

A stylized world map composed of a grid of dots in various shades of gray, with several dots highlighted in red. The map is centered behind the title text.

Ecological industrial policy as a key element of a sustainable economy in Europe

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- So far, Germany has come rather successfully through the recent period of global economic crisis. The strong position held by manufacturing has been an important factor in this. High levels of balance of trade surpluses show the potential of an economic strategy based on industry and industry-related services.
- Also Germany is confronting the task of a reorientation of the structure of its industry. Only economies which adjust in time to the challenges of climate change and the necessity for energy- and resource-efficiency will prosper in future.
- Those wishing to profit from the enormous growth potential of green technologies, must now set the course for the development of an ecological industrial policy. A new model of progress for a third industrial revolution is needed.
- The German Social Democratic Party (SPD) has, during its time in office, provided major impetus for resource efficiency and an ecological industrial policy. It has used a broad set of policy tools, ranging from economic incentives and price signals to classical regulatory law.

The industrial sector as anchor in the crisis

Germany has come through the worldwide crisis, stemming from the financial markets, more successfully than many other countries. The strong position held by manufacturing has been a critical factor here. In Germany, financial services held, in 2010, a share of only five per cent of GDP. Industry, on the other hand, accounted for 23.1 per cent of gross value added. To this are added industry-related services, like the servicing and maintenance of machines and products already sold. Altogether the share, in the economy, of industry and industry-related services amounts to 35 per cent of gross domestic product. By comparison, Great Britain or the United States, for example has, according to OECD, an industrial sector amounting to only 12.3 per cent and 13.3 per cent of GDP. Both countries have to struggle with rising unemployment and with substantially lower growth rates.

The success of the German economy in globalised competition, built essentially on allegedly »old-fashioned« manufacturing, is sufficiently well known. In 2010, goods to the value of €959.5 billion were exported. With this, Germany is no longer the world's no. 1, but comes second only to China. The cost of imports into the country was €806.2 billion. The trade surplus of €153.3 billion is a clear indication of the competitiveness and strength of the German economy.

The old industrial society has gone as far as it can

In spite of these successes, Germany is confronted with the task of reorienting the structure of its industry. Not industry in itself, but sustainable industry has to be the leitmotif for the 21st century. Only those economies that adjust in time to the challenges of climate change and the need for energy- and resource-efficiency will have a lasting prosperous future. We stand before the challenge of bringing mass prosperity in line with the absorption capacity of our planet. By 2050, industrial nations will have to lower their CO₂-emissions by 80-95 per cent by comparison with 1990 levels, otherwise collapse threatens. The population boom does not make this any easier. By 2050, the world's population will have reached nine

billion. Already by 2030, the number of people living in industrialised societies will have doubled to four billion. This will not be possible within the limits of today's production processes and technologies, since the hallmark of current industrial societies is, above all, extremely high consumption of energy and resources.

The need for alternative economic activity and management is not completely new, but has intensified. Ever since the *Club of Rome* published a study, in 1972, entitled *The Limits of Growth*, the ecological boundaries of economic growth have been the focus of attention. The core message was that: If the population, food production and industrial output, and also environmental pollution and the consumption of non-renewable resources continue to grow unchecked, then the world economy will, through scarcity of resources, collapse within the foreseeable future. Subsequent research has found that technological progress can delay this collapse, but cannot really prevent it. This assessment continues to be correct, albeit with one important limitation: It applies only insofar as we try to solve the problems of industrial society with the traditional answers.

Ecological economic policy as the motor for future growth

From a political perspective, the matter is perfectly clear: We need growth, but growth with quality. The green markets of the future are forecast to show medium-term growth rates of eight per cent per year. That is, for a certain period of time, these markets should double in value every ten years. By 2020, the value of worldwide green technology markets is expected to have grown from today's 1.4 billion to 3.2 billion. Enormous opportunities for employment arise from this economic dynamic. According to the forecasts of different research institutions, we can create up to 2 million new green technology jobs in the present decade in Germany. The most recent study on the economic benefits of measures to reduce greenhouse gas emissions comes from the Potsdam Institute of Climate Impact Research (PIK). The central finding is this: An intensification of the greenhouse gas reduction target, for 2020, in the European Union, from 20 per cent to 30 per cent, will lead to positive growth and job-creation effects: Annual GDP growth, in the European Union, will rise by around 0.6 percentage

points, generating up to six million additional jobs. The unemployment rate is expected to fall to 5.3 per cent (as opposed to 7.6 in the reference scenario) and the proportion of investment, in relation to GDP, is expected to rise from 18 to 22 per cent. According to the PIK study, all industrial sectors would profit, particularly the construction sector (+25 per cent per cent, industry +9 per cent) through insulation of buildings and infrastructural development.

