



www.ecologic.eu

Ecologic Institute

Berlin
Brussels
Vienna
Washington DC



Decoupling economic growth from resource use and environmental impacts

What do we need to achieve? And how?

Dr. Martin Hirschnitz-Garbers
Ecologic Institute

<http://dynamix-project.eu/>

<https://twitter.com/EUResources>



DYNAMIX is a project funded under the European Union Seventh Framework Programme





Ecologic Institute – Expertise in science-based policy advice

- private not-for-profit non-university research institute since 1995
- applied environmental research, policy analysis and consultancy
- topics: e.g. Arctic, Climate, Energy, Land use, Law, Resources, Water
- offices in Berlin, Brussels, Washington DC and San Mateo, CA
- clients: European Commission, Parliament and EEA; national and sub-national ministries and agencies, non-profit organisations
- 120 employees

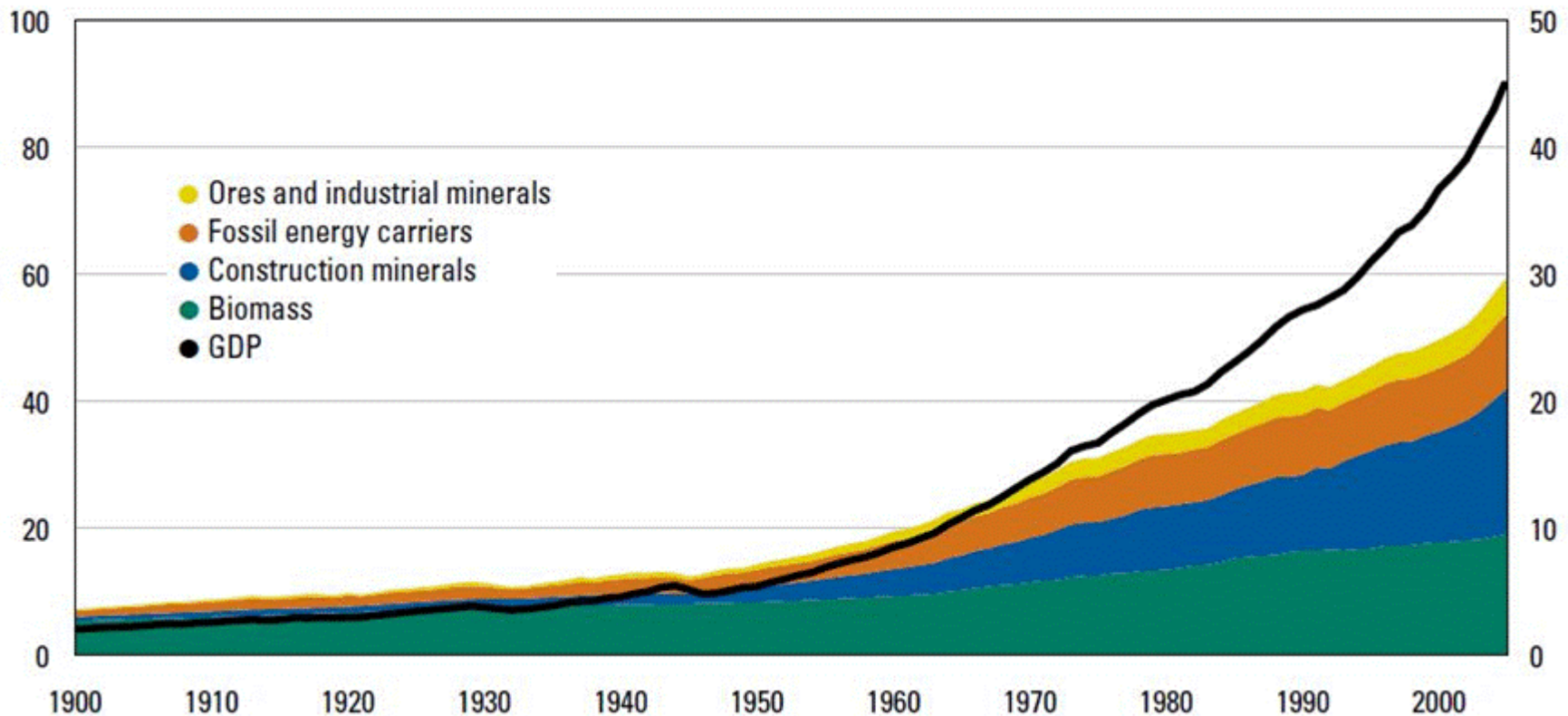
<http://www.ecologic.eu/>



Background – Global Resource Use

Material extraction
Billion tons

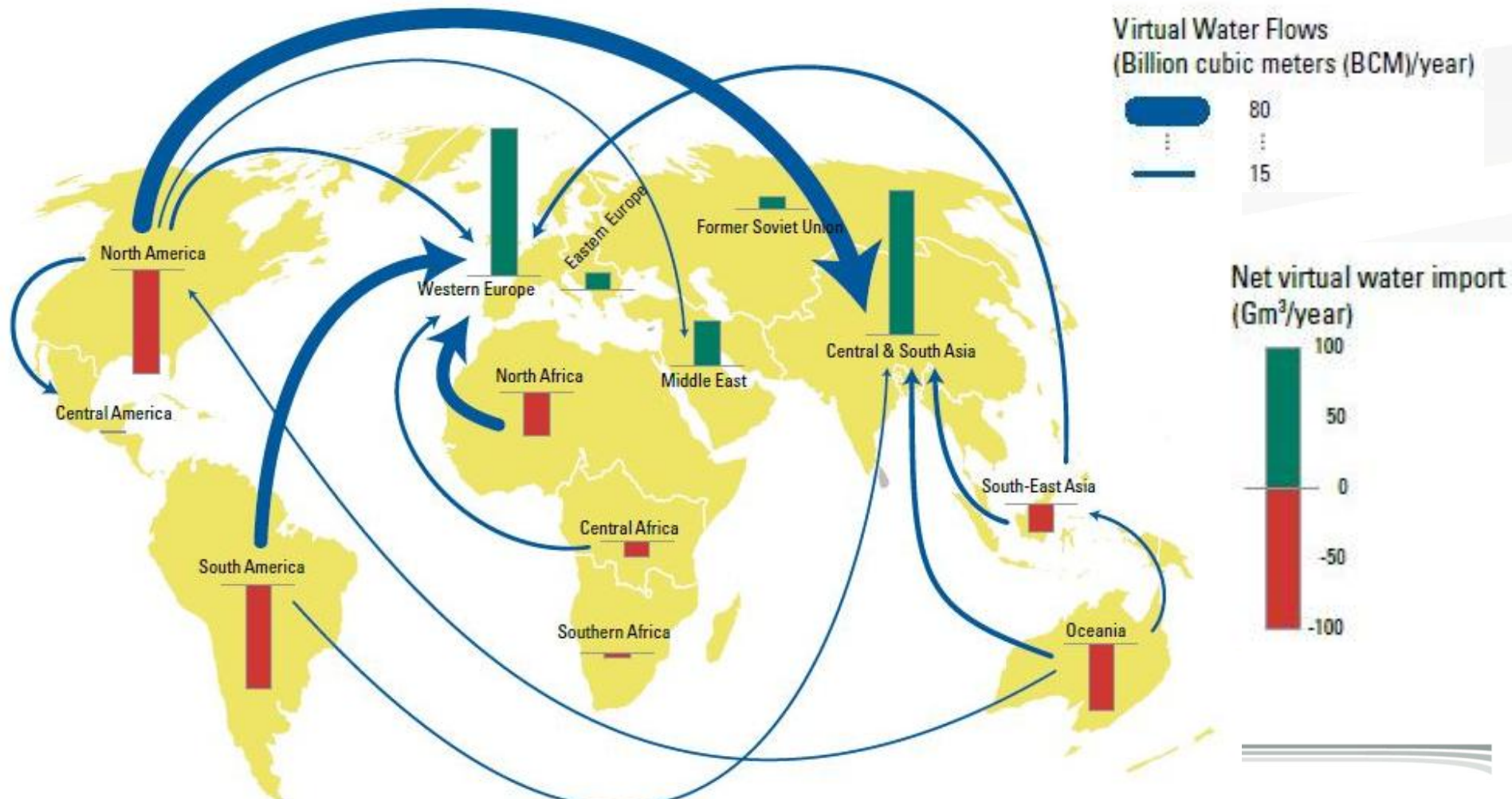
GDP
trillion (10¹²) international dollars



