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

THE FOLLOWING TEXT IS THE 2010 DECLARATION OF THE INTERNATIONAL FACTOR 10 CLUB [1]

WITH EXPANATORY NOTES OF ITS FOUNDING PRESIDENT
F. Schmidt-Bleek

1. Good living, prosperous economies, high levels of employment and peace require a healthy environment, including an agreeable climate and rich biodiversity. Today, all are threatened: urgent action to change course and reduce the overuse of fossil fuels, water and material resources is of paramount importance. To this end, the Factor 10 Club in 1994 called on governments to achieve within a generation a ten-fold increase in the efficiency with which their economies use energy, natural resources and other materials. The technologies required for a four-fold increase exist and, with appropriate policy reforms, a tenfold increase could be achieved (1).

2. The Club's ten-fold target entered the international political agenda in June 1997 on the fifth anniversary of the Earth Summit. Soon after, the EU proposed that industrialized countries pursue a progressive path toward this target with a 25% increase by 2010, a 75% increase by 2030 (Factor 4) and a 90% increase by 2050 (Factor 10). The target also received a favorable response from sections of business and industry including the World Business Council for Sustainable Development (2).

3. Despite this, progress has been dangerously slow. Although Gross World Product has more than doubled over the past two decades reaching almost US$ 60 trillion in 2010, the UN's 2005 Millennium Ecosystem Assessment found that this historically unparalleled growth was based mainly on unsustainable forms of energy, agricultural, industrial, urban and other development. The Assessment found that 15 of the 24 major ecosystem services that support the human economy—services such as providing freshwater and food, purifying air, and regulating the climate—have already been or are being pushed beyond their sustainable limits. This overshoot has reached a point where even the US Pentagon felt compelled in its 2010 Quadrennial Defense Review to warn that continuing climate change and environmental destruction will have significant geopolitical impacts around the world, contributing to poverty, instability, mass migration, conflict and the further weakening of fragile governments (3).

4. Bringing fossil energy and resource use down to a sustainable level is the common thread running through any potentially successful response to the ongoing security, economic and environmental crises. Moreover, since all materials taken into an economy end up sooner or later as emissions and wastes, it is essential to reduce not only emissions but also the overall flows of resources drawn from nature (4).

5. We know of course that very large flows of resources occur naturally, either from volcanoes or land erosion or other biosphere processes. Together these flows amount to some 50 billion tons

[1] This Declaration is based on discussions held at the Factor 10 Institute (Provence) in September 2010

per year, although more research is required to establish a precise number. However, human induced flows of resources into the economy now exceed this by an estimated factor of two. In line with the precautionary principle, we should aim at reducing these human induced flows by that factor of two. Assuming seven billion people on planet Earth, a figure that will soon be surpassed, that would result in an allowance of about 6 to 8 tons per capita per year. In devising reduction strategies, fossil energy flows which drive climate change should continue to receive priority. Reducing water flows is also a priority concern in many parts of the world. Beyond that, further research is required urgently to determine the other resource flows which require priority attention.

6. Some may feel that a ten-fold reduction in the use of fossil energy, water and resource use would entail a correspondingly dramatic cut in humanities' quality of life. Fortunately, that is not the case at all. Since the technologies for achieving such a reduction exist or are on the way, introducing them over a generation should in fact result in a steady improvement in the competitiveness of business, along with expanded possibilities for employment and increased potential for wealth creation and the quality of life of people and their communities (5).

7. A transition to accelerated gains in energy and resource productivity is not a simple matter however, and will not happen by itself. It will require action by governments, industry and society on many fronts.

8. The most important change needed is to bring market signals in line with both economic and environmental realities. In a market economy, the most important and pervasive signal is price and the idea is eventually to make prices "reflect the ecological truth", so that economic advantage and ecological sustainability reinforce each other. Governments regularly intervene in the market through taxes, subsidies, fiscal, trade and other policies but today these interventions serve largely to increase rather than reduce the consumption of fossil energy, water and other resources. This must be reversed and in the real world governments can do so using a gradualistic approach involving steady year-by-year incremental changes (6).

9. For example, as experience in some countries demonstrates, governments can gradually overhaul the way they raise revenues. They can gradually reduce taxes on income, savings and job creating investments while gradually increasing them on energy, resources and products with a high environmental impact. They can do this without adding to the overall tax burden. Moreover, if prices increase no faster than the average efficiency of energy and material use, the average annual price paid for energy and resources should remain stable. Obviously, for reasons of equity, matching reforms should be introduced simultaneously to compensate those living at minimum levels of consumption.

