



# The Green Economy: Looking to the Future

Sustainability: The Cure for the Crisis

**Professional Know-How** Recycling to solve the resources predicament **The Broader View** EU Commissioner Günter Verheugen: Interview

#### Weiji: Danger and Opportunity

### Dear Readers,

Over the past year, various Öko-Institut projects have taken me to China. Naturally, many of the talks about projects there took place in the shadow of the global financial and economic crisis - ,weiji', as it is called in Chinese. The Chinese term for ,crisis' is composed of two characters, which taken separately indicate ,danger' and ,opportunity'. Richard von Weizsäcker, when he was Germany's president, tried to explain to us even then that we should learn from China not to see only dangers in periods of crisis but also opportunities for change. The current financial and economic crisis amounts to just this sort of litmus test. We must grasp the fact that we can only avoid climate and environmental dangers if we seize this opportunity to make fundamental changes in our manufacturing methods in the sense of a ,green New Deal'. Will it be possible now - some 80 years after Roosevelt's ,New Deal' - to replace smoking factory chimneys and automobile exhaust with solar plants, wind farms and eco-mobiles? Will ,green jobs' bring the desired economic revival?

The question everyone in China kept asking me was: ,Are you Europeans taking advantage of the crisis as an opportunity to restructure your industrial sector and manufacturing methods to advance the shift to a green economy?' I would be only too happy to answer with a resounding ,Yes!'. But unfortunately Germany's economic package forces me to answer otherwise. Because in this package there is no trace of a true shift toward a green economy - neither in the volume nor the proportion of green investment. In Germany, as in other countries, what has happened is that we could hand out the staggering amount of EUR 2 trillion only once, to rescue the financial system: the large sums that might have gone to climate protection were lost in the process.

Recently Vice President of the EU Commission Günter Verheugen has said – for example in an interview in this issue – that what we need is a ,new industrial revolution'. This cannot be brought about with yesterday's industrial and economic policies. In China people are puzzled when they hear, on the one hand, the changes Europeans unabashedly expect of them, while the Europeans themselves clearly lack the courage to push consistently for such changes at home. Instead, they try to pass off instruments like the German usedcar scrap bonus as a plus for the environment. In short, they do not practice what they preach. The criticism is justified: if we call on others to leave the beaten path for untracked ground, we must lead the way.

The Öko-Institut has just now presented a study commissioned by WWF entitled ,Germany as Model: Thoughts about Climate Protection to 2050, from the Objective back to the Present'. The study shows that Germany could - and could afford to - lower greenhouse gas emissions by 95% by 2050. I would far prefer to report to the Chinese National Development and Reform Commission that we in Germany are well along the path to a green transformation. That would be a very important signal, to my way of thinking, of how climate and resource protection could flow into the 12th Five Year Plan 2011-2015 of the People's Republic, to secure and promote further investment in the restructuring of Chinese industry.

If the new German Government fails to send this signal clearly in its coalition agreement, we might as well just erase the character, ji' from the Chinese word for crisis and leave ,wei', ,danger', there by itself - danger for the global climate and danger for our own medium- and long-term economic success. We cannot afford to take this chance. It is precisely now, in this time of global financial crisis, that restructuring for a sustainable economic order is more urgently needed than ever before. Thus our slogan for our annual conference in Brussels this year: ,Sustainable Industrial Policy for Europe'. You will find more on this subject as the focus of this issue.

Enjoy! Zaijian!

Christian Halfeld

Christian Hochfeld, Member of the Executive Board, Öko-Institut.

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# The Crisis: An Opportunity in Disguise



Industrial policy must be sustainable if it is to meet the challenges of the future.

The headlines in the newspapers about the financial crisis and its consequences warn us daily of inevitable economic and social disaster, for example, through the spectre of mass unemployment. The same is true of the climate crisis: urgent warnings by scientists and environmental and development organisations, prognoses by insurance companies, analyses by security experts, and reports of extreme weather events - all together these confront us with a frightening picture indeed. Fundamental questions are raised, and the answers will determine tomorrow's headlines. But all of them primarily concern the future of our society and our planet.

