DYNAMIX

Decoupling growth from resource use and its environmental impacts

Deriving a pragmatic target set for guiding EU resource efficiency policy towards 2050

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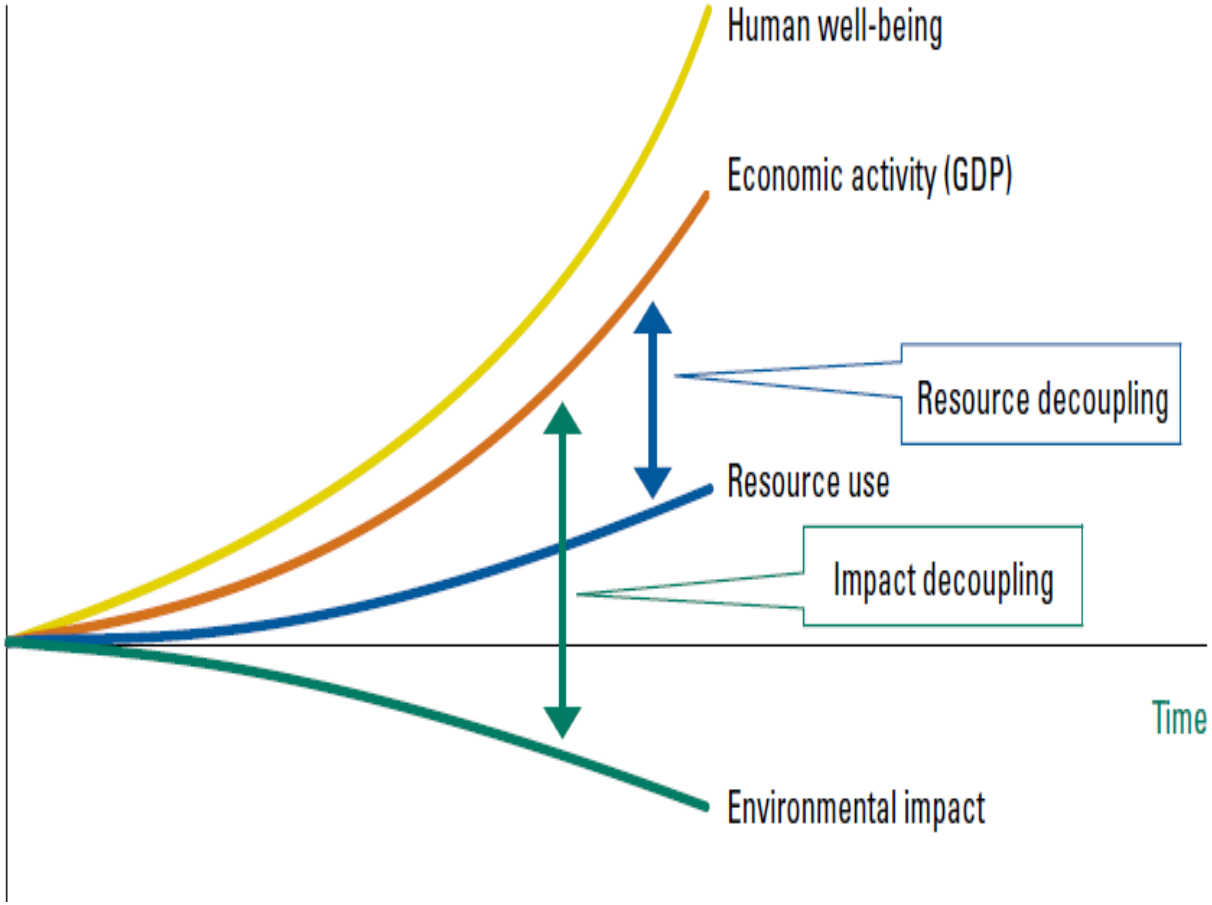
Resource Efficiency



[UNEP, 2011]

RESOURCE EFFICIENCY IN EU POLICY

2001: **EU Sustainable Development Strategy**

2002: **The Sixth Environment Action Programme (2002 – 2012)**

2005: **Thematic Strategy on the Sustainable Use of Natural Resources**

2010: **Europe 2020 – A strategy for smart, sustainable and inclusive growth**

A Resource Efficient Europe – Flagship initiative

2011: **Roadmap to a Resource Efficient Europe**

RESOURCE EFFICIENCY IN EU POLICY

Roadmap to a Resource Efficient Europe:

"By 2050 the EU's economy has grown in a way that respects resource constraints and planetary boundaries, thus contributing to global economic transformation. Our economy is competitive, inclusive and provides a high standard of living with much lower environmental impacts. All resources are sustainably managed, from raw materials to energy, water, air, land and soil. Climate change milestones have been reached, while biodiversity and the ecosystem services it underpins have been protected, valued and substantially restored."

