Recommendations of the International Resource Panel

Veronika Kiss
CEEweb for Biodiversity
CEEweb Academy, 25th October

UNEP

- **Mission:**
  To provide **leadership** and encourage **partnership** in caring for the environment by inspiring, informing, and enabling nations and peoples to improve their **quality of life** without compromising that of **future generations**.

International Resource Panel I.

- Globalized economy -> more resource use
- Sectoral approaches: climate and biodiversity policies
- **Holistic approach to resources management is needed to better identify their interlinkages and gaps in a systemic way**

International Resource Panel II.

- Targets **policy-makers** to streamline actions for ensuring a more sustainable management of renewable and non-renewables resources
- Launched in 2007 and consists of
  - 28 **members** from scientific institutions, universityies
  - **partners** from governments, the EC, UNEP and other intergovenrmental organizations as well as NGOs
- Provide the **scientific impetus** for decoupling economic growth and resource use from environmental degradation

✓ carry out **assessments** of policy relevance

✓ compile **recommendations** on how

International Resource Panel III.

- builds on the UNEP's
  - ✓ 10-year framework on sustainabel consumption and production (Marrakech process),
  - ✓ 3R (reduce, reuse, recycle) initiative,
  - ✓ Circular economy approach,
  - ✓ Global Environmental Outlook
  - ✓ Green Economy Initiative
  - ✓ Millenium Ecosystem Management

Reports of the International Resource Panel

I. Recycling rates of Metals, 2011

II. Decoupling natural resource use and environmental impacts from economic growth, 2011
   - Focus on fossil fuels, metals, minerals, biomass complementered by other reports deal with land, soil, water

Findings - Recycling rates of Metals, 2011

- Less than **one-third** of the 60 metals studied have an end-of-life **recycling rate** above 50% while 34 elements are below 1% recycling
- More than **half** of the iron and steel, as well as platinum, gold, silver and other precious metals, are recycled in industrial applications, only a **small fraction** of them in **electronic goods**

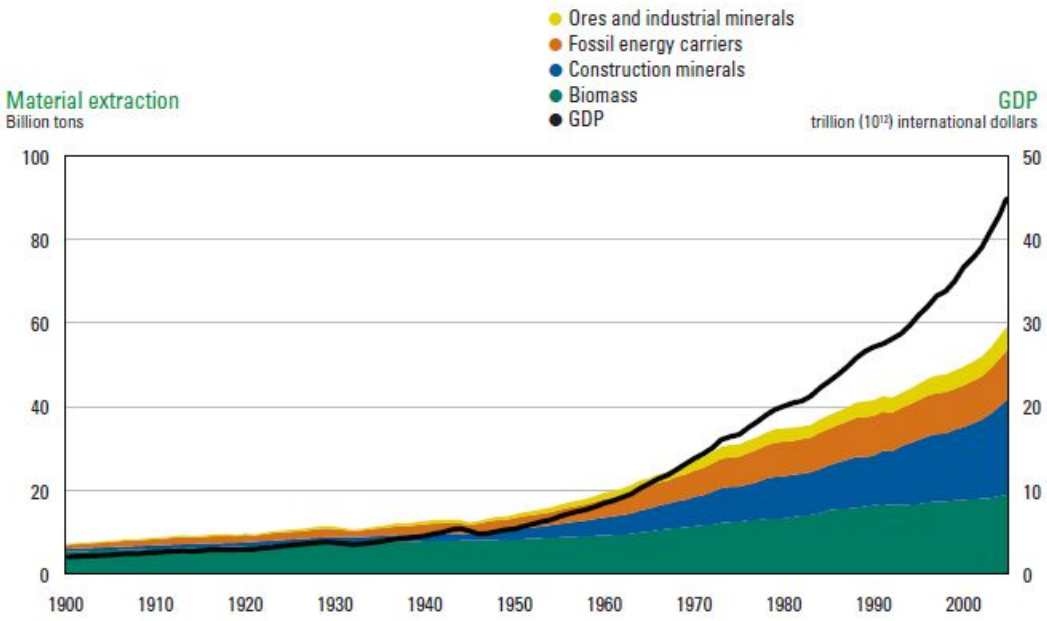
Recommednations

- negotiate with the Chinese to **exchange** the current recycling technology.
- develop policy instrument in line with lifeline phylisophy
  - ✓ what you really **need for living** in terms of energy and water is cheap and the cost - **price signal - begins** only above that lifeline amount.
  - ✓ the **poor** are almost entirely exempted from the price rise
- table proposal for **fiscal instruments** that encourage resource productivity,
  - ✓ a **tax shift** from labour to resources -> shift the EU to be more **competitive** in fields that really count on world markets
  - ✓ **scarce factors** such as metals, biomass valuable and abundant ones less valuable