To name a few: What is the connection between the economic crisis and the environmental crisis? What do we want to change in the future? What can we change? What must we change? How can truly sustainable development be achieved in times like these – times of crisis?

,Aside from the obvious threat, the crisis actually opens the economy to an ecological opportunity,' says Christian Hochfeld, Member of the Executive Board of the Öko-Institut. It is his view that precisely in such times of crisis a shift to environmentally and climatically sound practice in industry is both possible and necessary. Our current way of life and our industrial economy will inevitably confront the coming generation with a dilemma: If people consume less in future - for example, if they buy fewer cars - the industrial sectors affected, like the automotive industry today, will loudly protest. Besides, this would have serious consequences - for instance, for existing social security systems. Yet if we go on producing and buying as usual, we will face the by now well-known consequences in terms of the environment, human health, and social cohesion. And climate change especially, which is already underway, may well throw the global weather system out of kilter, threaten our natural existence base and subject our economic and social model to a scarcely sustainable strain.

The environment, the economy, and our social system are closely interconnected. The current global financial crisis and recession show with unusual clarity how closely interdependent the environment, the economy and our social system are. Will the economic crisis engender a renaissance of the concept of ,sustainability' and strengthen it - or not? Is it possible that the economic restructuring currently under discussion might lead to an environmentally sound industrial economy - that is, a green economy - and that a sustainable industrial policy might point to an exit from the current crisis? There is more at stake than maximisation of profits in the next quarter. As already recognised in the early 1990s, we need economic and social systems that can remain sound and stable for generations in the future, and that also create equity among the world's nations.

Sustainable industrial policy is to be understood as a more advanced economic policy concept, one in which sustainability is defined as the ultimate objective of economic policy, beyond classic competition and innovation. In this concept, all three dimensions of sustainability – the economic, social and ecological – are weighted appropriately: societal and social objectives are achieved with and by means of industry, within a politically established framework and supportable ecological bounds. For this the state must reacquire primacy of policy and take its assignment seriously: it must set the sort of sustainable social framework conditions without which the free market economy will rush into the void. One example of this is inadequate agreement at EU level on goals for  $CO_2$  emissions for cars, which now provide neither effective climate protection nor sustainable market positioning for German and European automobile manufacturers.

Players from enterprises and industry are also rethinking their social positioning in times of economic crisis and climate change. This shows the increasing significance of the principle of corporate social responsibility (CSR). Katharina Schmitt, Öko-Institut expert for environmental law and governance, explains: ,The Öko-Institut's assessment of the environmental and social responsibility of individual branches of industry has identified the concrete steps that must be taken to achieve higher standards. Above all the interchange between policies that promote and specify, on the one hand, and the ecological and social activities of enterprises, on the other, must be improved and better coordinated and harmonised – for the good of the economy, the environment and the society as a whole.'

Climate change can only be halted, and the indispensable shift of industry to a  $CO_2$ -free and resource-sparing economy – the third industrial revolution – brought about if changes are made in the framework conditions of the industrial sector. In addition to a certain amount of painful upheaval and disruption, positive effects will no doubt ensue as well. ,An ambitious, sustainable industrial policy must serve as the driving force for innovation,' says Hochfeld. Additional ripple effects of a sustainable indust

trial sector are lower costs through the saving of energy, greater independence from imports of raw materials, which are steadily becoming scarcer, and a more stable balance within society – providing the gap between social and economic goals can be narrowed once more.

Possible configurations of the necessary economic restructuring are already available in printed form. For instance, the UNEP, the United Nations Environment Programme, particularly focuses its ,Global Green New Deal' on Europe. European experts are demanding that a third of all economic stimulus and rescue packages created during the economic crisis be designed to bring about an economic restructuring that is geared to sustainability (,greening the world economy'). The global economy has got to get in step with the 21st century and effect its own transformation.



We need a third industrial revolution.