[European Commission, 2011]

DYNAMIX (DYNAMIC POLICY MIXES FOR ABSOLUTE DECOUPLING OF ENVIRONMENTAL IMPACT OF EU RESOURCE USE FROM ECONOMIC GROWTH)

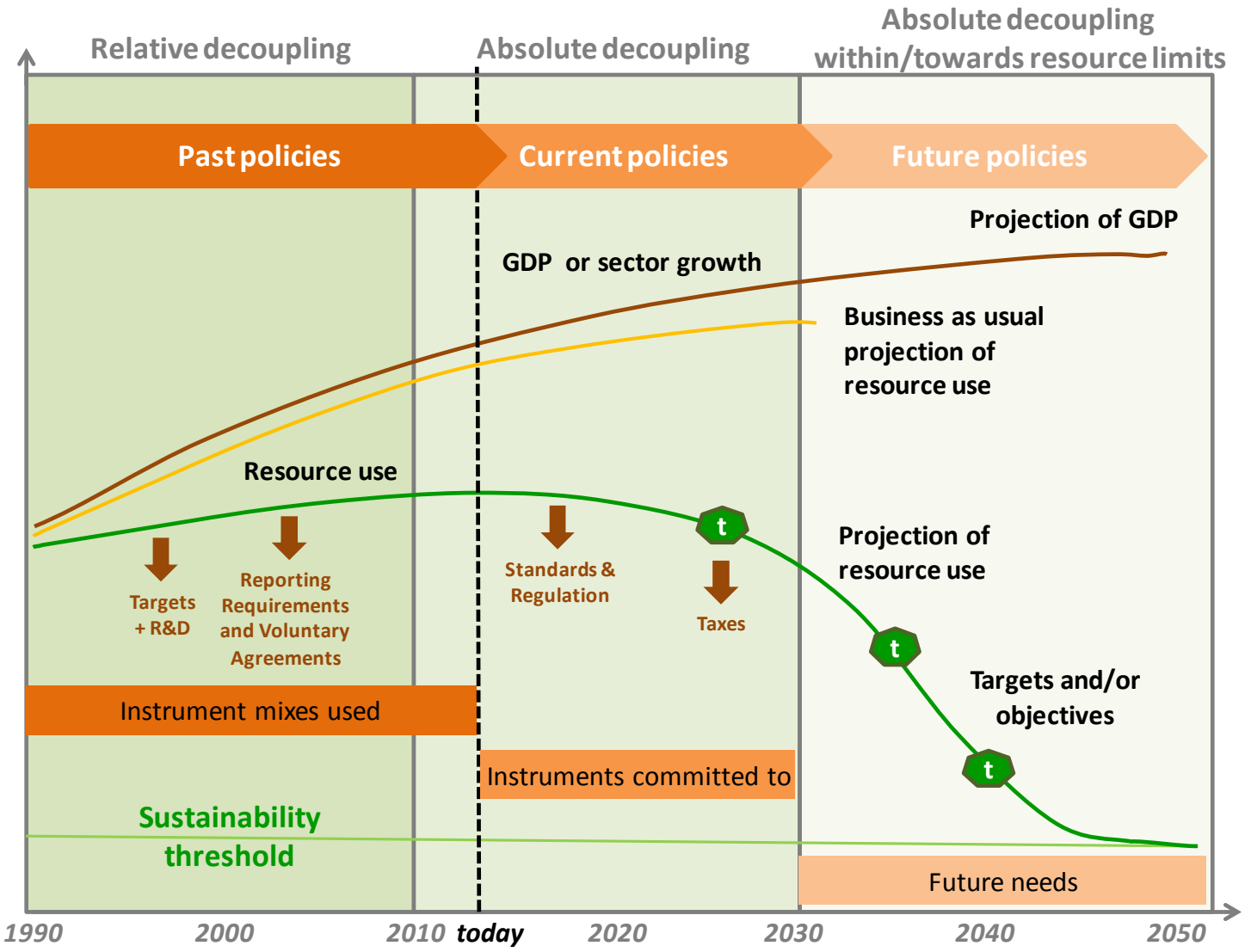
OBJECTIVE

- To identify policy pathways to achieve absolute decoupling of economic growth from resource use and its environmental impacts in the EU in 2050

