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A special issue in “SAPIENS”

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The challenges of resource efficiency and appropriate strategies

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In May 2011, the OECD Ministerial Council Meeting launched its long-awaited green growth strategy. Though not entirely new in content, it is an interesting approach at a time when the financial crisis is not yet over and the forthcoming Rio+20 Earth Summit may not bring real progress on the issues at stake. The green growth approach suggests economic opportunities that may start as recovery programmes for sluggish economies and, hopefully, can be turned into stable eco-innovation pathways.

Our special issue seeks to address this fascinating topic along a core question: What is the proper scope and role for policies? Any such strategy will have to address primary environmental challenges, such as increasing energy use and CO₂ reduction. Characterized as the "biggest market failure the world has seen" (Stern, 2008, p.1) it is quite clear that internalization of negative externalities will yield innovation in the energy system, such as renewable energies. However it is less clear how climate and energy interact with other ecosystems and natural resources. If relative factor prices are assumed to drive investments for innovation and growth, commodities and materials are at least as relevant as energy. According to a Eurobarometer (2011) survey, material costs account for around 40-45% of the gross production value of manufacturing companies in the EU; similar shares can be expected in other regions worldwide. A recent expert paper written by the International Resource Panel (UNEP, 2010) underlines the environmental relevance of not only fossil fuels but also agricultural goods, biotic materials, and metals such as iron, steel and aluminium. In other words, enhancing resource efficiency is more conducive to eco-innovation and any green growth than a focus on CO₂ reduction alone. Searching for synergies on how long-term greenhouse gas emission reduction by 80-90% can be aligned with better management of natural resources is a key to eco-innovation. Accordingly, the EU's eco-innovation observatory defines eco-innovation as "any innovation that reduces the use of natural resources and decreases the release of harmful substances across the whole life-cycle" (EIO, 2011).

The sceptical reader may sympathize with eco-innovation as such but ask for incentives. Why should firms that face the prevailing competition select greener products and services as long as prices do not yet sufficiently internalize negative externalities? Why should economies not take comparative advantage of, say, exporting commodities, coal-fired power stations and SUVs? What does the poor performance of the Kyoto Protocol on the reduction of greenhouse gas emissions tell us with regard to international diplomacy and new modes of governance? Policies are challenged to, on the one hand, facilitate the emergence of green entrepreneurs, products and services—not to mention system innovation—and, on the other hand, contribute to a soft landing of dirty industries. Designing appropriate incentives thus is a multi-level challenge:

- At the international level, distortions stemming from unfair practices of trade and lax environmental standards in some countries need to be addressed. While effective global agreements are desirable but probably unrealistic at this time, the quest is for flexible regional mechanisms that may form a more polycentric governance regime at the global level. This may include the G20 and industrial activities as well.
- At the national level, research promotes the idea of bottom-up approaches of best practices being disseminated through international mechanisms. While this suggests less emphasis on binding agreements to restrict polluting activities, the quest is for those national incentives that have proven to be effective in unleashing eco-innovation activities.
- At the micro- and meso-level of business, consumer, industry, and regions, a wave of activities can be observed. Driven by engagement of various actors and with tangible benefits of various kinds—profits *and* environmental relief—those activities outweigh the slow progress at the international level.¹

This special issue sheds light on this multi-faceted topic. The papers included address all three levels in different ways on the nexus of resource productivity, policies and incentives. They were prepared for the Third International Wuppertal Colloquium on “sustainable growth and resource productivity—harnessing industry and policy towards eco-innovation” that was jointly organized by the Wuppertal Institute (Raimund Bleischwitz), the European Institute for International Economic Relations at the University of Wuppertal (Paul Welfens) and the East-West Center Honolulu (ZhongXiang Zhang) on September 4–6, 2010, in Brussels in the premises of the European Commission (DG ENV).

David Runnals expresses a view on environment and economy with a look back at the international debate since 1972 and how the USA in particular has changed since. Looking at how the financial crisis shapes this debate, he underlines investment opportunities, the role of the private sector and the initiative for cutting subsidies.

Rene Kemp deals with green innovation policies in Europe. He examines the rationale for such policies and gives an overview of the instruments in use. The paper develops ten themes of innovation policy, which are: 1) the need for policy to be based on identified barriers, 2) preventing windfall profits, 3) specific and generic support policies, 4) balance between policy measures, 5) targeted spending in areas where innovation is needed, 6) missions, 7) strategic intelligence for innovation, 8) portfolios, 9) policy learning and 10) international policy.

Yasuhiko Hotta gives an overview on Japan’s strategy and argues that it can be characterized by its emphasis on improving resource efficiency and expansion of voluntary approaches by comprehending environmental challenges

as opportunities for further technical progress, innovation, and industrial competitiveness. The paper also analyses two recent sustainability strategies developed by Ministry of the Environment of Japan and concludes that it is time to place greater emphasis on total reduction in environmental impact from production and consumption to achieve the next step of sustainability for Japan and elsewhere in the world.

Francois Grosse analyses current recycling markets for metals and develops a perspective towards sustainability. It summarises cardinal virtues of sustainable material growth and describes the profile of a sustainable economy which does not rely on a decrease in the need for raw materials by three key requirements: material growth must be less, or even considerably less, than 1% per annum; the recycling efficiency rate must be greater than 60%, or even 80%; the rate of addition to stocks must be less than 20%, meaning that the economy must discharge as waste at least 80% of the quantities it consumes of each material.

Henning Wilts and *Raimund Bleischwitz* develop an international metal covenant. The relevance stems from two angles: firstly, low recycling rates at an international scale and for consumer products such as vehicles, and secondly, industries’ interest to ensure a stable supply of such materials. The proposal develops elements of a legal contract based on private law (a covenant) between suppliers and automotive manufacturers, recycling industry and the relevant public authorities in the export and destination countries. Such a covenant should set long-term goals to increase the resource productivity by high quality recycling of old cars (wrecks) and other means. It should define the responsibilities of different actors in terms of operation, implementation, and evaluation.

While all papers address opportunities and barriers related to resource productivity and policies, the conclusions for any green growth strategy are not yet entirely clear. Our two books (Bleischwitz *et al.*, 2009; 2011) may be of complementary interest to the reader; however this is certainly an area for further research.

¹ See e.g. SAPIENS 2009 Vol.2 / No.3 - Cities and Climate Change

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