40 Jahre Öko-Institut e.V.
Wir wünschen uns was!

“Let’s make a wish!”

Annual Report of the Oeko-Institut 2017

Wishes for a sustainable future

On the occasion of its 40th anniversary, the Oeko-Institut was showered with messages of appreciation, respect and congratulations – you can read some of the wishes for the institute and for a sustainable future here. All the messages can be found in our anniversary blog at http://40.oeko.de/glueckwuensche

"40 years of the Oeko-Institut: That's 40 years of commitment to independent research and consultancy for all-round protection of nature and the environment. On behalf of Berlin, I therefore congratulate the Oeko-Institut very warmly on this anniversary; I hope that the entire team will continue to enjoy its work and to have the right instinct for the issues of the future."

Michael Müller
Governing mayor of Berlin

"According to a popular saying, it's at 40 that Swabians become wise. In terms of the environment and resource consumption, humanity is still far from wise. That is why we shall continue to need a strong and capable Oeko-Institut for the next 40 years. I hope that the next generation will be just as committed to this project and that the friends and supporters of the institute will steadily grow in number."

Jo Leinen
Member of the European Parliament

Contents

"The Oeko-Institut can take the credit for coining a new word: the term Energiewende, with its overtones of forward-looking boldness, is used all over the world. By striding out boldly together, we can unleash a global energy transition that will prove unstoppable. At 40 the Oeko-Institut is far from past it. Quite the reverse – there is still time for plenty more."

Jürgen Trittin
Member of the German Bundestag

"You have achieved a great deal over the years! But there is no time to rest. Not only is sustainability still important – it is now at the heart of our society. The Oeko-Institut's expertise is still needed – I congratulate you on your success and wish you all the best for the next 40 years."

Klaus Müller
Director, Federation of
German Consumer Organisations

"For forty years you have been committed to ensuring that sustainability research makes progress. I offer my warmest congratulations on your anniversary and wish you every success in the future."

Prof. Johanna Wanka
Former Federal Minister for Education and Research

"The environment needs friends. The fantastic Oeko-Institut team are some of the best friends it could have! My warmest congratulations!"

Prof. Ernst Ulrich von Weizsäcker
Scientist, politician and author

"Founded at the end of the 1970s, the Oeko-Institut has become a leading institution in the field of environmental conservation and sustainability. In fact it is largely due to the institute that the environment, energy efficiency and sustainability are now such mainstream issues in politics, industry, science and society. Many thanks and warmest congratulations!"

Cornelia Quennet-Thielen
Secretary of State in the Federal Ministry for
Education and Research

"The Oeko-Institut stands for many important things: boldness, integrity, professionalism, relevance, precision, credibility, adherence to the facts, innovative thinking and commitment. It is a research and consultancy institution that one would have to found if it did not already exist."

Prof. Lucia Reisch
Behavioural economist and social scientist

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Our year 2017

Dear readers,

The past year was a special one for us: we celebrated our 40th anniversary! 1977 – 2017. For 40 years the Oeko-Institut has been striving towards a world that protects the environment, cares about the climate and uses resources sparingly – in short, a world fit for our grandchildren. From the first Energiewende study to the resource transition conference, from the first general assembly in Freiburg to lectures at Darmstadt University and interviews with journalists in Berlin – for 40 years we have been working intensively, obstinately, flexibly, creatively and persistently on a wide range of research topics at what are now our three offices. Right from the start we have been passing on our scientific findings to policy-makers and the public; we are still the organisation that people turn to for solutions and ideas on (almost) all environmental issues.

That is a source of great pleasure and is one of the things that we celebrated last year – with our political, scientific, economic and civil-society partners but also in discussions with critics of our opinions, with whom we are also in touch. And in 2017 we successfully pursued projects that enabled us to exert some influence on political and social change in the coming years and decades. The anniversary was also an opportunity for us to look forward and define where the greatest challenges for the future lie. Not for nothing did we choose "We're making a wish!" as our anniversary motto, thus reversing the usual situation in which the birthday person receives wishes rather than makes them. In our publication "Heute. Morgen. Zukunft." and also in our anniversary blog we have described what we want to campaign for in future and where – in the eyes of the Oeko-Institut – the drive towards sustainability still needs to take us. Some views are those of the Oeko-Institut as a whole; some represent the very personal points of view of our staff.

In response we received appreciative comments at various events, in the blog, in our members' magazine and in many interviews and discussions – from people such as Federal Environment Minister Dr Barbara Hendricks, who attended our anniversary celebrations in Berlin in November. And there was support from our members, whose subscriptions and donations, questions and suggestions continue to ensure the independence that we need for our work. We are delighted by all this feedback – which shows what we can and are doing. It also spurs us on to "keep going" in the most positive sense. Whether the subject is final storage or resources, the energy transition or sustainable consumption, exnovation or e-mobility, there is more call than ever before for our expertise – to encourage positive develop-

ments, correct faulty processes, motivate the hesitant and convince the naysayers.

By comparison with 1977, 1987 or 1997 the challenges have not diminished. Climate change, resource shortages, water scarcity – many problems are global ones that nevertheless require customised solutions that can be applied locally. However, we are aware not only of the great global tasks but also of the local commitment of many people, such as those who are daring to explore creative solutions in cities all over the world, even if they are mocked in some quarters. With our own 40 years of experience behind us, we can say to them: Don't be put off! Keep going – sooner or later, many others will follow you.

We see the present and future task of the Oeko-Institut as being to capture the environmental, social and economic consequences of new technologies in scientific terms; to research ways of switching from non-sustainable technologies and forms of production to sustainable ones; to continue coming up with solutions for a sustainable world of tomorrow. And to carry on discussing these things as broadly as possible within society. It is with this in mind that 170 excellent members of staff pursue their outstanding work at the Oeko-Institut every day. They are working on climate change mitigation, on sustainable resource use worldwide, on healthy and safe technologies, on the pathway to a sustainable society in keeping with the aims of the 2030 Agenda – it is to these and other tasks that we are committed in the coming years.

You can read about our wide-ranging activities in our anniversary year and about the highlights of our "normal" scientific work in 2017 in this annual report. I hope that you will find in it suggestions that you can act on yourself, and I shall close with a quotation from our founding declaration of 1977 that still rings true today:

"We can only hope
if we act ourselves!"

