www.factor10-istitute.org
www.worldresourcesforum.org
www.factor10.de

Factor Ten Institute
La Rabassière
Carraire de Bravengues
F – 83660 Carnoules/Provence
Tel/Fax +33 4 94 33 24 58
biovar@orange.fr
President
Prof. Dr. F. Schmidt-Bleek

POSITION PAPER 2011/2 EN
May 2011
Original GERMAN

The Economic Crisis and the Climate Change
Fundamental Defects of the Free Market System

20 Years Factor10/MIPS Conzept

Essential Terms and Concepts

RESOURCES

- Natural resources are understood to mean materials – including fossils -, water, and land, as they are available on planet earth.
- Eco-systemic services and functions [1] are vital for the survival of humans on planet earth.
- In a system sense, environment protection means: the best possible maintenance of eco-systemic services and functions.
- The **physical root cause** of the continuing destabilization of eco-systemic services and functions is the gigantic mobilization and excessive consumption of natural resources for the production and consumption of technical energy, shelter, food, material wealth and security [2].
- The ecological quality of goods, services and technical energy depends essentially upon their life-cycle-wide resource intensity ("ecological rucksack", MIPS).
- Eco-systemic services and functions cannot be created by technology to any noteworthy extent.
- The limitation of physical resources on planet earth, population growth, and the need to protect the eco-systemic services and functions call for an average tenfold increase in resource productivity [3] of

---

[1] *Ecosystem services and functions include the availability of liquid fresh water and unpolluted air, a range of elements, minerals, and metals, a substantial level of biodiversity, healthy plants and animals, productive seeds, sperms, and soil, a moderate temperature range on the surface of the earth, and the protection against radiation from outer space. Without ecosystem services, humankind cannot survive. Some have already been or are being pushed beyond their sustainable limits. Heute schon messbare Konsequenzen solcher Veränderungen sind stark vermehrte Bodenerosionen, Verlust von Arten, Klimawechsel, extreme Wetterbedingungen, Wassermangel auf allen Kontinenten, Wüstenbildungen und Überschwemmungen.*

[2] *F. Schmidt-Bleek: "The Earth, Natural Resources and Human Intervention", Haus Publishers, London, 2008*

[3] Declarations of the International Factor 10 Club, www.factor10-institute.org, www.faktor10.de. Resource productivity and

western goods and services as well as for providing technical energy .

- The minimization of mobilization, extraction, and use of natural resources should preferably take place at the front end of economic activities.
- The **economic root cause** for the growing loss of eco-systemic services and functions is the near zero price for using nature [4].
- The human economy must be constrained to function within the limits of the environment and its resources and in such a way that it works with the grain of, rather than against, natural laws and processes. Sustainability cannot be reached otherwise [5].
- To measure welfare with GNP is counterproductive from a systems point of view.
- Traditional policies have not been able to prevent the life-threatening deterioration of eco-system services or other serious developments like financial or nuclear meltdowns. Rather than continuing to seek successive solutions for individual problems, **system policies** must be developed that aim to improve welfare and wellbeing of people by optimizing the efficiency and precautionary nature of measures. This can be achieved by eliminating root causes of (potentially) harmful developments first, rather than separately repairing their symptoms. System policies reduce the risks associated with taking actions. System policies are essential for approaching sustainability. They do not exclude that certain mayor existing problems are treated with priority (e. g. climatic change). However, all solutions must aim at minimizing the use of natural resources.

ENERGY

1. Energy made available by technical means **(technical energy)** can only be generated, transported and applied by using natural resources: materials (including fossils), water, and land.
2. Technical energy is a production factor like labor or capital. It is *not* a natural resource like solar radiation or geothermal energy.
3. The ecological consequences of technical energy are principally due to its resource intensity. Exceptions are radiation and noise.
4. From an eco-systemic point of view, saving technical energy makes only sense if the overall mobilization and use of natural resources are reduced. This applies to all measures. Energy saving strategies and published examples for energy saving must take this into account [6].

