Öko-Institut e.V.
Institut für angewandte Ökologie
Institute for Applied Ecology

Facilitating change

Annual report of the Oeko-Institut 2011

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Of upheavals and new tasks

Reflections on the year 2011

Dear readers,

What a year! So much happened last year, it could easily have filled two or three, don't you think? The year began in an extraordinary way with the events that unfolded in March: Fukushima and the subsequent hard-fought energy policy decisions taken in Germany are surely important milestones for the future of the country's energy situation; they certainly were in relation to our own work over the past year. But other important developments beyond environmental policy were also significant last year, impacting on people and societies all over the world – the financial crisis that enveloped certain European countries and the big upheavals in the Arab world, to name just two. And, in the Land of Baden-Württemberg, Germany now has its first Green prime minister. The tasks facing him are considerable, not least that of mediating between public functions, entrepreneurial interests and the justified demands of citizens.

These and other events made 2011 a special year for the Oeko-Institut. The motto "facilitating change" is a very apt description of our work over the last 12 months. On numerous occasions, and always in line with our aims and values, we presented our own independent point of view in public debates, put forward scientifically reasoned solutions and provided support for specialist policy work. Though not always popular, we brought a keen awareness of the challenges to bear and contributed constructive ideas and proposals.

Fukushima – Perceptions of risk are changing

Many of you were moved for several weeks by the events that occurred in March in Japan – the earthquake followed by the tsunami with its catastrophic consequences for the nuclear power plants on the country's east coast. Things familiar to us as scientists from theoretical models and from (thankfully) few actual events in the past occurred with a frightening degree of precision in Fukushima. The reactors' cooling systems broke down, the emergency generators failed, and there were hydrogen explosions and core meltdowns. A catastrophic nuclear accident had occurred at a normal nuclear power station in an advanced industrialised country.

Ongoing evaluation and independent assessment of these events along with unbiased projections of possible further developments – these are what the public and the media alike demanded of the Oeko-Institut in the weeks and months following 11 March, 2011. The telephone lines in our press office were constantly busy, our scientific staff working tirelessly to provide up-to-date information and clear appraisals. Their commentaries and assessments ap-

Fukushima change constructive solutions tra

peared in hundreds of TV documentaries and newspaper articles, helping people in Germany and elsewhere to get a balanced view of the risks and dangers.

Transition to sustainable energy in Germany

The risks that became a very real threat for the Japanese people in March and April did not go unnoticed by politicians in Germany. The decision to keep German nuclear power stations in operation – taken as recently as October 2010 – was now opened up for reassessment. Here too experts from the Oeko-Institut were called upon to work out possible energy scenarios without nuclear energy in Germany and to address issues of energy security and energy imports from abroad. In order to demonstrate that a turnaround is possible and alternatives are viable, we worked to convey convincing scientific arguments at policy body meetings. Both here and in public contexts we presented independent scientific knowledge and, in statements presented before the Ethics Commission and at hearings in the Bundestag, we were able to demonstrate that it is possible to secure energy supplies in Germany without having to take on board the risks posed by nuclear energy.

Can we speak of a genuine transition to sustainable energy systems at this moment in time? The phasing out of nuclear energy is certainly a major step in the right direction. In our view, however, more efforts are needed to achieve an energy supply that is sustainable and, above all, climate friendly. Expanding the electricity infrastructure and tapping further energy efficiency potential in industry, transportation and buildings are just some of the tasks that have still to be tackled. We will carry on contributing in order to both develop appropriate proposals and maintain a dialogue with the people who need to understand and embark on this path.

Facilitating change – now and in the future

If 2011 was the year of the transition to sustainable energy, then the coming decades will be about putting it into practice. The requirements for expanding renewable energies and promoting energy efficiency bring us face to face with a further set of sustainability issues: How do we deal with the urgent issue of finding repositories for highly radioactive material once the nuclear power stations have been shut down? How do we resolve the issue of increasing scarcity of strategically important metals such as rare earths? How can cities and local councils be persuaded to switch to more sustainability in, say, public procurement? How can we motivate even more people to be more climate conscious in their everyday activities?

For many of the problems we face, more scientific research is needed with results that leave no questions unanswered now and in the future. This is what we will seek to contribute to in 2012 as well – of that you can be assured.

I hope you enjoy reading our annual report.

Michael Sailer
Chief Executive Officer
of the Oeko-Institut

Tackling global challenges together

Since 1977 the Oeko-Institut has been working on scientific issues relating to ecology, sustainability, the environment, climate change and resource conservation. Over the last 30 years and more there have been changes in social and political conditions as well as in the statutory framework. Dealing with these changes while never losing sight of what is best for people and the environment is one of our core competences. Our work spans politics and science as well as economic, technical, social and legal considerations and their linkages.

Interdisciplinarity is built into our work at the Oeko-Institut. As a matter of course our scientists plan and implement science-based solutions in multi-disciplinary teams with outstanding specialist skills. They devise their own methodological and analytical principles and take up the findings of academic researchers. And they translate theory into practice, thereby contributing to reflective action in politics, industry and civil society.

In the second decade of the 21st century a changed social and political framework also means that sustainability problems are not confined by national borders. International resource flows, global attempts to mitigate climate change, and the trans-border development and networking of environmentally sound renewable energies are just three of the many challenges that we face today. Coming up with solutions that take account of our global responsibility is an important aim of our work. That is what lies behind our membership of the ecological research network Ecornet and our work for internationally active clients such as the European Commission, the United Nations Environment Programme UNEP and the European Environment Agency EEA.

Sites and research topics

The Oeko-Institut's research teams work on an inter-site basis on a wide range of environmental and sustainability issues:

1977
Freiburg
48°0'N,7°51'E
Merzhauser Strasse 173

The Oeko-Institut's Freiburg office was opened in 1977. Fifty-five members of staff work in the "Solar Ship", a highly energy-efficient office building with a minimised ecological footprint. Key areas of research are energy and climate change mitigation, sustainable production and consumption patterns, sustainable policy in industry and technology, and environmentally responsible chemicals management.

1980
Darmstadt
49°52'N,8°39'E
Rheinstrasse 95

The Oeko-Institut's Darmstadt office, opened in1980, is where the nuclear researchers are based. Some 48 members of staff work not only on radiation protection and the safety of nuclear facilities but also on issues of environmental law and governance, sustainable consumption and events and energy policy. In addition, advice on drawing up comprehensive sustainability strategies is available to businesses.

