F. Schmidt-Bleek
(MEMBER, EU ECO-INNOVATION PANEL)

Re: EUROPE INNOVA – Innovation Watch
ECO-INNOVATION PANEL, first meeting on 4 April 2006

Here: R&D suggestions for inclusion in EU call for proposals

Date: April 6, 2006

Some comments first - and two necessary clarifications of terms.

Technical ENERGY itself does *not* cause significant ecological harm (except in cases of massive man-made radioactive radiation or very strong explosions). Noises are in some cases health hazards, but rarely ever of ecological significance. The ecological problems we face with technical energy today are the low material productivity of energy generation, storage, transportation and use. In INDUSTRY, the efficiency of energy use could be improved by some 40 - 50 % on the average, often without major investments. The German electricity mix is 5 times more material intensive than the Finnish or the Austrian mix. In vehicles, only a small fraction of the energy contained in the fuel is converted into motion. Dematerializing the economy by a factor of 10 – with end-use satisfaction similar or better than today - would eliminate some 50 to 80 % of the present demand for technical energy, including in the transportation area. When assessing the environmental quality of energy, its own material productivity and its contribution towards improving the material productivity of goods and services are the important factors.

In general, ECO-INNOVATION resulting in saving material and energy per defined output (lowering demand) is far more effective for reaching sustainability than replacing existing types of supply with new ones, even when they carry lower ecological rucksacks .

In the following, the word „material“ always includes the energy used as input, measured in kg or tons. Also, material inputs should be separated for non-renewable (abiotic) and renewable (biotic) materials, water and soils .

Some of the following questions are only indicative for the need to improve statistical information on ECO-INNOVATION and ECO-INDUSTRY. They may have to be re-formulated in the context of the overall call for proposals.

„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, and surface area) per unit output, and a minimal release of toxic substances ".

"ECO-INSUSTRY is that part of industry which is pro-actively and demonstrably involved in ECO-INNOVATION, including firms and enterprises offering novel solutions for meeting legally set standards, norms and requirements".

R&D SUGGESTED

GENERAL

(1) What can government, industry and consumers undertake to stimulate ECO-INNOVATION?

(2) What can government, industry and consumers undertake to stimulate ECO-INNOVATION while at the same time creating new jobs?

(3) How can the options proposed under (1) and (2) best be implemented?

(4) What are potential - unwanted and/or positive - side effects of implementing the options identified under (1) and (2) above?

(5) What changes in existing legal provisions may become necessary due to implementing options identified under (1) and (2) above?

(6) What are the estimated costs and time requirements to implement the options identified under (1) and (2) above?

(7) What property right questions pertain to ECO-INNOVATION in general and in particular to the activities of ECO-INDUSTRY ?

(8) What small set of key-indicators is overall best suited (including the potential for international harmonisation) for measuring progress achieved by CO-INDUSTRY toward reaching ecological sustainability and comparing their performance with that of manufacturers involved in marketing functionally equivalent goods and services?

(9) What data must be collected in what form, by and from whom for applying the indi-

cators identified under (8) efficiently?

(10) What data should (as a minimum) be presented in socalled „sustainability reports“ issued by industry, in particular by ECO-INDUSTRY?

(11) What changes in education and training are necessary to support ECO-INNOVATION?

TECHNICAL

(12) What are the material intensities of various types of energy at the point of use, including geothermal and solar thermal energy as well as electricity produced by all known methods?

(13) What are the (average) „cradle to point of use“ material intensities of the most common materials (ca. 300-400) used today as input materials in manufacturing, construction and agriculture in kg/kg (the socalled Material Input Factors – MIF (= „Rucksack factors“))?

(14) How should designers, engineers, architects and others systematicall proceed in their work to further ECO-INNOVATION?

(15) What particularly impressive successes stories of the EU ECO-INDUSTRY exist since 2000 (products, processes, systems and services)?

STATISTICAL

(16) How many ECO-INDUSTRY firms exist today in the various statistical industry sectors in Member states of the EU 15 and EU 25, and what trends in these numbers can be detected since 1997?

(17) What is the total yearly resources consumption (abiotic and biotic materials, water and soil movements), including rucksacks, in the statistical sectors of industy in EU Member countries and the EU as a whole.

(18) What are current material efficiencies (material productivities) for abiotic materials, water and biomass) in the various statistical sectors of manufacturing industry, measured in life-cycle-wide material input per ton output , in t/t?

(19) What are current material efficiencies (material productivities for abiotic materials, water and biomass) in ECO-INDUSTRIES, measured in life-cycle-wide material input per unit output, in t/t?

(20) What were the material and water flows per annum (t/a) during the past ten years, including rucksacks in the various statistical sectors of national economies and the EU as a whole?

(21) What were the material inputs, including rucksacks, per annum (t/a) during the past 10 years in the various statistical sectors of national ECO-INDUSTRIES and the EU?
(22) How much biotic and abiotic material as well as water were saved per annum (t/a) through the activities of ECO-INDUSTRY in the EU?
(23) What is the national material productivity in the EU 15, EU 25, the Member states of the EU, the USA, Japan, China, India, Switzerland and a selected group of poorer countries?
(24) What are the per capita natural material, water and biomass consumption per annum in the EU 15, EU 25, the Member states of the EU, the USA, Japan, China, India, Switzerland and a selected group of poorer countries, measured from craedle to the point of use.

SPECIFIC SECTORS

(25) Due to their particular high material consumption per unit utility delivered, ECO-INNOVATION should be stimulated with high priority in the following sectors: Building and structures; ICT; Infrastructures, Transportation systems; Health care; Electricity generation-, transport- and application; and Leisure time activities. Studies are needed to show in detail the present performances in these sectors and their specific weaknesses, including reasons for shortcomings. Improvements should be suggested that could be achieved by legal, managerial, technical and fiscal means as well as by changes in consumer behavior. Incremental and long-term radical options for improvements may be considered.