---

resource intensity related to approaching sustainability are key concepts used in sustainability measurement as they attempt to decouple the direct connection between resource use (raw materials, soil, biomass, water, air and land surface) and environmental degradation. Their strength is that they can be used as a metric for both economic and environmental costs. Although these concepts are two sides of the same coin, in practice they involve very different approaches and can be viewed as reflecting, on the one hand, the efficiency of resource production as outcome per unit of resource use (resource productivity) and, on the other hand, the efficiency of resource consumption as resource use per unit outcome (resource intensity = RIPS; material intensity = MIPS = material footprint). The sustainability objective is to maximize resource productivity while minimizing resource intensity (partly from the internet).

[4] *B. Meyer, „Costing the Earth? Perspectives on Sustainable Development", Haus Publishers, London, 2009.*

[5] *P. Ekins, et. al.: Reducing Resource Consumption. "A Proposal for Global Resource and Environmental Policy".gws Discussion Paper 2009/5, ISSN 1867-7290,* meyer@gws-os.de

[6] *Misleading examples that can be - and often are - ecologically counterproductive. E. g.: Destroying still functioning goods like refrigerators and light bulbs in exchange for energy saving devices, or Separating CO_2 from emissions for storing it underground. Or promoting (even subsidizing !) dual engine-, "aluminum-", or electric cars. These vehicles carry enormous ecological rucksacks, up*

5. Electricity made available by technical means **(technical electricity)** can be called ecologically favorable if its generation, transport and application has been achieved with the least possible mobilization and use of natural resources per Kwh. In principle this argues for de-centralizing electricity production. Coal-, gas -, and nuclear power plants are highly resource intensive, and photovoltaic is much less resource productive than wind-mills. The traditional German electricity mix is 4 times more resource intensive than the Austrian mix.
6. **"Renewable"** is not necessarily the same as ecologically **"sustainable".** Using planted biomass for example for providing technical electricity can be ecologically destructive in many ways as well as ethically repulsive. The ecological rucksack of electricity and bio-fuels generated with planted bio-mass is normally high due to the considerable resource inputs "from the cradle to the grid" (or motor) [7].
7. Energy available in nature, like solar radiation and geothermal energy, are natural resources. Efforts to save these makes no sense. One hour of solar radiation received on planet earth is equivalent to the global yearly consumption of technical energy.
8. In order to approach economic sustainability, the energy productivity of western goods and services must be increased tenfold on average in the long term (2050). This relates to production and consumption. This imperative provides a unique opportunity to combine dematerialization and saving technical energy.

NOTE: "The consumption of technical energy in and by itself is not of significant ecological concern. It is the continued high resource intensity of technical energy that destabilizes the ecosphere and with it the economy. In the case of nuclear energy we not only disregarded its enormous resource intensity but also the dangers of potential radioactivity leaks. Had we begun in due time to radically increase the resource productivity for generating, transporting, and applying technical energy we would not now have to shoulder and pay for the ecological and economic consequences now."

Schmidt-Bleek warned of consequences early. (F. Schmidt-Bleek.:"FACTOR 10, ECOLOGICAL RUCKSACKS, AND MIPS", (1993), the translation of the book "WIEVIEL UMWELT BRAUCHT DER MENSCH, - MIPS, das Maß für ökologisches Wirtschaften", Birkhäuser, Basel, Boston, Berlin, 1994. www.faktor10.de).

The reader may also be reminded of the definition for eco-innovation:

"Eco-innovation *means the creation of novel and competitively priced goods, processes, systems, services, and procedures that can satisfy human needs and bring quality of life to all people with a life-cycle-wide minimal use of natural resources (material including energy carriers, water, and surface area) per unit output, and a minimal release of toxic substances."* (Reid, Alasdair, Miedzinski, Michal (2008), EUROPE INNOVA, Final Report for the EU Sectoral Innovation Watch Panel on Eco-Innovation, www.europe-innova.org*)* [8].