Findings – Decoupling Report

- Many critical resources are becoming more **scarce**
- Metabolic rates: used resources per capita varies beteew **4 to 40** t/capita/year
  - ✓ 4 tones is **lack of satisfaction** of basic needs
- Current rate of consumption **triples** resource use three times by 2050.
- Individual use should fall to **5-6 tons**, e.g. in Canada now it is 25 t

Figure 1. Global material extraction in billion tons, 1900–2005

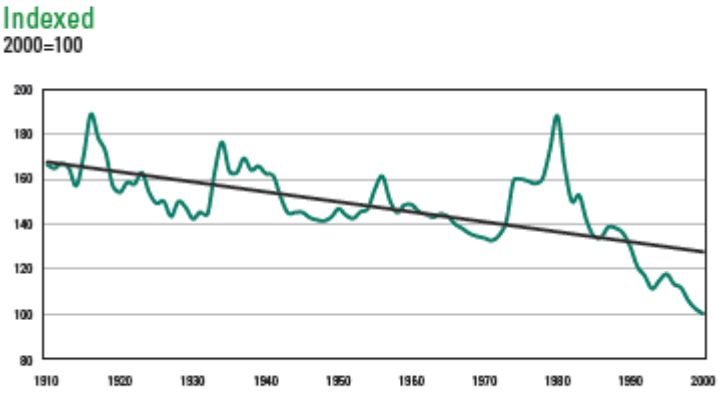


Source: Krausmann *et al.*, 2009

Prices

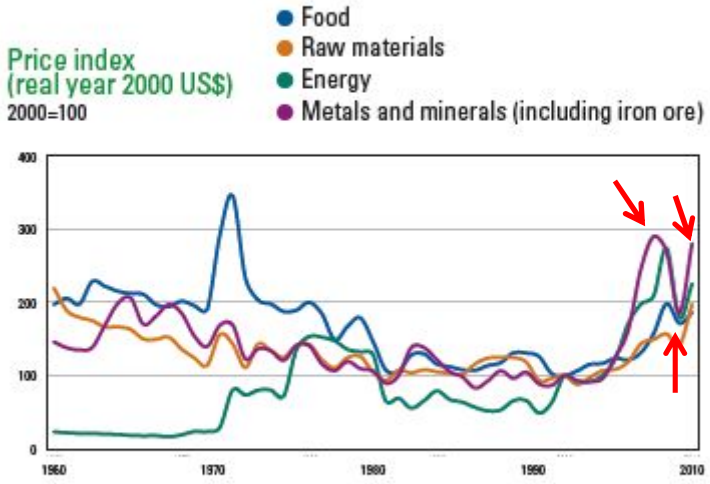
- Resource prices **decreased** 30% due to discovery, investments.

Figure 6. Composite resource price index (at constant prices, 1900–2000)



