SUGGESTIONS FOR A GLOBALLY COORDINATED DUAL ENVIRONMENT POLICY

By

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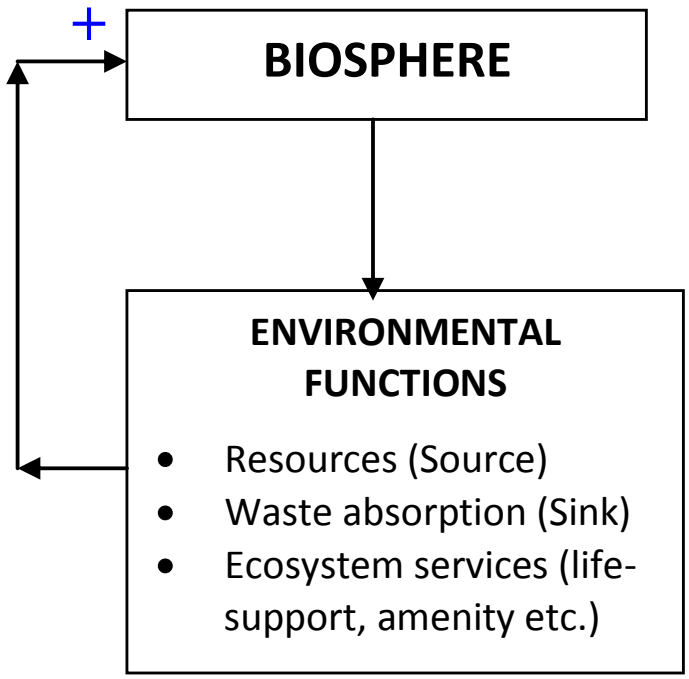
The Lindau Group

- Founded by Friedrich Bio Schmidt-Bleek and Bernd Meyer in late 2007; first meeting in Lindau, Lake Konstanz, in February 2008
- Mounting concerns over the uncharted role of human-induced global material flows, and the economic, and ecological ramifications of their unchecked growth.
- Need to substantially reduce global material flows in a timely manner.
- 10 Basic Conditions for Approaching Sustainability – on WRF website; http://www.worldresourcesforum.org/lindau
- Paper co-authored by Paul Ekins, Bernd Meyer, Friedrich Schmidt-Bleek, Friedrich Schneider

