Sustainability transitions in Europe: knowledge innovations and policy options

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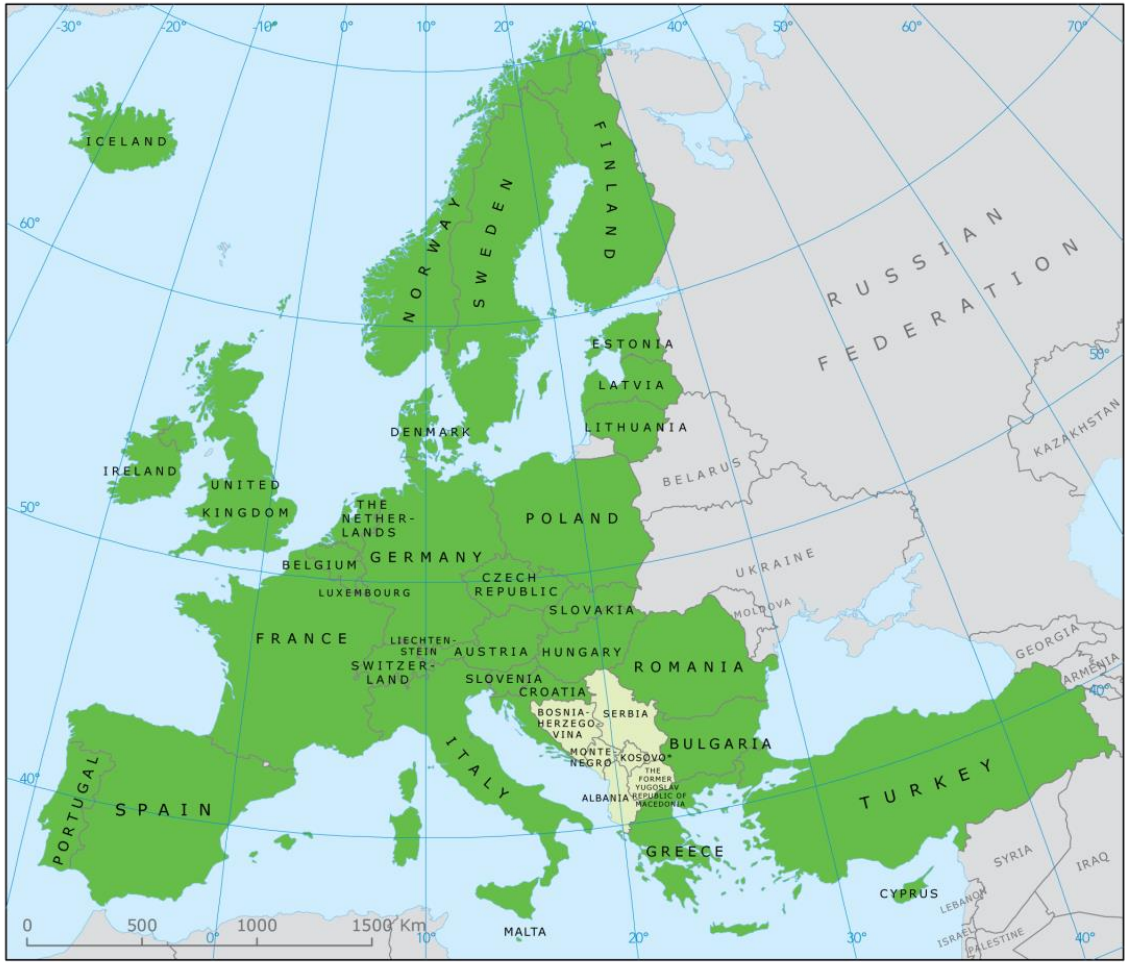
Vienna University of Economics and Business, 23 February 2016

EEA: a network organisation with a direct link to policy

The European Environment Agency is an EU body 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.



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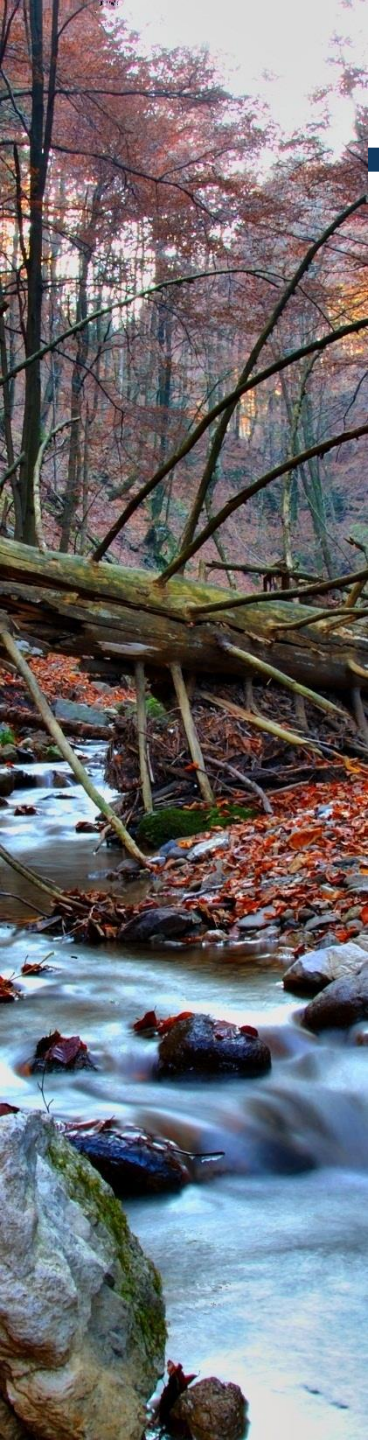

The European environment — state and outlook 2015

Based on a thorough review of Europe's environmental trends and outlook, SOER 2015 reflects on how to bring policies, knowledge, investments and innovations into line with Europe's 2050 sustainability vision.

The structure reflects the MDIAK logic – building up from data and indicators to provide a thorough assessment of past trends and future outlooks.