In Germany, in 2006, the German Ministry for the Environment drew up and presented a memorandum on ecological industrial policy in cooperation with the Ministry of Economics and Technology. One of its main conclusions was that: An ecological industrial policy is necessary to position Germany and the EU better economically. For this, one of the greatest economic challenges of the future will lie in coping with dwindling raw materials and fossil fuel reserves. But in any case we must think ahead. ,In Germany and Europe generally, we urgently need a structural change that goes beyond the classic technological sectors,' stresses Öko-Institut's Christian Hochfeld.

On the European level, the fundamental strategy of the EU to increase the competitiveness of the European economic sphere - the Lisbon Strategy passed by the heads of state of the EU member states - has for the most part failed in terms of sustainable development. Thus there is in Brussels as well a pressing need for rethinking what we are about. One possibility is the planned revision of the Lisbon Strategy, which is slated for next year, and the consequent search for a new, functional industrial policy model for the years to come. So far, a neo-liberal conception of economics - in many respects one-dimensional - has formed the basis for strategies to promote competitiveness, and this has hindered modern environmental and economic legislation geared to sustainable development.

One ray of hope at the European level is the Swedish EU Council presidency, which began in early July. As chair of the European Council of heads of state or government of the EU member states, the Swedish Government has already announced that it will take as its priority area the development of an ecologically efficient European economic system.

Despite positive approaches in the political sphere, the challenges are immense. To take an example from the field of resource efficiency: Will European efficiency with energy and the consumption of raw materials - however successful - suffice in view of the ever-more-rapidly growing economies of, for instance, China? What are the limits of the double dividend for the economy and the environment? To what extent must our consumer behaviour not only change but also be cut back? The development of sustainable and practical solutions, for example in the areas of consumption, resource management and industry, therefore continues to be at the heart of the work of the Öko-Institut. Claudia Kabel

The Öko-Institut will host its annual international conference on Thursday, 5 November 2009, in Brussels. This year's theme: Sustainable Industrial Policy.



## ConCISEnet Striding forth on a New Path

In the no-man's-land between sustainable development, innovation and competitiveness, conCISEnet, a project promoted by the German Ministry of Education and Research, is coming up with new approaches for European industrial policy. Its themes are sustainability and competitiveness in production and consumption, opportunities for sustainable structural change in such sectors as energy, mobility, food and housing, and public participation in large infrastructure projects, for instance, permanent disposal of nuclear waste.

Networks are formed between firms and consumers, sectors and social institutions. A group of high-ranking representatives from politics, the economy, science, academia and the civil society discusses, under the conCISEnet aegis, the framework conditions needed to harmonise sustainability and competition by means of innovation. The aim is to gain support for an integrated sustainability strategy for Europe as a prerequisite and opportunity for striding forth on a new path.

www.concisenet.de

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# Mineral Resources on a One-Way Street

Shortages of critical metals and ores may be looming in the future. Such shortages would spell disaster for the manufacturers of cell phones, laptops, solar cells and electric cars. The Öko-Institut study ,Critical Metals' shows that recycling and better raw materials cycles could ease the resource crisis.

Tantalum and palladium? These days everyone carries these metals around in their purse, backpack or attaché case - in the microelectronic components of cell phones and laptops. Tantalum and palladium are among the ,green minor metals', metals considered elemental for green innovation. In future, these resources will be playing a critical role - ,critical' in two senses: high tech and green future technologies (such as semiconductor technology, photovoltaics, battery and catalyser technology) absolutely depend on these special metals. Then, too, in coming years, the combination of greater demand, the natural limitations on extraction, and frequently inadequate recycling infrastructures is going to give rise

to severe shortages of raw materials. Many ,green minor metals' will suffer the same fate as natural oil. They are becoming scarce – with disastrous results for the economy and the environment. This is the conclusion reached in the study ,Critical Metals', sponsored by the Öko-Institut and published in 2009 by the United Nations Environment Programme (UNEP).