Yours

Michael Sailer
Chief Executive Officer of the Oeko-Institut

Today. Tomorrow. Future.
Visions and pathways for a sustainable society

Casting a critical glance at the past, acknowledging the progress made towards a sustainable future, and continuing to highlight prevailing problems and challenges – the 40th anniversary of the Oeko-Institut was an opportunity for us to take a critical and constructive look at the transformation to a sustainable society. The publication "Heute. Morgen. Zukunft." recounts the origins of the Oeko-Institut, describes our mission and outlook and illuminates global trends and developments. Across the organisation we have put a lot of work into spelling out our visions for a sustainable society and identifying clear ways of achieving them.

The Oeko-Institut's "future paper" focuses on six action areas: energy, transport, housing, food and agriculture, the economy, and consumption. For each area we have formulated a vision, looked at the current situation and at trends and developments and described the key measures needed for sustainable change. For example, in the section on energy we outline our vision for a reliable, affordable and environmentally sound energy supply. The key measures here include adopting a timetable for the definitive phasing out of coal and an active energy efficiency policy. A reflection on the nuclear phase-out looks at how a world without nuclear power plants and nuclear weapons can come true.

The chapter on mobility sets out our vision of an efficient, safe and emissions-free transport system and shows that this can be achieved partly by improving public transport, encouraging walking and cycling and promoting shared use. A sustainable future is also possible in the action area of housing. Our wish here is for a society in which housing is safe and affordable, climate-neutral and resource-efficient. Steps that could be taken to help achieve this include significantly increasing the rate at which buildings are renovated to improve their energy performance, and setting ambitious standards for both new buildings and renovations. In the action area of food and agriculture we consider the vision of a world without hunger that is characterised by environmentally sustainable and socially just agriculture and equitable distribution. We believe that this is possible if, for example, the agricultural sector is deliberately transformed with this in mind and EU agricultural policy is radically overhauled. If there is to be a shift towards sustainability in the action areas of the economy and consumption, there must be expansion of sustainable forms of production and consumption and non-sustainable practices must be halted. Meeting consumer needs in an environmentally sound and socially responsible manner and establishing an economy that is in equilibrium and remains within planetary boundaries requires the commitment of all stakeholders in the economy – policy-makers and industry as well as consumers.

The publication was presented at our anniversary event in November 2017 and discussed with decision-makers from industry, politics, science and civil society. We shall be continuing our work on the sustainable transformation of society in the coming years. Today. Tomorrow. And in future.

Read our paper "Heute. Morgen. Zukunft." online at:
www.oeko.de/heutemorgenzukunft

Figures for 2017

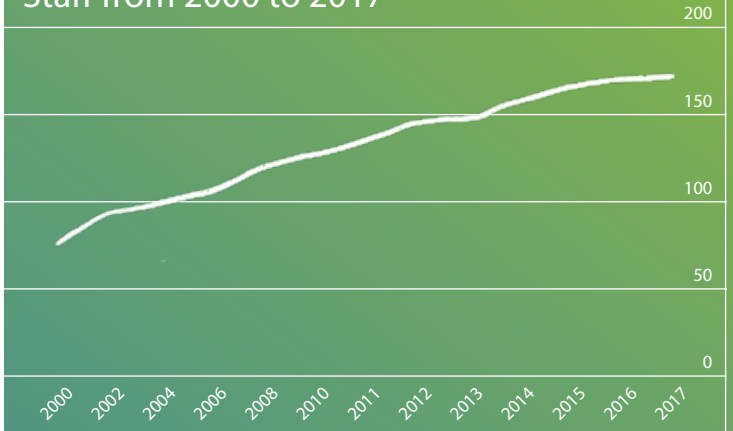
Human resources

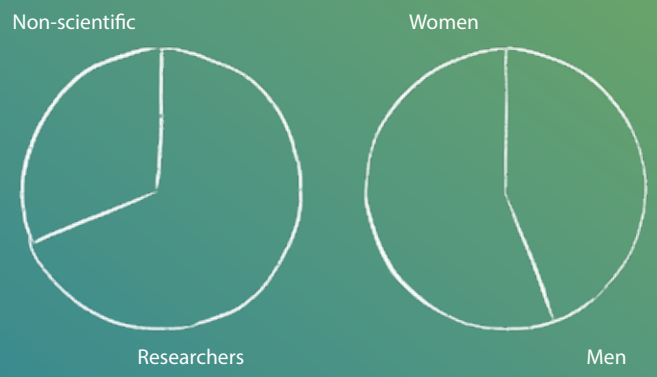
In 2017 we had more than 170 members of staff working on issues relating to the sustainable organisation of our society. They are employed at the institute's offices in Freiburg, Darmstadt and Berlin.

Our workforce includes almost 120 researchers. In addition, more than 50 members of staff in Central Services ensure that our scientific work runs smoothly.

In terms of the number of posts, the Oeko-Institut employs more women than men: in 2017 there were 95 women and 76 men working at the institute. But because more women work part-time, the overall ratio is balanced.

Staff from 2000 to 2017



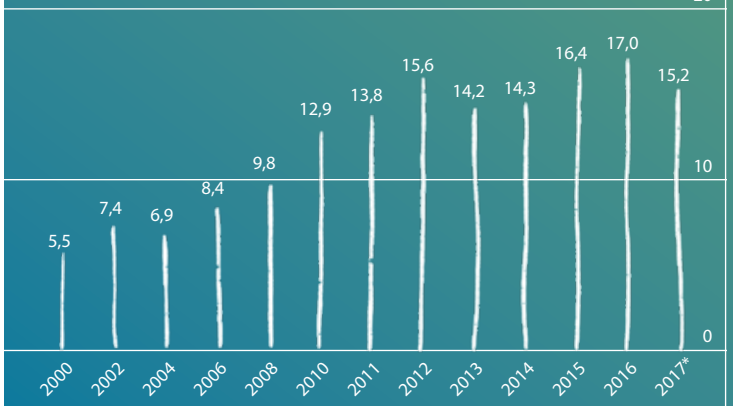


Projects and turnover

Last year the Oeko-Institut's researchers worked on more than 380 projects. The institute's total turnover was in excess of 15 million euros (target figure). Key projects commissioned by our clients came from politics, business and civil society.