PARTNERS

WORK TO BE PERFORMED

- Literature review of inefficiencies of resource use; ex post assessment of existing policies and policy mixes; development of scenarios and new policy mixes (incl. paradigm shifts); quantitative modelling; qualitative ex ante assessment; and, stakeholder involvement through policy platforms.


Relative decoupling
Absolute decoupling
Absolute decoupling within/towards resource limits
Past policies
Current policies
Future policies
Projection of GDP
GDP or sector growth
Business as usual projection of resource use
Resource use
Targets + R&D
Reporting Requirements and Voluntary Agreements
Standards & Regulation
Taxes
t
Projection of resource use
Targets and/or objectives
Instrument mixes used
Instruments committed to
Sustainability threshold
Future needs
1990
2000
2010
today
2020
2030
2040
2050

TARGETS TO GUIDE EU RESOURCE EFFICIENCY POLICY

- Research questions
  - *How will we know if absolute decoupling has been achieved?*
  - *Will absolute decoupling be sufficient to ensure that EU resource consumption stays within ecologically acceptable limits?*
- Method
  - Literature review
  - Policy platform
- Scope
  - Abiotic resources, including minerals, metals and fossil fuels (inputs)
  - Biotic resources, including timber, fish, agricultural products and all other types of biomass (inputs)
  - Environmental media and the ecosystem services linked to them: land, water, air, soil, biodiversity (impacted by outputs such as waste or emissions)

SETTING TARGETS FOR 2050

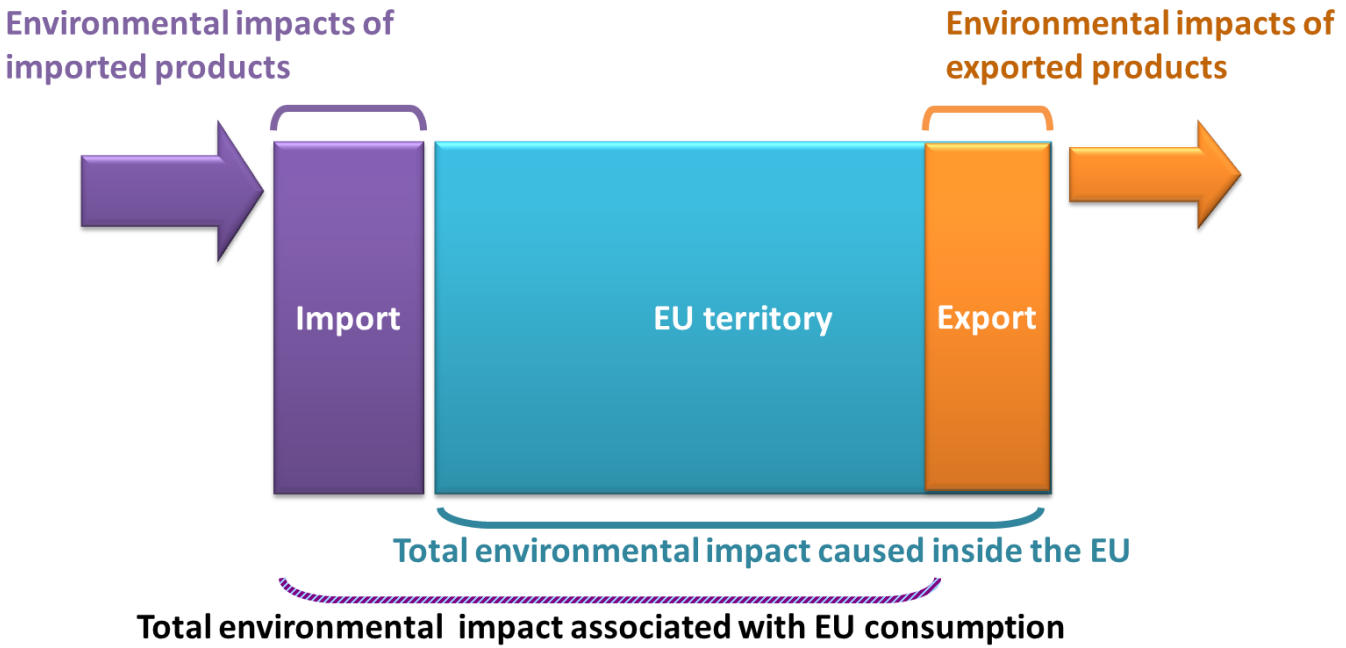
- Why targets?
  - A target is a quantified and measurable policy objective based on a relevant, accepted, credible, available and robust indicator
  - Provides clear orientation, concrete guidance and helps prioritise actions
  - Benchmark for assessing the effectiveness of policies
  - Monitors progress towards policy objective
  - It inspires and engages