1991
Berlin
Schicklerstrasse 5-7
52°31'10"N,13°24'24"E

The Berlin office of the Oeko-Institut, the newest of the threesome, celebrated its 20th anniversary last year. Close to the centre of policy-making in Berlin, 39 members of staff work mainly on issues of national and international energy and climate policy, environmental law, and sustainability in business, in transport and at major events.

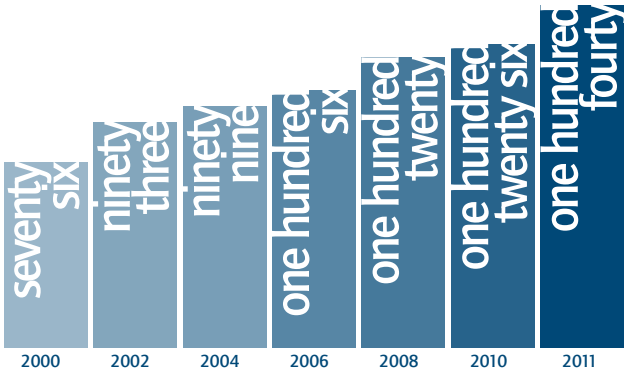
People, places, numbers

The Oeko-Institut in 2011

Staff

The Oeko-Institut employs more than 140 staff at its three sites in Freiburg, Darmstadt and Berlin – more than 90 of whom are researchers.

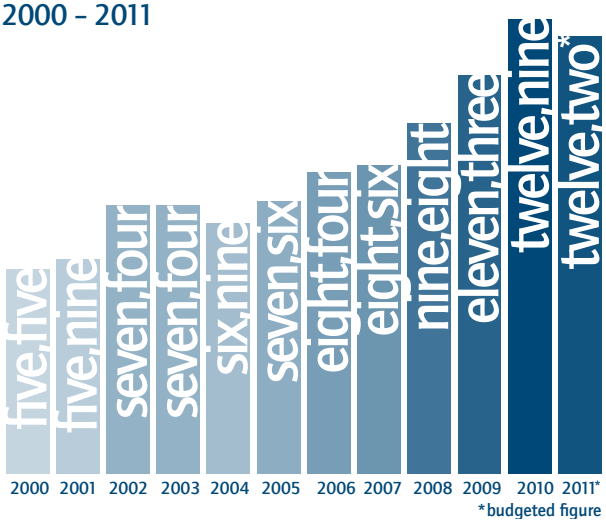
Human resources 2000 – 2011



Turnover

Financial resources come mainly from third-party, project-based funding as well as from member subscriptions and donations.

Turnover in million euros 2000 – 2011



Sustainability at the Oeko-Institut

Sustainable resource use is a priority for the Oeko-Institut. For business travel within Germany, all staff normally use the train or other forms of public transport. If air travel is necessary, the Oeko-Institut offsets the unavoidable greenhouse gas emissions through contributions to emissions reduction projects or retirement of emission rights under the European emissions trading system.

In addition, in 2012 the Oeko-Institut will again conduct an internal environmental audit with the aim of achieving further reductions in greenhouse gas emissions and in the use of energy, paper, water and other resources.

Clients

Our key clients include ministries, state and federal agencies, industrial enterprises, the European Union, non-governmental organisations and other associations.

The organisation

The Oeko-Institut is a registered non-profit association headed by a Committee which selects the Executive Board. The Advisory Board advises the institute on strategic issues.

The Oeko-Institut has more than 2,500 members, including 30 local authorities. Their support provides the foundation for independent research.

Facilitating change

Selected projects in 2011

The world changed in 2011. It does so every day, of course. Yet when we look back over the year gone by, the changes seem more serious, more profound. The Fukushima disaster certainly played a considerable part in this. It changed many people's view of the world for good – and of how we want to live in this world. Embarking on new paths, always with a watchful eye on national and international developments, is what the work of the Oeko-Institut is all about. The projects run in 2011 show clearly how alternative approaches and innovative strategies can be devised – and how a desire for change can find practical expression in the real world.

The scientists at the Oeko-Institut explained and interpreted the devastating events that unfolded on Japan's eastern coast. And they calculated the options for a German energy supply without nuclear power. In doing so, they provided support for far-reaching change in matters of nuclear energy and the transition towards sustainable energy systems.

Many Oeko-Institut projects last year dealt with pioneering ideas and decisions. Our experts studied, for example, how it might be possible to put six million electric vehicles on Germany's roads by 2030 and analysed the options for establishing an effective recycling system for "rare earths". They looked at a standardised, across-the-board procedure for carbon emissions accounting in logistics, the effectiveness of instruments aimed at promoting sustainable consumption patterns, as well as measures for reducing electricity usage in people's homes. Other studies conducted at the Oeko-Institut addressed issues such as the search for a final nuclear repository, market-based instruments for climate protection and nature conservation, and the communication of product life-cycle costs.

The ten projects presented on the following pages are just a small selection of the 380 or so conducted overall in 2011. The Oeko-Institut's work in these months ranges from supporting the development of an environmental action plan for the art and culture project "The art of living" and an analysis of the Brandenburg energy market through to a Europe-wide data collection and analysis on waste management. We will be happy to continue providing you with information on our studies, strategies and analyses – be it in personal conversation, on our website, or next year in these pages.

All eyes on the disaster

An expert's view on Fukushima

Right up close, keeping a steady eye on events as they unfold. This imperative constantly guides media reporting – and so it is also in March 2011. Flickering across our TV screens, almost in real time, come images of the violent earthquake in Japan, the tsunami that followed it and, finally, the catastrophic events at Fukushima nuclear power plant. The disaster on Japan's eastern coast moved the entire world. But just what are the dangers emanating from the white-and-blue blocks of Fukushima Dai-ichi? All the TV images in the world cannot answer this question. Experts at the Oeko-Institut provide background information and offer an interpretation – and in doing so become an important point of contact for the public and the media in the days and weeks following the accident.