*Target figure

Turnover from 2000 to 2017



The Oeko-Institut at a glance

General Assembly, Committee, Advisory Board, Executive Board – the Oeko-Institut, which was founded in 1977, has the standard structure of an association. The institute's research divisions are supported by the various departments of Central Services. Also part of the institute's structure are co-determination bodies such as the Staff Assembly at each site and the extended management.

Advisory Board

Prof. Dr Nina Buchmann
Dr Susanne Dröge
Dr Erhard Eppler
Prof. Dr Klaus Fricke
Prof. Dr Martin Führ
Prof. Dr Regine Kollek
Prof. Dr Ellen Matthies
Prof. Dr Peter C. Mayer-Tasch
Prof. Dr Eckard Rehbinder
Prof. Dr Lucia Reisch
Dr Hartmut Richter
Prof. em. Dr Udo E. Simonis

Research Divisions

Christof Timpe
Head of the Energy & Climate Division (Freiburg/Darmstadt)

Julia Repenning
Acting Head of the Energy & Climate Division (Berlin)

Beate Kallenbach-Herbert
Head of the Nuclear Engineering & Facility Safety Division

Dr Matthias Buchert
Head of the Resources & Transport Division

Carl-Otto Gensch
Head of the Sustainable Products & Material Flows Division

Franziska Wolff
Head of the Environmental Law & Governance Division

The Oeko-Institut's organisation chart provides an overview of its structure

General Assembly

Committee

External members of the Committee
Dorothea Michaelsen-Friedlieb – First Chair of the Committee
Ulrike Schell – Second Chair of the Committee
Prof. Dr Regina Betz
Prof. Dr Gerald Kirchner
Thomas Rahner
Kathleen Spilok
Prof. Dr Volrad Wollny

Internal members of the Committee
Dr Georg Mehlhart
Dr Nele Kampffmeyer
Michael Sailer
Moritz Vogel
Christof Timpe

Executive Board

Michael Sailer
CEO

Prof. Dr Rainer Grießhammer

Susanne Fröschl

Central Services

Boris Hüttmann
Head of the IT Department

Thomas Manz
Head of the Tenders & Contracts Department

Susanne Rossbach
Head of the Finance & Accounting Department

Mandy Schossig
Head of the Public Relations & Communications Department

A diverse programme
Selected projects from 2017

Over the last forty years our researchers have worked on numerous projects on a wide range of issues. In 1980 they paved the way for the Energiewende with a pioneering study; they investigated pollutants in drinking water and the risks of genetic engineering as well as turning their attention to sustainable corporate strategies and how the waste industry can help mitigate climate change. In 2017 complex analysis, wide-ranging research, professional consultancy and expert reporting continued to be the hallmarks of the institute's work.

On the following pages we profile ten projects from the five research divisions. They reflect the varied work of the Oeko-Institut in 2017, which considers the needs of consumers as well as the requirements of businesses and the challenges for policy-makers. For example, the Sustainable Products & Material Flows Division helped private households switch to energy-efficient LED lighting and produced guidelines for businesses to enable them to select sustainable chemicals. The researchers of the Environmental Law & Governance Division looked at what schemes to improve corporate sustainability are achieving and drew up recommendations for transformative environmental policy. The Energy & Climate Division produced the Integrated Climate Protection Plan Hesse 2025 that sets out 140 measures designed to achieve Hesse's climate targets and adapt to climate change impacts; the Division also worked on two studies on the phasing out of electricity generation from coal.

One of the issues considered by the Oeko-Institut's Resources & Transport Division in 2017 was whether the resource needs of electric transport can be met even if there is a significant increase in the number of e-vehicles on our roads; the Division also produced two online tools that enable businesses and private households to calculate the climate benefits and cost savings of electric transport. An example of the work of the Nuclear Engineering & Facility Safety Division is its analysis of the risks to nuclear reactors in crisis areas; it also produced a report on the Neckarwestheim and Philippsburg nuclear power plants for a consulting consortium in Baden-Württemberg.

These ten projects not only provide an opportunity to look back: they also point the way forwards – for climate change mitigation, human rights, resource conservation and greater safety for people and the environment.

Going LED
Efficient lighting put to the test

Private households are now using a lot more electricity than they did in 1990. And with regard to lighting there is a technology that can significantly cut energy consumption, environmentally damaging CO_2 emissions and costs – LED (light emitting diode) technology. By switching to LED lamps throughout the home, a family can reduce its annual electricity usage by up to 300 kilowatt-hours, but not enough households are doing this. The Oeko-Institut ran a nationwide electricity-saving campaign designed to help consumers make the change.

Despite the advantages of LED lamps, many households are continuing to buy comparatively inefficient halogen light bulbs. There are indeed some practical obstacles to be overcome when switching to LED bulbs: sizes and fittings may be different from those of existing bulbs, and consumers may need to learn about the brightness and light colour of LED bulbs. The campaign "Everything's going LED" aimed to change things. It was run by EcoTopTen, the Oeko-Institut's website that identifies the most environmentally friendly products, and was sponsored by the German Federal Environment Ministry as part of the National Climate Protection Initiative. The campaign was supported by 35 cooperation partners including energy suppliers, LED manufacturers, retailers and 17 municipalities.

A range of measures encouraged consumers to switch to LED bulbs and helped them make the change. For example, the Oeko-Institut and its cooperation partners conducted practical tests in 14 selected households: with the help of experts, the households were able to buy LED bulbs worth up to 200 euros and they then documented their use of the bulbs and their electricity savings. When the clocks changed in October there was a lottery campaign and a variety of materials were produced, some of which drew on the findings of the practical tests – a brief guide to rapid conversion to LEDs, detailed practical guidelines, LED photostories, a glossary of important LED-related terms and an explanatory film.

Project profile

Project title: The campaign "Everything's going LED – Efficient lighting put to the test" as part of the EcoTopTen product award project
Contact: Britta Stratmann, b.stratmann@oeko.de, Dr Dietlinde Quack (Project Manager), d.quack@oeko.de
Institute Division: Sustainable Products & Material Flows
Funding: BMUB's National Climate Protection Initiative
Project partners: 35 cooperation partners, including electricity providers, LED manufacturers, municipalities
Timescale: January 2015 – June 2018 (entire project) January – December 2017 ("Everything's going LED" campaign)
Further information:
www.ecotopten.de/beleuchtung/alles-leuchted

Britta Stratmann

In her work Britta Stratmann focuses on sustainable consumption and sustainable products. Having studied biology at university, she has been working for the Oeko-Institut since 2006; her tasks include conducting environmental assessments of products and processes.