Nevertheless, those wishing to profit from the growth-driving potential of environmental technologies, must now set the course for an ecological industrial policy. The competitors do not sleep. The new ecological technology and production cluster are taking form now, rather than in ten years time. We need a new, progressive concept for a third industrial revolution. Above all, this has to include the efficient use of resources. As noted by the Federal German Statistics Office, resource efficiency is a »sleeping giant«. With 46 per cent of gross production value, the consumption of resources is the largest cost factor in the German manufacturing sector. According to the German Materials Efficiency Agency (demea), an increase of 20 per cent in the efficiency in the use of raw and other materials in the German industry would create savings of €100 billion per year! And yet politics, worldwide, continue to act as if wages were the only adjusting variable...

In the meantime, it has been understood globally that the conversion in the direction of a *green economy* brings with it enormous opportunities. If one looks at the recent economic stimulus plans, the following can be noted: The worldwide economic stimulus plans have staked 450 billion on green investments, that is, some 16 per cent of the overall packages. The importance of the topic is rising. It seems to have been understood that we must invest in the future, i.e. in the structural change of our industrial society.

Ten points on the way to a third industrial revolution

The following defines the »imperatives« of an ecological industrial policy, illustrated with examples and concrete measures which were brought in, in Germany, by a SPD-led Department of the Environment. These measures

have, in recent years, contributed enormously to the successes of the German economy in the fields of green technologies and show, in an exemplary fashion, what instruments are available for national efforts on ecological renewal.

1. Reinforce economic instruments

From a regulatory point of view, economic instruments play a key role, since the price of commercial goods represents relevant information. Ecological levies and taxes correct original prices and »price in« the costs of ecological consequences. Thus they contribute to price formation that tells the »ecological truth« or at least moves in the direction of this goal. Trade in (emissions) rights is a further economic instrument, using the scarcity principle to pursue ecological aims. Rather than, as in the case of taxes and levies, it is not the price that is the immediate point of leverage, but the quantity concerned. Ecological industrial policy is not, however, about creating new revenues. It is rather about further development of ecological financial reforms, furthering of »public goods« and pushing up, via taxation, the prices of »public bads«. Some starting points would be the reduction of environmentally harmful subsidies, the further development of resource-oriented tax deduction regulations, ecological differentiation of VAT rates, an expansion of the auction and trading of emission allowances to air and sea traffic and a reform of agricultural subsidies.

2. Encouraging investments

The ecological industrial policy aims to develop renewable energies and replace scarce fossil resources with renewable raw materials, and to increase energy and raw materials efficiency. This is not only a question of technological progress, but above all of investment in more efficient buildings, plants, processes and equipment and of better organization, servicing and maintenance of existing assets.

3. Facilitating finance

In order to promote the development of environmental technologies and to enable further growth of the sec-

tor, it is important that the financing of environmental investments and the setting-up of enterprises is ensured. In Germany, there is liquidity in the market, but it does not always flow to the right places. Eco-investments therefore often fail for lack of capital and/or a readiness, on the part of banks and financial intermediaries, to take risks.

By setting up a »GreenTech Fund«, the particular requirements of innovative green-technology-companies in their start-up phase can be taken into account. Such a *green tech* fund should be conceived within the context of a public private partnership (PPP) as being a temporarily limited early stage venture-capital fund, with a focus on green technologies. For Germany, a fund of €500 million could be fed from both private and public capital. The development of leasing models for energy efficiency measures and the establishment of a GreenTech-segment of the stock market (GreenTech DAX) could further ease the financing problem.

4. Making use of regulatory law

Regulatory law is the classical environmental policy instrument. It is specifically targeted and applies equally to all. With decrees and prohibitions, as well as various limits and thresholds, it has not only contributed, in the past, to great successes in environmental policy, but also to German *green tech* having a good reputation, and to its manufacturers often being among world market leaders. High environmental standards have driven technological development. Regulatory law is faced with a renaissance. However it should give more room for innovative policies, and hence be more dynamic in form. This also includes an ambitious and reliable CO₂ emissions limit for cars, an increase in the waste recycling quota, and a binding obligation to use »smart« controlling and measuring systems.

5. Making benchmarks transparent and establishing labels and »top runners«

Ecological industrial policy, with its instruments, aims both at the supply and the demand side. The State, companies, trade associations and consumers are likewise

asked to innovate and to set the economy on a course towards sustainability. The purchasing power of the consumer is great. In order to be able to give conscious momentum to modernisation, consumers must have all the information available to them. Frequently, the only information available is the price, and is not really informative from an ecological point of view. Markings and labels give important additional information, make the market transparent and help to identify the 'top runner' for the given product group. Labels and markers are therefore an important precondition for strategic consumption and demand that drives innovation. In order to keep in step with technological development, we need dynamic development of energy and efficiency labels. There cannot be innovative lead markets without demanding customers. In order to inform consumers comprehensively and independently, it would be expedient to set up a public database for ecological and resource-efficient technologies.