Just a few weeks before the 25th anniversary of the catastrophic nuclear accident at Chernobyl, the disaster on the coast of the main island, Honshu, thrusts the unpredictable and life-threatening risks of nuclear energy back into people's consciousness. The accident is triggered by an earthquake measuring nine on the moment magnitude scale followed by a tsunami. The Fukushima Dai-ichi and Dai-ni reactors shut down automatically. To safeguard the urgently needed residual heat removal system, the plants should now switch to their emergency power supply. This fails, however, in four blocks at the Dai-ichi plant. Even the external power supply is interrupted by the earthquake. The grave consequence: it must be assumed that a meltdown has occurred in reactor units 1-3 at Fukushima Dai-ichi. A "catastrophic accident" is how the Japanese authorities describe it on 12 April, 2011 – the highest level nuclear event on the INES scale.

Just a few hours after news of the accident broke, the demand for explanations from Oeko-Institut scientists was huge. Whether in national news broadcasts or online media, their assessments were highly sought after. A team of up to ten experts was engaged continuously in assessing the current situation. Over the course of these days, Michael Sailer became an ever-present guide; others were also in the spotlight, though. Their credibility and neutrality made them an important source of advice and guidance for media and society alike.

In addition to the experts' day-to-day assessment of events, the Oeko-Institut worked on providing comprehensive information for the interested public. For example, the institute released a list of FAQs on the most urgent issues around the accident and addressed the disaster in great detail in its members' magazine and e-paper eco@work, as well as in countless public talks. In September 2011 the Oeko-Institut also cast its gaze backwards and summarised the most important events, information and contact persons in an up-to-date report. In doing so, it contributed towards helping the general public keep closely apprised of events 185 days after the Japanese nuclear catastrophe. After all, even at this point the emergency still cannot be declared over.

Dr. Christoph Pistner
Physicist Dr. Christoph Pistner has been contributing his expertise to the Oeko-Institut in nuclear technology and plant safety since 2005. His main area of work is writing expert reports and statements on issues such as plant safety and systems analysis, nuclear regulatory mechanisms and emergency response systems within plants.
Contact: c.pistner@oeko.de

„The Oeko-Institut received an enormous number of inquiries following the Fukushima disaster. We appreciate this special regard for our work and thank everyone for the considerable trust they place in us. One thing we are aware of: it is the expertise and credibility of its scientists that make the Oeko-Institut an important source of advice for the media and the public."

On the right track

Within reach: a genuine transition to sustainable energy systems

phase-out climate CO_2 electricity sun

Nuclear power plants are being shut down and the expansion of renewal energies has so far exceeded expectations. Ambitious political goals exist for renewables and energy efficiency. So is the transition towards sustainable energy on the home straight? Probably not, because the decision to stop generating nuclear energy is only the first step. A 20 percent increase in renewable energies has been easier to achieve than the transition to an energy system based upon them entirely. Policy implementation in the area of energy efficiency remains weak, and the task of massively expanding the infrastructure and restructuring the market in the energy sector throws up challenges of a whole new dimension. The transition towards sustainable energy continues to demand considerable effort from all involved. The Oeko-Institut's analyses also indicate, though, that the phasing out of nuclear energy creates just the momentum needed.

The nuclear power stations connected to the grid at the start of 2011 provided a total of 20,500 megawatts of capacity. According to Oeko-Institut calculations, this amount can be generated by alternative means by 2020 – such is the outcome of an analysis conducted for WWF Germany and submitted just a few days prior to the catastrophic nuclear accident in Japan. Other analyses have shown that the phasing out of nuclear energy can become a reality without having any drastic impacts on electricity prices, climate protection or energy security.

By agreeing on a complete phase-out of nuclear power in May 2011, the ruling government coalition itself took the decisive step in the transition towards sustainable energy systems: by the end of 2022 electricity generation from nuclear power is to be history in Germany. However, the agreement on a phase-out, according to another analysis done by the institute, provided for the virtually simultaneous decommissioning of the remaining nuclear reactors in the year 2020/2021. Since this may considerably endanger the controlled process of phasing out, the Oeko-Institut put forward a model for a step-wise phase-out. The federal government, the Bundestag and the Länder subsequently agreed to such a plan.

The Oeko-Institut will continue to focus on the transition towards sustainable energy – and on measures for ensuring that it can become reality in an efficient way and at a predictable price. These include effective instruments for achieving the climate protection goals that have been set, the rapid expansion of electricity grids and storage facilities, as well as proposals for energy efficiency in industry, transportation and buildings.

„Our research shows that the transition towards sustainable energy is both doable and in many respects beneficial, not least with a view to costs and competitiveness. We have been looking at the possibilities of alternative supplies and energy usage for the last 30-odd years. Politicians at the national level have now set the compass decisively. I am convinced that if we can implement intelligent policy, invest sensibly, and think in both European and global terms, we are on the right track."

Rapid phase-out of nuclear energy in Germany
Analysis and alignment of the scheme for an accelerated shutdown of German nuclear power plants

Contact: Dr. Felix Chr. Matthes (f.matthes@oeko.de)
Institute division: Energy & Climate (Berlin)
Client: WWF Deutschland
Timescale: March 2011 and May 2011
Further information: www.energiewende.de

Dr. Felix Chr. Matthes

Dr. Felix Chr. Matthes, who has a degree in engineering and a doctorate in political science, has been a researcher and advisor at the Oeko-Institut for more than 20 years. He coordinates research on energy and climate policy and looks at CO_2 reduction strategies for Germany and Europe, energy demand and emissions projections, energy market analyses, the design and assessment of specific policy instruments, and international climate change mitigation policy.

From nought to needed

Sustainable resource management for rare earths

The yogurt pot goes in the yellow bin, the newspaper in the blue bin. Recycling has become a taken-for-granted part of everyday life – albeit not for every recyclable material. No such recycling system exists for rare earth elements such as neodymium and dysprosium. Yet supplies are limited and demand is up – so it is high time to act. An Oeko-Institut study commissioned by the Greens and European Free Alliance in the European Parliament shows what sustainable resource management might look like in the case of rare earths.

A large number of "green" technologies such as compact fluorescent lamps depend on rare earths. As important as these technologies are for the future, their availability is highly precarious: the main supplier, China, drastically reduced its exports in 2010. The impacts were felt immediately, given that 90 per cent of European imports come from the People's Republic. Up to seven rare earths – such as lanthanum, needed to manufacture catalytic converters – will be affected by supply bottlenecks by 2014. In many applications such as energy-efficient lighting no comparable substitute is available as yet.

