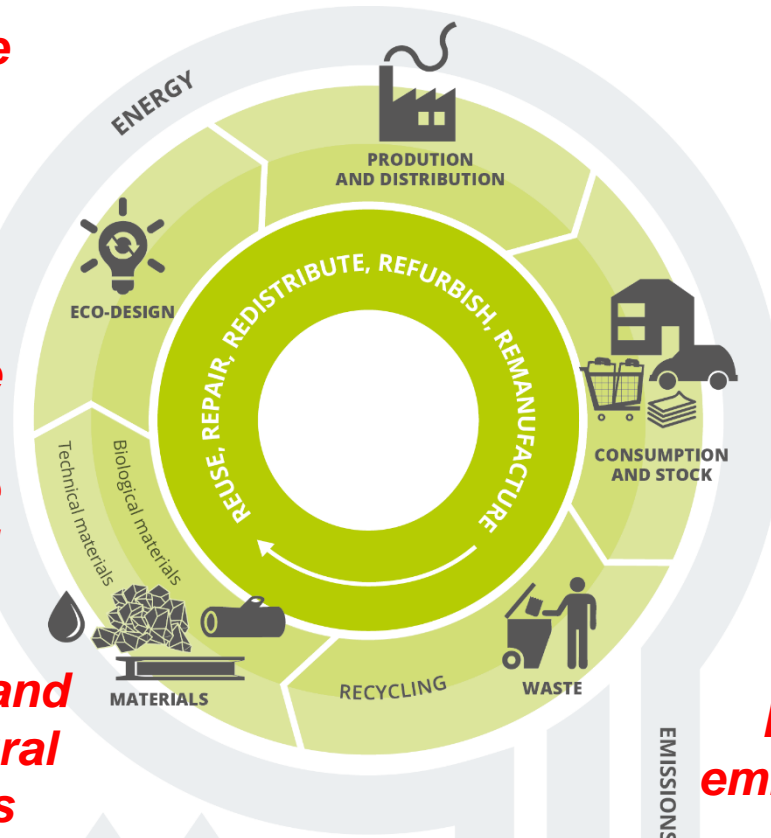
# Circular economy



# What is the circular economy?

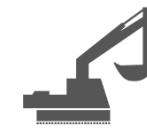
**Keep the value of products, components and materials in the economy**  
**Increase share of renewable and recyclable resources and energy**