SETTING TARGETS FOR 2050

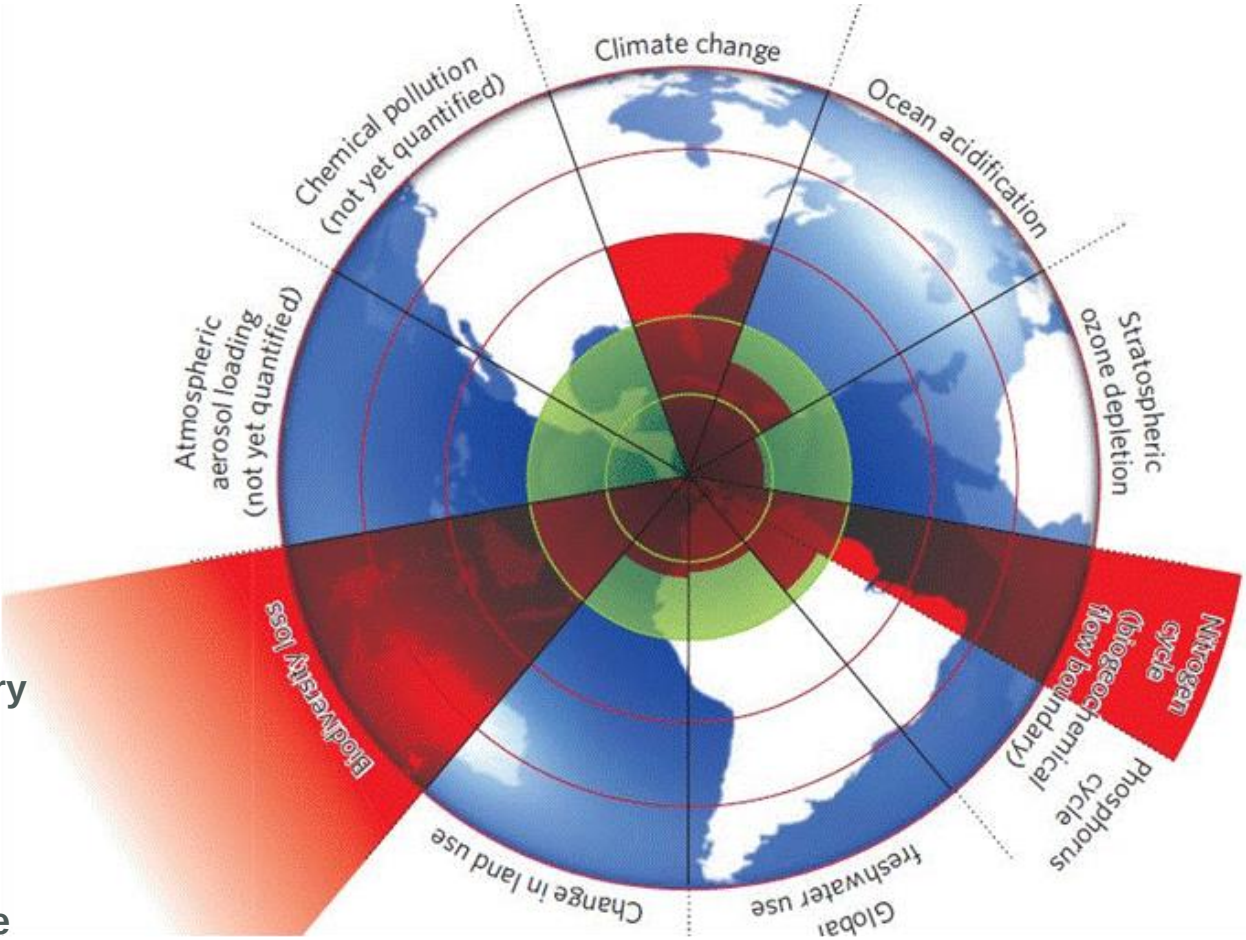
- Criteria for deriving targets
  - *cover the most critical environmental impacts of resource use, while avoiding overlap between the different targets*
  - *reflect sustainability thresholds and looming scarcity of vital resources*
  - *progress towards them can be measured based on available data*
  - *the targets do not predetermine any specific resource efficiency solution*
  - *the targets reflect absolute reductions rather than changes in intensity or productivity*
  - *the targets can be easily communicated*