SOER 2015 Synthesis report

SOER 2015 Assessment of global megatrends

Global megatrends	European briefings	Cross-country comparisons	Countries and regions
11 briefings	25 briefings	9 briefings	39+3 briefings

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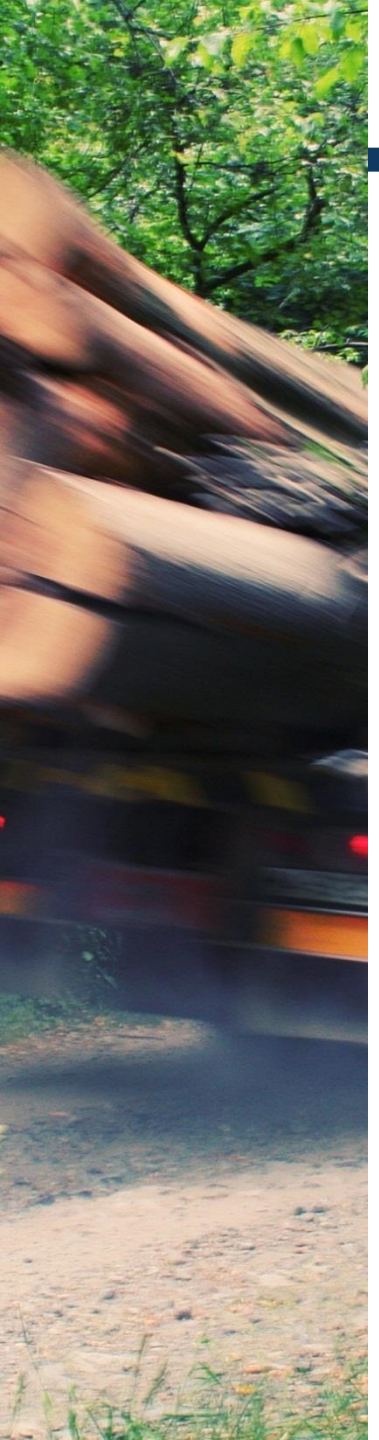
Vision of the 7th Environmental Action Programme

‘**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.’

Key messages from SOER 2015

- **Policies** have delivered substantial benefits for the environment, economy and people's well-being but major challenges remain
- 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 and put Europe at the frontier of science and innovation



Protecting, conserving and enhancing natural capital

	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.

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Resource efficiency and the low-carbon economy

	Past (5–10 year) trends	20+ years outlook	Progress to policy targets
Material resource efficiency and material use			No target
Waste management			☐
Greenhouse gas emissions and climate change mitigation			☑ / ☒
Energy consumption and fossil fuel use			☑
Transport demand and related environmental impacts			☐
Industrial pollution to air, soil and water			☐
Water use and water quantity stress			☒

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.

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Safeguarding from environmental risks to health

	Past (5–10 year) trends	20+ years outlook	Progress to policy targets
Water pollution and related environmental health risks			☑ / ☐
Air pollution and related environmental health risks			☐
Noise pollution (especially in urban areas)		/	☐
Urban systems and grey infrastructure			No target
Climate change and related environmental health risks			No target
Chemicals and related environmental health risks			☐ / ☒

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.

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SOER 2015: the overall picture

- Resource efficiency has improved but has not translated into increased ecosystem and social resilience
- The long-term outlook is often less positive than recent trends

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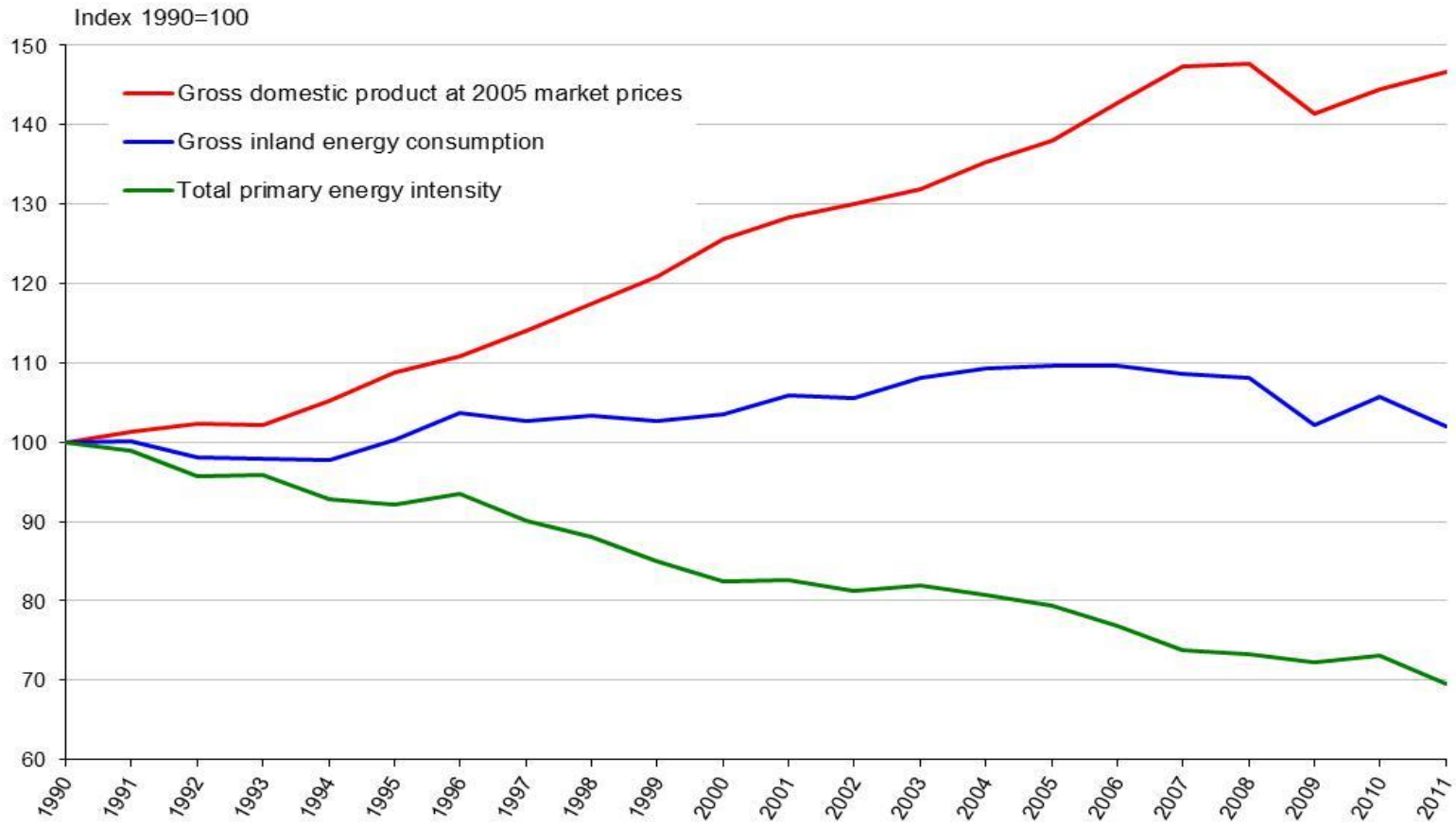
The limits of the efficiency paradigm and technological solutions