**Less input and use of natural resources**



**Less emissions**

**Fewer material losses**



11.5 tonnes of materials extracted in 2014



3.0 tonnes of material per person imported in 2014



0.3 tonnes of waste per person incinerated in 2012



2.2 tonnes of waste per person sent to landfill in 2012

Minimise



EXTRACTION AND IMPORT OF NATURAL RESOURCES, INCLUDING ENERGY CARRIERS



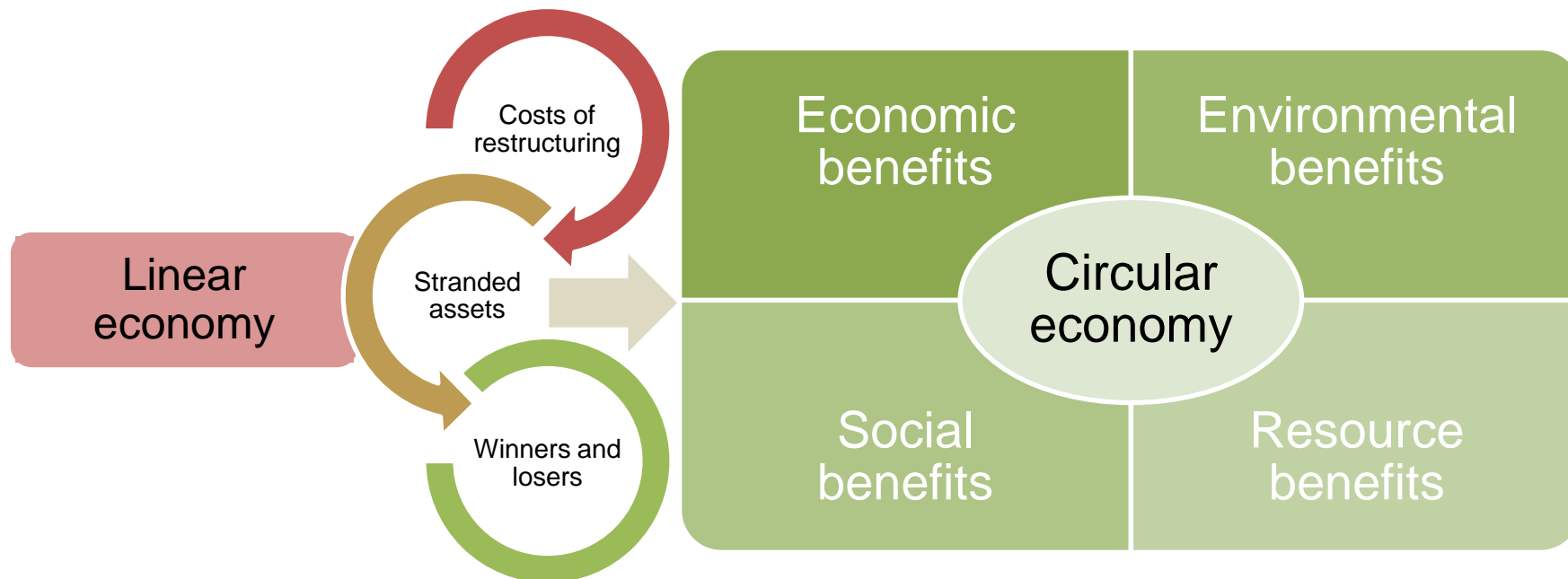
INCINERATION



LANDFILL

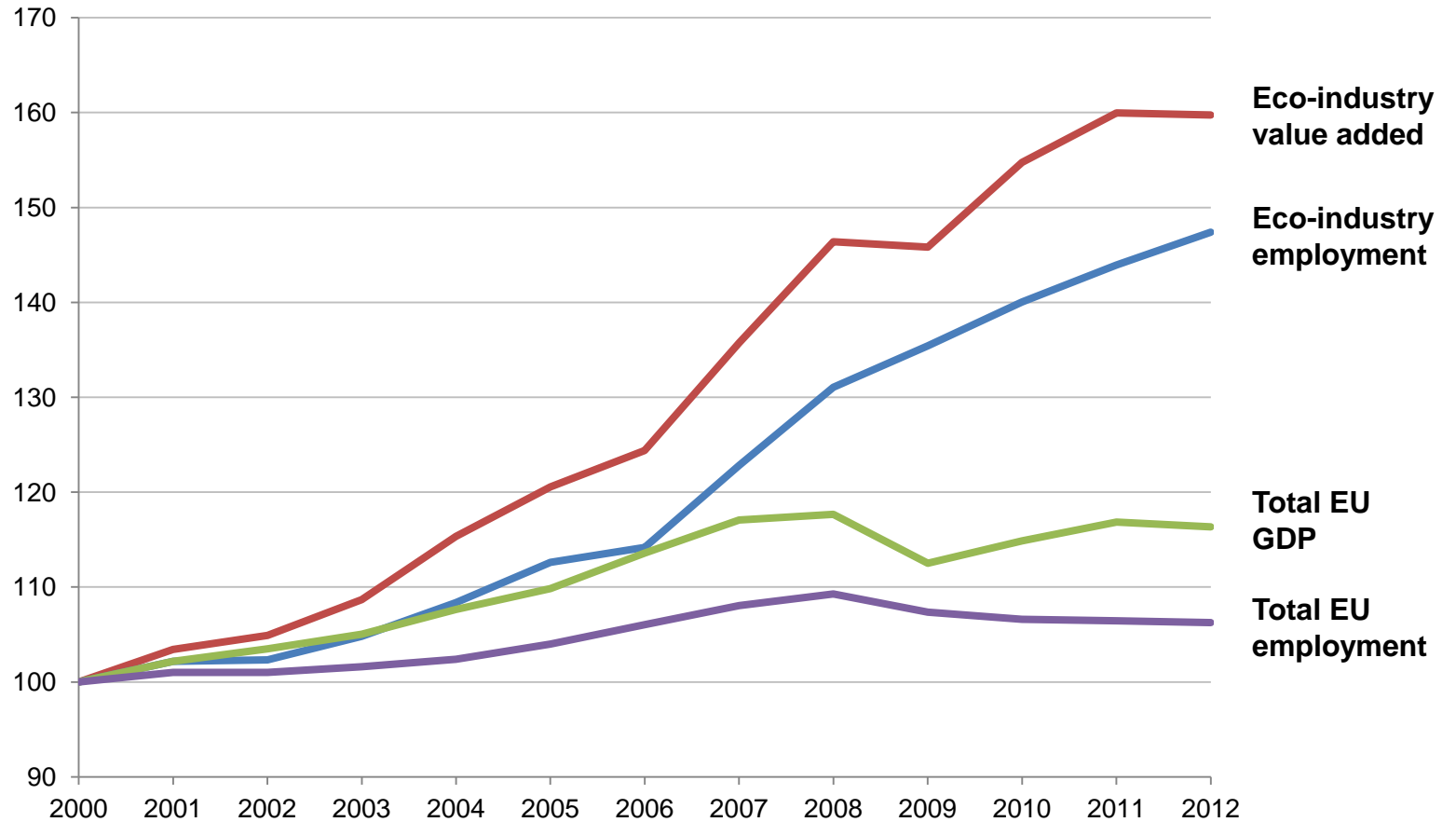


# From a linear to a circular economy





# Eco-industries have prospered despite the recession in Europe



Source: Eurostat, 2014.