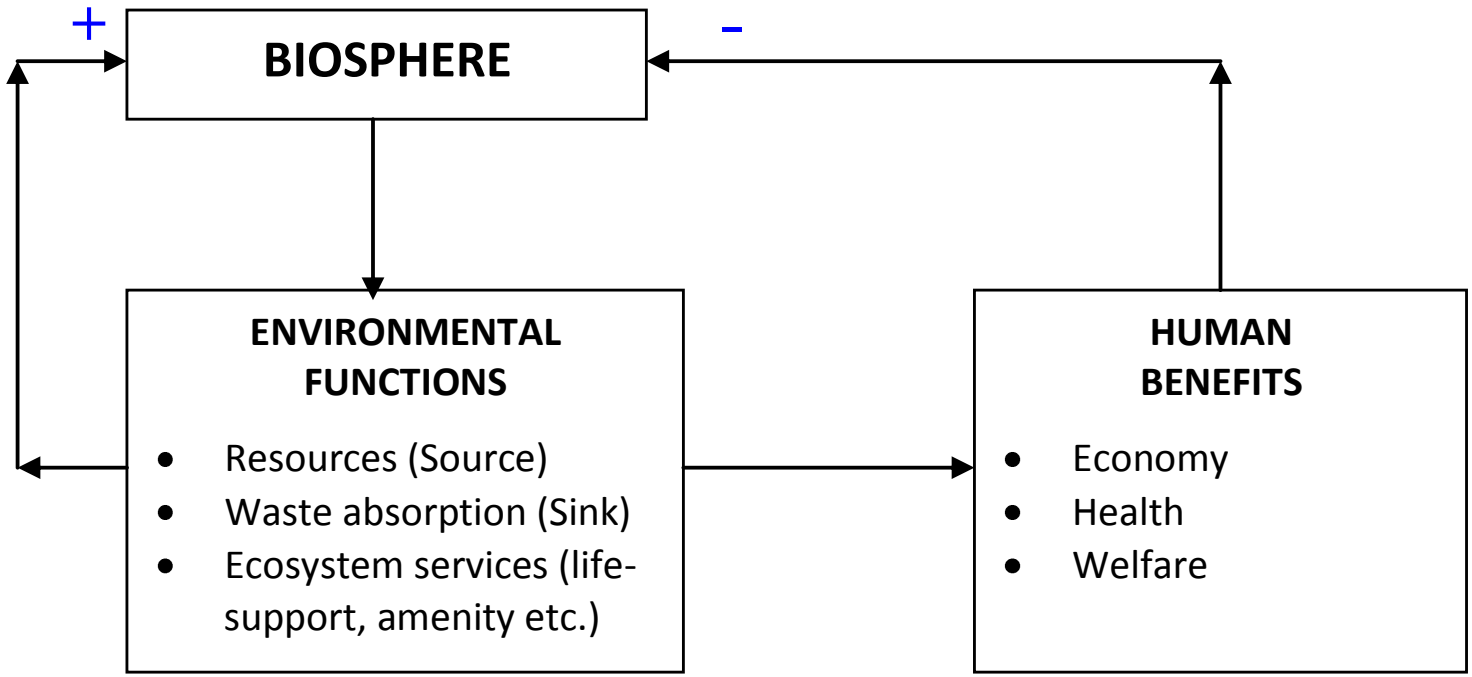
The concern

- Climate science and the Millennium Ecosystem Assessment make clear that without a radical reform of the human-nature relation – in favour of nature – human civilisation is at grave threat
- Specifically, nine billion humans cannot live current Western lifestyles and maintain a habitable planet: the first thing to go will be climate stability, the whole biosphere may then start to unravel. Issue is saving the human, not the planet.
- Any aspiration for sustainable economic growth must start from the recognition of the need for sustainable resource use
- It must also be rooted in basic laws of physical science: indefinite physical expansion of the human economy on a finite planet is impossible; all use of non-solar forms of energy creates disorder, and potential disruption, in the natural world
- We must start by getting right the basic conception of how the human economy relates to the natural environment