10. Governments can also gradually reduce economically perverse, ecologically destructive and trade distorting subsidies which are now estimated to exceed $1 trillion a year. According to the OECD, the production and consumption of fossil energy alone is encouraged by tax-supported subsidies exceeding US $500 billion annually. They could also modify the present restrictive interpretation of trading regimes to allow consideration of the ecologically destructive effects of production processes as well as products.

11. Through these and other similar reforms, governments would gradually harness market forces to support rather than oppose the urgently needed transition to a low carbon, dematerialized and resource efficient economy. Announcing and smoothly enacting incremental

reductions in perverse subsidies and changes in prices for energy and resources would lead to a decisive acceleration of resource productivity.

12. Discussing these reforms reveals the inadequacy of the traditional approach to so-called "environmental" issues. Reacting to the symptoms of environmental degradation after the damage has been done and the economic and social costs of that damage have been incurred, has failed completely as a strategy. According to Lord Stern, the costs imposed far exceed the costs of changing course. It makes far more sense to deal with the root causes in the first place. These root causes are to be found largely in the tax incentives and subsidies, and in the fiscal, trade, energy, agricultural and other policies of government, which not only drive environmental destruction, but also drive it at a pace and scale well beyond the capacity of even the most vigorous react-and-cure strategies to keep up, let alone catch up. However, this will require governments to take a more "systems" approach to developing and applying policies. It will require them to view issues like climate change as economic, trade, energy, social and national security issues, not simply as environmental issues. It would require them to recognize that these issues are the responsibility of the head of government and his/her key economic and security ministers, and not simply that of the minister responsible for environmental protection. And it will require them to recognize the priority need for precautionary strategies, not simply after-the-fact react-and-cure strategies. We therefore urge governments to take a more "systems" approach to the development and application of policies on these issues (8).

13. In support of these changes, there is an urgent need for robust directional indicators. It is now generally recognized that if governments don't measure the right thing, they won't enact policies to do the right thing. Still, obsessed with indicators of annual increases in G.D.P., they consistently fail to assess changes in other factors which can have a decisive impact on economic prosperity and human well-being, such as the economic and social costs of climate change, resource use and environmental degradation. They are mislead in other ways as well. Current national accounting systems have no capital account and no proper balance sheet. If corporations didn't recognize consumption of man-made capital, they'd soon go bankrupt. Because of their inadequate accounting systems, however, governments do not recognize or measure the consumption of their natural resource capital. Consequently, it is possible to show high levels of national income by running down environmental and resource stocks, even when this resource degradation is sure to bring declining incomes in the future. Current systems of national accounts also fail to place any value on the economic services provided by natural resources, 15 out of the 24 of which have already been or are being pushed beyond their sustainable limits according to the UN's 2005 Millennium Ecosystem Assessment mentioned above.

14. Over the years, a number of alternative accounting systems to measure progress have been proposed, most recently by two Nobel prize-winning economists, Joseph E. Stiglitz and Amartya Sen. We call upon governments to adopt new means of measuring wealth and new indicators for human progress (9)

15. We also call upon governments to introduce some universally applicable measures for assessing the ecological stress potential of material flows. One of these, the "Material Footprint MIPS", was developed in the Wuppertal Institute in the early 90s. MIPS is the material intensity, the life-cycle material input per unit output, and is highly suited as a sustainability indicator for decoupling the use of natural resources from generating wealth. One of its strengths is that it can be

used as a metric for both economic and environmental costs. We suggest that Material Footprint MIPS be universally accepted. (10)

16. Finally, we would ask all heads of government, corporate leaders and the EU to begin to take seriously the goals they so solemnly adopted at the 1992 Earth Summit and reaffirmed at many subsequent international and regional conferences. They need urgently to develop national strategies to reach these goals and begin belatedly to implement them. It is evident from the recent climate conferences that not all countries are able or willing to move at the same pace. We therefore urge the creation of a Coalition of States willing and able to take the lead and act as a spur and catalyst for the others. On Planet Earth, time is the most limited resource we now have (11).

Originally signed by:

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EXPLANATORY NOTES

(1) The main physical barrier to reaching sustainable ecological and economic conditions is the enormous human consumption of natural resources per unit output of value, utility or service. This observation applies to all renewable and nonrenewable materials, domestic animals, water, soil, and land use. Typically, more than 90% of technically mobilized and extracted material from nature becomes waste before a new car is put on the road, and its use requires additional resources.