According to the EU financed study, there could be shortages of critical metals, such

as tellurium, gallium and indium, which are used to manufacture solar cells, for instance, in as little as five years time if the present heavy demand persists. In the longer term, a similar situation appears to be developing for tantalum and lithium (important for batteries and electric cars), and for palladium and platinum, which are needed for catalysers. However: ,Such acute shortages of resources are by no means an unmitigated horror scenario,' says Dr Matthias Buchert, co-author of the study. ,The global economy will be forced to react - and this presents a new opportunity for greater sustainability.' Thus Öko-Institut scientists have found that the recycling of platinum, palladium and rhodium is 10 to 100 times more beneficial in ecological terms than primary recovery of these metals.

What is currently going amiss in raw materials cycles is well illustrated by cell phones. Have you ever peered into the inner life of one of these little gems of modern communication? A whole lot of coils, wires and soldering points – all kinds of metals! A cell phone is like a little treasure chest. It has 250 mg of silver, 24 mg of gold, 9 mg of palladium and 9 g of copper. This means that 250 tonnes of silver, 24 tonnes of gold, 9 tonnes of palladium and 9000 tonnes of copper are used for the one billion cell phones manufactured each year throughout the world. The extraction of these metals from naturally occurring mineral resources takes place at considerable cost to the environment.

The bad news is that only a fraction of worn-out cell phones currently winds up at state-of-the-art recycling centres. In 2006, fewer than 10% of used cell phones were recycled. Most of this potential continues to sink out of sight in refuse dumps and incinerators; or it ends up in local back-yard recycling facilities in threshold and developing countries, with high losses in terms of raw materials and major damage to the environment and the health of the people on site.

The good news is, that thanks to the most modern recycling plants, the treasure concealed within cell phones and other electro-scrap can be almost fully recovered. This would reduce the mining burden on primary resources and spare a lot of CO<sub>2</sub>. Highly efficient recycling plants illustrate how this can work. One example is the UMICORE works in Antwerp, which specialises in recovering valuable metals from electro-scrap. The high-tech process can extract 95% of the precious gold from an old cell phone. True, construction of such plants costs about EUR 1 billion, but on the other hand 17 top-quality metals can be recovered from a wide variety of electro-scrap. And not only that: CO<sub>2</sub> emissions could be reduced by four million tonnes if metals were consistently recycled from EU electro-scrap.

Unfortunately, the metal ,cycle' is often more a one-way street, even though it begins with an approach that actually makes sense ecologically: to go on using the product instead of discarding it. ,Old cell phones, out-dated electronic devices like computers, and even automobiles are often exported to developing or threshold countries for sale second-hand,' reports Dr Buchert. ,But this means that the valuable metals are also transported to the destination country, where they are lost forever through improper disposal and a lack of recycling possibilities.' As a result, raw materials prices rise, and the environment suffers from accelerated mining of ores. Then there are

the social and health consequences for the people living in threshold and developing countries, where the recovery of metals is carried out by people working in backyard operations at sub-standard wages, and without any safeguards against the fire and chemicals they are obliged to use. Such methods are highly damaging to the environment and human health, and at the same time the gain is minimal: at most a quarter of the gold in a cell phone can be regained in this way.

To prevent the loss of precious metals, the Öko-Institut proposes that a study be conducted to restructure the one-way resources street into a smoothly-flowing roundabout, for instance by forming a close-meshed network among purchasers and distributors in industrial, threshold and developing countries. Such a network would enable worn-out electronic devices to be returned to exporting countries, where they could be recycled. State-of-the-art technology and know-how could be exported via the same channels. Although in the importing countries the collecting and mechanical dismantling of electro-scrap provides jobs for large numbers of people, these parts of the world must not remain cut off from knowledge and development. Furthermore, optimal electronic devices should in future be built to last longer, to more readily allow for repairs, and to be as easy as possible to break down into their component elements for recycling.



## The StEP Initiative

The Öko-Institut endeavours to find solutions to global resource problems. Since only global partnerships and cooperation can hope to cope with an international problem of this size, Öko-Institut is one partner in the international initiative ,StEP Solving the E-waste Problem'.

