

## **Concept and Implementation of Ecological Industrial Policy in Germany and Relevant European Strategies**

*Klaus Jacob*

*Environmental Policy Research Centre, Free University Berlin*

The discourse on costs and benefits of environmental policies has changed fundamentally. Studies like the Stern Report (Stern 2006) or the study on the Economics of Biodiversity (TEEB 2009) have pointed out that environmental degradation inevitably leads to tremendous economic losses. Other studies demonstrate the economic potentials of environmental technologies and services (e.g. Roland Berger 2007, BMU 2009, Jaeger et al 2009). A number of national and European policies have been developed to exploit the potentials of the fast growing markets and to further stimulate environmental technologies.

It is difficult to delineate environmental technologies from other mainstream technologies. Official statistics focus on technologies with the main purpose of cleaning the environment or preventing further pollution. The investments in these technologies are in decline for several years in most countries. The picture is different for technologies with other purposes, e.g. the provision of energy, mobility, housing, etc., but with a lower environmental impact compared to other mainstream technologies. The markets for such technologies are growing world wide at a fast pace. The global turnover for such technologies is estimated for 2007 at 1.400 bln EUR and expected to rise to 3.100 bln EUR until 2020.

Environmental technologies have evolved for Germany as a major economic activity. The share of the GDP is estimated as high as 8% and expected to rise to 14% in 2020. Germany holds a favourable position in the world markets. However, other economies, mainly Japan, China and the US are catching up and developing large and ambitious programs. The new Obama administration has announced a 10 years \$150 bln spending programs for R&D in climate friendly technologies, Japan will spend \$30 bln in the coming five years. South Korea spent 80% of its stimulus package in green technologies, China 1/3 of its package which is the largest of the world, both is far ahead of the German efforts.

The strategy for Ecological Industrial Policy (EIP) is meant as the core German policy in this international green race. It is laid down in several studies and policy documents (Jacob 2009). There is no specific instrument assigned to EIP, but instead a multitude of approaches. The focus is not only on the development of technologies, but also on their market introduction, the broad diffusion and support for the export. Although there are many different instruments possible (see Rennings and Jacob 2008), the focus is on spending programs in support of green technologies throughout the phases of the business cycle. Demand side instruments such as regulations to enforce private investments have not been fully utilized.

In the European Union several policies in various domains are relevant for the promotion of green technologies. The promotion of green tech is not fully integrated in the meta strategies such as the Lisbon Strategy, the Strategy for Sustainable Development or the Better Regulation Strategy, all of which aim to provide guidance for the development of sectoral policies. Comparing European R&D policies, environmental policies and economic policies, R&D policies score best in terms of potentials and the actual orientation towards the promotion of green technologies, environmental policies second and economic policies third. In the latter domain, there are still counteracting policies, which emphasise the support of existing, conventional technologies (Hertin et al. 2008). Overall, there is a lack of mainstreaming, the implementation in concrete policies and in the Member States falls short,

the focus is often limited to climate issues, the potentials of global diffusion are not utilised, and there are few effort to increase the demand for green technologies.

Industrial policies to promote industrial sectors and to transform industry as a whole have a transformative potential beyond the technologies, the resources and the forms of energy usage. Historically, the replacement of energy sources was linked to new production models, new core technologies and industries, and new institutions (Jänicke and Jacob 2009). The phases of transition are phases of redistribution between firms, sectors, regions and revaluation of capital and qualifications. It is quite open which regions of the world will be successful in leading the development towards a more sustainable industrialisation. It will be a transformation that is not only market driven, but requires active and guiding governmental policies.

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**Contact:**

email: [jacob@zedat.fu-berlin.de](mailto:jacob@zedat.fu-berlin.de)

website: <http://www.polsoz.fu-berlin.de/en/polwiss/forschung/systeme/ffu/index.html>