ECONOMY-WIDE COVERAGE

- Resource use and environmental impacts
- Territory/production-based and life cycle/consumption-based



PLANETARY BOUNDARIES

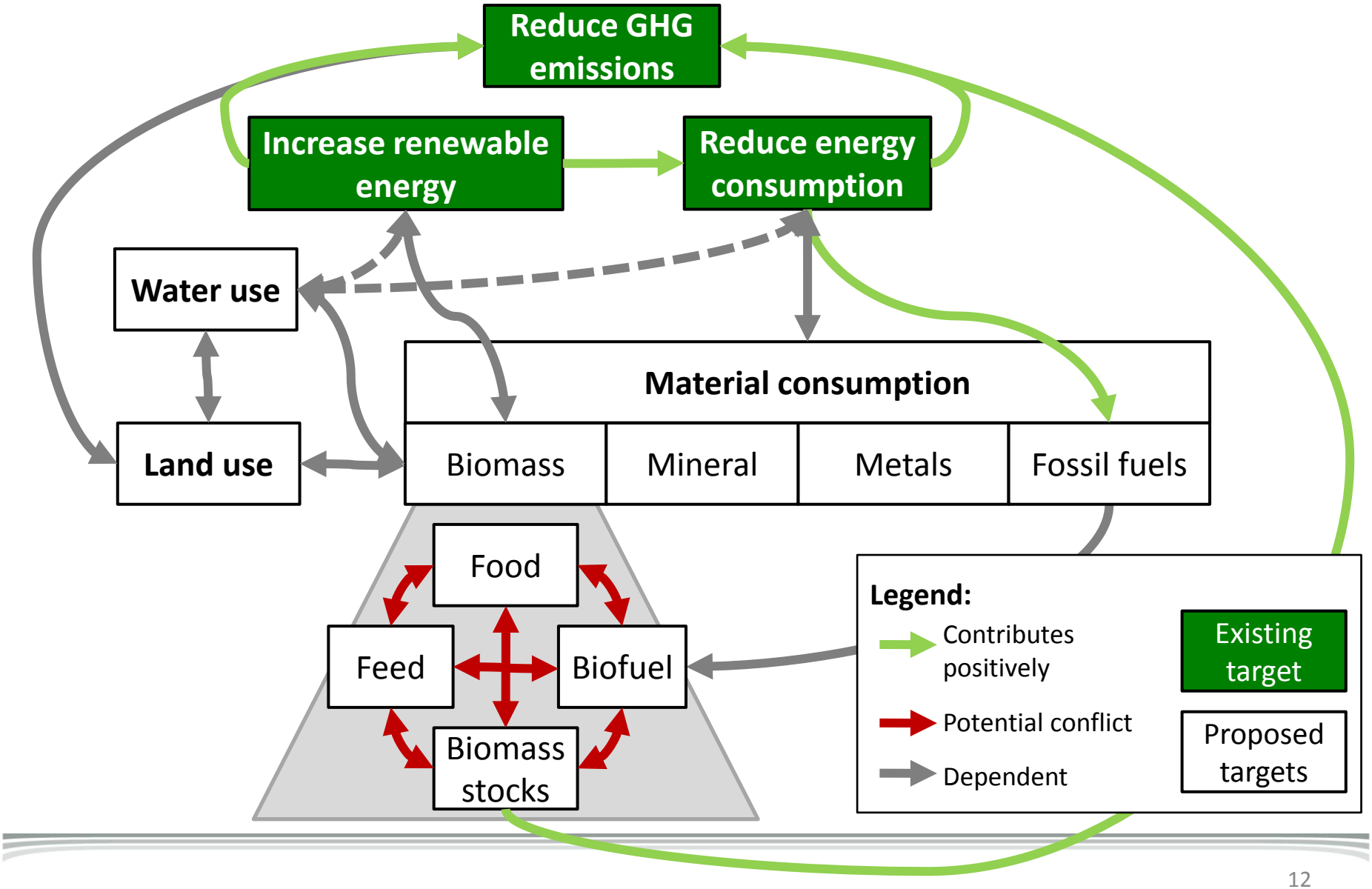


inner green shading = proposed safe operating space for nine planetary systems

red wedges = estimate of the current position for each variable

[Rockström et al., 2009]

USE OF RESOURCES ARE INTERLINKED



RATIONALE

- Environmental rationale
  - scientific evidence about environmental thresholds and carrying capacity, e.g. resource base, absorption capacities
- Socio-economic rationale
  - evidence about what is economically feasible, fair, socially preferable and technically possible

PROPOSAL FOR FIVE KEY TARGETS FOR 2050 FOR THE EU

1. Consumption of virgin metal ores
   - 80% reduction compared to 2010 measured by RMC
2. Greenhouse gas emissions
   - 2 tonnes CO_2-equivalent per capita and year (measured as footprint to reflect embedded emissions and as EU-internal emissions)
3. Use of arable land
   - zero net demand of non-EU arable land
4. Nutrients input
   - reducing nitrogen and phosphorus surpluses in the EU at the level best available technique can achieve
5. Freshwater use
   - no region should experience water scarcity representing impacts of resource use on freshwater availability.

PROPOSAL FOR FIVE KEY TARGETS FOR 2050 FOR THE EU

1. Consumption of virgin metal ores

- 80% reduction compared to 2010 measured by RMC

- representing scarcity of metals and environmental impacts caused by extraction, refinement, processing and disposal of metals

PROPOSAL FOR FIVE KEY TARGETS FOR 2050 FOR THE EU

2. Greenhouse gas emissions

- 2 tonnes CO_2-equivalent per capita and year (measured as footprint to reflect embedded emissions and as EU-internal emissions)

- Climate change impacts of greenhouse gas emissions through energy use as well as agricultural and industrial processes

PROPOSAL FOR FIVE KEY TARGETS FOR 2050 FOR THE EU

3. Use of arable land

- zero net demand of non-EU arable land

- Impacts of biomass production on soil quality, water quality, ecosystems and biodiversity

PROPOSAL FOR FIVE KEY TARGETS FOR 2050 FOR THE EU

4. Nutrients input

- reducing nitrogen and phosphorus surpluses in the EU at the level best available technique can achieve

- Impacts of agricultural production on marine and freshwater quality as well as soil quality

