

June 2011

Ecological Industrial Policy for Ecological Structural Change

In 2006, the Federal Minister for the Environment, Nature Conservation and Nuclear Safety published a first memorandum for a 'New Deal' for the economy, the environment and employment. Given the subsequent advent of the financial and economic crisis, which at that time was not generally foreseen, the fact that the memorandum laid down a number of benchmarks, taking in a wide range of issues and adopting a clear Keynesian stance with regard to state intervention, means that it is high time to take another look at the concept, five years after its publication, in light of the debate on a 'Green New Deal'. Ecological industrial policy should not be seen as an end in itself, but rather as an instrument for achieving ecological structural change.

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Ecological Industrial Policy: The Establishment of More 'Pioneering Markets'

The concept of ecological industrial policy stands in the tradition of ideas about sustainable development which link the economic goal of growth with the ecological requirements of climate protection and resource conservation: "It is essential that the model for sustainable development revolves around a 'third industrial revolution' with energy and resource efficiency at its centre. Instead of playing economy and ecology off against each other, we need to finally understand the economic potential inherent in the

necessary ecological structural change: new growth, new value creation, new products and processes and new jobs are all possible. To make it happen we need an ecological industrial policy that will adapt our industrial structures to the ecological and economic challenges."¹

Introducing the notion of ecological industrial policy first of all raises the question of what it involves. But perhaps even more important is the question of what it no longer involves. If there is an ecological industrial policy, in other words, is there also an unecological industrial policy?

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Industry of any kind – but especially manufacturing – involves the consumption of materials. The use of cheap energy sources is even a constitutive condition for industrialisation. There-

fore, there cannot be an industrial policy which does not have ecological consequences. In particular, the availability of natural resources will increasingly shape the industrial competitiveness of a location poor in raw materials, such as Germany. To that extent the concept of an 'ecological industrial policy' could be a pleonasm. It would perhaps make more sense to talk of a knowledge-based and resource-efficient industrial policy. This could make it clear that the notion of ecological industrial policy refers not only to the traditional 'environmental industries', but also to Germany's productive base as an industrial location in general. However, for a transitional period, it seems necessary to mark out a policy arena in which goals and measures can be formulated for a policy which, in the medium term, will make the concept of ecological industrial policy superfluous because it is self-evident. In these terms, a knowledge-based and resource-efficient industry could be described as the goal and ecological industrial policy as the path to that end.

The State Must Lead the Way

Since Willy Brandt promised a blue sky over the Ruhr 50 years ago the state has sought to protect the health of the population and the environment with a variety of targeted measures. This policy has been both a driver of innovation and led to the early development of 'pioneer markets' of a competitive and high-export environmental industry.

With climate change and resource scarcity global challenges have developed which require not just local 'end of pipe' measures, but integrated solutions. Here too the individual profit motive can be combined with sustainability

goals for society. It may be, however, that the environmental crisis of capitalist society is calling into question our wealth creation model as a whole, or at least an understanding of wealth based, as it has been hitherto, on unlimited growth in the consumption of materials and energy.

The establishment of new 'pioneer markets' remains an important part of ecological industrial policy, but a pioneering function for the state is also needed. The industrialised countries must, especially in cooperation with the skyrocketing economies of the emerging nations, pose the question of the limits of global economic growth. The international community must formulate answers which enable fair and peaceful cooperation on an endangered planet with ever scarcer resources and increasing failures among life-sustaining eco-systems. That being the case, the pioneering role of the state must not be confined to the opening up of 'pioneer markets', but must also pursue new paths in the area of diplomacy and multilateral agreements. New multilateral agreements on the fair distribution of global energy and resource consumption will not only open up new markets but possibly also reduce traditional resource-intensive consumption and production structures.

Setting Benchmarks for the Basis of Ecological Industrial Policy Action

The Federal government has committed itself to doubling energy and raw material productivity by 2020 and to increasing the proportion of renewable energies in electricity generation to at least 20 per cent. On the whole, however, the government lacks an industrial policy vision and benchmarks with regard to how German indus-

try's globalised value chains can contribute to reducing the heavy burden on the planet in absolute terms. A too narrow view of our resource use threatens to shift environmental damage to other countries. This concerns in particular the extraction of natural resources (for example, mining, fishing, biofuels, wood from tropical forests) and thereby often the poorest segments of the populations of other countries. The complexity of our industrial metabolism calls for differentiated solutions and benchmarks taking in the full range of value chains.

Developing an Intelligent Ecological-Industrial Regulatory Framework

In the course of developing its environmental policy Germany has come up with a palette of instruments which could form an intelligent ecological-industrial regulatory framework.

The Law on Renewable Energy is now one of the most copied legislative initiatives in the world. Besides ambitious ecological limit values and production standards there is a whole series of successful instruments, such as ecological tax reform, the set of incentives deployed by the KfW Development Bank (*Kreditanstalt für Wiederaufbau*) and energy and material efficiency agencies at both the federal and the *Land* levels, as well as emissions trading. To date, these elements have not been articulated within a coherent overall framework and in certain areas they have been annulled by means of exemptions. Assessments and better planning of the various environmental policy measures should reduce contradictions, redundancies and overregulation and foster more coherence and efficiency. In this connection the consistent re-

duction of ecologically harmful subsidies is essential.