"An LED lamp uses significantly less electricity than other forms of lighting. In a year, a 45-watt halogen bulb that is on for three hours a day uses electricity costing 14 euros; a 60-watt incandescent bulb used in the same way would use 19 euros' worth of electricity. But a comparable LED bulb uses only three euros' worth. Depending on household size, using LEDs can cut electricity usage by up to 80 percent."

Phasing out coal
Facts, options and strategies

Coal is a fuel without a future – at least if Germany is serious about action on climate change. Hard-coal and lignite-fired power plants in Germany are responsible for 80 percent of the electricity sector's CO_2 emissions; lignite is more harmful to the climate than any other fuel. Several of the Oeko-Institut's projects are looking at how the necessary phase-out of coal and the switch to other forms of electricity generation can be achieved. Its researchers are busy in two areas: they are compiling facts and figures on the current situation and drawing up scenarios that show how the use of coal could be discontinued.

Although the generation of electricity from lignite plays a major part in energy and climate policy, the available information on the sector has been patchy and unclear. The Oeko-Institut has now produced a comprehensive study of the situation for Agora Energiewende and the European Climate Foundation that includes an account of the environmental impact of opencast mining and power plants and an analysis of the economic structures involved in the generation of electricity from lignite. The study also shows that while lignite was a prominent factor in the industrialisation of Germany in years gone by, its economic importance is now confined to certain regions.

In a study for the WWF the Oeko-Institut and Prognos considered various options for an accelerated phase-out of coal by 2035. The project team found that this can be achieved by speeding up the expansion of renewables and using gas-fired power plants for a transition period. The analysis shows that what is required is a managed reduction of coal-fired power plant capacity and an upper limit for greenhouse gases once power plants reach a certain age. Lignite mining can then be sharply cut back and existing opencast lignite mines can be significantly reduced in size. At the same time the experts call for investment in structural change in the affected regions.

Project profile

Project title: The German lignite industry. Historical developments, resources, technology, economic structures and environmental impacts;
The future of the electricity system. Phasing out coal by 2035
Contact: Hauke Hermann, h.hermann@oeko.de
Institute Division: Energy & Climate
Clients: Agora Energiewende and the European Climate Foundation (The German lignite industry), WWF Deutschland (Phasing out coal by 2035)
Project partner: Prognos AG (Phasing out coal by 2035)
Timescale: February 2016 – June 2017 (The German lignite industry)
March 2016 – January 2017 (Phasing out coal by 2035)
Further information:
www.oeko.de/braunkohlenwirtschaft
www.oeko.de/kohleausstieg2035

Hauke Hermann

Hauke Hermann, who has a Master's degree in environmental and resource management, has been working for the Oeko-Institut since 2009. He specialises in aspects of the electricity market such as market-based climate policy instruments and renewables.

"If global warming is to be kept to well below two degrees centigrade and if emission allowances are fairly distributed, then the German electricity sector has an emissions budget of just four billion tonnes of CO_2 to play with. To keep within this budget a number of things must be done. Phasing out coal is crucial: older coal-fired power plants must be turned off by 2020, and the last coal-fired power plant must be shut down by 2035."

Transformative environmental policy

Shaping social change

An innovative technology is just one component of change. If our economy is to keep within safe environmental limits, far more is needed: there must be a comprehensive transformation of society. When it comes to action on climate change or the conservation of biodiversity, simple solutions are not enough. Environmental policy can play a key part in bringing about the necessary change by steering transformation processes towards sustainability in specific areas such as energy, food and transport. A study conducted by the Oeko-Institut, the Free University Berlin and IFOK GmbH identifies the requirements that a transformative environmental policy of this sort must meet.

On behalf of the German Environment Agency, the project team showed that a thoroughgoing transformation must be based on an all-round view. For example, what we eat, how we travel and how we produce and use energy depends on many factors – on the range of products and technologies available, on infrastructure, social structures and societal norms, on time frames, market conditions and power relationships. In the light of this, the researchers suggest that a transformative environmental policy be approached in a number of different ways. For example, they recommend systematic compilation of knowledge in collaboration with societal stakeholders and participatory elaboration of long-term objectives. Another aspect of this concept of a transformative environmental policy is continuous monitoring of social trends such as digitalisation and exploration of their potential contribution to the visions and aims.

The study also recommends seeking allies from outside the field of environmental policy, such as financial market players and health insurance funds. As well as promoting technical innovation, it is also important to encourage new social practices – in other words, social innovation. And the analysis points out that a key component of a transformative environmental policy is "exnovation" or the abandonment – after suitably lengthy preparation – of environmentally damaging technologies and structures.

Project profile

Project title: Identifying key components of transformative environmental policy
Contact: Franziska Wolff, f.wolff@oeko.de
Institute Division: Environmental Law & Governance
Clients: German Environment Agency
Project partner: Free University Berlin, IFOK GmbH
Timescale: June 2015 – September 2017
Further information:
www.oeko.de/transformative-umweltpolitik

Franziska Wolff

Franziska Wolff is an economist and political scientist who has worked for the Oeko-Institut since 2001; she was appointed head of the Environmental Law & Governance Division in 2014. Her work focuses on environmental governance at national and international level.

"Transformative environmental policy does not mean that we should turn our backs on the environmental policy of the past – after all, it has achieved a great deal. We need to add to existing environmental policy measures and refine them in order to facilitate, accelerate and support social change."

A nuclear risk
Reactors in crisis regions

Armed conflict in Ukraine, fighting in Pakistan, simmering tensions with Iran and North Korea – each crisis is different, but all of these countries have one thing in common: the existence of nuclear facilities on their territory. However, there is very little media coverage or public debate about the vulnerability of these facilities and the adverse impacts – intended or not – of an escalating political or armed conflict on nuclear infrastructure. In a study funded by the Legacy for the Future Foundation, the Oeko-Institut shows how conflicts, past and present, put nuclear safety at risk and could potentially lead to a nuclear disaster with transboundary repercussions.