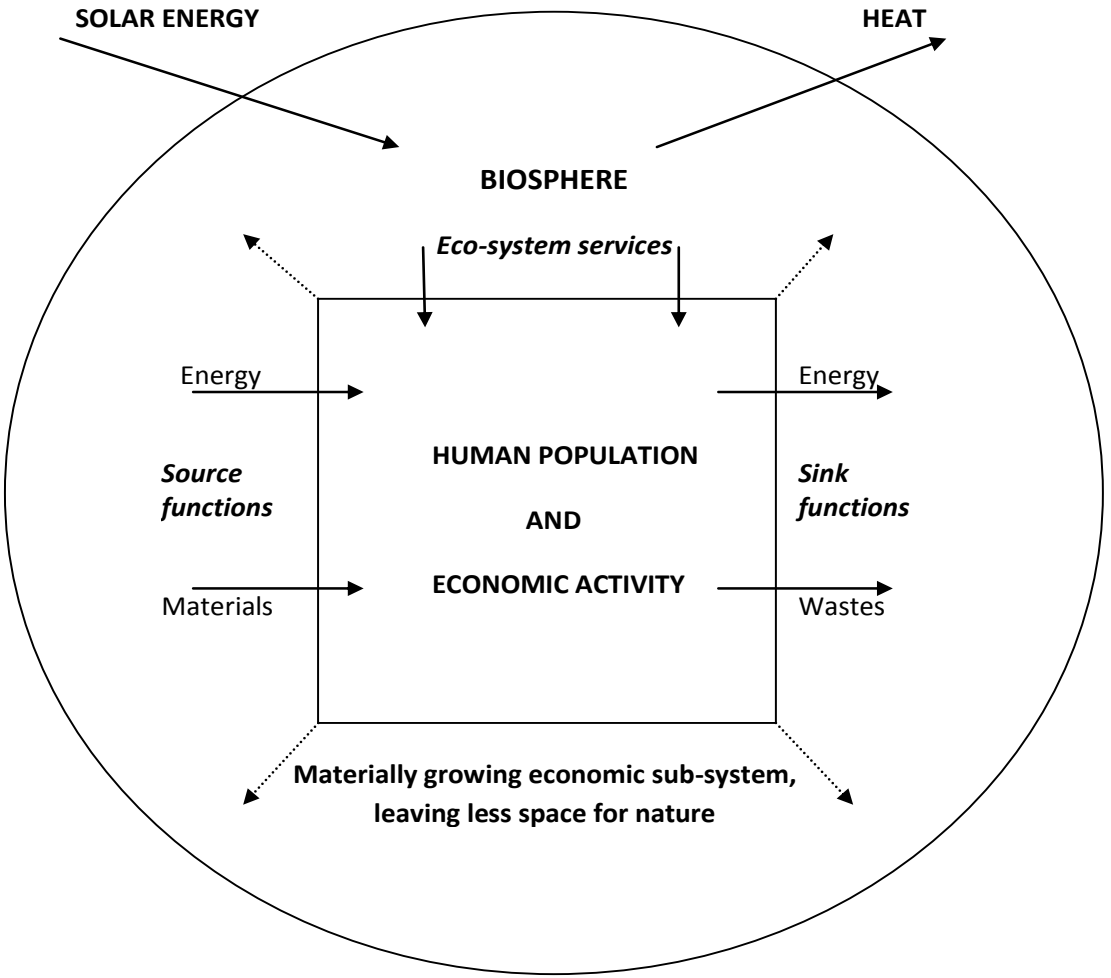
The ecological cycle



The ecological cycle and human well-being



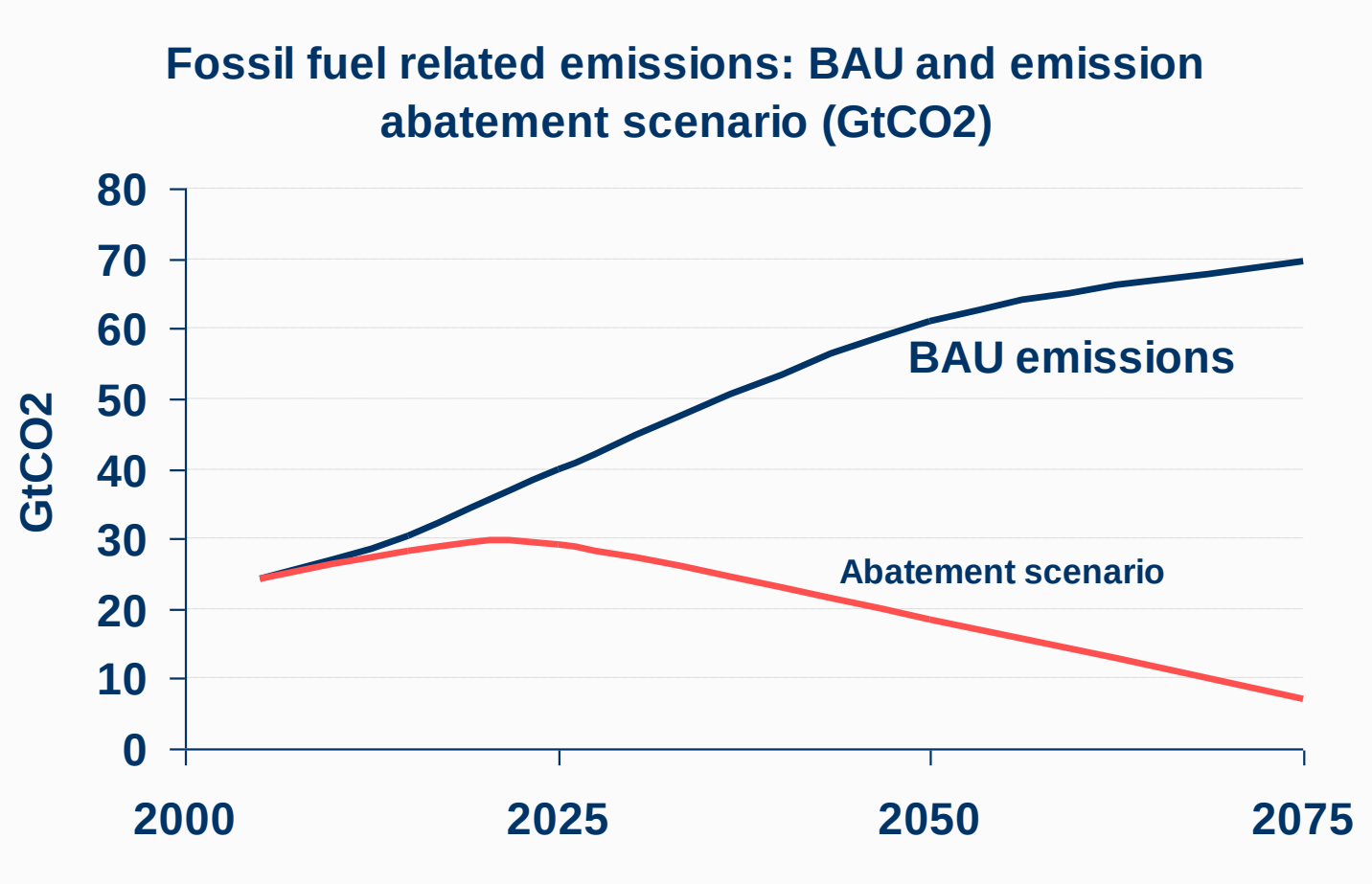
The economy as a sub-system of the biosphere