Source: Tesla

Efficiency gains in energy use



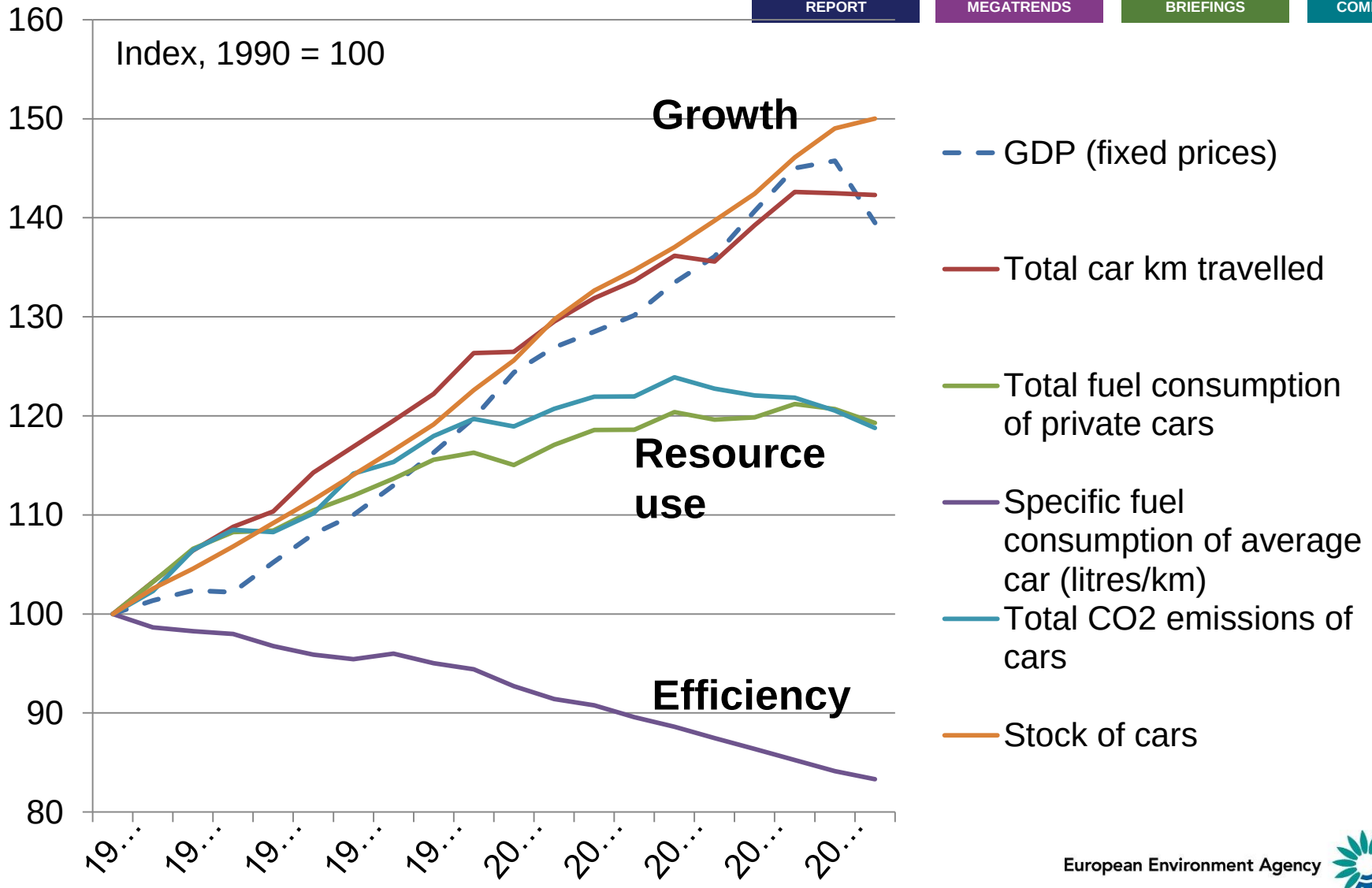
Economic growth

Resource use

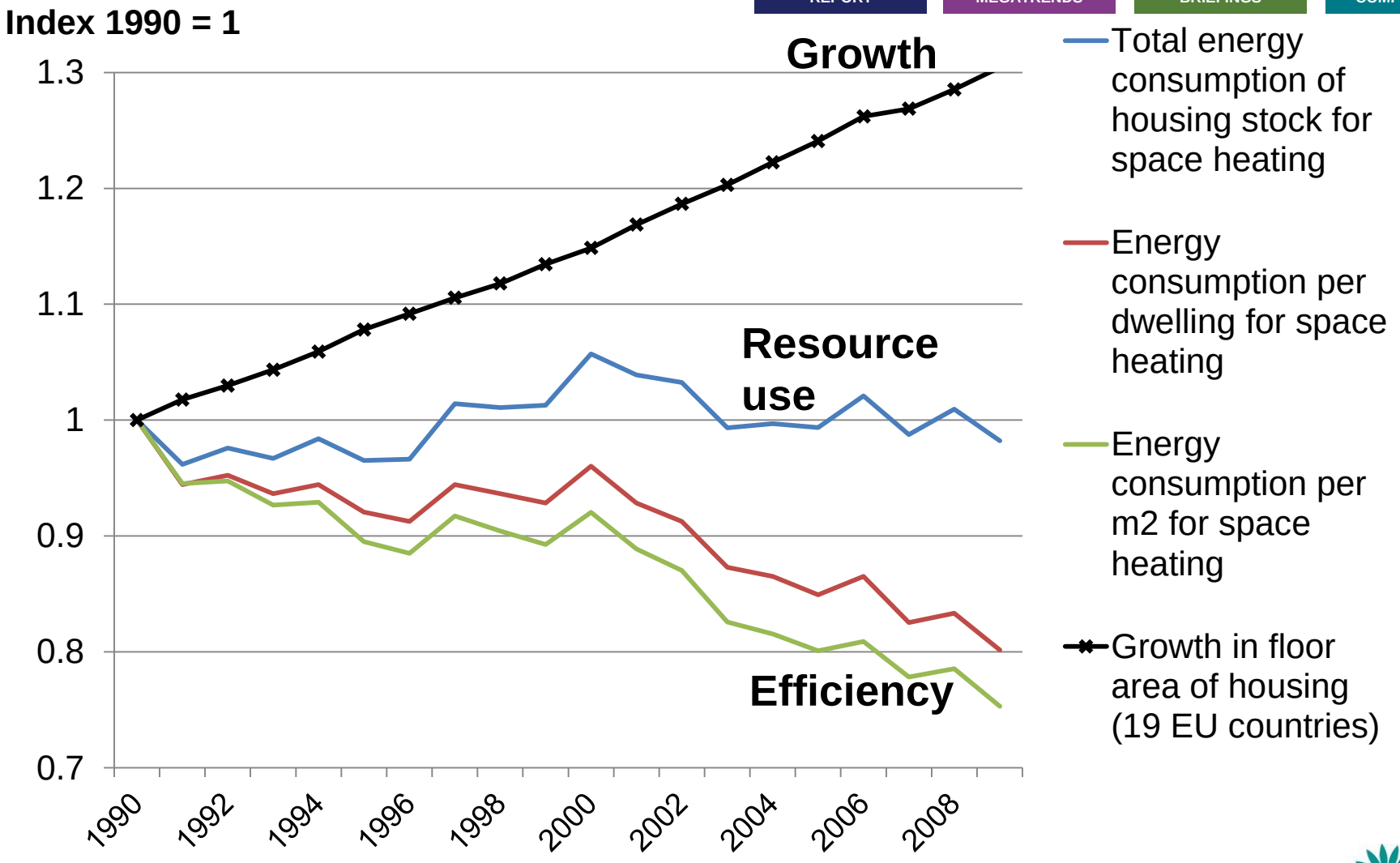
Efficiency gains

Source: EEA (CSI 028)

Efficiency gains in the mobility system