Nuclear facilities depend on a stable institutional and physical infrastructure. In conflict situations, however, it is often impossible to prevent erosion of the safety culture and guarantee institutional control. The energy supply has strategic relevance in armed conflicts, so it too may become a target for attacks and sabotage. As the research team demonstrates, there are also increased accident risks arising from collateral damage such as interruption of a facility's external power supply. The study also shows that the storage of high-level radioactive waste (HLW) is associated with major potential hazards.

The Oeko-Institut uses the example of Ukraine, among others, to illustrate the real threat that crises and conflicts pose to nuclear safety. The measures currently being implemented in Ukraine to improve safety in the nuclear sector are only possible thanks to massive financial support from abroad. But in November 2015, several electricity pylons on the peninsula of Crimea were blown up in an act of sabotage, causing a full or partial blackout which affected 1.9 million people. The impact on the operation of the Zaporizhzhya nuclear power plant – the largest in Europe – was so severe that the national power company Ukrenergo categorised the situation as "very dangerous". In light of these circumstances, the Oeko-Institut's researchers express concern about Ukraine's dependence on nuclear energy and its intention to keep its nuclear power plants operating in future. They also urge policy-makers, the media and society at large to pay far more attention to the threat to nuclear safety in conflict regions.

Project profile

Project title: Nuclear Safety in Crisis Regions
Contact: Dr Veronika Ustohalova (Project Manager), v.ustohalova@oeko.de
Dr Matthias Englert, m.englert@oeko.de
Institute Division: Nuclear Engineering & Facility Safety
Funding: Legacy for the Future Foundation (Stiftung Zukunftserbe)
Timescale: January 2016 – April 2017
Further information:
www.oeko.de/nukleare-sicherheit-krisengebiete

Dr Veronika Ustohalova

Dr Veronika Ustohalova studied hydroengineering and water management and then undertook postgraduate studies with a focus on pollutant transport and waste management. In 2008, she joined the Oeko-Institut, where most of her work deals with radiation protection, emergency management and risk assessment for nuclear installations.

"We will be continuing this research in 2018. The Oeko-Institut's current donation-funded project will also focus on nuclear safety in crisis regions. Among other things, there are plans to produce a crisis report with facts and analysis of conflicts and nuclear safety and to develop a crisis barometer showing the risks to nuclear facilities."

Greener and cheaper mobility

Online comparison tools

An electric car is considerably more efficient than a vehicle with a combustion engine, is quieter, and produces less greenhouse gas and air pollutant emissions: three advantages of electric vehicles. However, car owners also want to know what they cost to run. Does an electric vehicle make financial sense as well? The Oeko-Institut has developed two online tools for interested people to calculate the financial and environmental benefits of electric cars for themselves.

The online calculator for commercial vehicle fleets had its origin in the ePowered Fleets Hamburg project funded by the German Environment Ministry. In this the Oeko-Institut monitored the practical use of electric vehicles by over 230 businesses over several years and developed a fleet tool. Commercial users can use it to compare their current fleet with optimised variants in which conventional vehicles are replaced by electric cars and find the effects on overall cost and CO_2 balance. Individual adjustments, such as vehicle costs and features or fuel and electricity prices, can also be made to the detail settings. Other transport options such as electric bikes and car sharing can be selected too, as an emissions and costs balance cannot be achieved just by electrifying the fleet. Using public and non-motorised transport, reducing vehicle and fleet size and efficient use of vehicles are particularly effective measures.

A second tool, commissioned for development by the technical and scientific association VDE, allows private car users to compare costs and CO_2 emissions for electric and conventional vehicles. Here, too, individual adjustments can be made, such as in respect of annual mileage or type of electricity tariff. Sample calculations show the benefits of electric vehicles: for instance, in the space of eight years, a small electric car covering 9000 kilometres a year can save around 2500 euros and about seven tonnes of CO_2 compared with a conventional car.

Project profile

Project title: ePowered Fleets Hamburg;
Economic efficiency of electric cars: development of an online TCO calculator for private cars
Contact: Lukas Minnich, l.minnich@oeko.de,
Sven Kühnel, s.kuehnel@oeko.de
Institute Division: Resources & Transport
Clients: VDE (Verband der Elektrotechnik Elektronik Informationstechnik e.V) (cost calculator)
Funding: Federal Ministry for the Environment, Nature Conservation, Building and Nuclear Safety (ePowered Fleets)
Project partner: hySOLUTIONS, Alphabet Fleet Management Services (ePowered Fleets)
Timescale: January 2014 – June 2017 (ePowered Fleets),
January 2017 – March 2017 (cost calculator)
Further information:
www.oeko.de/fakten-elektromobilitaet

Lukas Minnich

Lukas Minnich graduated in environmental technology and has been researching alternative means of propulsion such as electromobility at the Oeko-Institut since 2014. He is also currently working on CO_2 regulation for new vehicles and energy-efficient local public transport.

"Our sample calculations show the environmental and cost benefits of electric vehicles. However, it is important for commercial users to carry out really systematic analyses of their fleets in future. In addition they should make greater use of alternative means of travel, such as car sharing, cycling and public transport, and not use vehicles that are half-empty."

Less dangerous, more sustainable

Guidance for sustainable chemicals

Do the chemicals we use pose a risk to human health and environmental quality? Some companies cannot deny that they do: they use chemicals with problematic properties – sometimes simply through lack of awareness of sustainable alternatives. This has prompted publication of the guidelines on sustainable chemicals that the Oeko-Institut and the Institut Ökopol have produced on behalf of the German Environment Agency. These practical guidelines for companies help manufacturers and users assess the substances they use and use problematic substances sustainably if no substitute is available.

Sustainable chemistry deals with the environmental impacts of chemical manufacture, with choosing safe chemicals that do not impact adversely on humans and the environment and with high social standards in the supply chain. The guidelines produced on behalf of the German Environment Agency use a traffic light system to show companies whether there is a major need for action, potential need for action, or no indication of a need for action. As well as focusing on the assessment of substances, they provide tips on dealing with mixtures. The chemicals are assessed against a range of criteria, including their physical and chemical properties, their inclusion in lists of harmful substances, their associated resource consumption and the assumption of responsibility in supply chains.

The document also sets out how substances for which there is no substitute can be used sustainably, for example by paying attention to the quantities used and to waste management.