One possible way out of the impasse is to design an efficient recycling system. The Oeko-Institut proposes an eight-point plan for the purpose. In addition to establishing a European Network of Expertise, beginning basic research on refining and processing in Europe as well as a European material flow analysis, it involves identifying pilot products, setting up a collection and pretreatment system, and developing pilot recycling plants. Highly important as well is the task of reducing the financial risk for investors and creating a suitable statutory framework.

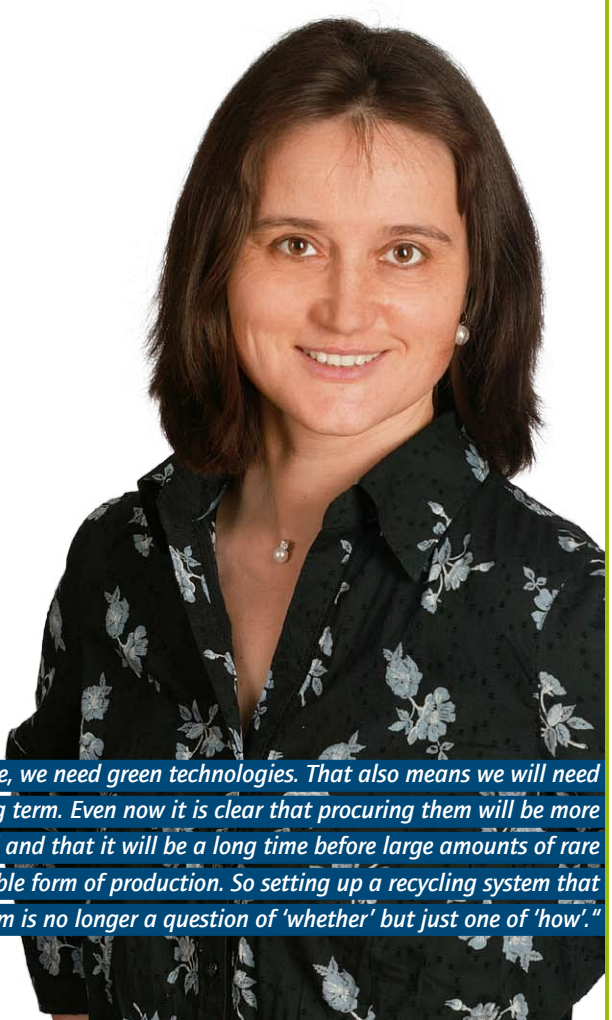
In addition to recycling, the study focuses on the primary extraction of rare earths. Due to the radioactive materials present in most deposits, this requires special environmental regulations. This is a further reason why effective recovery systems are vital. Set up in the right way, the recovery of rare earths may one day be as natural as recycling a yogurt pot.

Study on Rare Earths and Their Recycling

Contact:	Dr. Doris Schüler (d.schueler@oeko.de)
Institute division:	Infrastructure & Enterprises
Client:	The Greens / European Free Alliance in the European Parliament
Timescale:	September 2010 – January 2011
Further information:	www.resourcefever.org

Dr. Doris Schüler

Sustainable resource management is the focus of Dr. Doris Schüler's research in the institute's Infrastructure & Enterprises division. With a degree in engineering and a doctorate in energy and environmental technology, she has been working at the Oeko-Institut since 2002, addressing such issues as life-cycle assessment (LCA) and material flow analyses of technical products and industrial processes, and analysing waste management processes.



„If we want a sustainable future, we need green technologies. That also means we will need rare earths in the long term. Even now it is clear that procuring them will be more difficult in the years ahead and that it will be a long time before large amounts of rare earths come from a sustainable form of production. So setting up a recycling system that works well over the long term is no longer a question of 'whether' but just one of 'how'."

Signposts to sustainability

Policy instruments target private consumption

How can householders be encouraged to embrace energy modernisation? What helps families to rethink their food storage? And what incentive is needed to make a washing machine's efficiency the key purchasing criterion? In all three cases, policy measures often fail to steer consumers' towards sustainability in their decision-making. And yet private consumption harbours crucial potential for reducing CO_2 emissions. Working with six project partners, the Oeko-Institut has therefore been exploring the effectiveness of policy instruments in promoting sustainable consumption and has drawn up recommendations for refining them.

The research project "EUPOPP – Policies to Promote Sustainable Consumption Patterns" focused on policy measures and possible action strategies in the areas of housing and food. These are areas with particularly large potential for helping to protect the environment, mitigate climate change and cut resource use: of household-related greenhouse gas emissions in Europe, more than a third are attributable to housing and one-fifth are associated with food.

The researchers found that, despite the special policy emphasis on housing, many instruments are lagging far behind their potential. Among the improvements they propose are changes to the EU energy label: regularly updating energy efficiency classes in accordance with "best appliance" standards and a premium for returning old appliances could hasten the removal of inefficient household appliances from the market. There is also sustainability potential in the EU-wide building efficiency standards and improved implementation of them in both new and renovated buildings.

Among the opportunities for improvement in the area of food identified by the study are extending sell-by dates, providing vegetarian meals in canteens and adjusting VAT to promote the use of healthy and more sustainable food. The project, which is sponsored by the European Commission, also wants to encourage consumers to think about the food they buy and how they store it. The aim is to raise awareness for sustainable consumption and reduce waste, because less waste also means less CO_2.

„The many instruments created by policy-makers to cut the CO_2 emissions of private consumption are already having an effect. But it would be a mistake to stop here. We must constantly evaluate and improve what we are doing. That is the only way to raise the overall sustainability potential – after all, in the area of housing alone we are talking of possible savings of up to 400 million tonnes of CO_2 equivalents by 2030."

EUPOPP
Policies to Promote Sustainable Consumption Patterns

Contacts:	Dr. Bettina Brohmann (b.brohmann@oeko.de)
	Regine Barth (r.barth@oeko.de)
Institute divisions:	Energy & Climate (Darmstadt)
	Environmental Law & Governance
Sponsor:	7th Framework Programme of the European Union
Project partners:	six international cooperation partners
Timescale:	August 2008 – July 2011
Further information:	http://www.eupopp.net

Dr. Bettina Brohmann

Consumer and motivation research is one of the specialities of Dr. Bettina Brohmann, who is based in the Energy & Climate Division at the Darmstadt office. She is an expert in the "need area" approach and scientific evaluation and also studies the social aspects of energy and climate policy in Europe and the USA.

Charging forward!