# Environmental policy is a driver of innovation, not a deterrent

SYNTHESIS REPORT

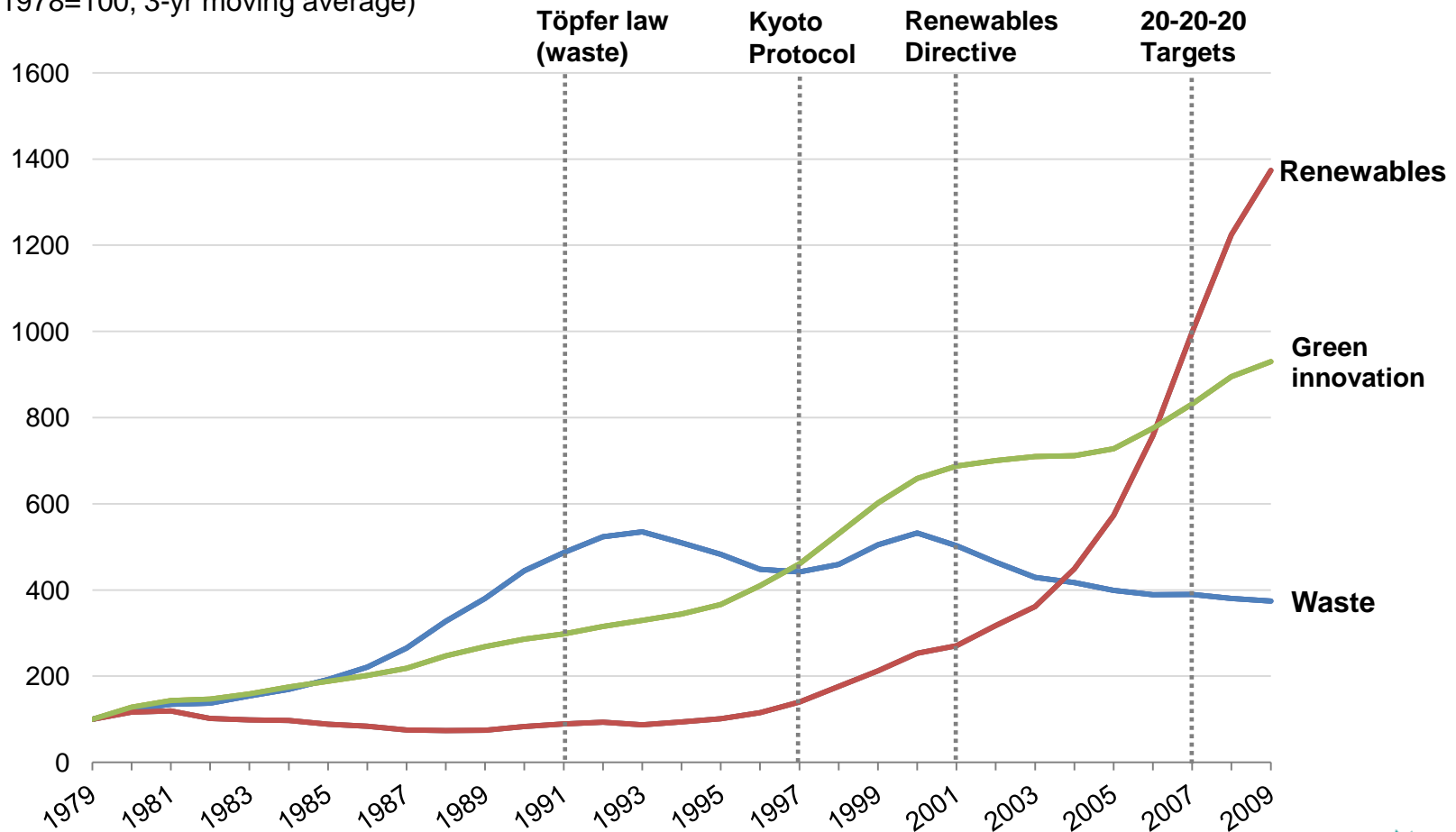
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**Patent applications with European coverage**  
(1978=100, 3-yr moving average)



Source: OECD

European Environment Agency

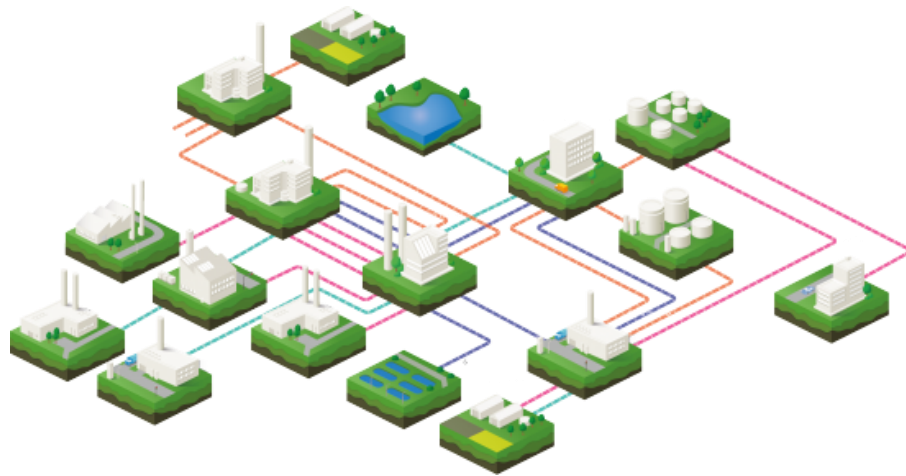


# Product design (Bloom)





# Enabling factors: Using waste as a resource



The National Industrial Symbiosis Programme (NISP) in the United Kingdom is a network of more than 15 000 participating industrial companies that identifies mutually profitable transactions between companies to optimise the use of underused or undervalued resources, including energy, water, waste and logistics.