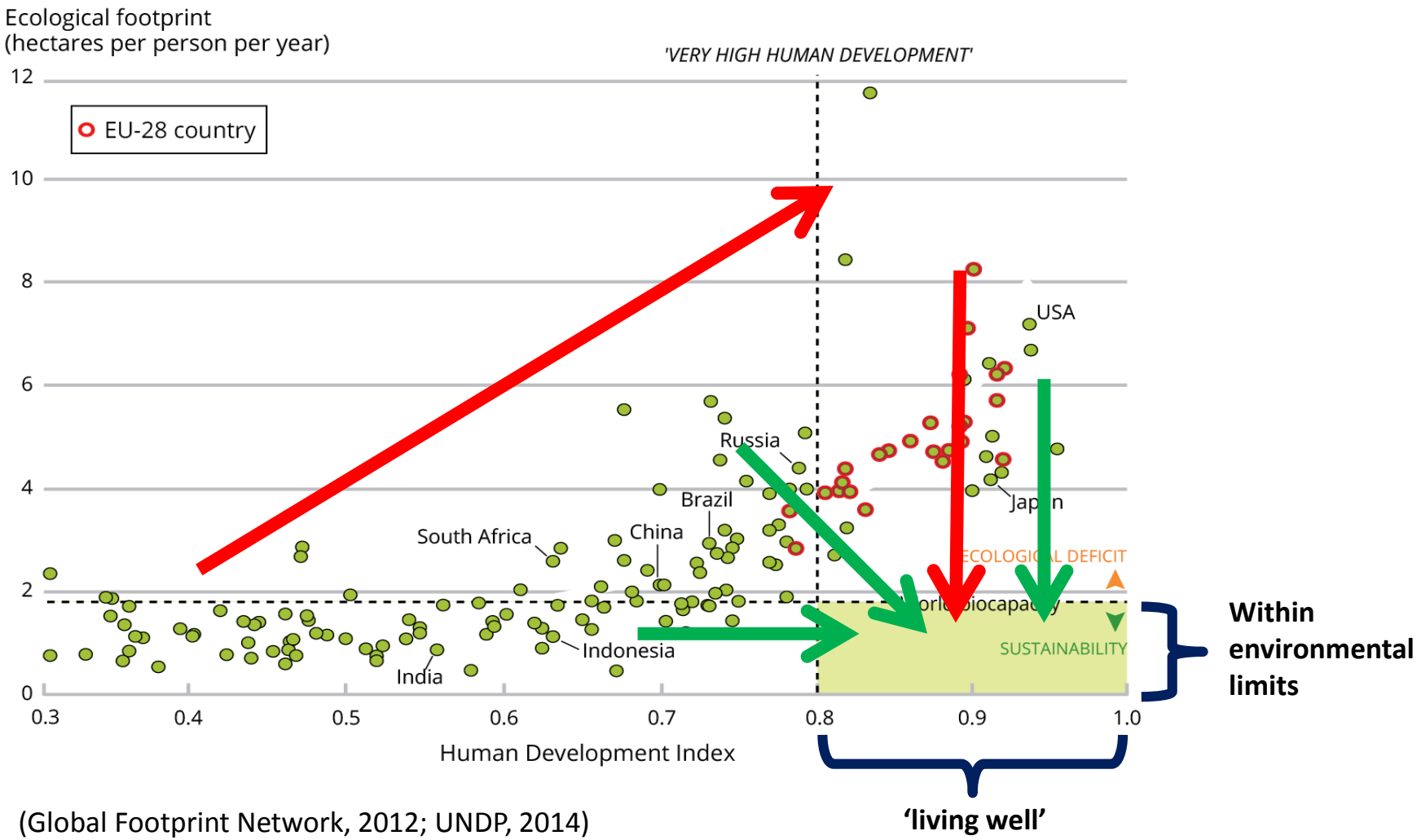


Efficiency gains in the housing system



Source: SCP023 indicator (draft)

‘Business as usual’ is no longer a viable development path



(Global Footprint Network, 2012; UNDP, 2014)