Source: Wagner *et al.*, 2002

Figure 7. Commodity price indices

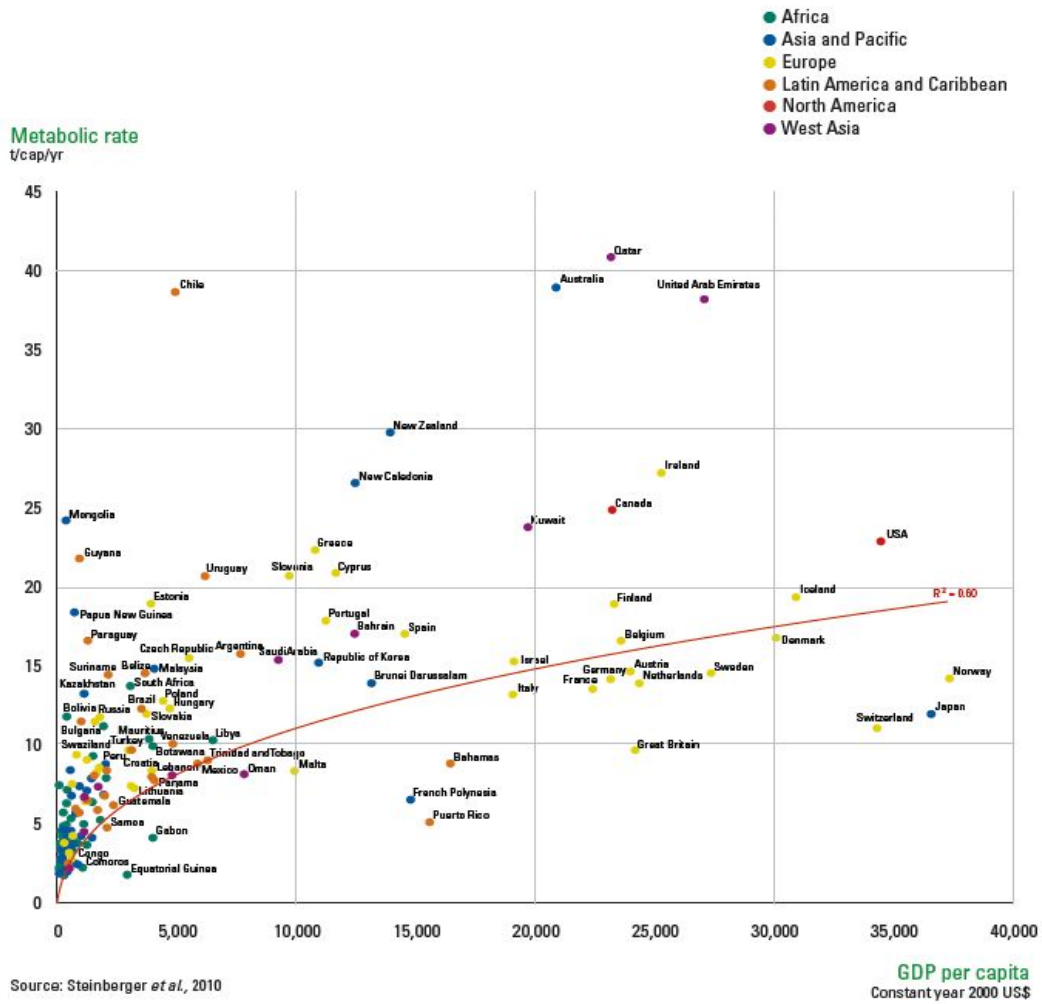


Source: World Bank Commodity Price Data (Pink Sheet), historical price data, available from http://blogs.worldbank.org/prospects/global-commodity-watch-march-2011

- Econimic **crises** - 2007 peak, 2008 decline, 2009 rise again
- Decline in pricing could end due to resource **depletion** and rising **demand**

Income rise

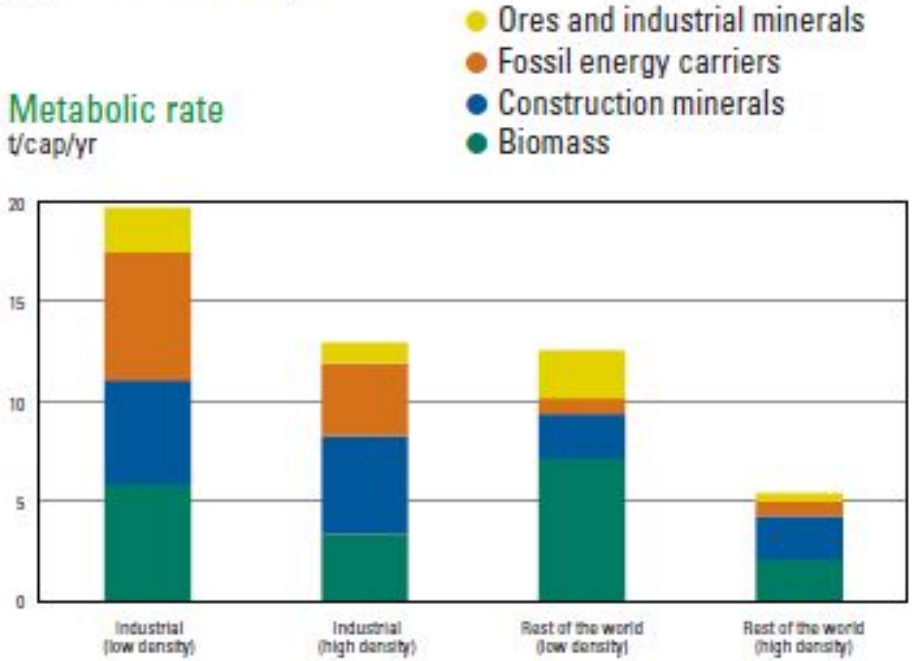
- Over the 20th century:
  - ✓ Per capita **income** increased **sevenfold**
  - ✓ Per capita reosurce use **doubled** from 4-6 tons to app 9 tons
- Now we are facing **rapid growth** due to emerging economies