The guidelines on sustainable chemicals not only serve to protect humans and the environment – they also help companies make economically sound decisions and ensure that their production can be sustained long-term, because chemicals that break down easily and have no properties that give cause for concern are not at risk of being banned and will therefore remain permanently available. In addition, products that are free of harmful substances are more readily accepted by customers.

Project profile

Project title: Guidelines on sustainable chemicals. A decision-making aid for those who manufacture, formulate or use chemicals.
Contact: Prof. Dr Dirk Bunke, d.bunke@oeko.de
Institute Division: Sustainable Products & Material Flows
Clients: German Environment Agency
Project partner: Ökopol GmbH
Timescale: September 2012 – June 2015
Further information:
www.umweltbundesamt.de/publikationen/leitfaden-nachhaltige-chemikalien
www.umweltbundesamt.de/dokument/subselect-instrument-zur-auswahl-nachhaltiger

Prof. Dr Dirk Bunke

Prof. Dr Dirk Bunke is in charge of Sustainable Chemistry at the Oeko-Institut, where he has worked since 1991. As a chemist with a degree in environmental sciences he is also a member of the PBT Expert Group of the European Chemicals Agency, which focuses on persistent, bioaccumulative and toxic substances.

"The guidelines on sustainable chemicals and the electronic 'SubSelect' tool also help manufacturers, importers and processers who use the chemicals enhance their compliance with the requirements of the European REACH chemicals regulation. Not only must they register the substances that they use; they are also responsible for using them safely."

140 actions
Hesse's 2025 climate action plan

Building more cycle routes, promoting low-emission vehicles, encouraging the phase-out of coal. These are just three of the 42 priority climate change mitigation measures that the state of Hesse plans to implement by 2019. The Integrated Climate Protection Plan Hesse 2025, which was adopted by the state government in March 2017, details a total of 140 measures that will enable Hesse to achieve its climate targets and tackle the consequences of climate change. The Oeko-Institut worked on this climate protection plan with five project partners and provided scientific input.

On behalf of the Hessian Environment Ministry the consortium was involved in identifying measures for implementation in nine areas: energy, the economy, transport, industry, services, land use, housing, waste and sewage. The measures are intended both to support achievement of the state's climate targets and to facilitate adaptation to the impacts of climate change. One hundred and forty million euros have already been set aside for the 42 priority measures, which include introducing a "job ticket" (concessionary travel scheme) for the state's public employees, drawing up a state-wide heat action plan, continuing to make the state government climate-neutral and monitoring health risks as a result of climate change. Other measures in the integrated climate protection plan involve better enforcement of existing legislation (for example in relation to building renovation work and agriculture), an information campaign dealing with solar panels on buildings, and a round table on the financial sector and adaptation to climate change.

Under the scientific management of the Oeko-Institut, the project team described the measures in detail and assessed the climate impacts and costs. In addition, all 140 measures were refined over the course of several months in a process in which a range of interest groups such as municipalities, business and environmental associations participated together with members of the public. It is anticipated that co-benefits will enhance acceptance of the plan: examples of these additional benefits are cleaner air because more people cycle and lower operating costs as a result of energy efficiency networks.

Project profile

Project title: Integrated Climate Protection Plan Hesse 2025
Contact: Kirsten Wiegmann, k.wiegmann@oeko.de
Institute Division: Energy & Climate
Clients: Hessian Ministry of the Environment, Climate Protection, Agriculture and Consumer Protection
Project partner: Fraunhofer ISI Karlsruhe, IWU GmbH Darmstadt, PIK Potsdam, Umbau Stadt Frankfurt am Main, Climate Babel Potsdam
Timescale: October 2015 – December 2017
Further information:
http://bit.ly/2z72VkZ

Kirsten Wiegmann

Biomass policy and climate change mitigation are key areas of work for Kirsten Wiegmann, a geoecologist and energy expert who joined the Oeko-Institut in 2002. She focuses in particular on the assessment of biomass use and land use and on climate change mitigation measures in agriculture.

"Adapting to climate change is more expensive than mitigating it – that was one of the clear findings of the consortium's work on the two issues. Policy-makers must take the targets seriously; they must devise and implement ambitious climate protection plans that specify concrete measures. With its Integrated Climate Protection Plan 2025 the Hessian state government has taken an important step towards a climate-neutral future – other steps should follow."

Global corporate responsibility

Sustainable supply chains

A certification scheme for soya, health and safety standards for gold mining, a sustainability database for textiles: many sectors are aware of initiatives for ensuring more sustainability. But how effective are these approaches? Which standards and initiatives really help to prevent, or at least mitigate, negative social and environmental impacts along global supply chains? The Oeko-Institut conducted an in-house project to find out how voluntary private-sector initiatives can help and to analyse the mechanisms of best-practice examples.

The project focussed on the textiles and clothing industry, information and communication technology (ICT) and four areas of raw materials production: cotton, soya, minerals and ores, and fossil fuels. Firstly the researchers systematised various initiatives. These included overarching guidelines such as the OECD Guidelines for Multinational Enterprises and specific standards such as the ILO's core labour standards, as well as cross-thematic and cross-sector approaches. In addition they listed "hot spots" along the global supply chain, such as problematic working conditions in mines and land consumption for soya production.

The project findings have been published in a working paper, which also presents promising initiatives that specifically address individual problems, for example the Accord on Fire and Building Safety in Bangladesh. It is designed to improve conditions in the textile sector there and calls for cooperation between textile companies, workers' organisations and government stakeholders. The Fair Wear Foundation, which publishes its audit results, demonstrates exemplary transparency in its activities. In the Oeko-Institut's estimation, these and other initiatives are already contributing significantly to improvements in health and safety at work and in protection for the environment. However, further government measures, such as sustainability standards in public procurement, are urgently needed in industrial countries.

Project profile

Project title: Focus on global supply chains: challenges and strategies
Contact: Dr Nele Kampffmeyer, n.kampffmeyer@oeko.de
Institute Division: Environmental Law & Governance
Funding: Oeko-Institut (self-financed)
Timescale: July 2015 – October 2017
Further information: www.oeko.de/globale-lieferketten

Dr Nele Kampffmeyer

How can we achieve greater sustainability? This question occupies social scientist Nele Kampffmeyer at many levels – with regard to both corporate sustainability strategies and sustainability governance. Dr Kampffmeyer has been with the Oeko-Institut since 2016.

