Tackling Resource (In)Efficiency

Drivers of Resource Use

1st DYNAMIX Policy Platform

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100 Years of Decreasing Global Material Intensity

Source: Krausmann et al. 2009

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More Than a Number

• **Growth in population** leads to growth in resource use. But who uses how much and to what end?

• **Economic growth** in the past was always accompanied by growth in resource use. But is the economy a means or an end?

• The **industrial transition** has led to very specific resource requirements in most economies. But how strong is our path dependency?

• **Global division of labor** enables certain regions to exist at the (material) ‘expense’ of others. But does this also make them more efficient?
150 Years of Explosive Growth in Resource Use

In the course of the last century,

- material use increased by an order of magnitude from 7.1 bio t (75% biomass) to 68.1 bio t (30% biomass)
- energy use (commercial TPES) grew from 44 to 517 EJ and transitioned from biomass and coal to oil and natural gas
- the expansion of cropland doubled from approximately 25 mio km² to 50 mio km²

Source: Krausmann et al. 2009
In the course of the last century,
• population grew from 1.6 to 6.9 bio people,
• average per capita material consumption doubled from 4.6 to 10.0 t/cap
• average per capita energy use more than doubled from 28 to 76 GJ/cap

Source: Krausmann et al. 2009
GDP Growth

Source: UNEP Decoupling Report 2010
GDP Growth in the EU

2000-2005 average growth rate

Source: SEC Database
Transition to Industrial “Way of Life”

Share of energy sources in primary energy consumption (% DEC)

Source: SEC Database
Industrial “Way of Life”

Source: Schaffartzik et al., forthcoming
Global Division of Labor
Global Division of Labor

Global Trade Flows in mio t/y

- Products
- C. minerals
- Ind. minerals
- Metals
- Fossil fuels
- Biomass


Units: mio t/y
What “We Don‘t Want”

• Continuous growth in resource use
• Rebound effects and outsourcing
• (Continued) material and energy poverty
• Changes in the industrial ‘standard of living’
• Limitations to development opportunities
• To declare capitalism a failed system
What “We Do Want”

- Cut back resource use and environmental impacts
- Concerted efforts across sectors and regions
- Fairly distribute both benefits and burdens
- Achieve MDGs
- Maintain standard of living
- GDP Growth
Do we need to redefine the problem(s)?