StEP is an international association of partners from industry (electronics and recycling companies), scientific institutes, and governmental and multi-national organisations such as GTZ and UNEP-DTIE.

www.step-initiative.org



Institutions such as the EU, UNEP and OECD can play a decisive role in getting a more efficient raw materials and recycling cycle going. Öko-Institut scientists call for massive investment in modern recycling technology and financial support for pilot facilities. An end should also be put to the illegal export of scrap through more effective controls. The study emphasises the importance of increased international cooperation and know-how transfer, so that developing and threshold countries would be enabled to recycle or dispose of used equipment in a manner that would conserve resources. The EU could act to develop guidelines for resource-conserving and recycling-friendly product design and for recycling of the critical and precious metals in solar cells and automobile batteries. The time for such measures is running out. If the problem of the one-way resource street is not solved soon, both the high-tech sector and green innovations are going to be left in the dust.

#### Lena Schwoerer / David Siebert

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# ,The notion that economics and ecology are in some way opposed is obsolete!'

Expressions like ,green economy' and ,sustainable industrial policy' are on everyone's lips today. At last a genuine change in industrial policy appears to be in the making. At the end of this year, Günter Verheugen, the current EU Commissioner for Enterprise and Industry, will end his term in office at the EU Commission. What conclusions does he draw for European policy from the current economic and climate crisis? Eco@work asked him.



Being interviewed by eco@work: EU Commissioner Günter Verheugen.

Mr Verheugen, you have called for a transformation in Europe to a know-ledge-based, scientifically supported and low-CO<sub>2</sub> economy. In light of the current economic crisis, is it still realistic to expect a rapid structural change to a more sustainable economic policy?

It is precisely in such times of crisis that the economy absolutely must take a new direction. It makes me uneasy to hear industrial leaders argue that financial bottlenecks are forcing them to cut back on research and innovation. The banking sector is getting



help from all directions. It is high time for it to start functioning again! I'm glad, however, that most of the EU member states have geared their programmes to meet the exigencies of long-term social and environmental realities. The old notion that economics and ecology are in some way opposed is obsolete today. Europe has a great opportunity as a pioneer in this sphere. When it comes to energy efficiency and conservation of resources, we have to be out in front – the first and the best! And we have a good chance of this: we're already ahead of others in a number of fields.

## What are the concrete steps that would lead to this kind of structural change?

Companies must hang on to their core employees. The crisis must not be used as a pretext for saving on training and upgrading. Europe has already set its long-term agenda for greater energy efficiency and environmentally friendly processes and products. Now it is time for industry to get on with the changes that have to be made. Governments can use incentives and investment to speed this up, show the way, set the pace. This is why the European Economic Recovery Plan deliberately promotes ,intelligent' investment – in upgrading human resources, energy efficiency and environmentally friendly technology.

## Will companies with CSR management perform better in the current crisis?

A CSR profile clearly has competitive advantages. Employees feel at home in companies like these. These firms have come to understand that their employees are their greatest asset – in times of crisis, too. Companies like these are far more innovative. CSR management means, of course, asking how production and the supply chain can be organised to be of optimal benefit to both the company and the society as a whole. The answers call for intelligence, the courage to find new solutions, and the readiness to accept responsibility for the public good, the commonweal.

Would more consistent and binding agreements at the EU level on CO<sub>2</sub> emissions for cars have helped European automobile manufacturers to a better market position?

Yes. European manufacturers should have moved faster in this direction. Industry simply must lower energy consumption and its consumption of raw materials. This is decisive for more than 12 million jobs in the EU. But even today, European automobiles, especially German ones, are better than most people think when it comes to energy efficiency. Legislation on  $CO_2$  emissions was the right way to go, since voluntary agreements were not producing results.

## Does the EU need a common economic intervention policy for times when the market fails?

With the Partnership for Growth and Employment the EU has come up with a tool for coordination of a joint economic policy. With common goals we also have the strength for common action. The European response to the crisis demonstrated this as well: the member states acted independently, but in accord with jointly agreed guidelines. It is all a question of political will: the market economy needs a social and ecological framework. A market without regulations is destructive.