Exploit Export Potentials More Fully

Germany is already 'world champion' when it comes to the export of environmental goods and services. The global ecological challenges will increase internationally in particular due to the dynamic growth of the emerging economies, thereby contributing to the emergence of green markets. This promises continued gains for the environmental sector in Germany. The crisis of the automobile industry, which in 2007, even before the outbreak of the general financial and economic crisis, made it clear that a product range oriented mainly towards the prestige car segment and consisting predominantly of material- and energy-intensive products can plunge a whole sector into crisis and threaten many jobs. German industry should learn from this spectacular management failure on the part of the automobile industry. The ecological framework conditions for Germany as a production location will not improve in the medium and long terms. The development of smart, resource-efficient solutions will therefore also shape export opportunities for German products. On this basis, the so-called 'environmental premium' (scrappage premium) was not a particularly well targeted instrument in terms of an ecological industrial policy, but served rather to reduce overcapacity.

Accelerating Systemic Innovation

State procurement policy, smart market launch programmes and 'top-runner' approaches can contribute to the dissemination of innovations. In this context the promotion of individual tech-

nologies should be relegated to the background in favour of systemic innovation in pursuit of ecological, economic and social goals. Systemic innovation means that research, development and the sale of new products and services should concern not only individual technologies but whole systems, such as value chains, sectors and areas of need.

This requires not only the formulation of political goals and the creation of economic framework conditions at the macro-level, but also a structural policy which articulates these goals at the meso-level – for example, value chains, sectors and areas of need – so that they can also reach the micro-level (in other words, companies and households). For the combination of state economic support, science and private companies needed for this, the instruments of European Regional and Research Policy in particular offer hitherto untapped potential. Key to this is systematic cooperation with the regional policy of the *Länder*.

Improving Innovation Financing for Companies, Research and the Political Sphere

Focusing innovation promotion on systemic innovations would also expand the target group of innovation financing. However, this would involve not only individual companies, but also their innovative environment or 'cluster'. Support would therefore not only be provided to individual companies, but at the same time also concern their cooperation with research institutions and political framework. Hitherto, research programmes have supported cooperation between research institutions and companies. As experience with the Law on Renewable Energy has shown, however, while the optimisation of re-

search, development and demonstration is important, the adaptation of political conditions is often decisive for market penetration.

Creating Lead Markets and Developing Apollo Projects

So-called flagship or Apollo projects are usually fixated on individual technologies (for example, biofuels, electrical mobility) or even objects (for example, Transrapid, Metrorapid). The operators often promise gains in prestige, not least among their own clientele and constituents. This object-fixation in many instances contrasts sharply with the oft-cited example of space travel. President John Kennedy, with his talk of 'new frontiers', was not announcing support for a specific missile technology, but rather the goal of putting someone on the moon. Similarly, in Germany ambitious goals and Apollo projects should be defined in a technologically open way (for example, CO₂-neutral mobility).

Political Integration for Eco-Innovation

The aim of a knowledge-based and resource-efficient industry must be to achieve a new quality in the cooperation between companies, the political sphere, research and academia. This requires, for example, integration and ecological orientation of the economic and scientific advancement which has developed extensively in Europe. For example, at federal and *Land* level the implementation of the EU Research Framework Programme and the design of the EU Structural Fund could be coordinated, as for example the European Scientific and Technical Research Committee has recommended.ⁱⁱ Without a consistent ecological orientation of research and structural policy a knowledge-based

and resource-efficient industry cannot be achieved. Besides promoting the economy and research, resource efficiency affects many other policy areas, including agriculture, foreign trade, energy, transport and logistics. This requires political leadership and a cooperative culture in communication between departments. It also requires new interdisciplinary approaches in research and teaching, as well as the integration of ecological considerations in training and further training. The social partners must also be used to accelerate the ecological modernisation of industrial branches in Germany and Europe.

The Third Industrial Revolution

The 'Third Industrial Revolution' called for by the 2006 Memorandum will give rise to winners and losers and thus requires 'revolutionary' consistency on the part of decision-makers. At the moment, the effectiveness of various instruments is often muffled and counteracted by the regulatory exemptions and measures of other departments. This makes ecological industrial policy inefficient, expensive and lacking in credibility. On the other hand, social hardships must be minimised and cushioned. An ecological industrial policy should therefore take account of the losers, but also embrace clarity and consistency. Besides the development of instruments and the formulation of strict policies the creation of a social consensus is thus also necessary. So far, Germany as a business location has benefited from environmental policy. Traditional environmental policy and ecological industrial policy have discernibly improved quality of life in Germany and have fostered the rapid growth of a competitive industry with many jobs. Clusters and structures have emerged

which have already generated innovations in a knowledge-based and resource-efficient industry. Instruments and measures are in operation which are receiving considerable attention abroad and in some instances have already been copied. Many instruments and institutions of ecological industrial policy have produced unique forms of cooperation and cultures, such as the REN programme in North Rhine-Westphalia, efficiency agencies and the DGB's measures to promote workplace resource efficiency based on codetermination. There is every reason to believe that Germany as a business location has unique qualities in terms of cooperation and advantages in respect of the clustering of institutions from science, the economy and politics. Ecological industrial policy in the twenty-first century can consolidate and build on Germany's existing lead, thereby promoting Germany's innovativeness and competitiveness as a production location and creating jobs.

The views expressed in this article do not necessarily reflect those of the FES London.

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- ⁱ Federal Ministry of the Environment, Nature Conservation and Nuclear Safety: Ecological Industrial Policy. Memorandum for a 'New Deal' for the Economy, the Environment and Employment, Berlin 2006.
- ⁱⁱ CREST 120/07: Guidelines for Coordinating the Framework Programme and the Structural Funds to support R&D.