Global Material Extraction in billion tonnes, 1900 – 2005; UNEP (2011): 10

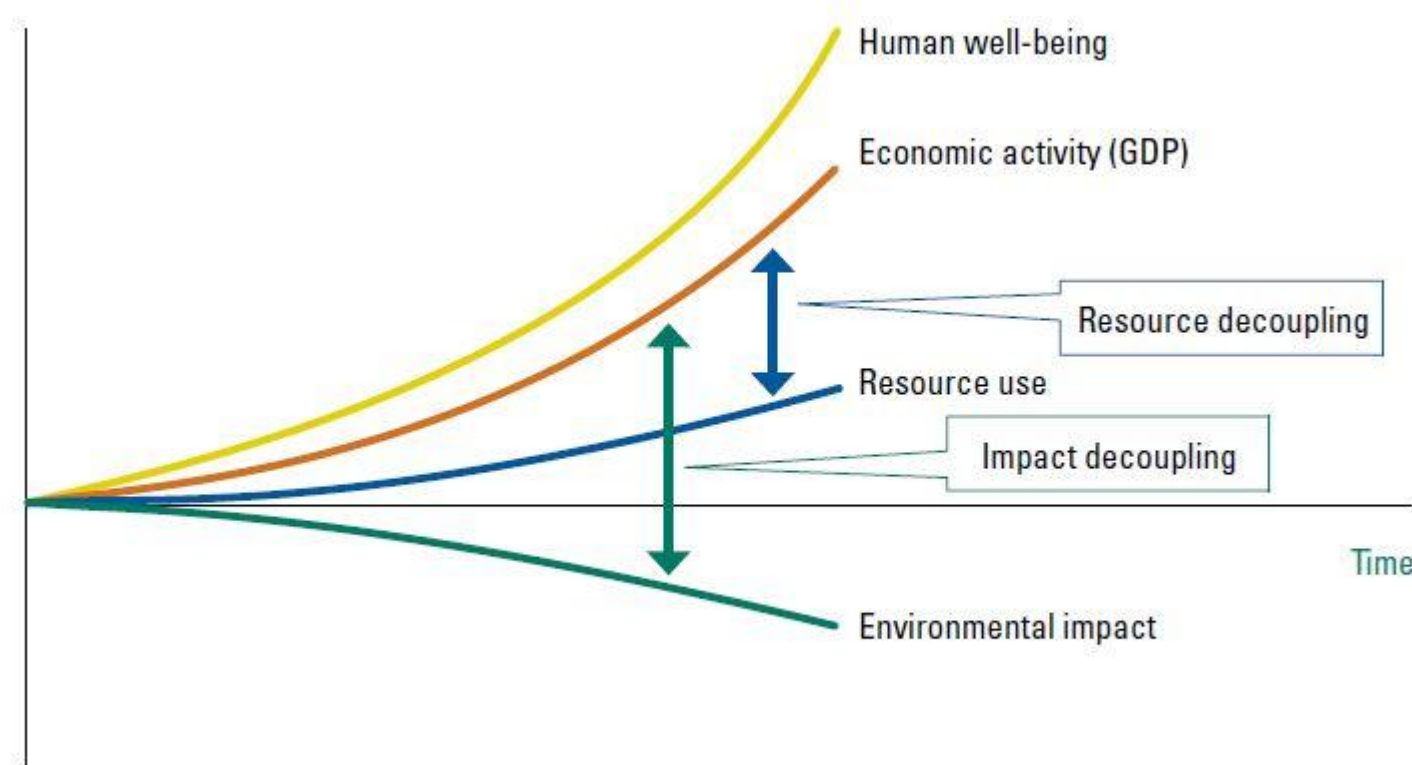


Background – Global Water Use



Virtual water trade balances and flows of agricultural products; UNEP (2011): 61

Concept of Decoupling – Conventional concepts

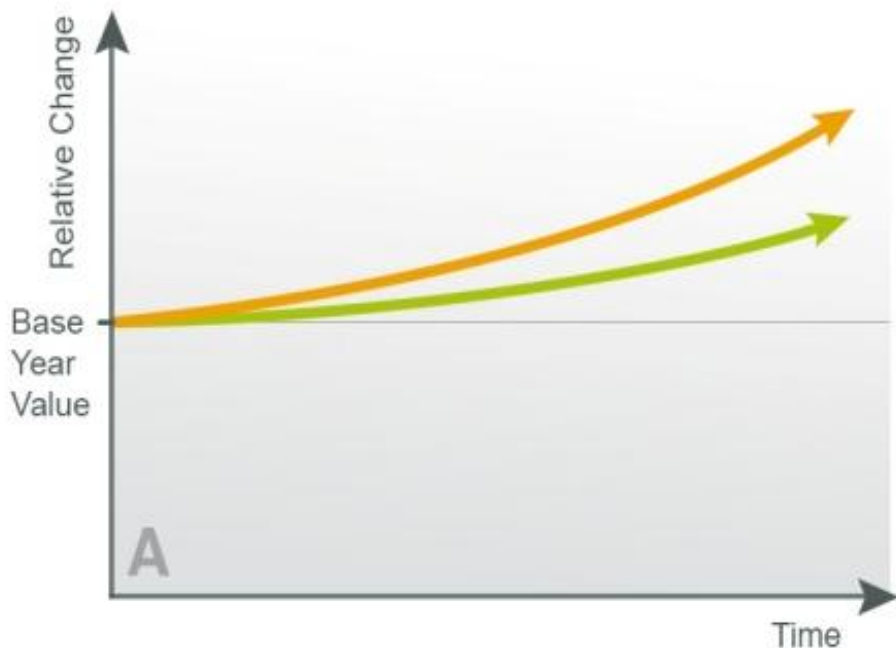


Two aspects of decoupling; UNEP (2011): 5

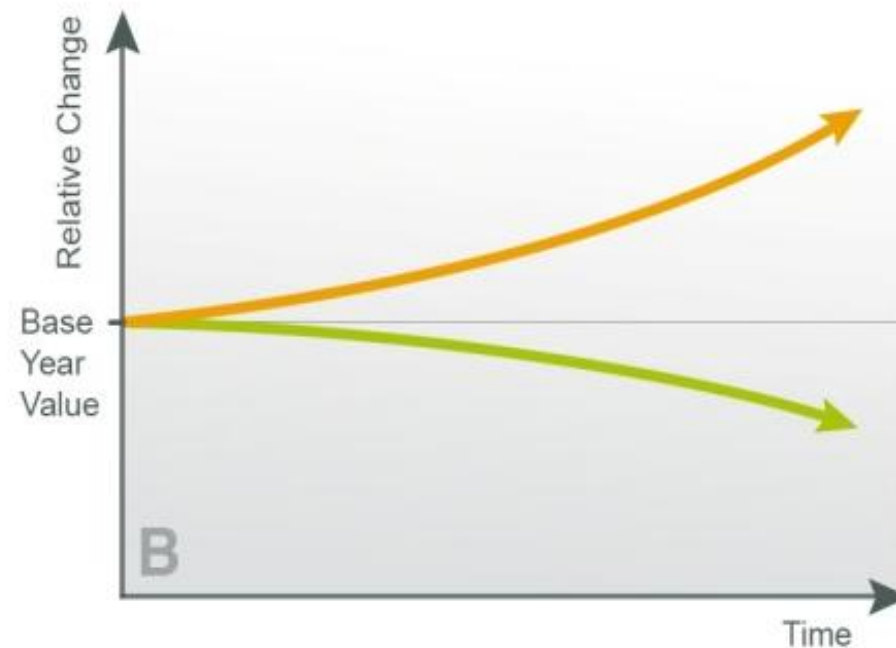


Concept of Decoupling – Conventional concepts

Relative Decoupling



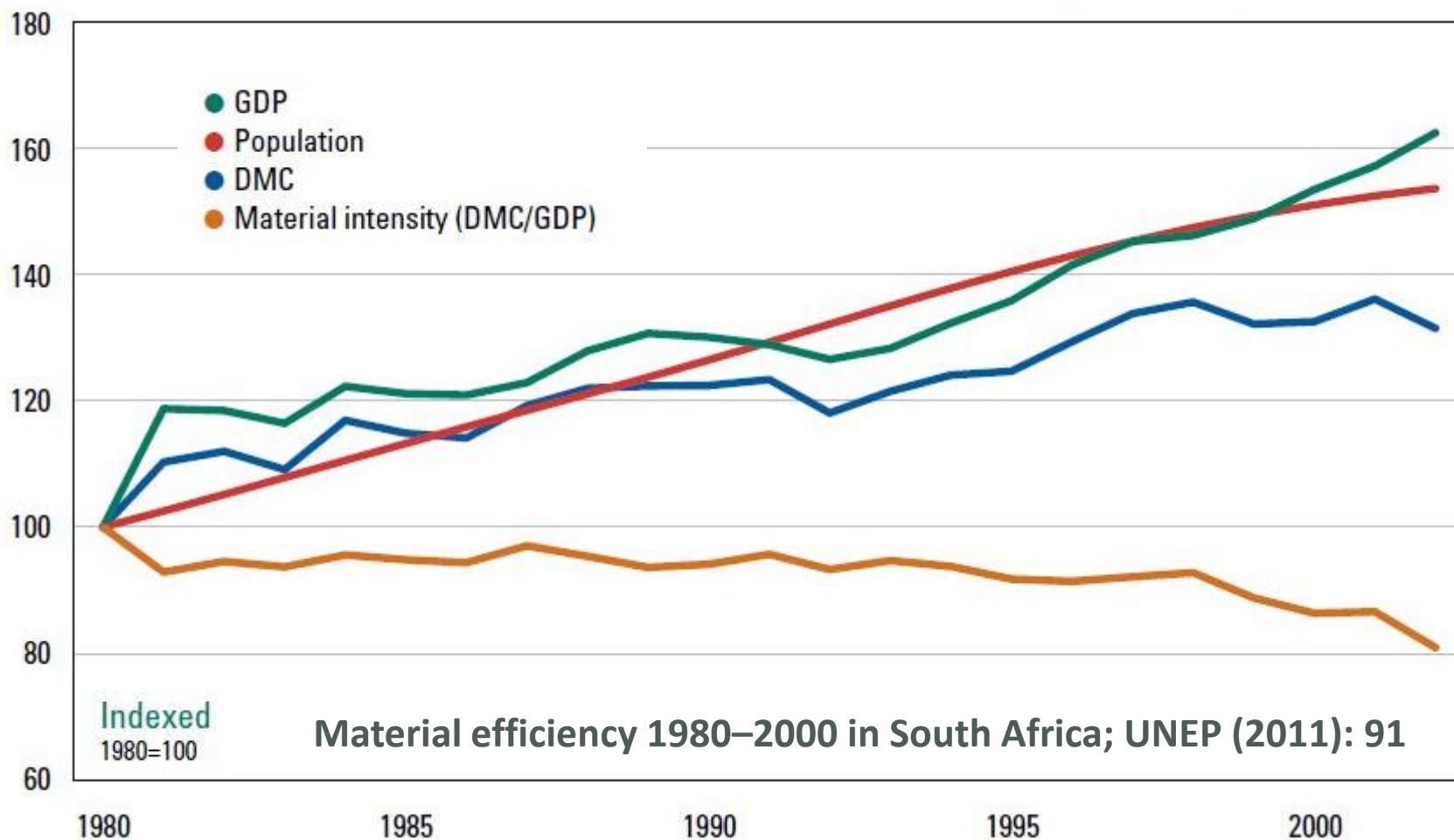