Given current economic and environmental policies, nature's vital life-sustaining services will continue to decline. These services and functions are vulnerable to human economic activities. Already today, consequences of excessive use of nature can be observed, e.g. massive soil erosion, water shortages, desertification, loss of species, and climatic changes, including increasing catastrophic events like hurricanes and floods [2].

Jared Diamond has shown how clinging to outdated behaviour, facts and authorities leads to the destruction of vital eco-system functions. Parallels to the present worldwide situation are frighteningly obvious.

(2) Governments in Austria and Germany are currently formulating far-reaching resource policies. In Germany, preliminary plans are to reach at least a tenfold dematerialization of the economy by 2050 [3]. The EU Commissioner for the Environment is also developing long range resource management plans.

(3) In JULI 2010 the German army published a report that concluded: „...there is a serious threat that a global transformation phase of economic and social structure will be the consequence of a sustainable scarcity of important raw materials and thus cannot but involve security frictions. The desintegration of complex economic systems....has direct and in part serious influences upon many areas of life, in particular in industrialised countries.....The

[2] F. Schmidt-Bleek „The Earth, Natural Resources and Human Intervention", Haus Publishers, London, 2006

[3] F. Schmidt-Bleek, "The Earth, Natural Resources and Human Intervention", Haus Publishing, London, 2008 (available in German (Fischer, Frankfurt, 2006), and Chinese

envisioned paradigmatic change contradicts economic logic and can therefore be left to market forces only to a limited degree" http://www.peakoil.net/files/German_Peak_Oil.pdf).

(4) Applying appropriate energy in the technosphere has little ecological consequences, except when it takes the form of nuclear radiation or noise. In one hour's time, the sun delivers energy to the earth that is equivalent to the yearly consumption of technically generated energy for the whole world economy. It is the life-cycle-wide material-, water-, and land-intensity of generating, transporting and applying energy for human „consumption" that is the root for a multitude of environmental impacts. This is the reason why it is unavoidable to dematerialize the energy that drives human activities (including a „low carbon economy"), as well as generate, transport, and store it with the best possible resource productivity. Moreover, reliable technology is paramount, as oil spills demonstrate. Low resource intensity energy can be supplied by e. g. utilizing wind, waves, and geothermic sources, but not by low efficient photo-voltaics, batteries or nuclear power plants (which provide electricity with about the same material intensity as coal fired power plants, not counting the resource input/KWh necessary for disposing nuclear wastes safely).

(5) Note: "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). Consult: www.wupperinst.org/en/publications/entnd?beitrag_id=1309 for designing dematerialized goods and services.

Examples of advanced products/systems with high resource productivity include: "SkySails" for propelling boats and ships; Factor 10 Office Building near St. Poelten, Austria (Dr. Robert Wimmer, Techn Univ Wien); low temp washing detergents; self-cleaning surfaces; Krauss Maffei jumbo jet movers for airports; the 30 floor „lifecycletower" constructed of wood (Rhombergbau, Bregenz, Austria); Insolating paint „GAINA" based on space experience by Nissin Sangyo Corporation/Japan (Blue Economy).

(6) Walter Stahel observed recently: „Eating people is wrong" is a statement which most people will support and most will adhere to; „taxing renewable energies is wrong" sounds equally right for most people. Many governments subsidise such renewable resources as biomass, solar and wind energy. Yet human labour – work – is another renewable resource which, when intelligently used, has traditionally been taxed in most countries, but when wasted, is supported by social welfare.

In a sustainable economy, taxes on renewable resources including work - human labour - are wrong and should be abandoned. The resulting loss of state revenue could be compensated by taxing the consumption of non-renewable resources in the form of materials and energies. Such a shift in taxation would promote low-carbon as well as low-resource solutions. Changing the tax focus will by itself promote a more sustainable circular economy: - taxing non-renewable energies instead of labour will promote a circular regional economy instead of a linear global one, by penalising fuel-based transports by road, air and sea in favour of local and regional solutions. - taxing non-renewable materials instead of labour will promote the local reuse of goods, components and molecules and thus reinforce the competitiveness of these business models.

To summarise: A shift in taxation from renewable to non-renewable resources will reinforce the emerging trend towards a circular economy based on stock management instead of throughput, especially with regard to the material (physical) part of the economy. This trend is already fuelled by two independent developments:

- Industrial economies are moving from scarcity to abundance.