"The self-financed project also shows that, as a rule, if a standard is very rigorous – like Fairtrade, for example – fewer companies will seek certification. More lenient standards such as the UN's Global Compact are used by significantly more companies. Unfortunately, however, most of these have so little force that the actual impacts on the ground may be very limited."

Nuclear power plant safety

Technical expert services for a state-level authority

Is the pump running smoothly? Are the pipes intact? Is the ventilation system working properly? It is not only the reactor pressure vessel and emergency power supply which play a key role in the safe operation of a nuclear power plant. Due to the risks that this technology poses to human health and the environment, all the components of a nuclear facility must be in perfect working order. Although the decision to phase out nuclear power has been taken, some plants are still in operation and need to be monitored closely. While the primary responsibility lies with the nuclear facility operators, the supervisory authorities and external experts also contribute to maintaining a high level of safety. The Oeko-Institut has prepared a number of studies for its client KeTAG (Kerntechnik Gutachter-Arbeitsgemeinschaft Baden-Württemberg) in this field.

KeTAG is a working group comprising TÜV SÜD and Pöyry Deutschland GmbH. It has a varied remit, conferred by Baden-Württemberg's Ministry of the Environment, Climate Protection and the Energy Sector and the state's supervisory authority for the nuclear industry. KeTAG's primary task is to review reportable events at the Neckarwestheim and Philippsburg nuclear power plants. Working with the project partners, the Oeko-Institut researchers therefore assessed the safety-related significance of these events, focusing on technical defects, such as leaky pipes, and human error. The project team reviewed the nuclear facility operator's investigation into the causes of the events and recommended measures to mitigate their impacts and prevent any recurrence.

In addition, the experts checked core system functions, such as radiation containment, heat extraction and coolant feed, at both facilities. They started by reviewing the operator's documentation of plant operations to pinpoint any anomalies or irregularities. This was followed by site inspections, which included systematic assessment of the condition of the facilities and their components. The project team found that both of the nuclear power plants investigated were in good overall condition. The team also identified good practices and made recommendations for the remediation of defects.

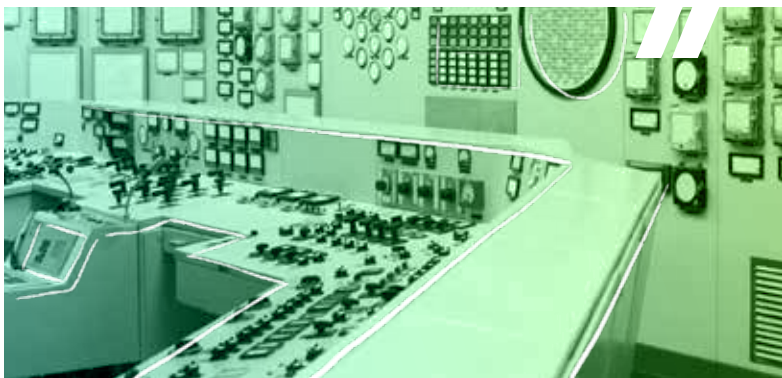
Project profile

Project title: Technical Expert Services according to §20 AtG for the Government Supervision of the Nuclear Power Plants in Baden-Württemberg
Contact: Dr Christoph Pistner, c.pistner@oeko.de
Institute Division: Nuclear Engineering & Facility Safety
Clients: Ministry of the Environment, Climate Protection and the Energy Sector Baden-Württemberg
Project partner: TÜV SÜD, Pöyry Deutschland GmbH
Timescale: October 2013 – December 2017
Further information:
http://bit.ly/2nl3rpZ

Dr Christoph Pistner

Physicist Dr Christoph Pistner has been preparing studies and expert opinions for the Oeko-Institut since 2005, focusing on topics such as facility safety, systems analysis and the development of nuclear regulations. In addition to his role as Deputy Head of the Nuclear Engineering & Facility Safety Division, he is a member of Germany's Reactor Safety Commission (RSK).

"Providing technical expert services for clients such as KeTAG is an important part of our work. In order to maintain the highest possible level of safety until permanent shutdown, it is essential that external experts work alongside nuclear facility operators and supervisory authorities and regularly review the operation of the plants and the condition of their individual components."



Towards sustainable transport

Resources for electric vehicles

The switch to green transport is inconceivable without electric vehicles. However, expansion in this field also means rising demand for strategic metals. The Oeko-Institut has calculated that the global demand for lithium for electric cars alone will rise from 6000 tonnes in 2015 to nearly 160,000 tonnes by 2030 and almost 500,000 tonnes in 2050. This is the raw material in lithium ion batteries. Will global resource stocks be able to withstand this much growth? Can they meet the rising demand for lithium and cobalt, nickel, graphite and platinum for electric vehicles? The Oeko-Institut was commissioned by Agora Verkehrswende to examine these issues.

The study looked at whether sufficient raw materials are available for electric vehicles, how much prices are expected to rise and how to guarantee environmentally and socially sustainable resource extraction. To this end the project team produced a forecast of global resource requirements for electric transport from 2030 to 2050. The analysis found that, even if considerably more electric vehicles are on German roads by 2050, their resource needs can be met. For example, global deposits of lithium are in the region of 47 million tonnes, with those of cobalt and nickel at 120 and 130 million tonnes respectively and thus well over predicted demand. Nevertheless, individual raw materials can still be subject to temporary shortages and price rises, as the lithium example shows.

The researchers also recommend a course of action for a sustainable supply of resources for electric vehicles. They suggest curbing the demand for primary resources by systematic recycling: by 2030 perhaps ten per cent, by 2050 as much as forty per cent of the demand for lithium could be met by recycled secondary material, although to date lithium recycling in Europe is only in its early stages. However, better environmental and social conditions in resource extraction, for example through closer international cooperation, are also crucial to a transition to sustainable transport.

Project profile

Project title: Strategies for sustainable resource provision for electric vehicles. Synthesis paper on resource requirements for batteries and fuel cells
Contact: Stefanie Degreif, s.degreif@oeko.de
Dr Matthias Buchert (Project Director), m.buchert@oeko.de
Institute Division: Resources & Transport
Clients: Agora Verkehrswende
Timescale: April 2017 – October 2017
Further information: https://bit.ly/2qbqXUn

Stefanie Degreif

Stefanie Degreif's research focuses on resources; her areas of interest include precious and special metals and a sustainable resource industry. A graduate in geography, she joined the Oeko-Institut in 2010.