Absolute Decoupling



— Gross Domestic Product (GDP)
— Resource Use / Environmental Impacts

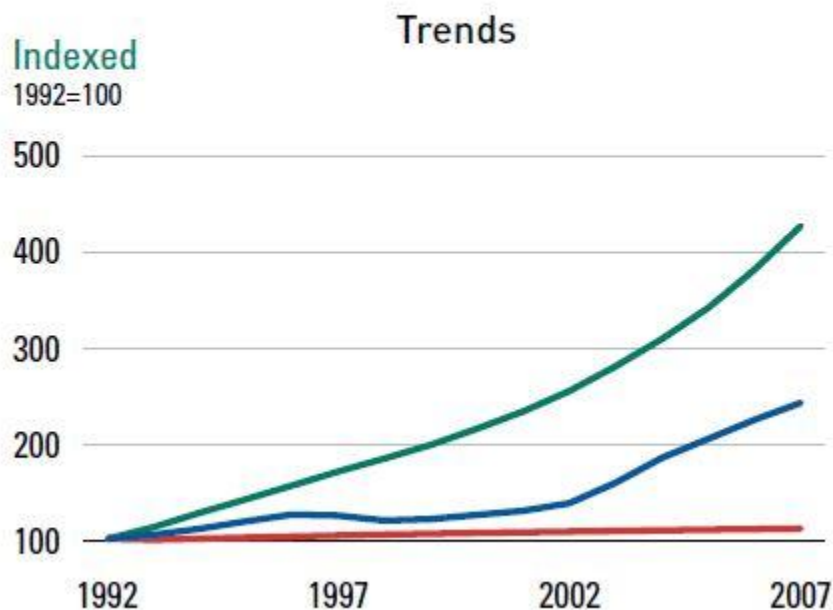


Examples for relative decoupling – South Africa

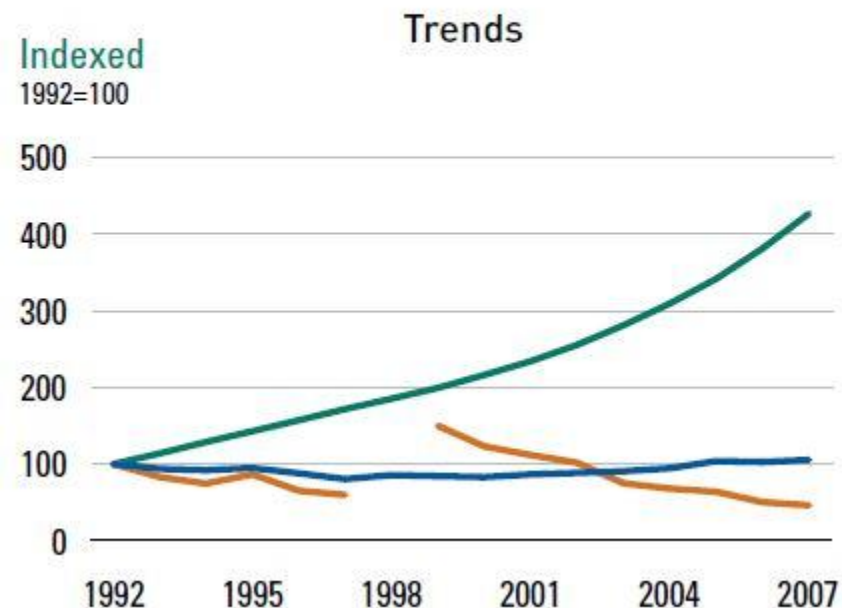


Examples for relative decoupling – China

- GDP
- Primary energy consumption
- Population



- GDP
- Waste water
- Solid waste

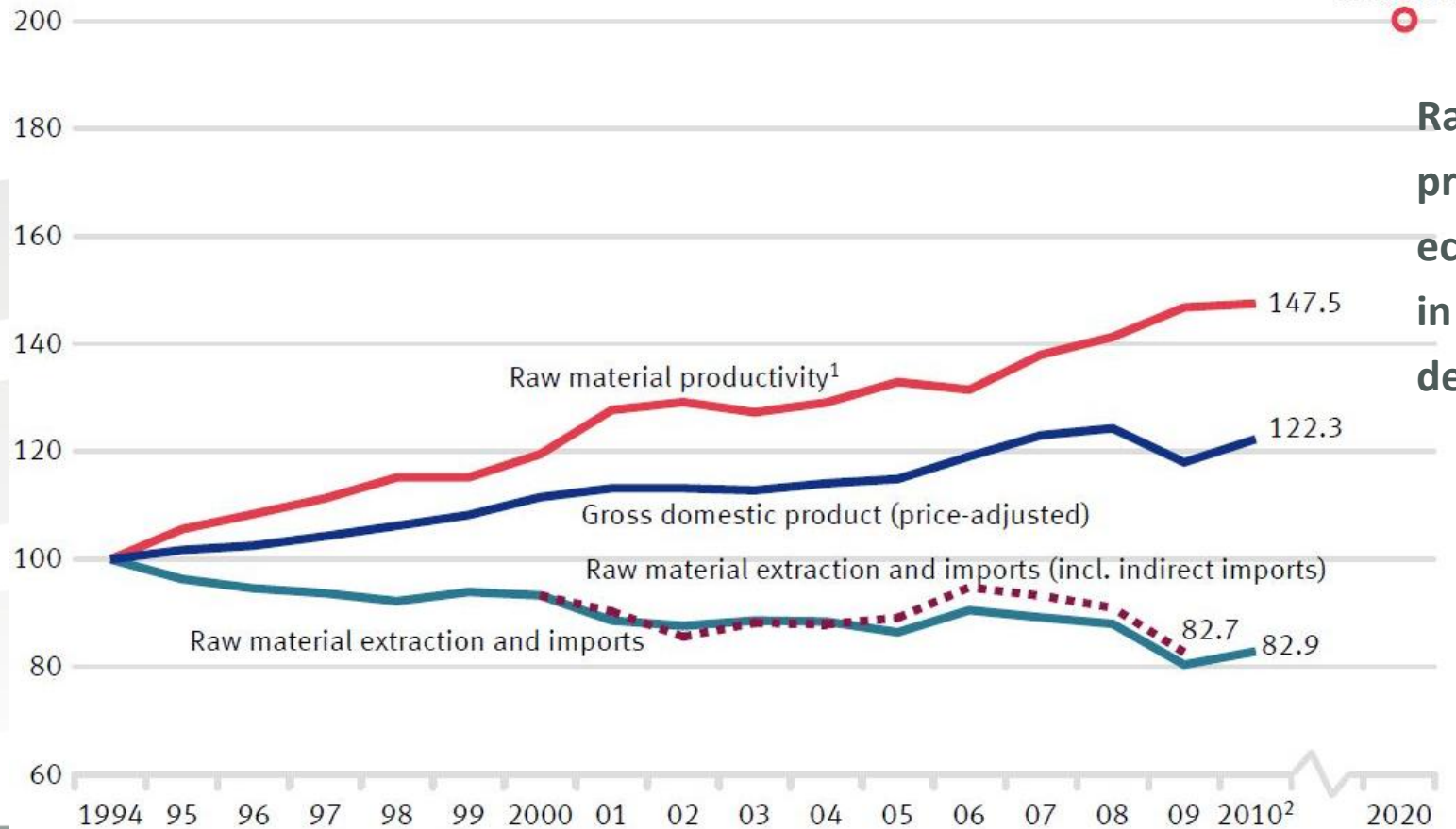


Decoupling trends for energy consumption and waste generation in China; UNEP (2011): 113 and 114)