Population growth and density

- Increasing human population: by 2050 **9 billion** people
- Resource use increased **twice** the rate of population growth
- **Less dense** areas / states use **more** resources as more dense states at the same standard of living and at material comfort.

Figure 9. Average metabolic rates (resource use in tons/capita) by development status and population density



High-density means a population density of 50 people/km^2 or higher.
Share in world population: 13% industrial, high density, 6% industrial, low density, 62% rest of the world, high density, 6% rest of the world, low density.
Source: Krausmann *et al.*, 2008

Global trade I.

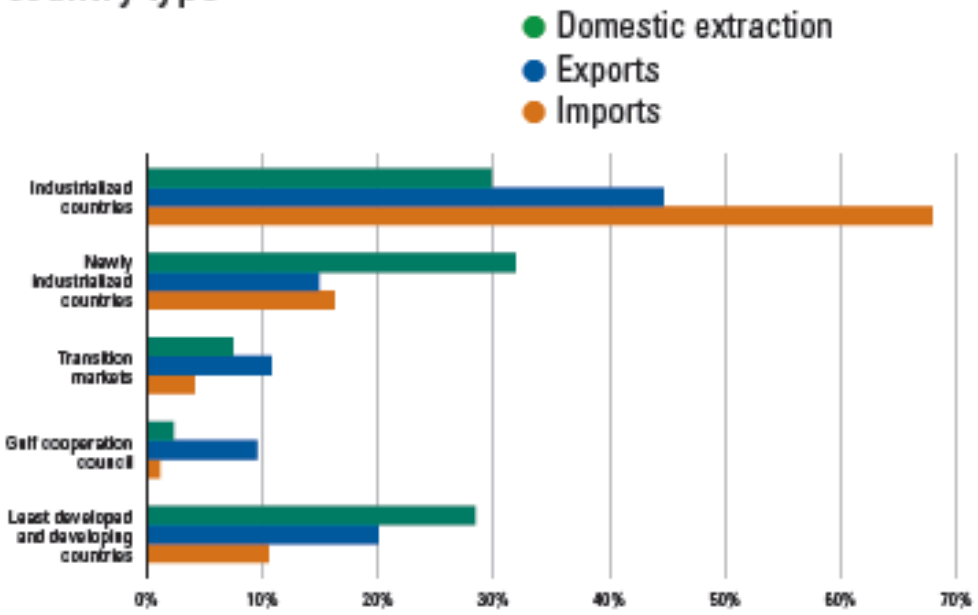
- Comparing to 1970, in 2006
  - ✓10 times more **manufactured** products
  - ✓2.3 times more **fuels** and **mining** products
  - ✓3 times more **agricultural** products

- Extraction of
  - ✓**Biomass** distributed most evenly
  - ✓**Fossil fuel** distributed least evenly

Global trade II.