The imperative of decoupling physical from financial growth

- **Decoupling:** a decline in the ratio of the amount used of a certain resource, or of the environmental impact, to the value generated or otherwise involved in the resource use or environmental impact. The unit of decoupling is therefore a weight per unit of value.
- **Relative decoupling:** in a growing economy, the ratio of resource use (e.g. energy consumption) or environmental impact (e.g. carbon emissions) to GDP decreases
- **Absolute decoupling:** in a growing economy, the resource use or environmental impact falls in absolute terms
- If GDP growth continues, climate stabilisation at levels of CO2 concentration that limit global average temperature increases to 2^{o}C will require a degree of absolute decoupling of GDP from carbon emissions that is outside all previous experience

Emissions scenario to limit temperature change



Source: Stern Review, Part III, Chapter 9

The necessary improvements in resource and carbon productivity

- **To achieve 450ppmv atmospheric concentration of CO_2, assuming ongoing economic and population growth (3.1% p.a. real), need to increase carbon productivity by a factor of 10-15 by 2050, or approx. 6% p.a.**

- **Compare current increase in carbon productivity of 0% p.a. over 2000-2006, i.e. global carbon emissions rose at 3.1% p.a.; also**
- **Compare 10-fold improvement in labour productivity in US over 1830-1955, must achieve the same factor increase in carbon in 42 years**

- **A similar increase in resource productivity is required**
- **Focusing only on carbon may increase other kinds of resource use**
- **A systematic focus on ALL resource extraction is required: make transparent and accountable the physical basis of the economy**

An unprecedented policy challenge

The Stern Review Policy Prescription for climate change

- Carbon pricing: carbon taxes; emission trading
- Technology policy: low-carbon energy sources; high-efficiency end-use appliances/buildings; incentivisation of a huge investment programme
- Remove other barriers and promote behaviour change: take-up of new technologies and high-efficiency end-use options; low-energy (carbon) behaviours (i.e. Less driving/flying/meat-eating/lower building temperatures in winter, higher in summer)
- To what extent does behaviour change need to be driven by price (e.g. The results of the fuel price increases over the past two years)?
- The basic insights from the Stern Review need to be applied to the use of other environmental resources (water, materials, biodiversity [space])

Broadening the Stern approach (1)

- Objective
  - By 2050 6 tonnes per head of material use (instead of 20 today)
  - By 2050 2 tonnes/head of CO2 emissions (instead of 5 today)
  - A greater relative reduction in resource use compared to carbon emissions is required

- Major instrument
  - Tradable resource use permits (extraction + net imports (raw and embodied) between cooperating countries) (cf EU ETS)
  - Linear reduction from current to sustainable resource use levels
  - Import taxation on non-cooperating countries with higher than average resource use per head
  - Development of resource measurement capability (required to avoid import taxation)
  - Sustainable commodity agreements to reduce environmental impacts of extraction

Broadening the Stern approach (2)

- Instruments of national environmental policy
  - Economic instruments (tax/trading), regulation (e.g. for efficiency), voluntary agreements, information/communication
  - Only increasing relative prices signals scarcity, and gives incentives for both the development of resource-efficient technologies and the adoption of resource-efficient behaviours
  - Importance of environmental tax reform (ETR)

The macro-economic costs of increasing resource productivity

- Optimists:
  - ‘Costs’ are really investments, can contribute to GDP growth
  - Considerable opportunity for zero-cost mitigation
  - A number of resource-efficient technologies are (nearly) available at low incremental cost over the huge investments in the economic system that need to be made anyway
  - ‘Learning curve’ experience suggests that the costs of new technologies will fall dramatically
  - Resource efficiency policies can spur innovation, new industries, exports and growth
- Pessimists:
  - Constraining resource use is bound to constrain growth
  - Cheap, abundant energy and other resources are fundamental to industrial development

Conclusions on costs and growth

- Attaining greatly increased resource productivity will require huge investments in resource-efficient technologies right along the innovation chain (research, development, demonstration, diffusion).
- IEA ETP estimates of *additional* investment needs in energy sector alone: USD 45 trillion (1.1% global GDP from now until 2050)
- Government funding of R,D&D must increase dramatically, but demonstration and diffusion can only be driven at scale by markets
- This will require high (now) and rising resource prices, achieved by a global trading scheme supplemented by national resource/environmental policies over the next half century
- These high resource prices will incentivise investments in resource efficiency and also greatly change lifestyles and consumption patterns
- Provided that the world goes cooperatively in this direction, there could be high profits to be made from these high resource prices and changing consumption patterns; technological and policy uncertainty mean that the risks are also high
- Low impacts on growth assume no special productivity improvements from cheap/plentiful/concentrated resources
- A world of lower growth is preferable to one of collapsing eco-systems