Example for absolute decoupling - Germany

1994 = 100

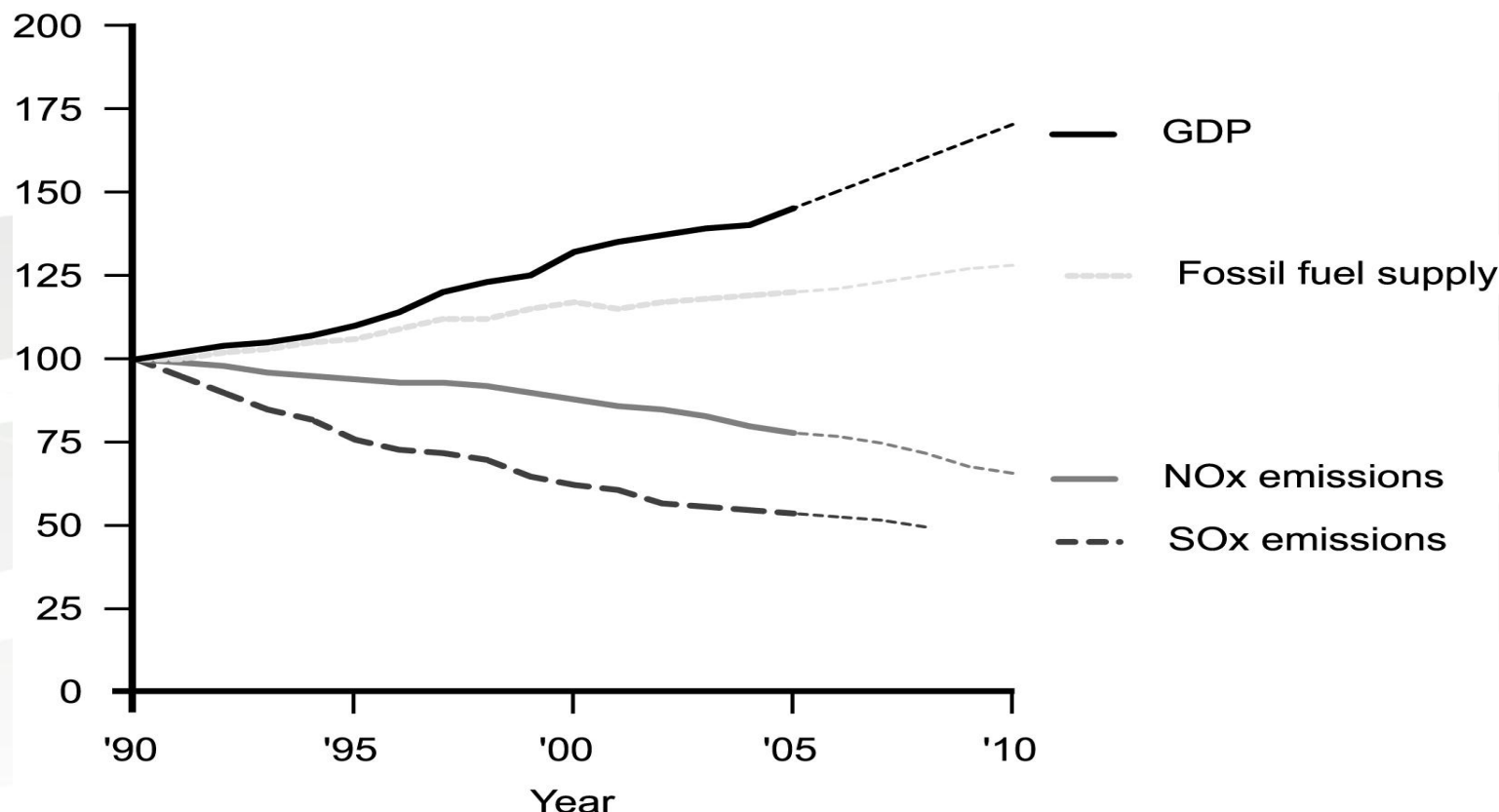


Raw material
productivity and
economic growth
in Germany;
destatis (2012): 8

1 Abiotic. 2 Preliminary results.



Example for absolute decoupling – OECD countries



Decoupling Economic Growth from Air Pollution in OECD countries; OECD (2008): 16

Resource efficiency and decoupling – inextricably linked

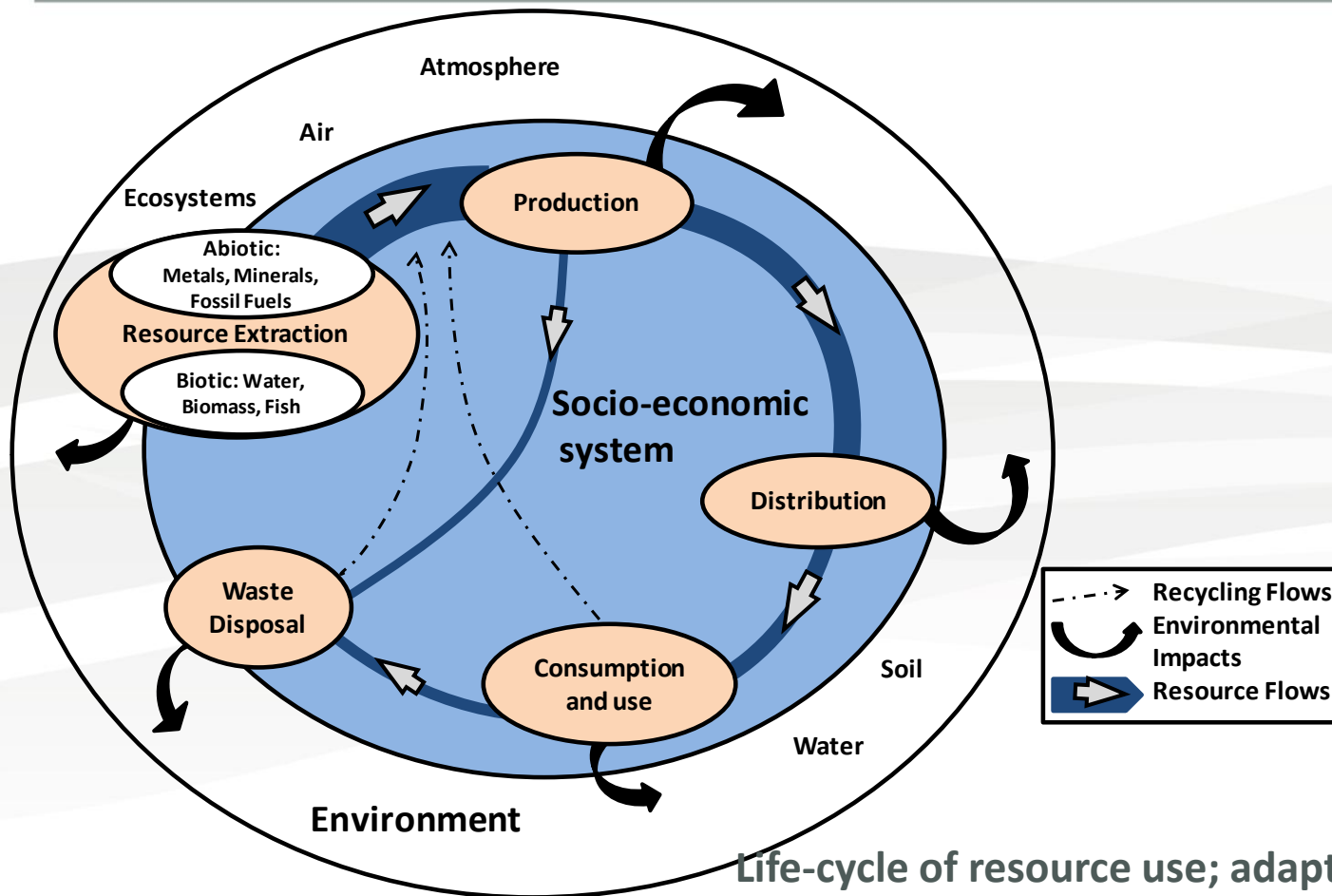
Resource efficient development „allows the economy to

- create more with less,
- delivering greater value with less input,
- using resources in a sustainable way
- and minimising their impacts on the environment.”

Roadmap to a Resource Efficient Europe, p. 3



Resource efficiency and decoupling – inextricably linked



Life-cycle of resource use; adapted from UNEP (2011): 122



Resource efficiency and decoupling – inextricably linked

- Integration of socio-economic and environmental aspects
- Resource Efficiency key for successful sustainable development
- But:
 - Policy agenda needs sharpening
 - How to achieve decoupling?
 - Decoupling as accepted/acceptable goal?



How to achieve decoupling? – a few relevant questions

- relative or absolute decoupling?
 - Science calls for absolute decoupling (e.g. PolRess, UNEP), policy less “ambitious” on that (EREK manifesto, Roadmap, ProgRess)
- decoupling against which base-year?
 - Science calls for year 2000 as base-year for targets in 2050
- All or only specific resources / impacts to focus on?
 - Roadmap’ resource focus vs. ProgRess resource focus
- Targets to set? Which?



How to achieve decoupling? – need for targets

Only few quantitative targets in the resource efficiency context

- 2020-objectives of the Europe 2020 strategy
 - reducing CO₂-emissions by 20%,
 - increase share of renewable energy sources in final energy consumption to 20%;
 - increase energy efficiency by 20%
- 2020 objective of Germany's Sustainable Development Strategy
 - doubling raw abiotic material productivity (vs. 1994)

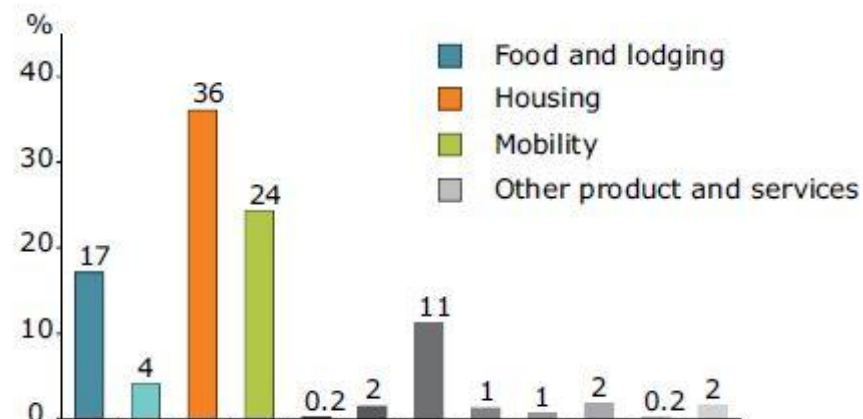
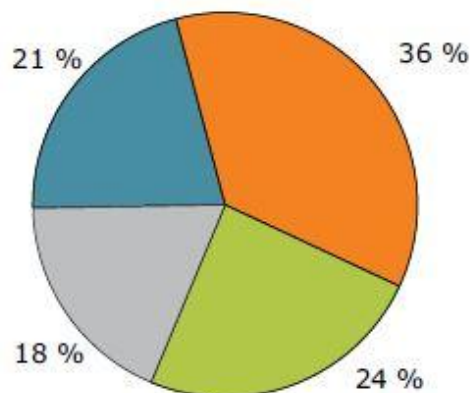
Resource efficiency and decoupling – target needs

Scientifically important target would be to achieve

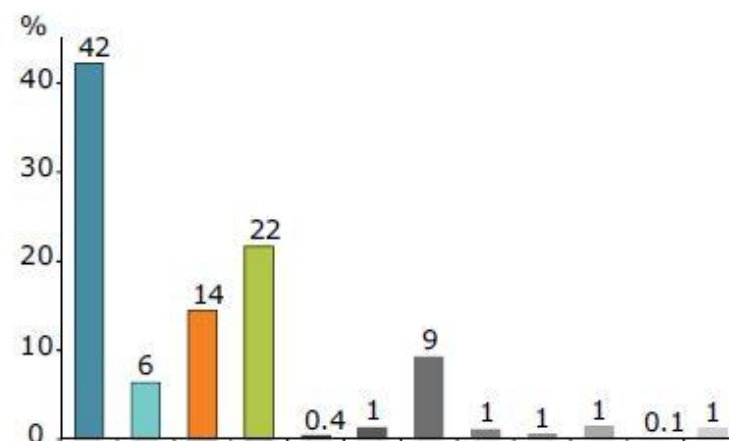
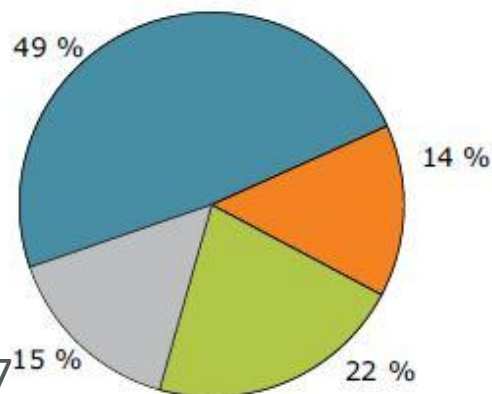
- 10t TMC abiotic per capita by 2050
- data for 2008 show 43 t TMC abiotic per capita
- reduction of 77% needed