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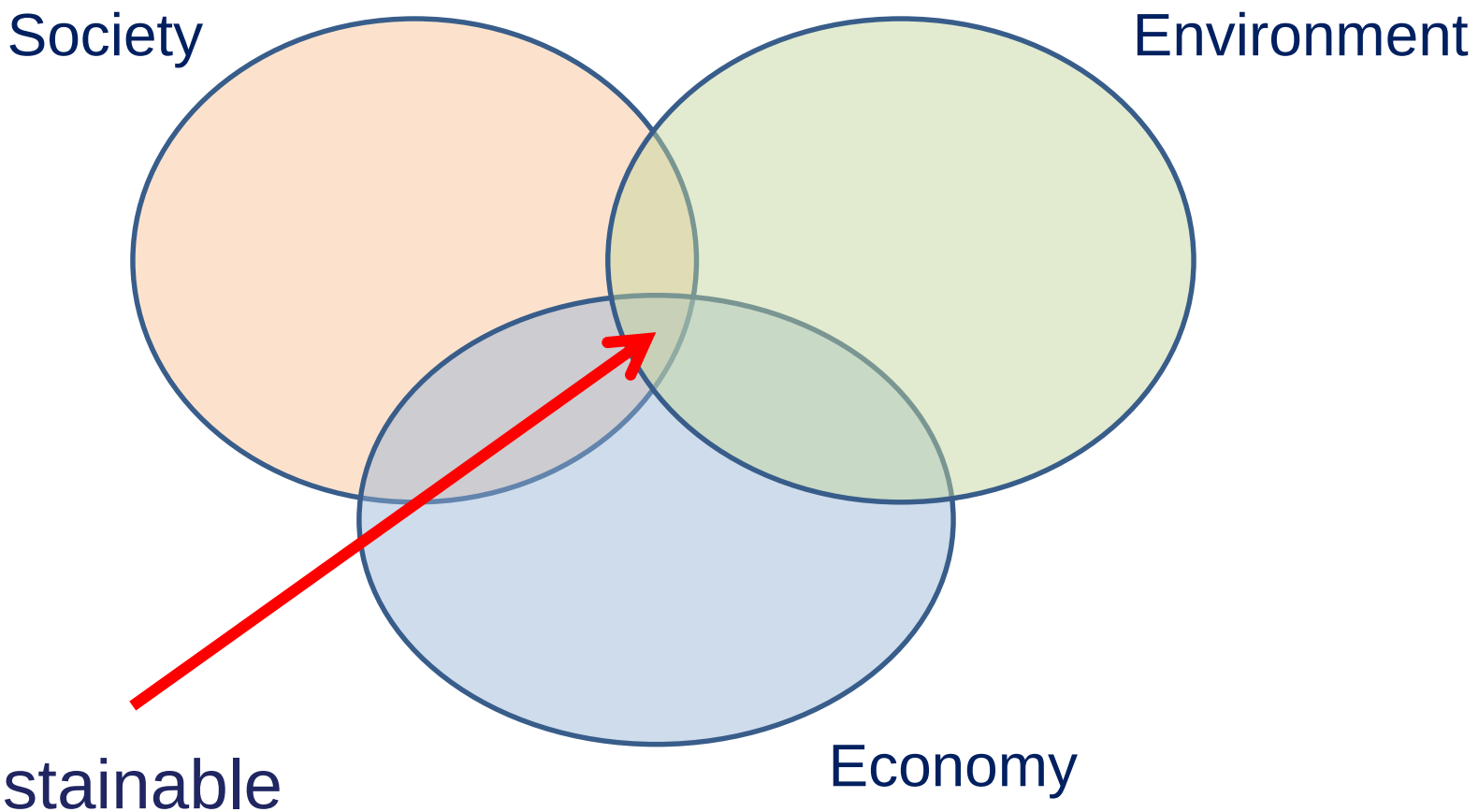
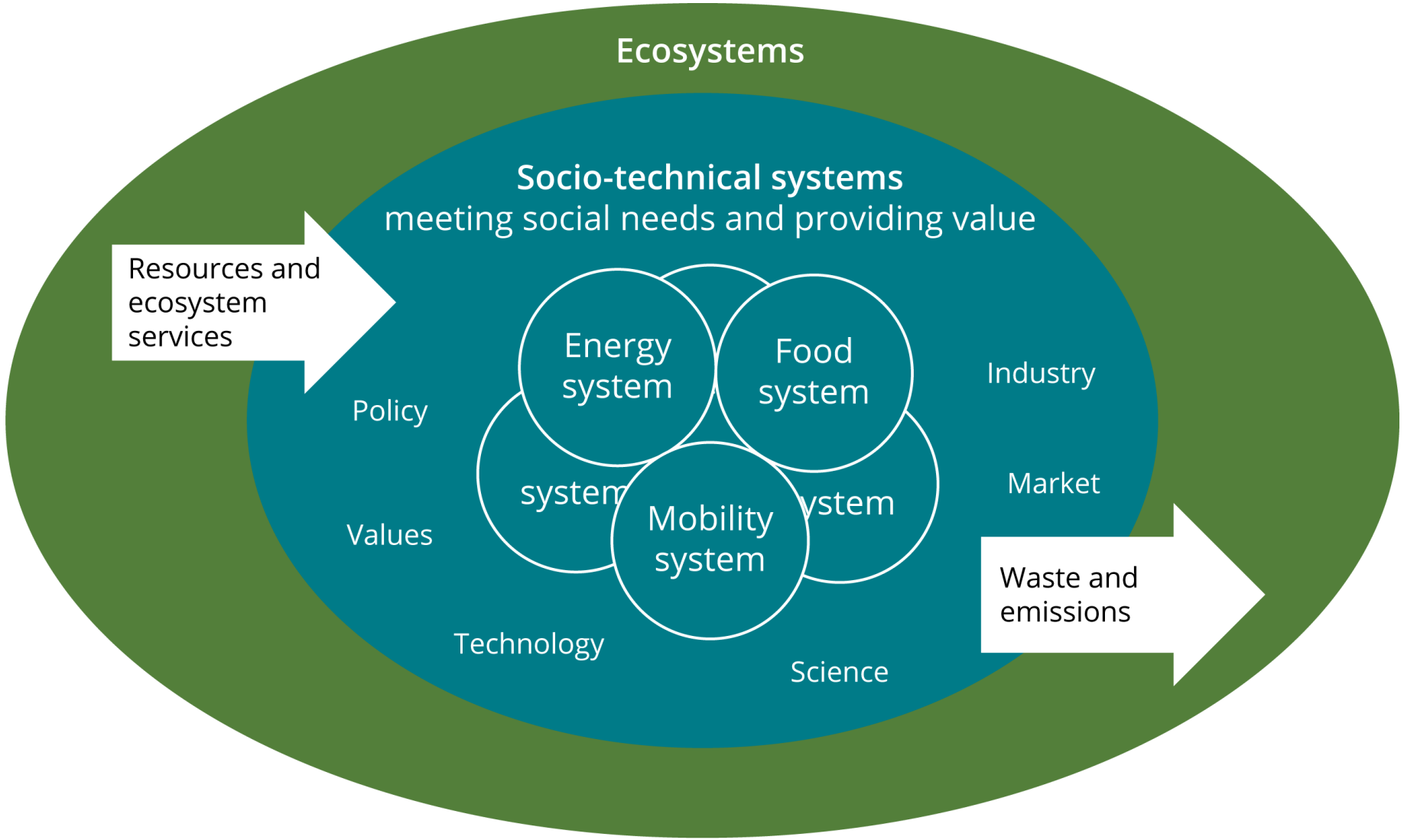
Sustainability revisited