The future of electromobility

car acceptance mobile environment limit value

It is not yet even 0.01 percent – the number of electric vehicles as a proportion of all the vehicles on Germany's roads today. The German government's plan to put at least a million electric vehicles on the road by 2020 and to increase the number to six million by 2030 therefore seems optimistic. Be that as it may – it is feasible. That is the conclusion reached by the Oeko-Institut in its study "OPTUM – Optimising the environmental benefit of electric vehicles".

According to the analysis conducted in cooperation with the Institute for Social and Ecological Research (ISOE), the number of electric cars could top a million by 2022. By 2030 such cars could account for around 14 percent of all registered passenger vehicles and for as much as 30 percent of new registrations. The experts believe that the majority of these electric vehicles will be of the plug-in hybrid type, since the combination of combustion engine and electric motor removes any limit on their range.

In addition to market potential the study also examines CO_2 mitigation potential and user acceptance. With regard to the climate benefit of electromobility, the study sponsored by the Federal Ministry for the Environment, Nature Conservation and Nuclear Safety highlights the need to build additional renewable electricity generating capacity for emissions-free vehicle operation. If this is done, electric vehicles could save 5.2 million tonnes of CO_2 in 2030. The climate change mitigation potential of electric vehicles also depends to a large extent on the time of day at which they are charged. To avoid unwanted demand spikes and additional greenhouse-gas-intensive electricity generation, battery charging times must be managed.

And what do consumers think? In 2020 around two-thirds would opt for an electric vehicle when choosing a new car. User acceptance is there. The general public may want more electric vehicles on the roads, but the legislators must also do their bit. Whether in relation to expanding renewable energy use or setting CO_2 emission standards for vehicles, the legal framework will play a crucial part in determining the future climate change mitigation potential of electromobility.

OPTUM
Optimising the environmental benefit of electric vehicles

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Institute divisions:	Infrastructure & Enterprises Energy & Climate (Berlin)
Sponsor:	Federal Ministry for the Environment, Nature Conservation and Nuclear Safety
Project partner:	Institute for Social and Ecological Research (ISOE)
Timescale:	September 2009 – September 2011
Further information:	www.oeko.de/optum

Peter Kasten

Sustainabile mobility is Peter Kasten's speciality. Having studied energy and process engineering, he now works on electromobility, analysis of mobility data, scenario development and emissions calculations. He has been employed in the Oeko-Institut's Infrastructure & Enterprises Division since 2010.

„The German government's targets are ambitious, but not unrealistic. Given the right conditions this country could have up to six million electric cars by 2030. But one thing should not be overlooked in the electromobility debate: traditional fuel-based vehicles also have great savings potential. Making them significantly more efficient could cut the greenhouse gas emissions of passenger vehicles by 25 percent by 2030."

Hunting down power guzzlers

Savings potentials in German households

energy
standby
efficiency
GHG
saving

Save 1,000 euros in five years. Almost without lifting a finger. And help the climate while you're about it. Who could refuse? Too many people – as electricity consumption in private households shows. Annual electricity consumption still averages 3,440 kilowatt-hours (kWh) for two people. German living rooms, kitchens and boiler rooms still hold considerable savings potential. This is one of the findings of the Oeko-Institut's research project "Energy-efficient climate protection in products", which is sponsored by the Federal Ministry for the Environment, Nature Conservation and Nuclear Safety.

Using power outlet strips, changing the lighting or adopting more efficient laundry practices – these are simple steps that people can take to reduce energy consumption in the home. For example, boiling water in an electric kettle rather than on the electric hob can save 208 kWh or a good 50 euros a year. Even more can be saved by using master/slave sockets to reduce standby losses: this can cut energy consumption by around 485 kWh per year. Altogether these and other low-investment measures could represent an annual saving of 1,000 to 1,200 kWh for a typical two-person household.

Moreover, using high-efficiency household appliances could also reduce electricity requirements significantly. As yet, however, the technical possibilities have not been sufficiently exploited. As part of this research project the Oeko-Institut is therefore proposing a raft of measures – including an incentive programme for consumers, clear efficiency labelling and manufacturer bonuses for innovative products. Because buying only the most energy-efficient products can cut the electricity consumption of an average two-person household to around 1,150 kWh per year. The initial and often more expensive investment in high-efficiency products is amortised by their lower electricity consumption. The more efficient appliances could cut average consumption figures to one-third of their present levels. That means reducing costs to one-third too. Who could refuse that?

„There is a lot that consumers can do to cut their electricity consumption. Boosting demand for high-efficiency appliances needs tailor-made policy: more stringent consumption limits for products, specific measures to promote the development and marketing of efficient appliances and a better information policy. At present products do not carry any information about their differing electricity costs. In addition, energy efficiency labelling is far too confusing to be of real help when buying an appliance."

Energy-efficient climate protection in products – as part of Germany's National Climate Initiative

Contact:	Tobias Schleicher (t.schleicher@oeko.de)
Institute division:	Sustainable Products & Material Flows
Sponsor:	Federal Ministry for the Environment, Nature Conservation and Nuclear Safety
Project partner:	Ö-Quadrat
Timescale:	January 2010 – March 2012

Tobias Schleicher

Tobias Schleicher focuses on energy and resource efficiency in buildings and private households – which might involve anything from cost/benefit analysis of energy efficiency measures to evaluation of tailor-made policy instruments. An economics graduate, he has worked in the Oeko-Institut's Sustainable Products & Material Flows Division since 2011.

Electricity + water = costs

eco shopping products information. comparison

Promoting sound communication of life-cycle costs

Compare prices before you buy: for most consumers, detailed analysis of cost differences is a key part of the decision-making process when they buy new products. Usually, however, they consider only the purchase price itself and the subsequent costs of energy and other resources are ignored. Something the buyer thinks is a snip could in the long term turn out to be a cost trap. Even though the initial purchase price of high-efficiency products is usually higher than that of their conventional equivalents, their overall costs – or life-cycle costs – are identical or even lower. Showing how overall costs can be better communicated and how information gaps can be bridged is the aim of the "Strategy for communicating life-cycle costs in the retail sector" that has been drawn up at the Oeko-Institut.

The higher acquisition costs of climate-friendly or sustainable products prevents them enjoying the market success they deserve. Consumers are often not prepared to pay more for such products than for conventional alternatives. In addition, running costs are usually not considered because insufficient information about them is available.