- Trade related activities count for
  - ✓**27%** of the total energy-related **CO_2** emissions
  - ✓**16% water** of the global water footprint
  - ✓**20%** of the total **material extraction**

Figure 17. Raw material extraction and trade by country type



Source: Drawn from SEC database, http://www.uni-klu.ac.at/socec/inhalt/3812.htm, see Steinberger *et al.*, 2010

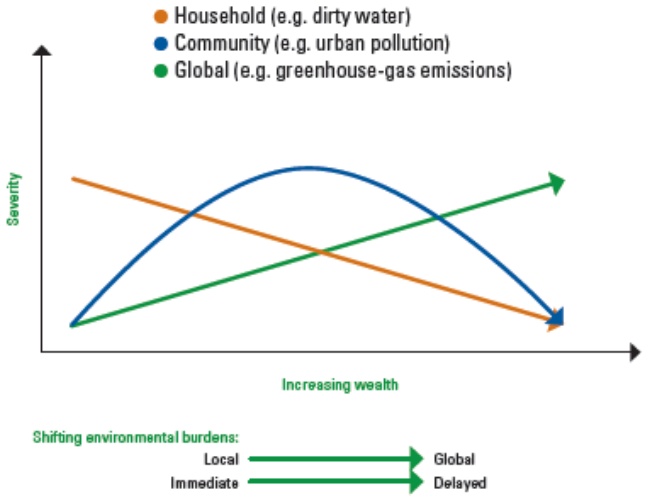
Environmental Impact of resource use

- Environmental pressures caused by
  - ✓ **Biomass use**, contributes to
    - habitat change,
    - climate change,
    - load on water ,
  - ✓ **Fossil fuel use,** contributes to
    - depletion of energy resources,
    - climate change,
    - emmission related impacts, including toxic emmissions
- Ores and metals are **mined** outside their use spots.

Strategies for reducing environmental impact

1. **Substitution -** More harmful to less harmful resources, BUT
   - ✓ **more** metal resources use -> **scarcity** -> extraction becomes more resource intense and pushes the limits
2. **Using resources more environmental careful through their life cycle**
   - ✓ Pressure **shifted** in time and space
3. **Reduction of resources**
   - ✓ Most **economic** -> reduces production cost
   - ✓ Deals with scarcity
   - ✓ Tackles the shift of environmental impact

Figure 11. Environmental risk transition framework



Source: Adapted from Wilkinson *et al.*, 2007

Aims

- Decoupling
  - ✓ **using less** resources per unit of economic output, and reducing the environmental impact of any resources
- Absolute resource use reduction at global level, while
  - ✓ **human-wellbeing** increases
  - ✓ **economy expand**s
  - ✓ **environmental impact diminishes**

Will we reach these aims?

Scenarios

1. **Business as usual**
   - ✓ Industrialized countries consume at current level
   - ✓ Developing countries reach this level of consumption
   - **-> tripling of global recourse use by 2050**
     - Metabolic rate 16 tons/capita/year = EU's current average
2. **Moderate contraction and convergence**
   - ✓ Industrialized countries halve their consumption (16->8 t/capita/year),
   - ✓ Developing countries reach this halved level,
   - ✓ Through investments in innovation
   - **-> 40% increase overall resource use extractio**n
     - Metabolic rate 8 tons/capita/year = the current global average

Scenarios

3. Tough contraction and convergence

- ✓ Industrialized countries reduce by a factor of 3 to 5 (16 to 5-3 t/capita/year)
- ✓ Developing states achive 10-20% reduction in their metabolic rates
- ✓ High rate of innovation

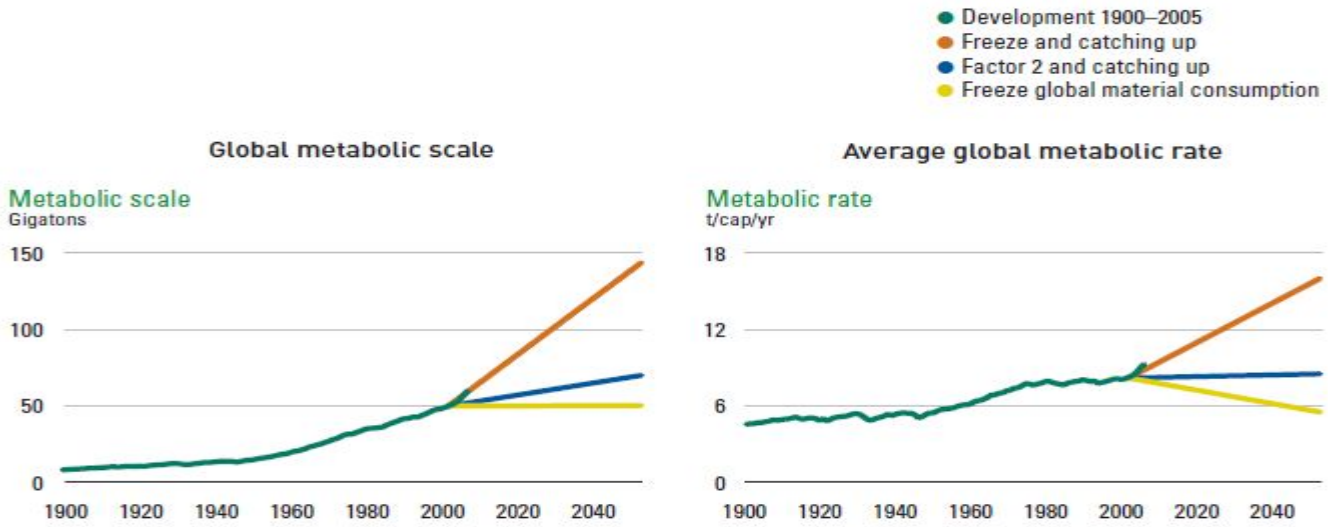
-> **Global consumption maintained on the level of 2000 and the same in every country**