Sustainable development?

Of course not!

Living well within environmental limits



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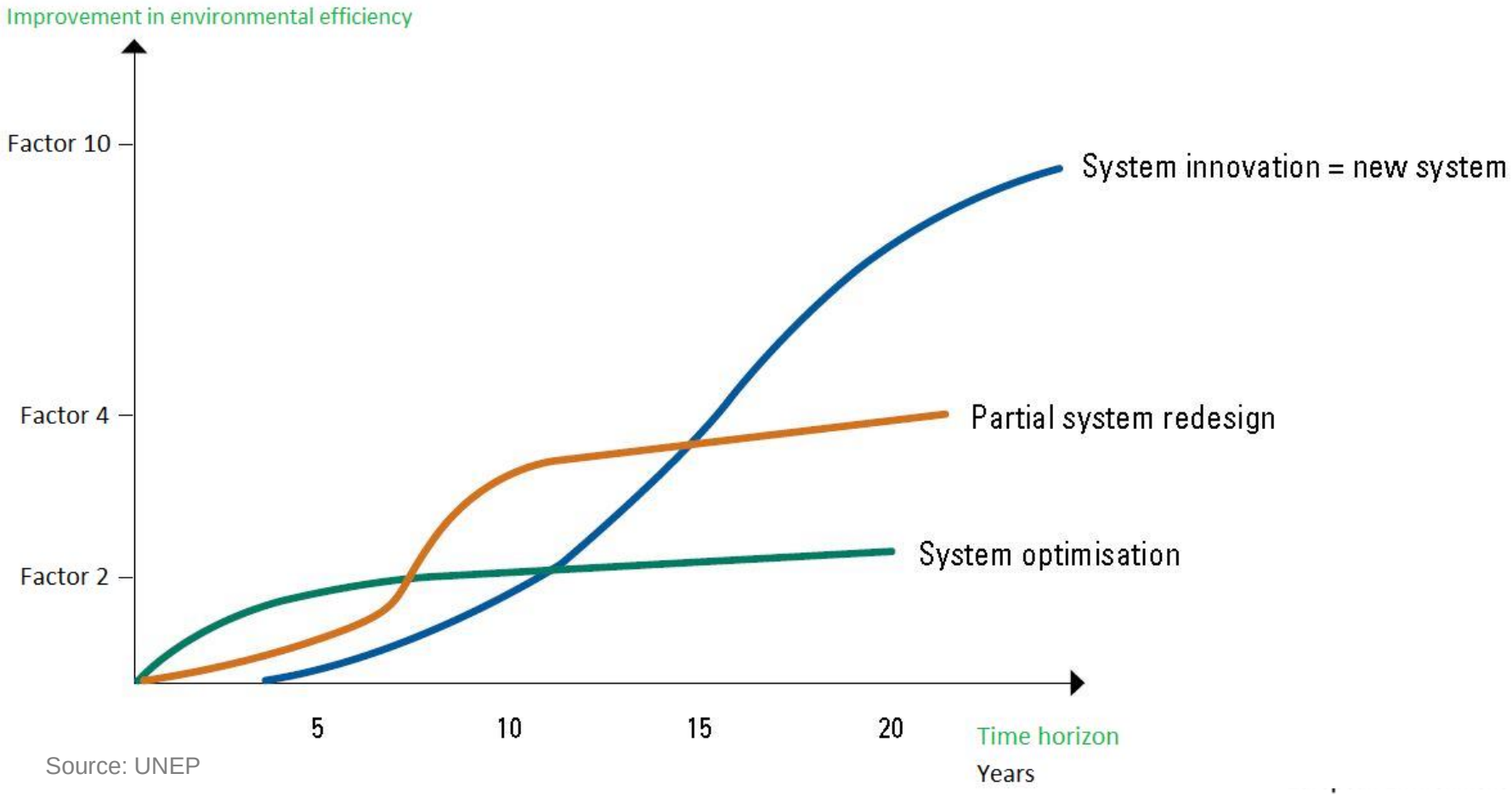
From challenge to response

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
- Raw Materials Initiative
- Energy Union
- Sustainable Development Goals