- The 2008 European waste directive has reconfirmed waste prevention as first priority,

and has defined the re-use and service-life extension of goods (i.e. a circular economy for goods) as the main strategies to achieve waste prevention.

Economic optimisation thus changes to value preservation in addition to creating value added.

(8) Environment correspondent, BBC News website

Rainforest in Kakum National Park, Ghana Losses are great, and continuous, says the report The global economy is losing more money from the disappearance of forests than through the current banking crisis, according to an EU-commissioned study. It puts the annual cost of forest loss at between $2 trillion and $5 trillion. The figure comes from adding the value of the various services that forests perform, such as providing clean water and absorbing carbon dioxide. The study, headed by a Deutsche Bank economist, parallels the Stern Review into the economics of climate change.

Speaking to BBC News ...., study leader Pavan Sukhdev emphasised that the cost of natural decline dwarfs losses on the financial markets. "It's not only greater but it's also continuous, it's been happening every year, year after year".

(9) The German Parliament has just installed an enquete commission for 2,5 years, that will deal, among other things, with the development of economic indicators that take externalities into account.

(10) *Material productivity* is an indicator of the output or value added generated per unit of material used. *Material productivity* is defined as the quantity of output produced per unit of materials inputs used in the production of the output. *Material Intensity* indicators are the inverse of productivity indicators. Material productivity and material intensity are decoupling indicators that describe the relationship between the use of natural resources (e.g. materials) and economic growth or industrial activity. Material productivity can be expressed as the inverse of MIPS, namely S/MI. It is the unit of good or service (value or utility) that is obtained trough the life-cycle-wide sum of all material inputs for producing the good or generating a service, including those masses needed for making energy available (e. g. generating electricity). On the other hand, the material intensity describes the quantity of natural material MI that has to be used from cradle to cradle in order to generate a certain service or value S = MIPS. The sustainability goal is to maximize the resource productivity or to minimize the resource intensity.

(11) Only „Systemic Policies" can lead to sustainability. These aim to improve welfare and wellbeing of people by optimizing on the system level the efficiency and precautionary nature of measures by early eradicating the *root causes* of potentially harmful developments, rather than separately repairing their consequences, often provoking the risk of delaying, increasing the costs of, and even preventing the solution of other problems. This applies to all areas of responsibility, environmental, social, economic, and financial.

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About Schmidt-Bleek: German Env. Ministry 1982, Director General Peter Mencke-Glückert: „Father of the German Chemicals Act"; BILD DER WISSENSCHAFT 2006: „Father of Dematerialisation". DER SPIEGEL, Sept 2009: „Doyen of the German environmental research". FINANCIAL TIME DEUTSCHLAND: „One of the best known environmental scientist of Germany".

Friedrich Schmidt-Bleek is a physical chemist by training (Max Planck Institut). During the 60ies he worked with Nobel Price winner Sherry Rowland, and as a faculty member at the University of Kansas, Purdue and Tennessee University System, where he founded an environmental study center in 1971, together with Oak Ridge National Laboratory and Tennessee Valley Authority. Starting in 1974, he coordinated the (West) German environmetal research, and later developed and administered the German Chemical Substance Control Act. He founded the German Environmental Sample Repository in 1976. As Head of Division at the OECD he was in charge of chemical management, including harmonized testing and evaluation procedures. He subsequently became leader of the Technology, Economics, and Society Program at the International Institute for Applied Systems Analysis, IIASA, where his principal task was to support the development of market economic legislation in (former) COMECON countries in close cooperation with the chief economic advisor to President Gorbachev, Stash Shatalin. Realizing that western environmental protection laws could not achieve sustainability, Schmidt-Bleek developed the Factor 10 dematerialization concept, including indicators such as ecological rucksack and MIPS (Material Footprint). He built up the Wuppertal Institute with Ernst Ulrich von Weizsäcker as founding Vice President, and served as chairperson for the Future Council of North-Rhine Westfalia (18 Million inhabitants). In the 90ies he became the founding president of the International Factor 10 Club and the Factor 10 Institute in the Provence. In 2008 he initiated the World Resources Forum Davos, and, together with Bernd Meyer, the Lindau Group, an association of concerned economists interested in economic perspectives of sustainable development.
Schmidt-Bleek has taught physical chemistry, economics, law, and system design at various universities. He has published hundreds of papers and some 20 books in a number of languages.