#### Mr Verheugen, thank you very much!

Interviewers: David Siebert and Claudia Kabel

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### Mastermind



**Christof Timpe** thinks diversity is pivotal for energy at this crucial juncture

### Setting a Good Example



**Sven Giesler** takes up the cause of environmental protection at Daimler AG

### Visionary



**Pavan Sukhdev** fights for a ,Green New Deal'

,At least 80 percent fewer CO<sub>2</sub> emissions in the industrialised countries by 2050? That would be a revolution indeed!' says Christof Timpe, co-organiser of the Öko-Institut's annual conference ,Sustainable Industrial Policy for Europe'. ,What we want to demonstrate in Brussels,' he goes on, is that we can only come to grips with the challenges of climate change if we change industrial structures.' The peace movement and the protests against the nuclear reprocessing plant at Wackersdorf were what galvanised Christof Timpe politically and socially. At the time Timpe was at university, sustainability was not even on the curriculum. ,I wasn't a typical energy technology student. Higher mathematics was dull as dishwater to me! What I liked was clambering around power plants in helmet and overalls. I was a real eccentric back then, with my talk of energy policy and renewable energies.'

A car manufacturer that goes in for environmental protection? This need not be a contradiction in terms, as anyone can see from the 4000 m<sup>2</sup> photovoltaic system atop the Daimler plant in Untertürkheim - just one example of the Work Group Environment's success as catalyst. The Work Group Environment was founded 15 years ago at the initiative of Daimler employees. ,The company supports us financially, but we maintain our conceptual autonomy - that's important to us,' stresses Sven Giesler of Daimler's Production and Materials Technology section and a co-founder of the Work Group. His achievements as the company's ,green conscience' are noteworthy. For example, special one-year tickets to use the public transport system ÖPNV, a commuter driving pool, and resource efficiency projects. ,Anyone can do something for

A green banker? Pavan Sukhdev - head of the Global Markets division of the Deutsche Bank - wants to harmonise the interests of industry and nature conservation. He will be directing the study ,TEEB (The Economics of Ecosystems and Biodiversity), an analysis of the biodiversity crisis, until October 2010. ,The dwindling of resources is having massive economic impacts,' explains Sukhdev. In the course of the study, he assessed the economic productivity of nature conservation areas in terms that included the value of drinking water, coastal and rain forests (as flood protection and CO<sub>2</sub> sinks), eco-tourism and plants used for the manufacture of medicine. The result: ,We are losing USD 5 billion annu-

But Timpe's exotic interests rewarded him in 1993 with a quick entry into professional life at the Öko-Institut, where he has headed the division Energy and Climate Protection since 1996. Timpe is out to discover how a shift in energy policy can actually be brought about. Whether the issue is municipal climate-protection concepts, promotion of renewable energy or intelligent household appliances, Timpe believes in diversity when it comes to concrete climate protection measures. ,Innovations are born of competing ideas,' says Timpe, putting his philosophy in a nutshell. ,This is why we emphasise the role of small-scale actors, such as municipalities, city utilities and consumers." dc

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the environment!' - that's the Work Group motto. ,In 2008, we arranged for Daimler to acquire more than 500 square metres of solar panels,' reports Giesler. Lectures on ,cooling with the sun', balance sheets on electric cars and mobility, organised by the Work Group at the plant, are attended by workers and product and engine designers. ,We provide food for thought with hopes of having an impact on corporate decisions,' says Giesler. And what new incentives does he expect from the annual Öko-Institut conference? ,We need to make a quantum leap in the technology of reducing raw materials consumption, yet at the same time both industry and consumers must come to place a higher value on ecological products.' ds

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ally through the disappearance of nature preserves – more than we lost through the financial crisis, which according to the IMF has cost ,only' USD 4 billion.' Sukhdev also heads the United Nations Environment Programme (UNEP) Green Economy Initiative. He appeals that the financial crisis be viewed as an opportunity: ,If we can channel the financial resources now being used to stimulate the economy into ecological investment instead,' claims Sukdhev, ,we could create more jobs, increase climate protection and reduce poverty – all in one blow!' *ds* 

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