Incremental change will not be enough

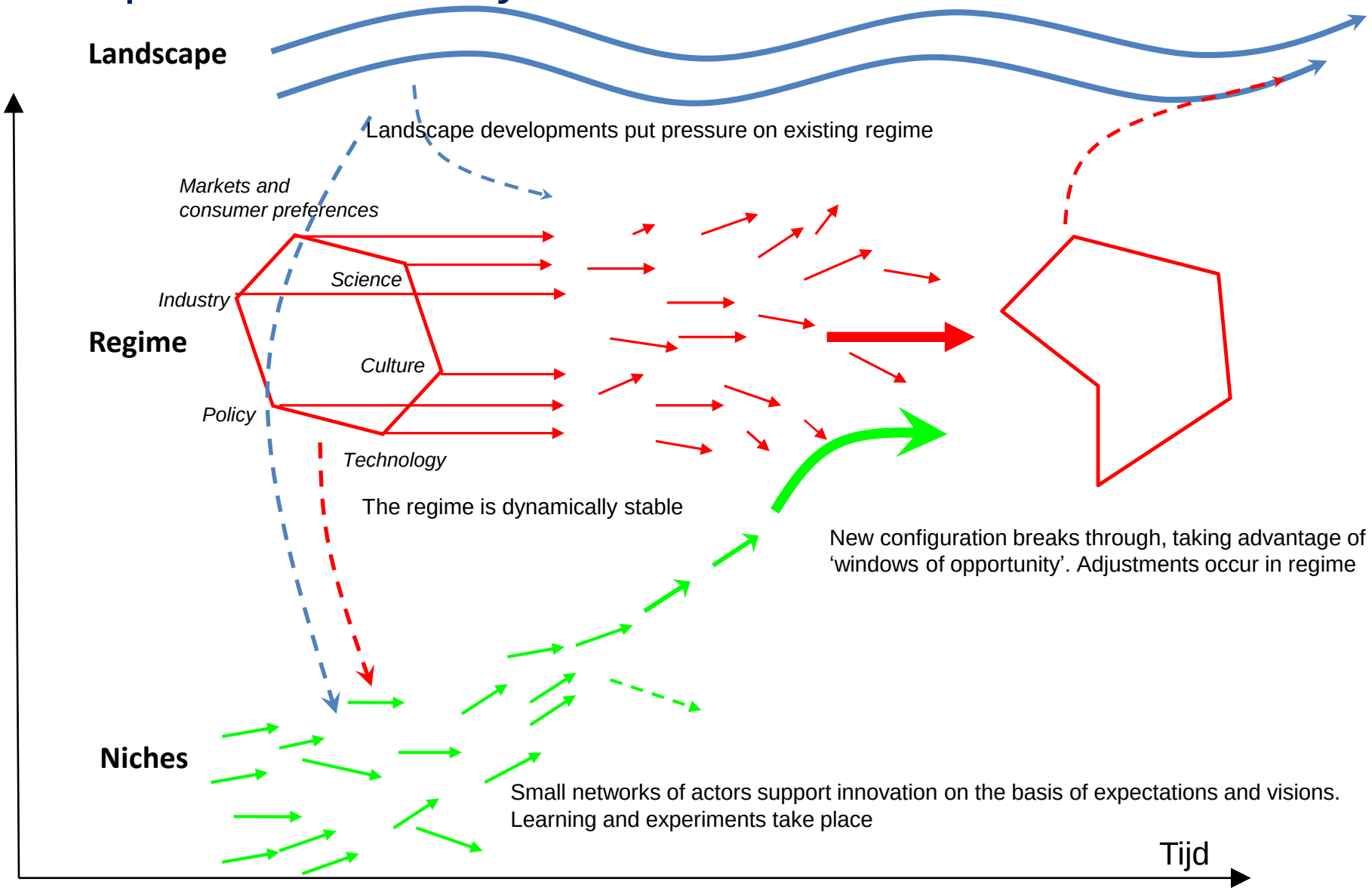
For developed regions, the scale of the needed improvements in environmental efficiency demands systemic innovation