In view of this the strategy envisages labelling products with their overall costs or running costs as an elementary means of boosting sales of high-efficiency appliances. This requires a standardised method of cost measurement – which could be achieved by harmonising existing calculation methods and input parameters. In addition the study suggests that consumers be provided with clear and easily available key data. This increases the transparency of the information and hence the likelihood that it will be acted on. The specific proposal is that products should be labelled with the cumulative costs of running them over a particular period, rather than with just a single year's running costs. Providing a comparison with a conventional appliance is also considered useful. Indeed it is essential if consumers are to be able to compare prices on the basis of reliable information – and then select the product that offers best value in the long term.

Strategy for communicating life-cycle costs in the retail sector, drawn up as part of the project "Energy-efficient climate protection in products"

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Institute division:	Sustainable Products & Material Flows
Sponsor:	Federal Ministry for the Environment, Nature Conservation and Nuclear Safety
Timescale:	January 2010 – March 2012

Ina Rüdenauer

Ina Rüdenauer's research focuses on sustainable consumption and products. She therefore studies large household appliances, washing machines and driers and well as professional washing machines, driers and dishwashers. After studying as a teacher of biology and chemistry she decided to pursue a research career and has worked in the Oeko-Institut's Sustainable Products & Material Flows Division since 2001.

„High-efficiency and innovative products are still not selling well enough – although they are usually worthwhile from the economic as well as the energy-saving perspective. This is due partly to the reluctance of consumers to pay more, but also to a lack of awareness of products' overall costs. Our study shows how this information can be incorporated into the purchasing process."

Transparent carbon footprinting

Guidelines for calculating greenhouse gas emissions in the logistics sector

How much fuel does a lorry use from Madrid to Munich? How much CO_2 does it emit between Amsterdam and Hamburg? In short: what is its carbon footprint? Consistent and transparent answers to these questions used to be a major challenge for businesses in the transport and logistics sector. Now help is at hand in the form of guidelines drawn up by the Oeko-Institut in cooperation with the Association of German Freight Forwarders and Logistics Operators (DSLV) and the Institute for Energy and Environmental Research (Ifeu) in Heidelberg: they lay the foundation for standardised calculation of greenhouse gas emissions in the sector.

Transport specialists must know their emissions exactly before they can act to reduce them. The guidelines on "Calculating greenhouse gas emissions in freight forwarding and logistics" funded by Germany's Federal Environment Agency enable companies to work out their energy consumption and greenhouse gas emissions for all modes of transport themselves, using procedures laid down in the draft European standard EN 16258 "Methodology for calculation and declaration on energy consumptions and GHG emissions in transport services".

This basis for transparent calculation of carbon footprints in the sector and accompanying long-term emissions reduction measures has been taken further in the book "CO_2-Berechnung in der Logistik" (CO_2 calculations in logistics). As well as describing methods of calculating greenhouse gas emissions associated with freight transport, storage and handling, the book contains key background information and covers special topics such as biofuels, groupage and temperature-controlled logistics.

This is an important step towards greater transparency, consistency and, not least, climate performance – an area that the public transport sector is now also seeking to address. On behalf of the Federal Ministry for Transport, Building and Urban Development (BMVBS) the institute is now also drawing up guidelines for calculating the greenhouse gas emissions of local public transport. These are being produced as part of the BMVBS-funded project "Increasing the share of renewable energy and boosting energy efficiency in local public transport" and are likewise based on the future standard EN 16258.

„Uniform standards, transparent methods and scientifically correct calculation of one's own carbon footprint – all are provided by the guidelines and the book on calculating CO_2 emissions in the logistics sector. This is not dreary, incomprehensible theory but a practical aid to emissions analysis. After all, logisticians should be able to calculate reliable carbon footprints swiftly and then use their time to put climate performance measures in place."

Guidelines on calculating greenhouse gas emissions in freight forwarding and logistics

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Client:	Federal Environment Agency
Project partners:	Association of German Freight Forwarders and Logistics Operators (DSLV), Institute for Energy and Environmental Research Heidelberg (Ifeu)
Timescale:	September 2009 – December 2011
Further information:	http://bit.ly/lStATt

Martin Schmied

Ecological and economic assessments guiding action to reduce the impacts of transport are a priority of Martin Schmied's research. In addition the graduate engineer advises policy-makers and industrial enterprises on environmental and transport issues, with a focus on freight transport and logistics. Working for the institute since 1999, he has been deputy head of the Infrastructure & Enterprises Division since 2007.

Finding a nuclear waste repository – a national task

The importance of safety and consultation

Disposing of high-level radioactive waste is an important task. And one that should not be passed on to future generations. Yet Germany has not yet settled on a site. The security and safety of the nuclear repository is paramount. But it is also extremely important that the process of selecting a repository is transparent and democratically legitimate and that the general public is involved at both national and regional level. In addition, a study carried out by the Oeko-Institut on behalf of the Federal Office for Radiation Protection (BfS) identifies ways of providing effective information and communication at the sites.

Geological formations and great depths are essential for the permanent storage of high-level radioactive waste. The best protection for people and the environment is provided by the principle of passive safety – that is, by concentrating the waste somewhere where, as a result of the site characteristics and storage strategy, the radionuclides remain as far as possible permanently enclosed. In addition, storing the waste at a depth of several hundred metres decreases the likelihood of it being accessed for terrorist or military purposes.

As well as taking account of such basic criteria for the nuclear repository site, the German Repository Site Selection Act, which is due to be drafted by mid-2012, needs to specify measures for the timely and ongoing involvement of the public in the selection process. Our researchers have established that these measures should include both a national dialogue and regionally based participation opportunities at the sites.

Effective information and communication are also the focus of an Oeko-Institut project on the perception and assessment of BfS public relations work in regions with (potentially) disposal sites. On the basis of scientific research and surveys of local people the experts have drawn up recommendations for action. Their recommendations highlight the need for active provision of information to the population via the media or newsletters, and the importance of implementing such information and communication strategies equally at all sites. Another essential is providing the population with opportunities to raise their questions and concerns during the process.

Studies and surveys on stakeholder involvement in regions with final repository activities in Germany

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Client:	Federal Office for Radiation Protection (BfS)
Timescale:	July 2009 – July 2011
Further information:	www.oeko.de/endlagerregionen

Julia Mareike Neles

Julia Mareike Neles' work focuses on nuclear waste management. This involves advising administrative bodies, specialist agencies and industrial enterprises as well as producing reports and expert opinions. She has a degree in environmental and hygiene technology and has been working for the Oeko-Institut since 1999. One of her tasks as a member of the Nuclear Engineering & Facility Safety Division is to support participation processes for stakeholders and members of the public.