How to achieve decoupling? – focus on resource use and impacts

Greenhouse gases



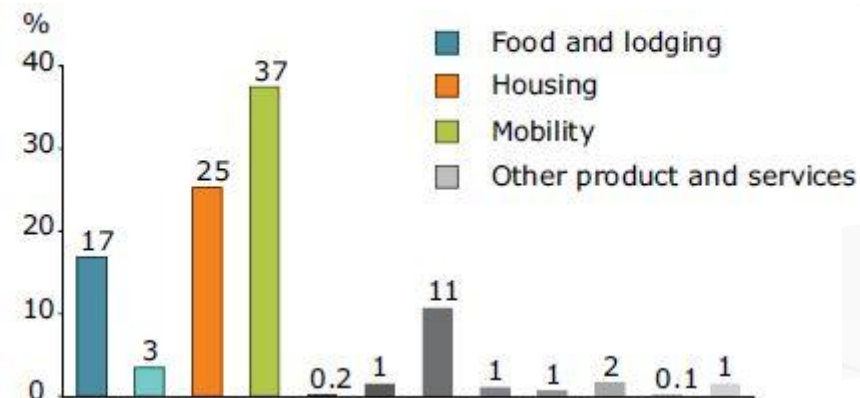
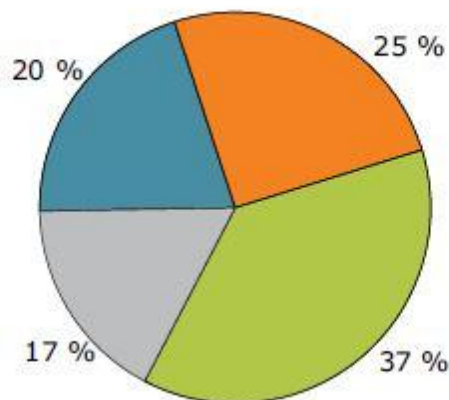
Acidifying emissions



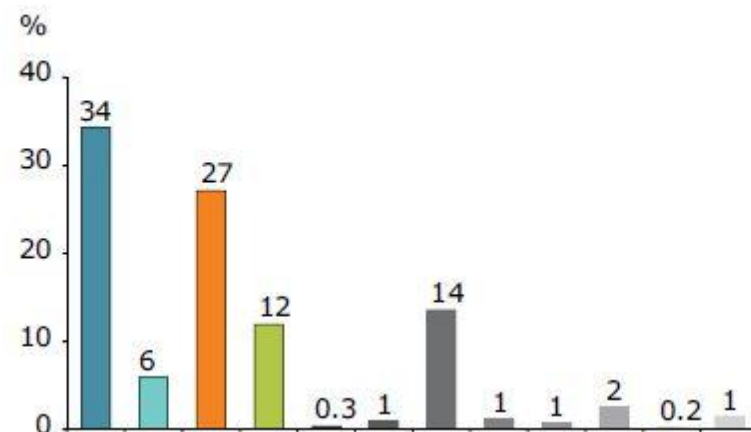
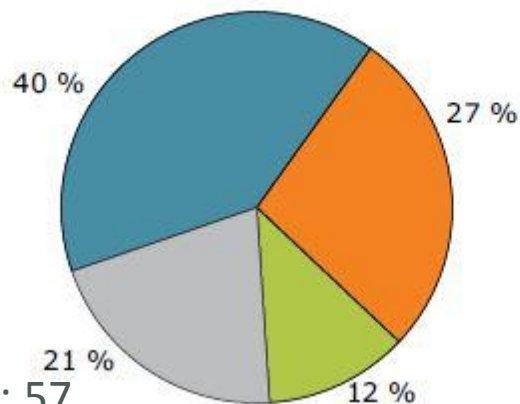
EEA (2013a): 57

How to achieve decoupling? – focus on resource use and impacts

Tropospheric ozone precursors



Total Material Requirement



EEA (2013a): 57



How to achieve decoupling? – focus on resource use and impacts

Main consumption areas

- Food (and lodging)
- Housing
- Mobility



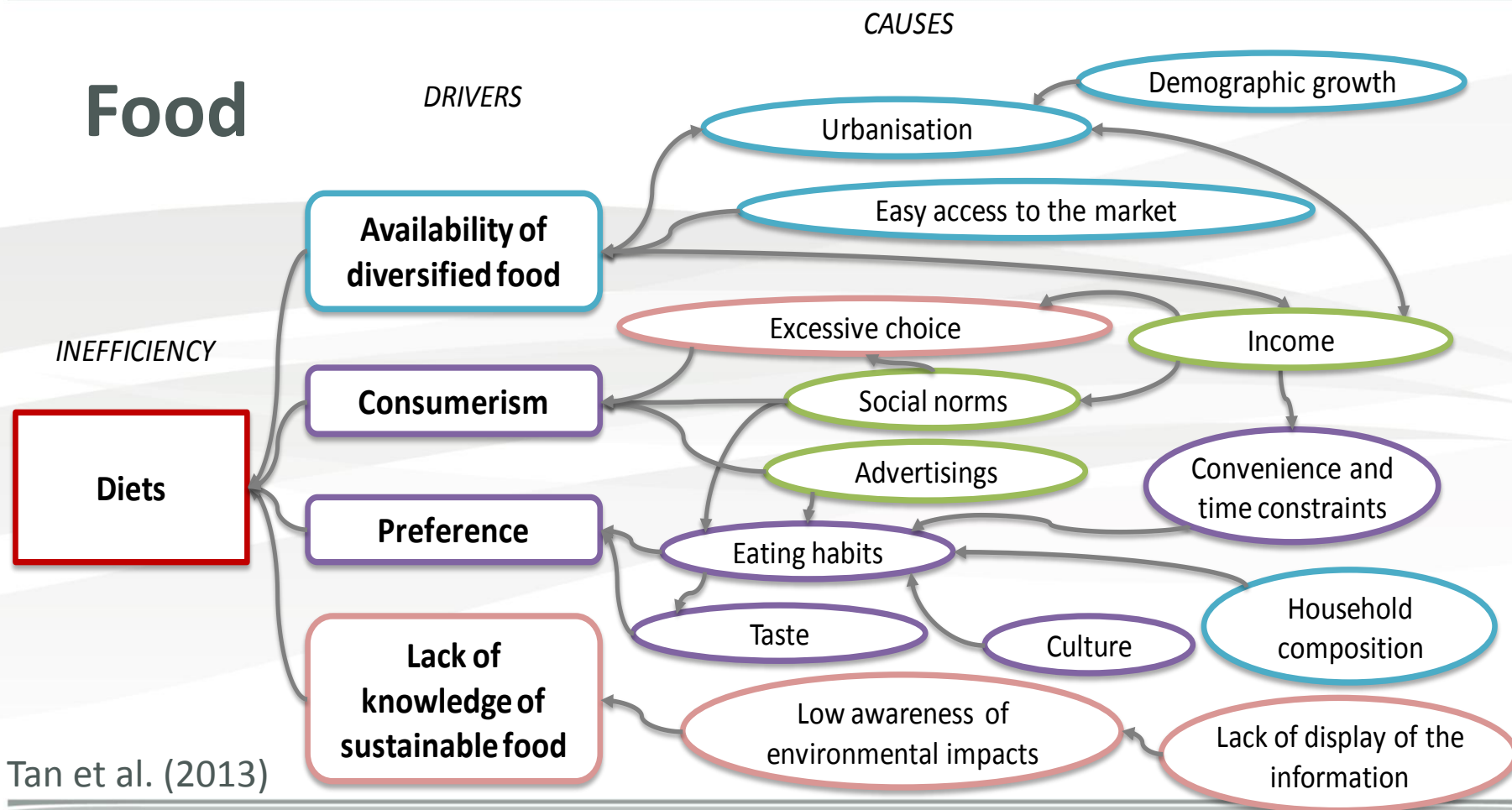
The diagram illustrates a circular flow model for a Resource Efficient Economy. At the center is a green circle labeled "RESOURCE EFFICIENT ECONOMY". Surrounding it are four main stages of the economic cycle, each represented by a grey arrow pointing clockwise: "Extraction" (top-left), "Production" (top-right), "Distribution" (bottom-right), and "Waste" (bottom-left). The flow of resources is indicated by a large grey arrow labeled "FLOW" pointing clockwise. The flow of money is indicated by a large grey arrow labeled "FLOW" pointing counter-clockwise. The diagram is surrounded by several green ovals representing feedback loops and goals: "Reducing resource inputs" (top), "Substituting resource use" (top-right), "Reducing demand" (bottom-right), "Reducing waste and losses" (bottom), "Reuse and recycling of resources" (bottom-left), and "Using resources that protect or improve the environment" (left). A dashed green line connects these ovals in a circular path. A central oval states "Using resources in a way that results in less environmental impacts". A dashed green line also connects the central oval to the "Extraction" stage, with the text "Extracting within sustainable thresholds" above it.

et al. (2013)

Tan et al. (2013)