Source: UNEP

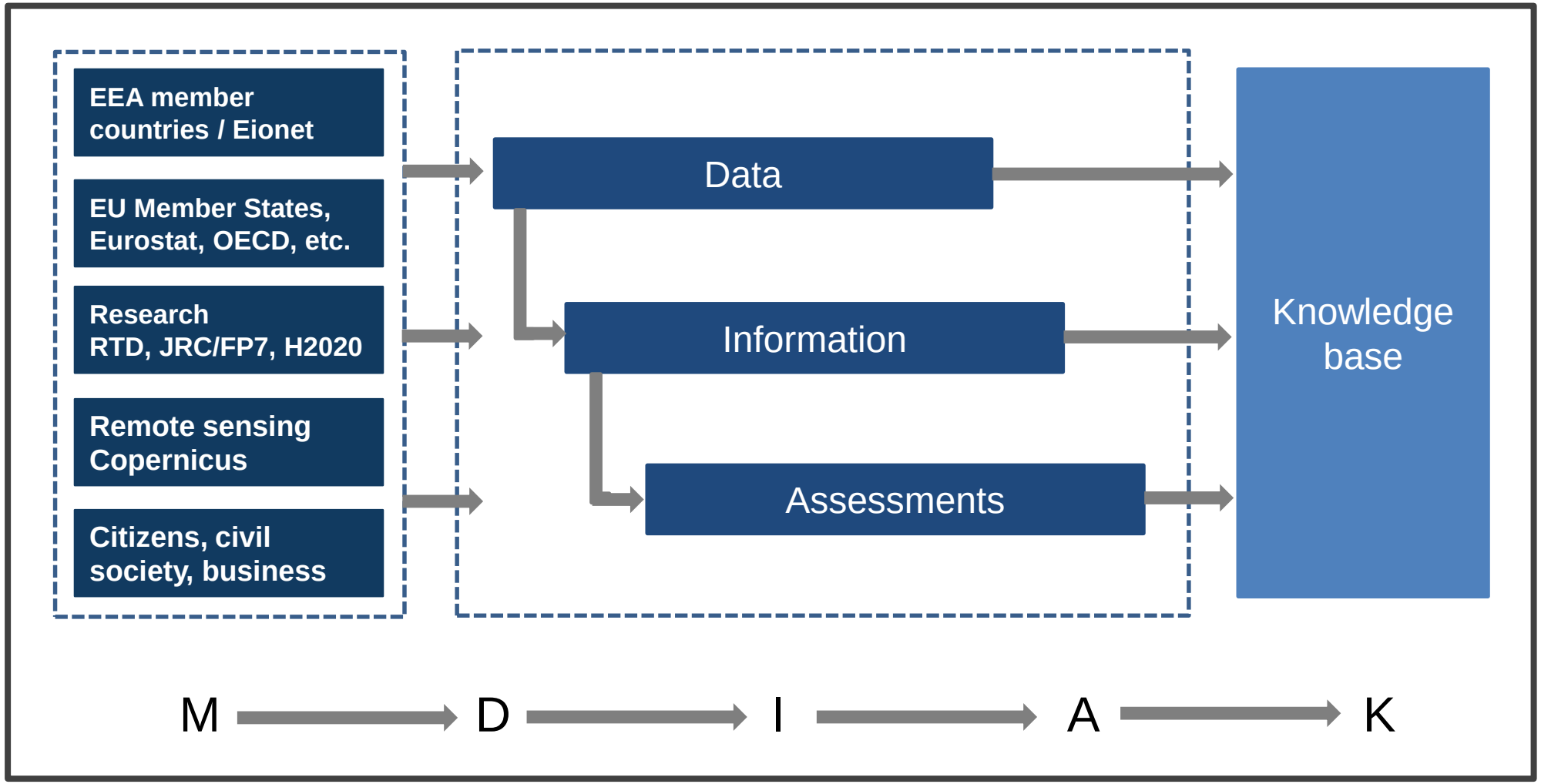
Agency

Systeeminnovation: complex, uncertain, non-linear, multiple forces and dynamics

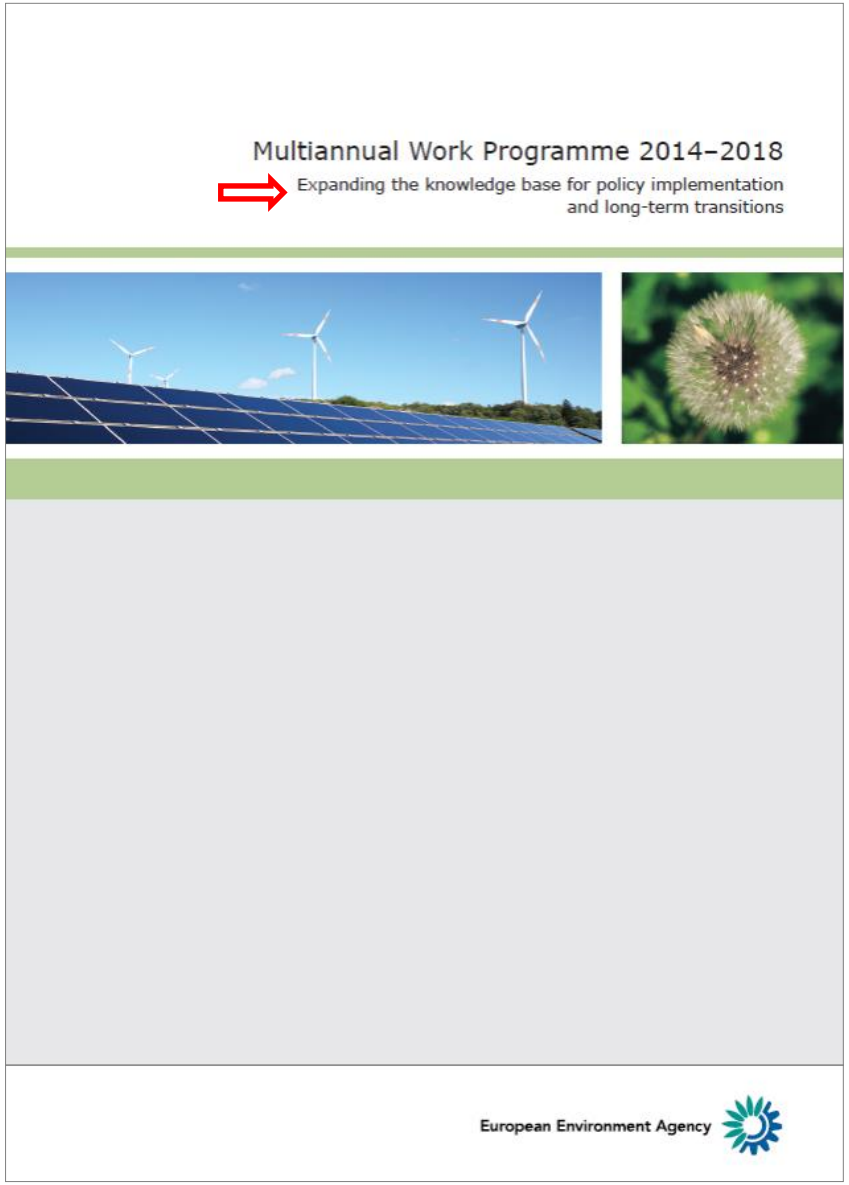


Source: based on Geels & Schot (2007)

The EEA-Eionet knowledge framework



Transitions thinking is built into EEA medium-term planning



Strategic area 1: Informing policy implementation

Strategic area 2: Assessing systemic challenges

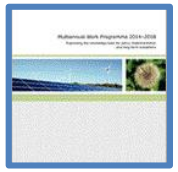
> *"Goal: To assess systemic challenges in the context of short-, medium- and long-term transitions, and to signal opportunities for (re)framing/recalibrating environmental policy to facilitate transition towards a more sustainable society in Europe."*

Strategic area 3: Knowledge co-creation, sharing and use

Shifting the EEA

Understanding systemic challenges and the need for transitions

Identifying knowledge, skills and governance approaches for transitions



2016 2017 2018

SOER 2020

PROBLEM-FOCUSED

SOLUTION-ORIENTED

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Next steps in building the knowledge base on sustainability transitions

We need a diverse and substantial evidence base, including:

- niche activities and upscaling
- visions and pathways for sustainable systems
- lock-ins, trade-offs and feedbacks in transition processes
- policies, governance mechanisms and institutions

Several EEA projects are under way aimed at developing our understanding of sustainable systems of production and consumption, use of foresight in policy, niche innovations across Europe, energy sector lock-ins, etc.

Possible roles for the EEA in supporting transitions

- Convener of actors from the different research and governance communities, with the aim of facilitating the integration of different forms of knowledge
- Translator both across disciplines and from complex academic theory into the language of policy
- Networker, helping in linking or replicating local innovations, or ’scaling up’ local practices to higher institutional or policy levels
- Analyst of specific aspects of systems of particular importance for transition processes

For example, we are currently working on…

- A **report on the knowledge base for supporting sustainability transitions**: concepts, knowledge, competencies, governance approaches and tools
- **Reports on key aspects of transitions** (e.g. energy sector lock-ins, use of foresight in policy)
- New processes of **knowledge development and sharing within our country network**
- Research into the **implications of planetary boundaries and global megatrends** at the European and national levels

Conclusions

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