-> Same level of environmental impact due to population growth

- Consistent with the 2.2 t/capita/year CO_2 emission to stay below 2 Celsius

Conclusions on the three scenarios

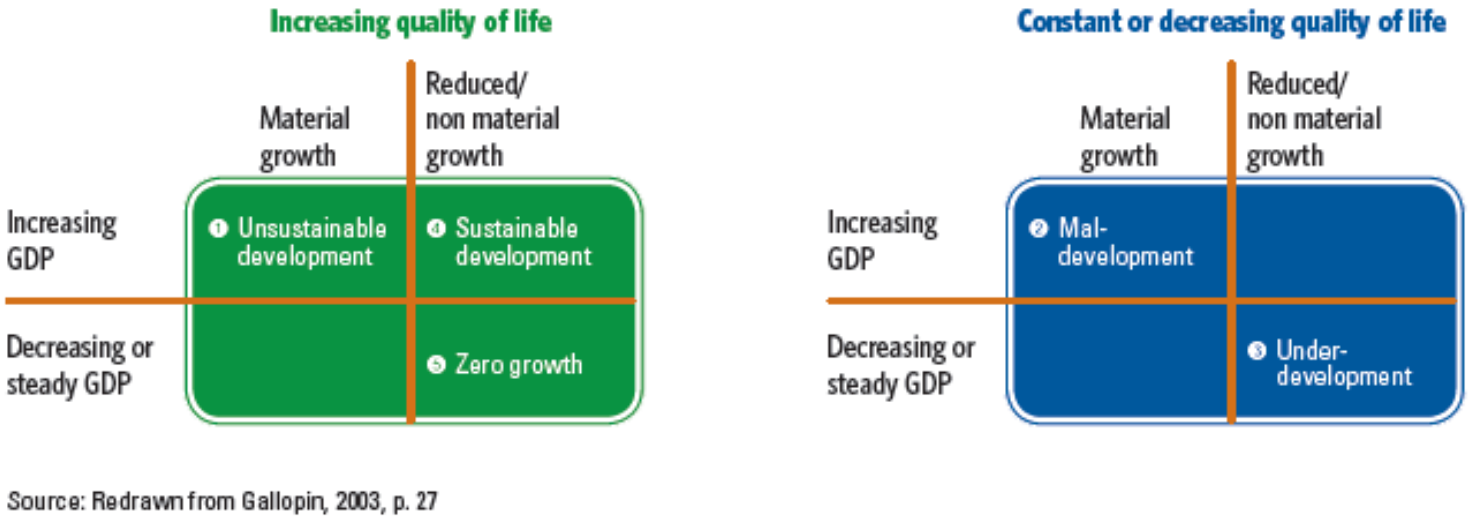
Figure 12. Resource use according to three different scenarios up to 2050



Source: Krausmann *et al.*, 2009 (Development 1900–2005) and own calculations (see text)

- Economic consequences of **scarcities** and environment **degradation** push
  - ✓policies to take more seriously the necessity of **decoupling**
  - ✓**well-being** considered instead of the threats to consumption

Towards sustainable development I.