Kalundborg is a medium-sized Danish town that, since 1970, has developed a symbiotic relationship between public authorities and private companies to buy and sell waste, including steam, gas, water, gypsum, fly ash and sludge.

# Service-and-function-based business models

I do not need a drill.  
I need a hole in the wall



# Prosumerism



# Consumer choice influencing





# Using waste as a resource



# How to get there: the capitals to look after

## Natural capital



## Human capital



## Social + cultural capital



## Building capital

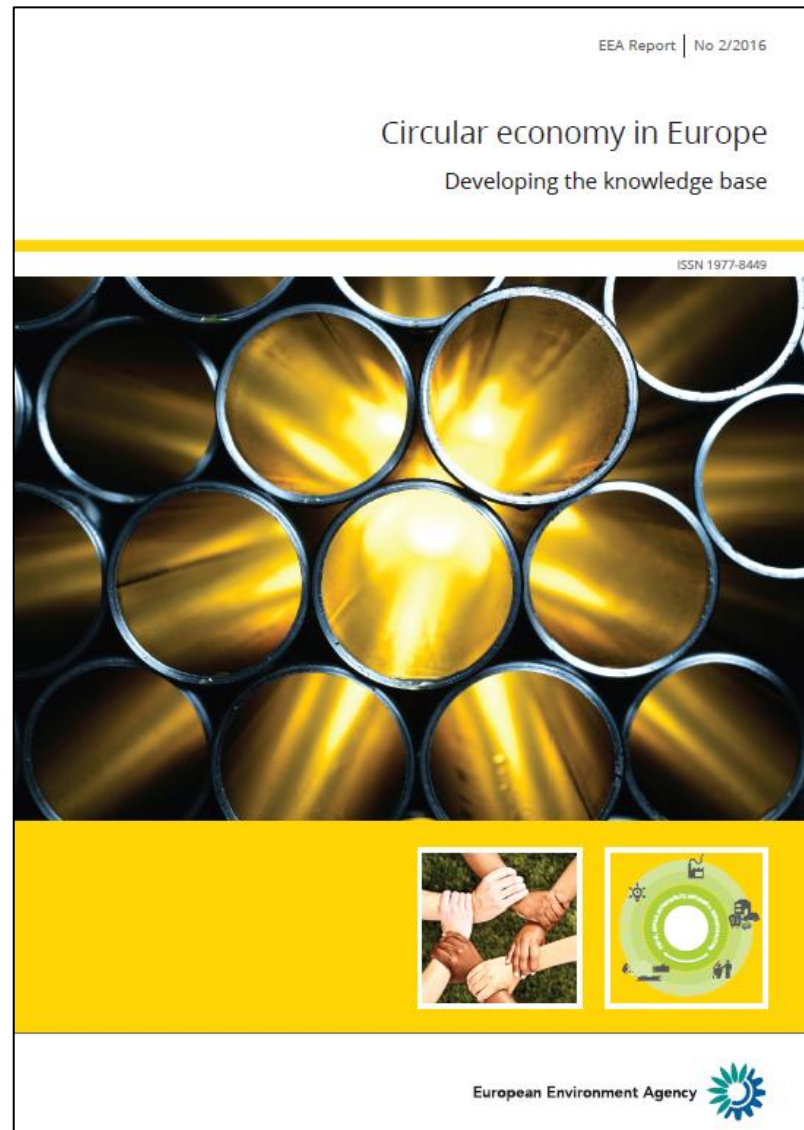




# How to get there: mobilising financial capital



# 2016 EEA report on circular economy





# Next steps in building the knowledge base on sustainability transitions

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- EUROPEAN BRIEFINGS
- COUNTRY COMPARISONS
- COUNTRIES & REGIONS

Understanding systemic challenges and the need for transitions

Identifying knowledge, skills and governance approaches for transitions



*PROBLEM-FOCUSED*

*SOLUTION-ORIENTED*

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