Also check reports by the "EU Eco Innovation Observatory, EIO" (**http://www.eco-innovation.eu/index.php?option=com_content&view=article&id=200%3Aannual-report-2011&catid=77%3Aeio-reports&Itemid=38**)

to twice that of "standard" cars, while even the latter have typical material footprints (MIPS) of 450 grams per km, of which only 15-20% are due to the energy used for propulsion. An eco-systemic approach would be to decrease the material footprint of inner city car-use by a factor of 10 or more with existing technologies and appropriate incentives.

0

[8] *F. Schmidt-Bleek, „The Earth: Natural Resources and Human Intervention", Haus Publishers, London, 2008;*

Schmidt-Bleek
CV 2010

Schmidt-Bleek ist Träger des hochdotierten Takeda World Environmnent Award 2001, zusammen mit Ernst Ulrich von Weizsäcker. Er ist Kernchemiker (MPI Chemie) und hat 14 Jahre als Universitätsprofessor in den USA gearbeitet, die erste Zeit zusammen mit dem Nobelpreisträger Sherry Rowland, der den Zusammenhang zwischen dem Sprühgas FCKW und der Ozonzerstörung entdeckte. Schmidt-Bleek hat beim neu gegründeten Umweltbundesamt in Berlin für die Einrichtung des Umweltforschungsplanes gesorgt und entwickelte an prominenter Stelle das deutsche Chemikaliengesetz. Danach war er für dessen Anwendung verantwortlich. Er schuf die deutsche Umweltprobenbank. Als Abteilungsleiter bei der OECD war er für das Umweltmanagement von 85% der Weltproduktion von Chemischen Produkten zuständig und entwickelte die heute gesetzlich vorgeschriebenen Testverfahren. Als Abteilungsleiter beim International Institute for Applied Systems Analysis (IIASA) bestand seine Hauptaufgabe in der Angleichung der Wirtschaftsgesetze früherer COMECON Länder an westliche Vorbilder. Seine Zusammenarbeit mit dem ökonomischen Chefberater von Präsident Gorbatschov, Stash Shatalin, überzeugte ihn davon, dass der westlich geprägte Umweltschutz nicht zur ökologischen und wirtschaftlichen Nachhaltigkeit führen kann. Er entwickelte das Faktor Konzept, insbesondere das Faktor 10/MIPS/Rucksack Modell als einzig messbarem Weg zur Nachhaltigkeit. Danach baute er mit Ernst von Weizsäcker das Wuppertal Institut als Vize-Präsident auf. Schmidt-Bleek ist Gründungs-Präsident des Factor 10 Institute und des International Factor 10 Club. Er war Vorsitzender des NRW Zukunftsrates. Er gab den Anstoß zum World Resources Forum Davos. Schmidt-Bleek ist Autor und Mit-Autor von Hunderten von Publikationen und ca. 20 Büchern.

Ministerialdirektor Peter Mencke-Glückert, zuständig für den amtlichen Umweltschutz in Deutschland in den 70er Jahren, nannte Schmidt-Bleek „Vater des Chemikaliengesetzes“.

BILD DER WISSENSCHAFT nannte Schmidt-Bleek 2006 den „Vater der Dematerialisierung“.

DER SPIEGEL, nannte Schmidt-Bleek am September 20, 2009 den „Doyen der deutschen Umweltforscher.“

FINANCIAL TIMES DEUTSCHLAND, nannte Schmidt-Bleek Anfang 2010 „einen der am besten bekannten Umweltforscher Deutschlands.“

Ernst Ulrich von Weizsäcker, März 2010: „Schmidt-Bleek ist in der Tat der grosse Pionier des Faktor Konzeptes. Von ihm habe ich es überhaupt erst gelernt“.

www.factor10-istitute.org
www.worldresourcesforum.org
www.factor10.de