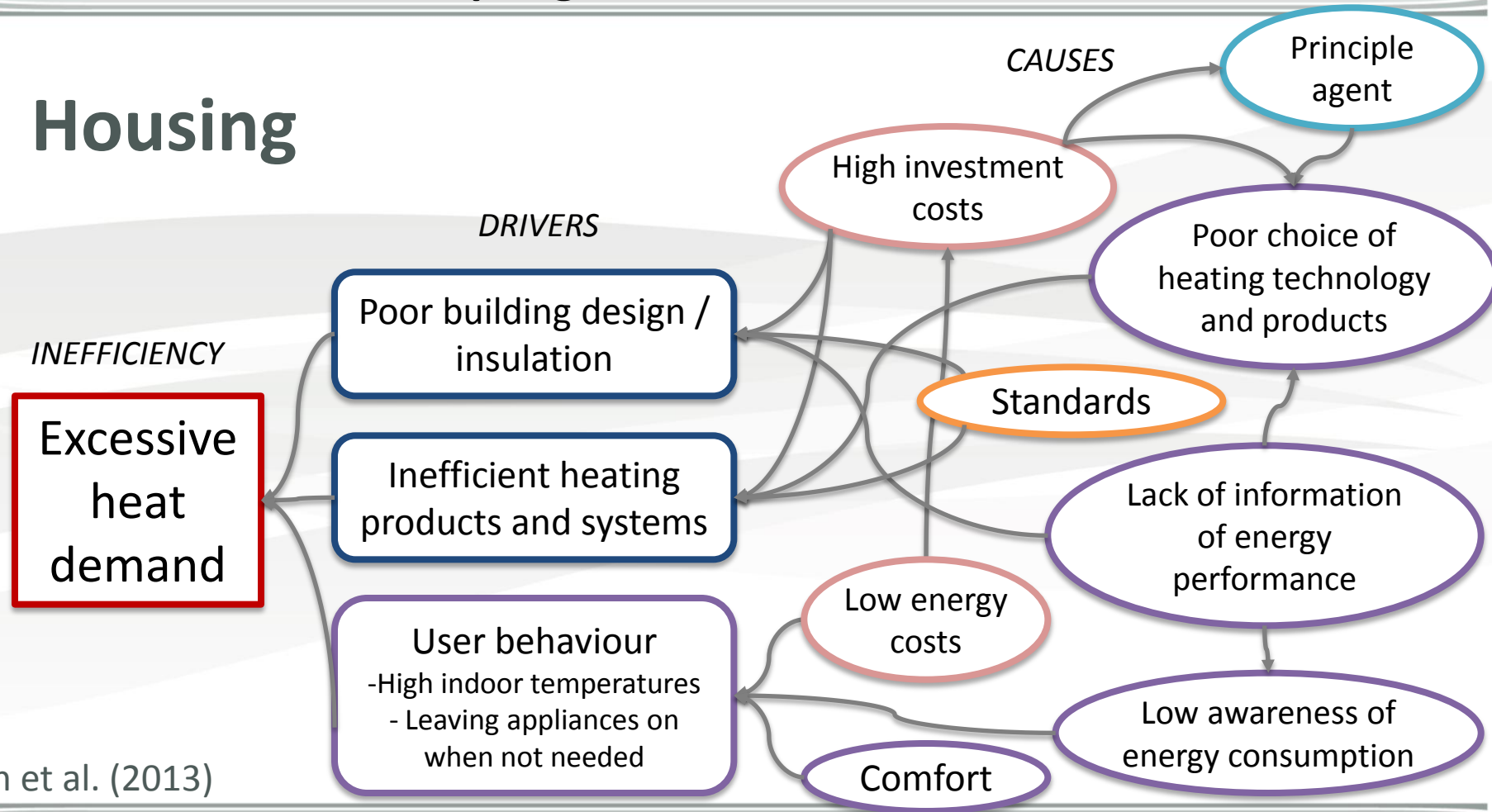
How to achieve decoupling? – drivers of inefficient resource use





How to achieve decoupling? – drivers of inefficient resource use

Housing

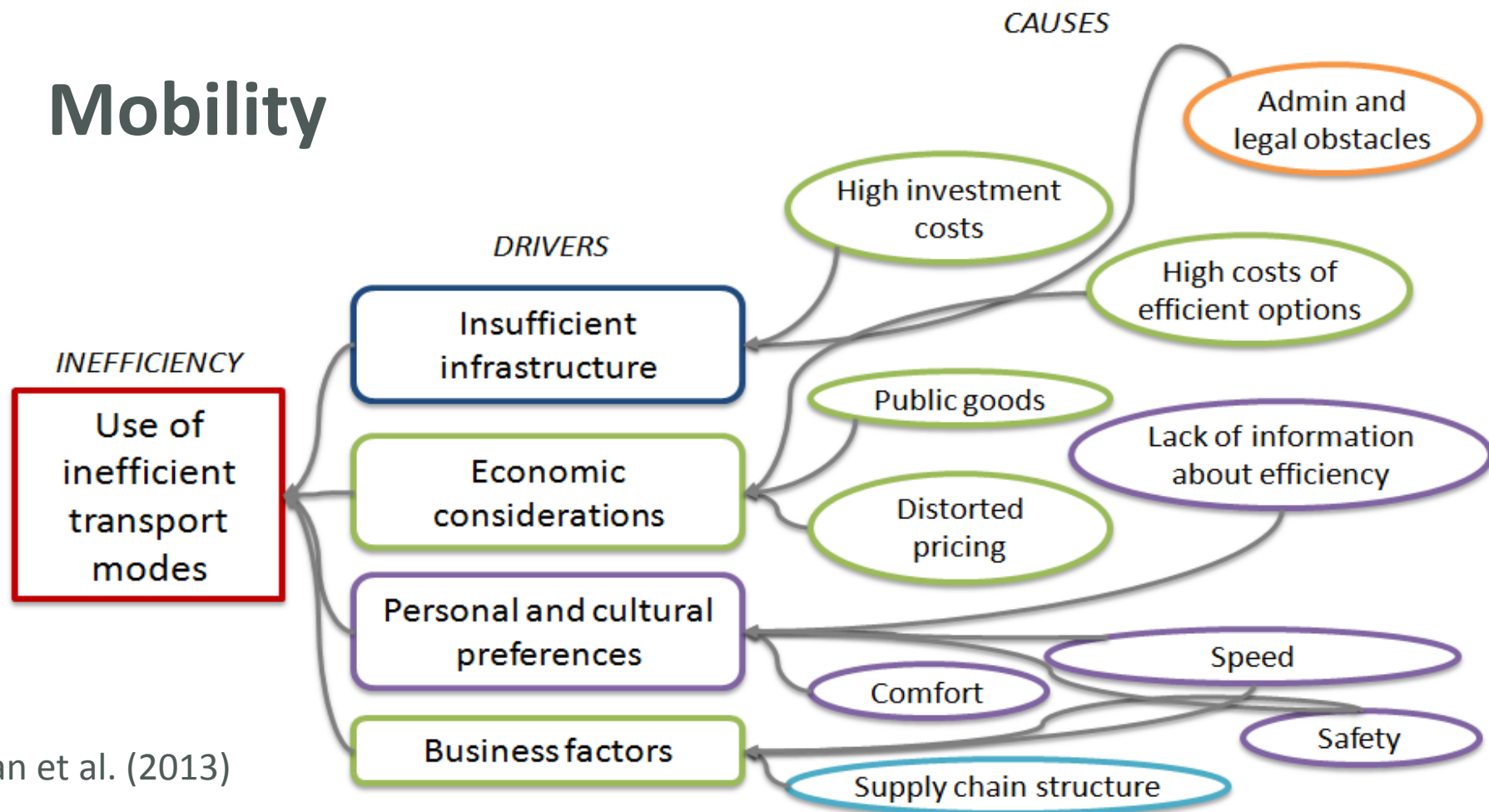


Tan et al. (2013)



How to achieve decoupling? – drivers of inefficient resource use

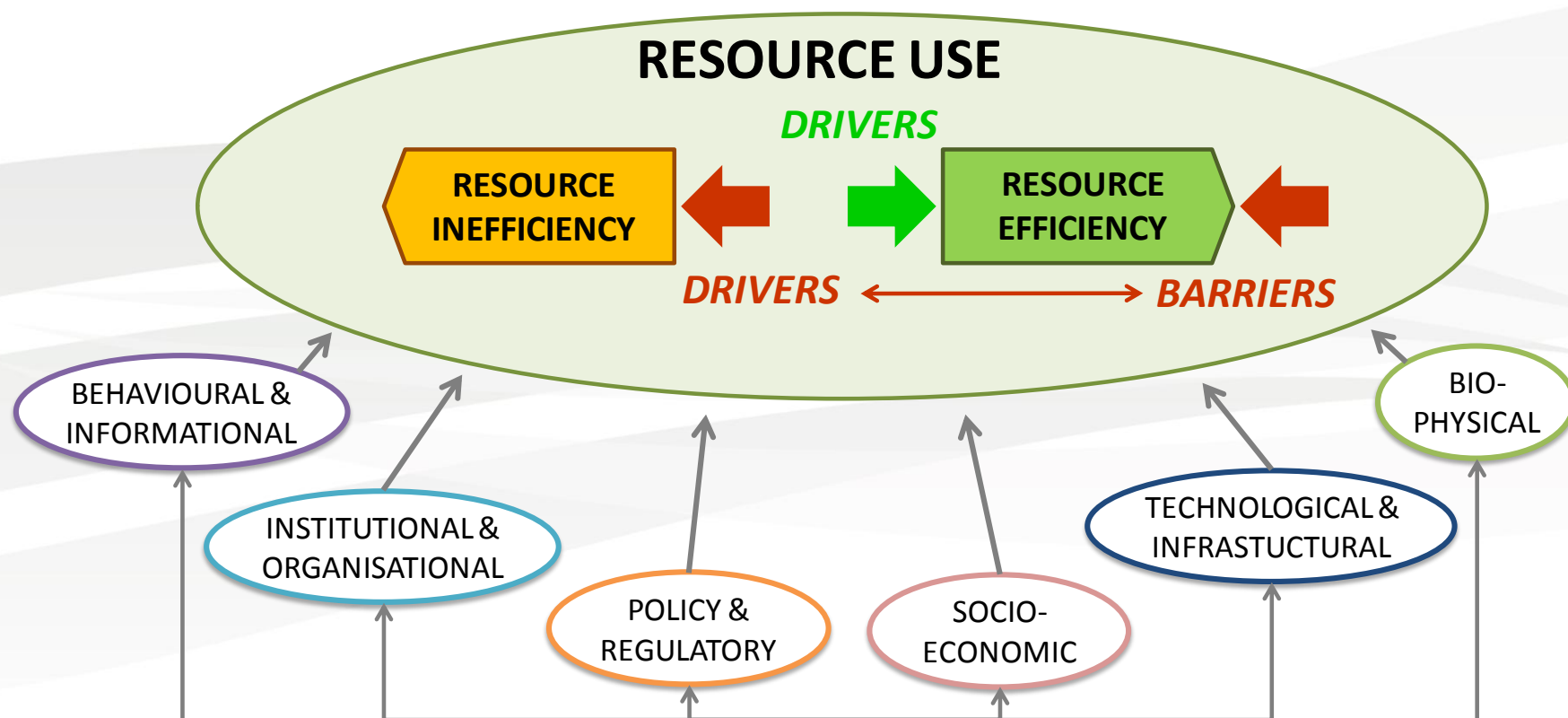
Mobility



Tan et al. (2013)



How to achieve decoupling? – drivers of inefficient resource use



Tan et al. (2013)



How to achieve decoupling? – focus on inefficiencies and drivers

Role of paradigms

The framework of ideas and beliefs by which an individual interprets the world and interacts with it.