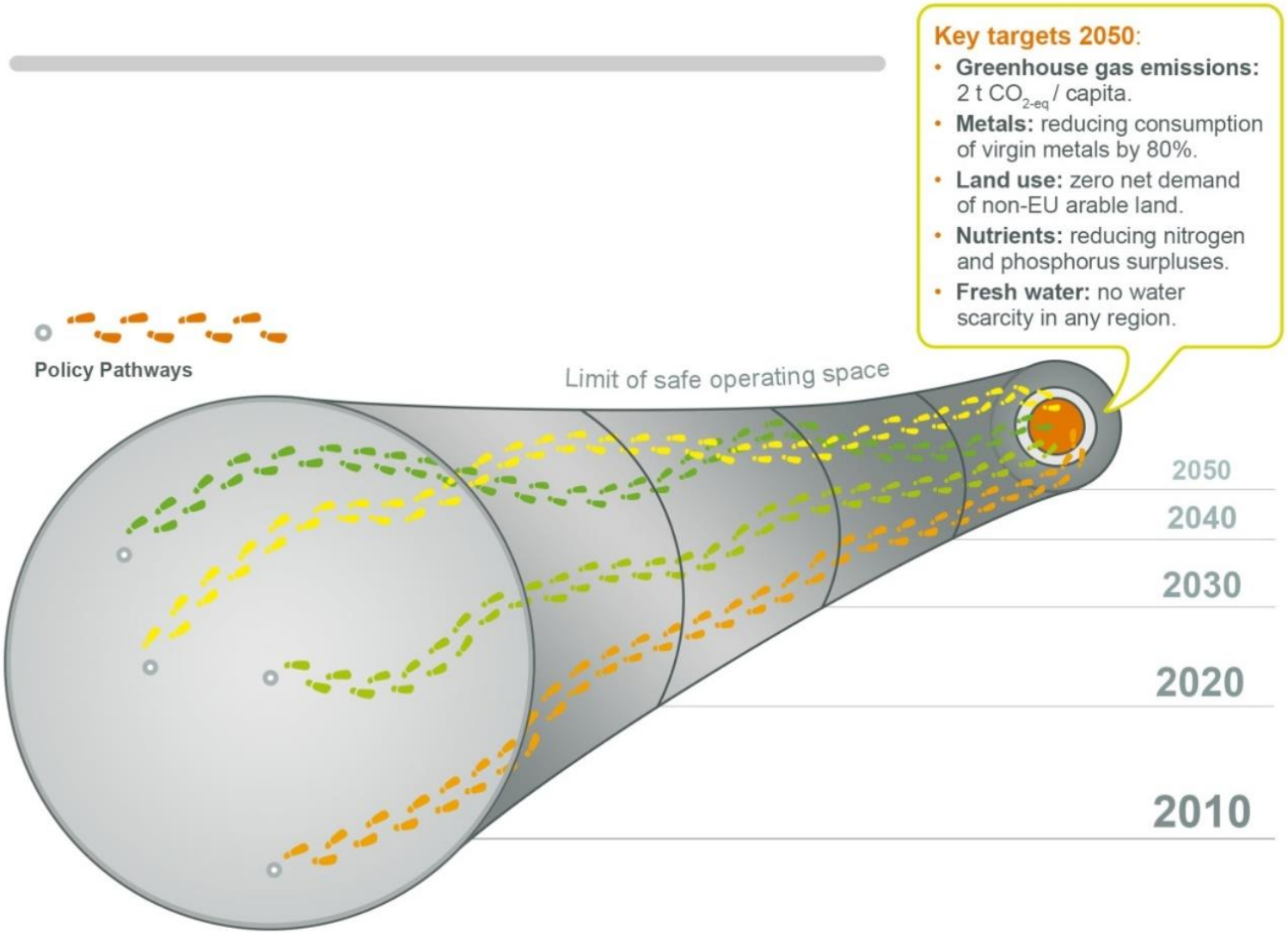
PROPOSAL FOR FIVE KEY TARGETS FOR 2050 FOR THE EU

5. Freshwater use

– no region should experience water scarcity representing impacts of resource use on freshwater availability

- Impacts of resource use on freshwater availability

PROPOSAL FOR FIVE KEY TARGETS FOR 2050 FOR THE EU



CONCLUSIONS (1/2)

- Targets are necessary to operationalise absolute decoupling
- Proposal for criteria for deriving pragmatic long-term targets to guide EU resource efficiency policy so that the EU economy will stay within ecologically acceptable limits by 2050
- A set of five key targets for GHG emissions, use of metals, land and freshwater as well as nutrients input

CONCLUSIONS (2/2)

- The targets outline the magnitude of the global challenges and provide a clear benchmark for measuring progress towards an EU economy that consumes and produces within acceptable ecological limits.
- By focusing on a limited number of key targets, complexity is reduced
- The targets could be operationalised as approximative restrictions in the economic models

- A limitation of the target set is its limited ability to address the challenge of data availability and the fact that two of the targets are formulated in qualitative terms (freshwater and nutrients) and thus will require further refinement to allow for monitoring.

THANK YOU!

QUESTIONS?

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DYNAMIX website

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