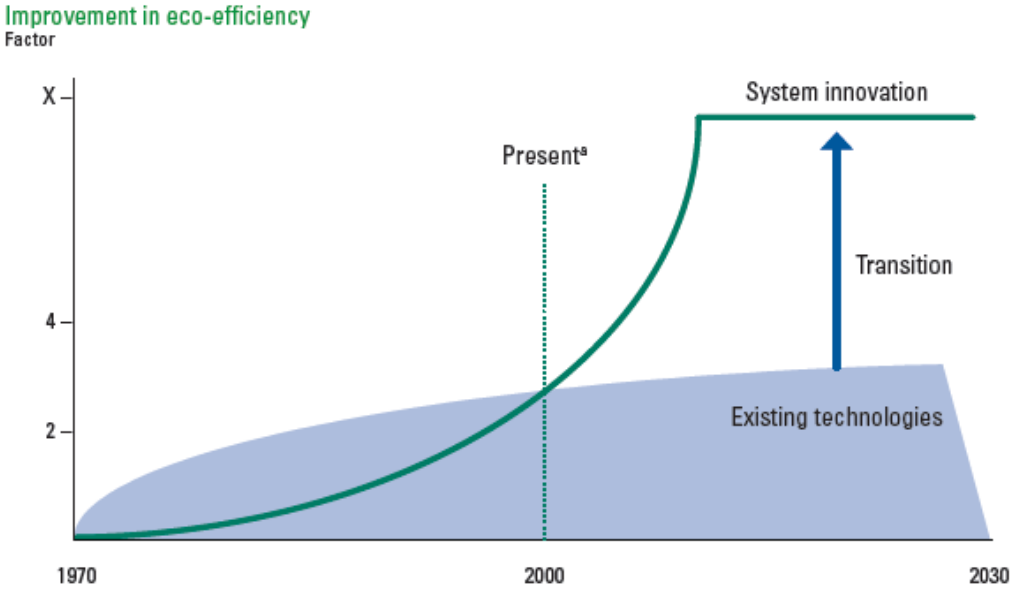
Source: Redrawn from Gallopin, 2003, p. 27

- Sustainability oriented **innovations**
- Institutional **arrangements**
- Agreed **indicator** that measures progress made towards sustainability

Towards sustainable development II.

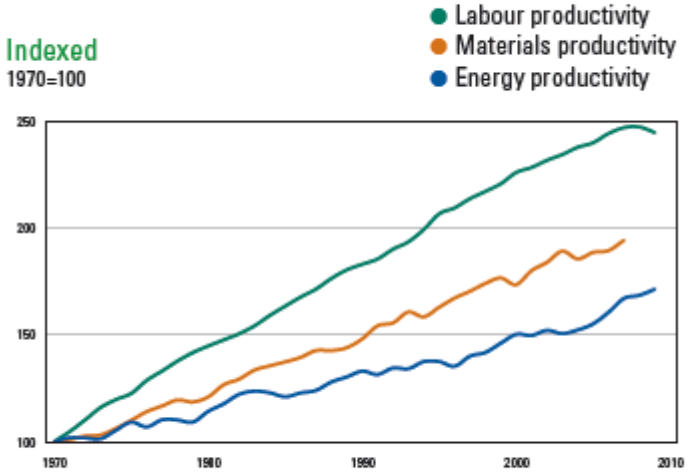
- Sustainability oriented innovations
  - ✓ Labour productivity
  - ✓ Resource productivity

Figure 16. System innovation



a At time of publication

Figure 14. Resource Productivity, labour productivity and energy productivity in EU-15



Note: Labour productivity in GDP per annual working hours; material productivity in GDP per domestic consumption (DMC) and energy productivity in GDP per total primary energy supply (TPES).
Source: EEA, 2011

✓ **Systematic change** – the most effective way to achieve decoupling even by the factor of 10

Thoughts for actions

- Growing resource **constraints** followed by **price rise**
  - ✓ **Poor** prohibited to develop
  - ✓ **Rich** withheld from enjoying the current rate of their consumption
- **Policies** should be developed to realize
  - ✓ **Absolute** resource use reduction in developed worlds
  - ✓ **Relative** reduction in developing world with a shift to absolute reduction after to a certain
- A **report** ready by rio+20 on technologies and policies targeting these challenges
  - ✓ **Impetus**, but not recommendations to international action on sustainable development policy for decades to come

Thank you for your attention!

Any questions?