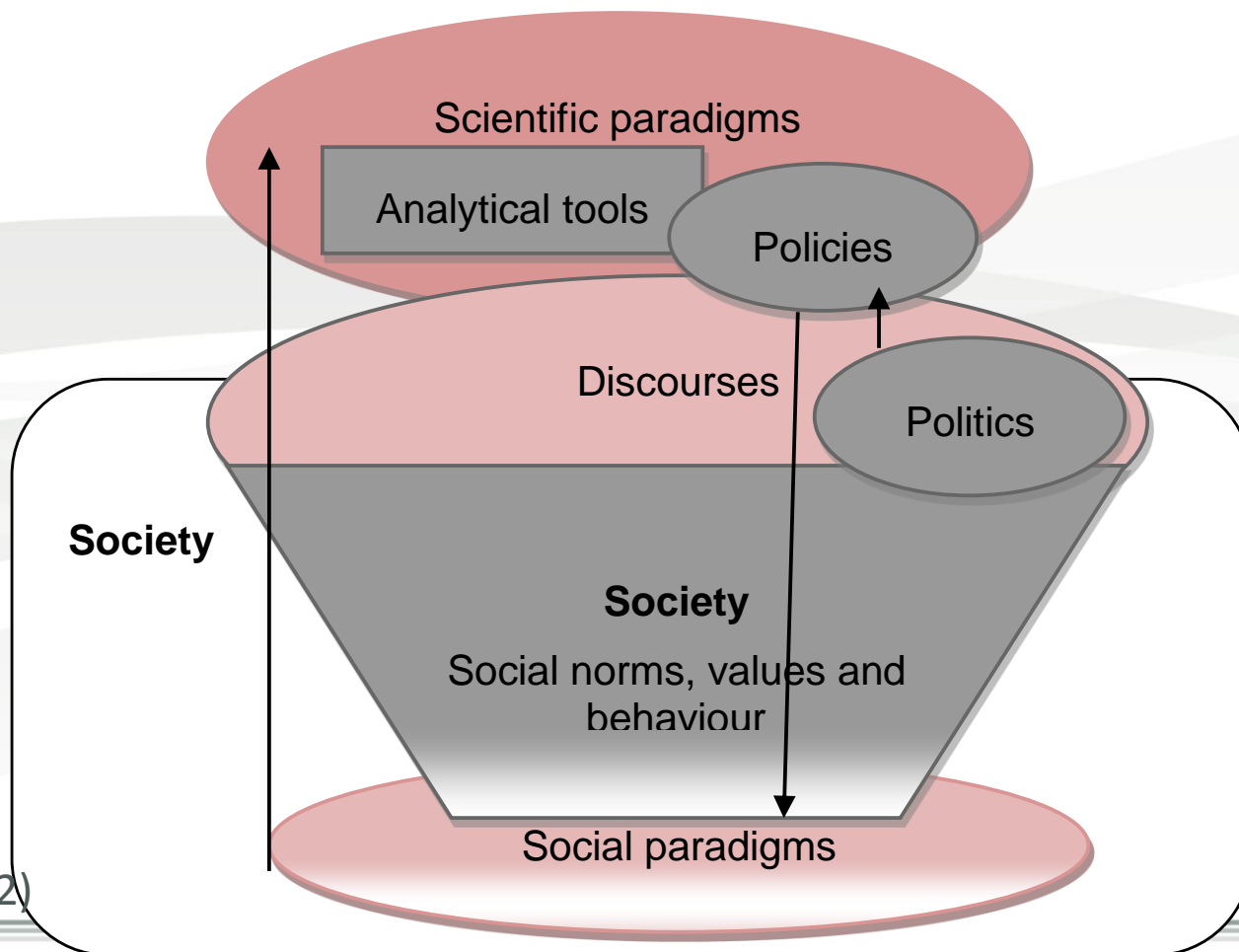
Donella Meadows in the “The Global Citizen”

Your paradigm is so intrinsic to your mental process that you are hardly aware of its existence, until you try to communicate with someone with a different paradigm’.

Kilbourne’s 2002 survey found that: “paradigm level issues were at the heart of the environmental crises” (p. 195)



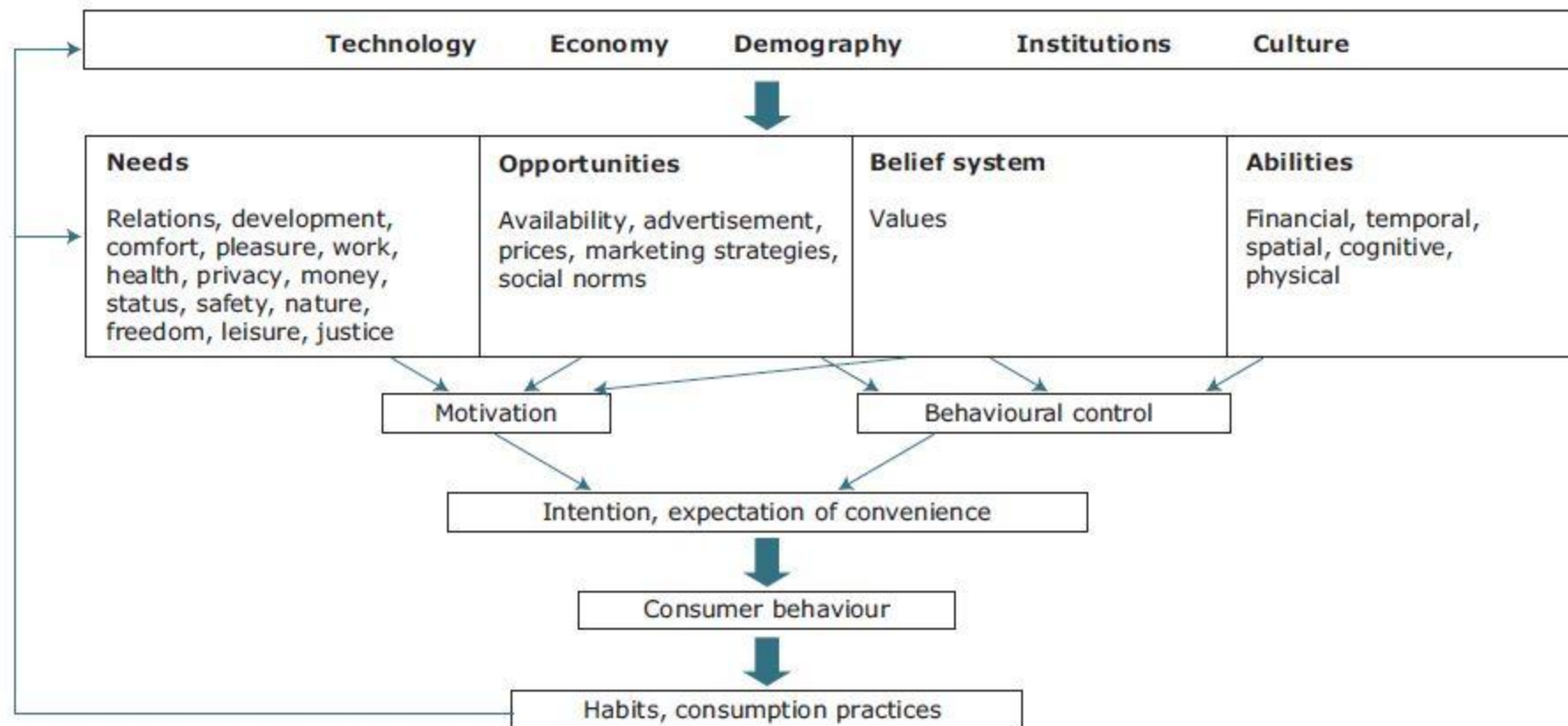
The Paradigm System



Vanner (2012)