„We have a responsibility for the final disposal of radioactive waste and we have it now. Safety is naturally the top priority in selecting the site. A fundamental requirement, though, is consensus in society on the selection procedure. Consistent involvement of the general public from the start is indispensible – at regional and also at national level."

The trade in nature

conservation
REDD+
biodiversity
water
market

Do ecosystems benefit from market-based approaches?

Whether by regulating the climate, providing drinking water or acting as a draw for tourists, the landscapes that humans have shaped exert a major influence on our quality of life. There is a growing trend for such "ecosystem services" to be traded on markets as commercial goods, for example by means of nature conservation certificates. But what impact would the broad-based use of market-based instruments have on ecosystems? This question is being explored by a group of young researchers supported by four project partners and sponsored by the Federal Ministry for Education and Research.

The seven researchers are focusing on the links between ecosystem services, quality of life and market-based policy instruments. The role of international policy frameworks in the creation and design of such instruments is being studied by the Oeko-Institut. Among other issues relevant to climate change mitigation and biodiversity, the study is investigating steps that could be taken at international level to improve the provision of particular ecosystem services and lessons that could be learned from the achievements of international environment policy.

For example, analysis of the REDD+ mechanism (Reducing Emissions from Deforestation and Forest Degradation in Developing Countries) currently being negotiated at international level highlights the challenges faced by market-based approaches. REDD+ is intended to enable emissions reductions and forest conservation to be managed via financial incentives – by placing an economic value on carbon stored in forests. According to the study, it is uncertain what the effects of possible integration into the international emissions trade would be. It also raises critical questions in a number of areas – for example, querying how effective design of this management system can be brought about in the light of ponderous international negotiations and limited knowledge of how relevant factors interrelate. It also asks how the environmental benefit would be affected if weak international climate targets fail to generate sufficient demand for forest conservation certificates or the CO_2 markets have undesirable effects on biological diversity. These questions alone show how important it is to subject any measure to careful scrutiny – and if in doubt to reject it.

„In recent years there has been a growing call from policy-makers for market-based instruments. But since the results of using such instruments to promote ecosystem services have been ambivalent, we should not rely on them blindly. Under what conditions they are appropriate and when other forms of control are advisable shall be revealed by the findings of the research project."

Market-based instruments in international climate protection and nature conservation: Creation, design, impact

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Institute division: Environmental Law & Governance
Sponsor: German Federal Ministry for Education and Research
Project partners: Berlin-Brandenburg Academy of Sciences and Humanities (project management), Ecologic Institute Berlin, Institute for Landscape Management at the University of Freiburg
Timescale: June 2009 – May 2012

Franziska Wolff

Franziska Wolff is a political scientist who has been working in the Environmental Law & Governance Division of the Oeko-Institut since 2001. Her areas of research include the management of natural resources, sustainable production and consumption patterns, and analysis and evaluation of policy instruments and forms of governance.

Facilitator for policy, industry and society

The Oeko-Institut's clients

Set out below is a cross-section of the policy-making bodies, companies and civil society organisations with which we collaborated during 2011:

Policy-making & executive bodies

- Aachen University RWTH
- Baden-Württemberg Ministry of Environment, Climate and Energy
- Bavarian State Ministry of the Environment and Public Health
- Brandenburg Ministry of Environment, Public Health and Consumer Protection
- Deutsche Gesellschaft für Internationale Zusammenarbeit (German International Cooperation – GIZ)
- European Commission: Directorates-General for Energy, Research, Environment, Enterprise and Industry, Climate; Eurostat; Executive Agency for Competitiveness and & Innovation (Eaci); ESTAT; Intelligent Energy Europe; European Atomic Energy; Centre for Renewable Energy Sources
- European Environment Agency
- European Parliament
- Federal Agency for Nature Conservation
- Federal Environment Agency
- Federal Ministry of Finance
- Federal Ministry of Education and Research
- Federal Ministry for the Environment, Nature Conservation and Nuclear Safety
- Federal Ministry of Economics and Technology
- Federal Ministry of Transport, Building and Urban Development
- Food and Agriculture Organization of the United Nations
- Freiburg city environment department
- German Federal Environmental Foundation (DBU)
- KfW development bank
- La Direction Régionale de l`Environnement, de l`Aménagement et du Logement d`Alsace
- Landratsamt Greiz district commissioner's office
- Land (regional state government) of Lower Saxony
- Landschaftsverband Rheinland local authority services
- North Rhine-Westphalian Ministry of Economics, Energy, Building, Housing and Transport
- North Rhine-Westphalian State Agency for Nature Conservation, Environmental Affairs and Consumer Protection
- OECD
- Office of Technology Assessment at the German Parliament, TAB
- Rhineland-Palatinate Ministry of Environment, Forests and Consumer Protection
- Schleswig-Holstein Ministry of Agriculture, Environment and Rural Affairs
- TA-Swiss
- UNEP
- United Nations University

Industry

- BKV Beteiligungs- und Kunststoffverwertungsgesellschaft mbh
- Bio-Wärme Gräfelfing GmbH
- BP Europe SE
- Daimler AG
- DeutschesBiomasseForschungszentrum
- ENTEGA Vertriebs GmbH & Co. KG
- Franz Haniel & Cie. GmbH
- Gore Associates GmbH
- Henkel AG &Co. KGaA
- HIPP OHG
- Ingenieurgemeinschaft für Verkehrs- und Eisenbahnwesen mbH
- Krombacher Brauerei
- Merck KGaA
- Metro AG
- Milieu Ltd
- Paul Hartmann AG
- REWE Group
- Schenker AG HO Essen
- Schluchseewerk AG
- Stadtwerke Ulm GmbH
- Südsalz GmbH
- Telekom Deutschland GmbH
- UmicoreBattery Recycling