6. Use and extension of market introduction programmes

Market introduction programmes are one way of creating new markets or dynamizing existing markets. Market incentive programmes stimulate competition for technological solutions and transport innovations into the market. Market launch programmes promote demand and product development and favour economies of scale, thus promoting dissemination. It is essential therefore, to bulk up existing market incentive programmes and to extend these with new elements like a programme of introduction of ultra-efficient household-appliances, efficient electric mobility and miniaturized combined heat and power plants (mini CHP plants).

7. Focus forces with an investment and a procurement package

The public sector has, in Germany, with annual demand of at least €260 billion for products and services, enormous market power. This market power has, until now, not been sufficiently used in connection with innovation policies: Public procurement and investment schemes tend to focus narrowly on immediate acquisition costs.

Life cycle costs frequently remain unconsidered, as well as external costs. With the acquisition of products that are more energy-efficient and environmentally-friendly, not only the maintenance costs are reduced. Furthermore, the public sector becomes the driving force behind the introduction of green technology to the market. Local authorities, in particular, which account for approximately 50 per cent of public procurement, have a role to play here. One possibility would be the conclusion of a public procurement agreement: Federal and regional and local government agree to meet at least 25 per cent of their procurement needs only with products and services that satisfy strict, jointly agreed environmental criteria.

8. Improving education and training

Germany, as a country with limited raw material sources, has always been dependent on the efficient use of knowledge and the optimal allocation of human capital. The strength of the German economy is based on engineers and well-trained, skilled workers. At the centre of innovation and technological progress lie qualifications and thus people. Investments in education and training are the prerequisites for successful innovation, research and technology. Just as the environmental sector creates new jobs and provides bread and wages for engineers and skilled workers, so its growth and economic success depend on the availability of a qualified workforce.

Dynamic and flexible orientation of employment promotion and further training programmes are needed in order to keep in step with the requirements of new branches of the economy.

9. Focusing research funding, creating beacons

The state has an important role to play in promoting research. It cannot order technological development from above, but it can set the framework conditions in such a way that company research is intensified. And, through financial support and pilot projects, it can contribute to advancing efficiency and technological leaps. Within the range of energy research there are, above all, projects on smart electrical grids, virtual power stations and efficient electrical storage technology that look promising.

Environmental-technological »beacon projects« represent signposts in uncertain terrain. They signal feasibility and provide orientation. Additionally, they contribute to social mobilisation and help to create public support. They thus also serve to society's understanding of itself. Terms such as »green bio-refinery, urban mining« and »electrical mobility« must find their way into our everyday life.


10. Intensifying export initiatives and foreign trade

Even if the domestic market is very important to companies in Germany, exports of environmental and efficiency technologies must be purposefully supported. German green technology offers solutions that, in many places, will be sought after and needed. At the same time, the employment growth in the field of environmental technology is driven by exports. Precisely because it is the provision of system solutions that is involved here, small, innovative companies risk falling behind large systems providers. Therefore it is important to overcome coordination problems, and to pool skills and capacities within the framework of export initiatives and programmes. Export initiatives are a proven means of bringing together supply and international demand.

Ecological growth, environmental sustainability and social responsibility

Ecology is the economics of the 21st century, and the concept of ecological industrial policy is drawing the conclusions from this. It gives an economic answer to the ecological question. Ecological industrial policy is a modernisation strategy for economics and society in terms of sustainable production and development. It aims to replace the material and energetic base of our economies by replacing finite with renewable raw materials, and by developing renewable energy. That not only contributes to achieving a more environment- and citizens-friendly economy in Europe, but also to the formation of a transferable new model of worldwide economic development.

The strategy of an ecological industrial policy thereby links two things that have until now been thought of as



being opposed to each other: It seeks to modernise and reposition industrial society and, at the same, to lay the foundation for a new thrust in economic growth. This is an opportunity that we should take - for the benefit of the environment - but also in order to keep our economies competitive, to ensure growth and employment, and to create high-quality jobs.

I started this paper by calling for a »third industrial revolution«. In the past, such economic developments have

always been connected with social upheavals. Travelling the path of ecological growth will be no exception here. Social and economic change will pounce and it will no longer be possible to duck them. There will only be sustainable growth if the risks of social centrifugal forces are adequately addressed and contained. The much used term »new progress« must be given life and substance. It is the task of politics to provide a vision for the future, and to inspire people by this. The goal must be that of bringing ecology and society together.



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