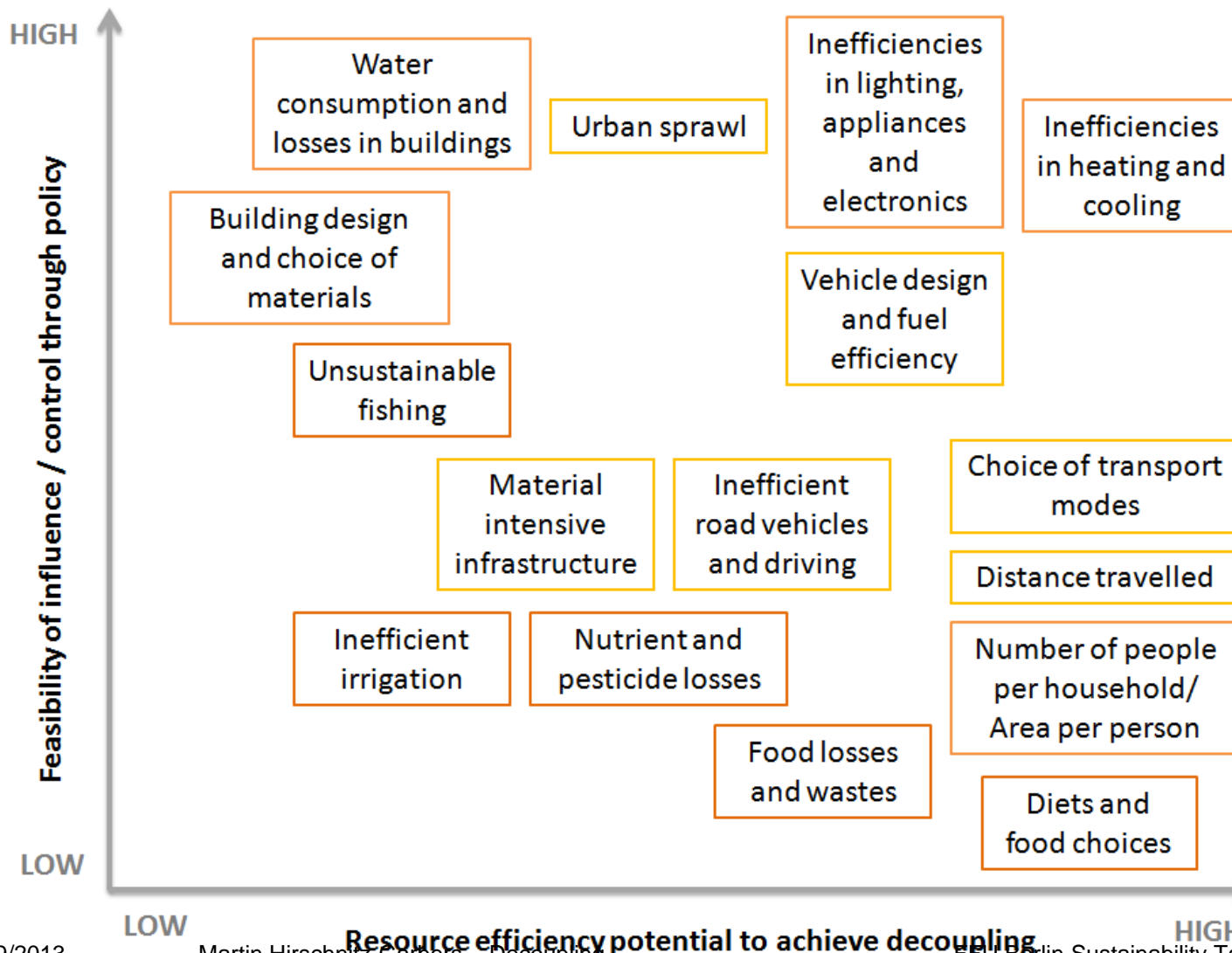
How to achieve decoupling? – influencing consumer behaviour



EEA (2013b): 12



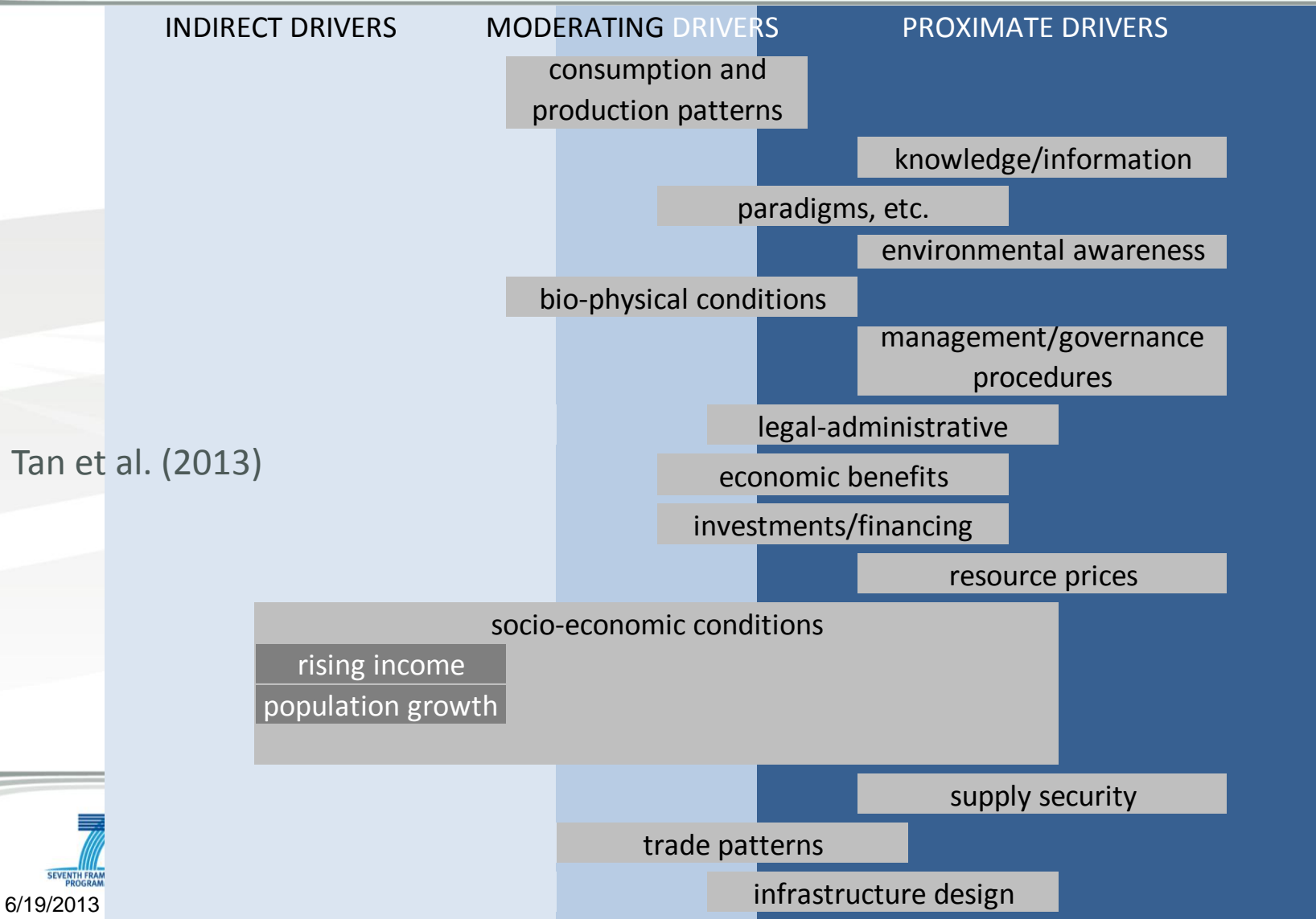
How to achieve decoupling? – policy priorities



Tan et al. (2013)

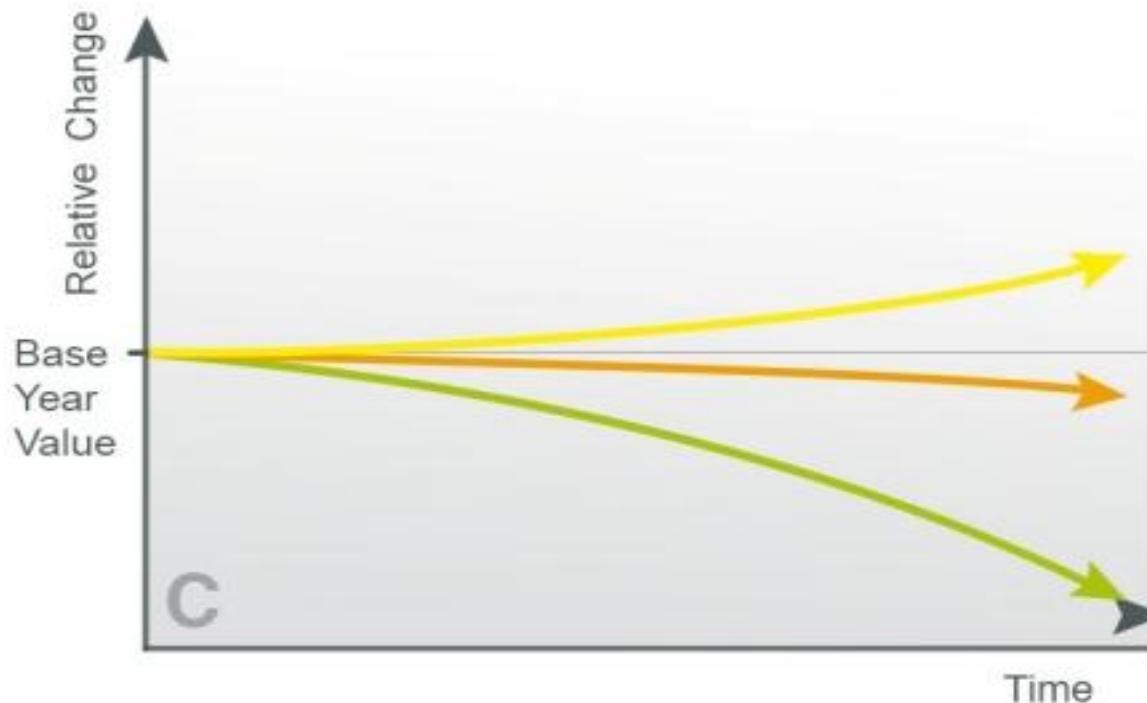


How to achieve decoupling? – policy priorities



How to achieve decoupling? – reframing concepts

Absolute Decoupling of Resource Use from Wellbeing



Gross Domestic Product (GDP)

Resource Use / Environmental Impacts

Wellbeing



How to achieve decoupling? – reframing concepts

- Efficiency – Consistency – Sufficiency (Enquete-Kommission, p. 770 et sqq.)
 - Efficiency – technological progress, increased productivity
 - Consistency – harmonising natural and economic processes (circular economy)
 - Sufficiency – challenging lifestyles and consumption patterns
- Beyond GDP: Well-being instead of economic growth
 - Material well-being
 - Social well-being and participation
 - Ecological well-being



Thank you for your attention.

Dr. Martin Hirschnitz-Garbers

Ecologic Institute, Pfalzburger Str. 43-44, D-10717 Berlin

Tel. +49 (30) 86880-0, Fax +49 (30) 86880-100

martin.hirschnitz-garbers@ecologic.eu

www.ecologic.eu