Civil society

- BEUC (The European Consumers' Organisation)
- Federation of German Industries (BDI)
- German Heat Pump Association (BWP) and Technical Group for Efficient Energy Applications (HEA)
- ClimateStrategies Cambridge
- Der Grüne Punkt - Duales System Deutschland GmbH (DSD)
- German Football Association (DFB)
- German League for Nature and Environment (DNR)
- Deutsches Tiefkühlinstitut (dti)
- Protestant Institute for Interdisciplinary Research (FEST)
- Gemeinnützige Umwelthaus stakeholder forum for Frankfurt Airport region
- Gesamtverband der Aluminiumindustrie (GDA) aluminium industry association
- Haus der Kulturen der Welt
- Komitee „Mühleberg Ver-fahren" nuclear action group
- NIZA Amsterdam
- Smart Energy for Europe Platform
- Legacy for the Future Foundation
- German Fruit Juice Industry Association
- Verbraucher Initiative federation of consumer initiatives
- World Resource Institute
- WWF Germany

A full list of references is available (in german) at: www.oeko.de/referenzen2011

Change and stability The management of the Oeko-Institut

General Assembly and Committee

The Oeko-Institut is constituted as a non-profit association. The General Assembly is its supreme body. This consists of the active members, who elect every two years, in secret ballot, seven external Committee members. A further five staff members of the institute belong to the Committee ("internal" Committee members). Four new individuals are on the Committee since 2011.

External Committee members

Dr. Barbara Praetorius – First Chair
(Head of the Policy, Strategy, Innovation Department of the German Association of Local Utilities VKU)
Dorothea Michaelsen-Friedlieb – Second Chair
(Business consultant for non-profit organisations)
Anton Lutz (Chair of KWA Contracting AG)
Thomas Rahner (Lawyer specialised in administrative law)
Nadia vom Scheidt (Head of the International Affairs Division at the German Federal Office of Civil Protection and Disaster Assistance)
Ulrike Schell (Head of the Food and Environment Section at the Verbraucherzentrale NRW consumer advocacy centre)
Kathleen Spilok (Freelance science journalist and project coordinator at the Baden-Württemberg Chamber of Crafts)

Internal Committee members

Michael Sailer – Chief Executive Officer of the Oeko-Institut
Christof Timpe – Management team representative

Staff representatives elected by the staff assembly:
Stefan Alt (Darmstadt)
Dr. Hannah Förster (Berlin)
Rita Kappeler-Keller (Freiburg)

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News from the world of communication

You are familiar with the Oeko-Institut as a partner in scientific research and consultancy for a sustainable future. You can expect consistency and reliability from us. Equally, though, we are always moving with the times – not just in our scientific work but also when it comes to communicating with the public.

In our communication we always strive to be comprehensible, precise and transparent. In 2011, these principles led us to explore the field of social media. More and more people are using social networks to obtain information, chat about private and work-related issues and interact directly with politicians, businesses – and the world of science. The Oeko-Institut's main aim in setting up profiles on the following platforms was to use these networks to make information available swiftly and create opportunities for questions and discussion. We invite you to make use of these to learn more about our research and to send us feedback if you wish.

Annual conference 2012: "Energy transitions – well connected?"

This is the title of the Oeko-Institut's annual conference 2012, which will look at the consequences of turning energy systems towards sustainability: What requirements does the expansion of renewable energies place on the infrastructure? How and with what power plant capacities will we be able to generate green electricity and heat? What mechanisms do the electricity markets of the future require? What incentives must be provided to encourage businesses to undertake green investment? How should stakeholder groups and the general public be involved in infrastructure planning? How can different interests be reconciled?

Date: 13. September 2012
Place: Kreditanstalt für Wiederaufbau (KfW)
Behrenstraße 31-33
(entrance for the conference)
10117 Berlin

Details of the programme and how to register will be on our website within the next few months:
www.oeko.de/jahrestagung2012

The Oeko-Institut in the social media:

Twitter: Short messages from the Oeko-Institut

Short messages in 140 characters – on Twitter we report our latest research results, contribute to discussion and provide swift responses to your questions.
www.twitter.com/oekoinstitut

Slideshare: Presentations to browse through

This is where we publish presentations from talks, committee meetings or debates. Other Oeko-Institut publications on a range of topics are also available here.
www.slideshare.net/oeko-institut

Flickr: Online picture library

On this picture-sharing network you will find photos of events or images of selected topics. If you would like to use particular pictures (for non-commercial purposes), please contact us.
www.flickr.com/oekoinstitut

Youtube: Pictures that move

On Youtube we show films that we or other people have made and media interviews or presentations involving our researchers.
www.youtube.com/oekoinstitut

The Oeko-Institut's classic information channels:

eco@work

The Oeko-Institut's e-paper appears four times a year, informing readers about our research at the Freiburg, Berlin and Darmstadt sites. www.oeko.de/epaper

Website www.oeko.de

Study results, publications, articles and comment as well as the latest updates on our work are available free of charge on our website.

Specialist publications

The Oeko-Institut publishes two journals: the ELNI Law Review, which reports on developments in European environmental law, and the KGV Rundbrief (in German), which covers all aspects of industrial permitting procedures.
www.elni.org and www.oeko.de/kgvweben

Conferences and events

The Oeko-Institut organises conference and workshops on specific issues. Our experts also contribute to scientific discourse with frequent lectures and presentations.

Members ensure stability

The Oeko-Institut is a non-profit association: with more than 2,500 members it has a broad support base in society. Although our work is funded mainly by public and private clients, membership subscriptions and numerous donations provide invaluable assistance in enabling us to maintain an independent position on controversial issues. The Oeko-Institut's researchers were much in demand in connection with the debate on extending the life of nuclear power plants and after the accident at the Fukushima Dai-ichi nuclear plant: they commented more than 3,000 times in newspapers and on radio and television.

Very important to the Oeko-Institut are its nearly 350 life members. The idea of life membership was conceived ten years ago and has been very well received. Life members have less administration to deal with and save money over a long period of membership. In return, the Oeko-Institut is able to reduce its administration costs. In addition we have a special relationship with our life members.

In 2011 we set up a separate service page on the Internet where you can find full details of membership. You can join or support us with a donation online.

Visit the new membership page at:
mitglieder.oeko.de

To tackle strategically and socially important issues we need your support – become a member!

Our membership rates

- annual membership: 80 euros
- concessionary annual membership (for trainees, students and seniors): 35 euros
- life membership: 1,000 euros

As a member

- you receive a free copy of our magazine eco@work four times a year.
- we keep you informed about Oeko-Institut events, for which you pay a reduced admission fee.
- we keep you up to date on the latest topics and studies via our website.
- we shall be happy to show you round our low-energy office building in Freiburg, the Solar Ship.
- you can of course offset your membership subscription against tax.

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