"Extracting raw materials for electric vehicles can create many social and environmental problems, such as a high energy demand, unacceptable working conditions in mines or even water disputes between local residents and mining companies. There is an urgent need for action here – including regarding the use of these resources in other technologies."

The Oeko-Institut's clients 2017

Politics & Government

- Abfallwirtschaftsgesellschaft des Neckar-Odenwald-Kreises (AWN)
- Baden-Württemberg Ministry of the Environment, Climate and Energy
- Berlin Senate Department for Urban Development and Environment
- Brandenburg Ministry of Rural Development, the Environment and Consumer Protection
- City of Munich
- Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ)
- Deutscher Bundestag
- District of Steinfurt
- European Commission
- European Parliament
- German Federal Agency for Nature Conservation (BfN)
- German Federal Environment Agency (UBA)
- German Federal Institute for Geosciences and Natural Resources (BGR)
- German Federal Ministry for Economic Affairs and Energy
- German Federal Ministry for the Environment, Nature Conservation, Building and Nuclear Safety
- German Federal Ministry of Education and Research
- German Federal Offices for the Safety of Nuclear Waste Management (BfE), Economic Affairs and Export Control (BAFA) and for Radiation Protection (BfS)
- Hessian Ministry of the Environment, Climate Protection, Agriculture and Consumer Protection
- Ministry of Finance, Republic of Ghana
- Municipality of Bischweier
- Municipality of Gernsbach
- Municipality of Neckarwestheim
- Münster District Government
- Rhineland-Palatinate Ministry of the Environment, Energy, Food and Forests
- Saarland Ministry of the Environment and Consumer Protection
- State of Mecklenburg-Western Pomerania
- States of Upper and Lower Austria
- Statistical Office of the European Union (Eurostat)
- Swiss State Secretariat for Economic Affairs (SECO)
- Umweltbundesamt GmbH Vienna

Industry

- ACEA European Automobile Manufacturers Association
- BASF SE Ludwigshafen
- Berner Trading Holding GmbH
- Caparol GmbH
- Carl Müller GmbH & Co KG
- Daimler AG
- Elektrizitätswerke Schönau eG
- HIPP OHG
- Liebherr-Hausgeräte Ochsenhausen GmbH
- MEIKO Maschinenbau GmbH & Co.KG
- MVV Energie AG
- Saturn
- Stadtwerke München
- Tchibo GmbH
- TÜV Süd
- Vaillant GmbH

Civil society

- Agora Energiewende
- Baden-Württemberg Stiftung
- Energie Vision e.V.
- ENTEGA Stiftung
- European Environment Agency (EEA)
- Forum Ökologische Landwirtschaft (FÖS) e.V.
- Foundation for the Future / Stiftung Zukunftserbe
- German Federal Environment Foundation (DBU)
- German Football Association
- German Foundation for Peace Research
- German Nature And Biodiversity Conservation Union (NABU)
- Greenpeace e.V. and Greenpeace Switzerland
- Heinrich Böll Foundation Nigeria
- North Rhine-Westphalian Consumer Advocacy Centre
- Renewables Grid Initiative e.V.
- Swiss Energy Foundation (SES)
- Transport and Environment Brussels
- University of Applied Forest Sciences Rottenburg
- University of Freiburg
- VDE Verband der Elektrotechnik e.V.
- VDI Centre for Resource Efficiency
- Velux Foundation
- Verbraucherinitiative e.V.
- WWF Germany

A full list of references is available (in German) at www.oeko.de/referenzen2017

Communication focus: 40 years of the Oeko-Institut

With an anniversary blog, a special edition of eco@work, anniversary banners, celebratory events, more PR and an overwhelming response from the media, the Oeko-Institut celebrated 40 years of its history in 2017.

The anniversary motto "We're making a wish" was the dominant theme in communication on all channels and supported visually by a special logo. The birthday wish was at the same time our aspiration for the future: we want to develop visions and solutions in response to urgent environmental problems, play an active part in policy-making and challenge business and society to act in environmentally aware ways.

The "40 years – We're making a wish" logo

40.oeko.de: Anniversary blog and timeline

To mark our anniversary we produced a multimedia blog that brought together congratulatory messages, interviews and articles by members of staff and supporters and also presented the history of the institute in the form of a journey through time. The timeline covers the eventful history of the Oeko-Institut from the years leading up to its foundation to the latest developments, events and projects.

Anniversary blog:: http://40.oeko.de

Celebratory events and future symposium

More than 400 guests from politics, industry, science, research and civil society celebrated our anniversary with us in Freiburg and Berlin. In Freiburg – where it all began – there was a special emphasis on the early years of the Oeko-Institut, while in Berlin the prospective challenges of sustainable development were discussed in a "future symposium".

Other communication channels

Outside our anniversary communications, traditional and modern channels enable us to deliver scientifically sound, objective and comprehensive information about the institute's work. Information is provided via announcements and dossiers on the website, regular press releases, the members' journal and online magazine eco@work and social media contributions in the form of news flashes, presentations, infographics, photos and films. Information from us can be found online at these addresses:

www.oeko.de
www.oeko.de/presse
www.oeko.de/epaper
www.twitter.com/oekoinstitut
www.slideshare.net/oeko-institut
www.flickr.com/oekoinstitut
www.youtube.com/oekoinstitut

The Oeko-Institut's members
The basis for independence and vision

More than 2200 members and numerous other supporters of the Oeko-Institut regularly support our work with donations and subscriptions. Many members responded to the call that we put out in October asking for subscription memberships to be converted into life membership.

The assistance of our members and supporters enables us to work on issues that we consider important but for which we do not have a mandate via projects financed by our clients. One such issue was the donation-funded project on the world's nuclear crisis regions that was launched in the autumn of 2017.

Donation-funded project 2017: Crisis report and crisis barometer for nuclear risks

All over the world, in countries such as Ukraine, Pakistan, Iran and North Korea, conflicts and flashpoints are increasing and nuclear facilities in these regions are becoming ever more vulnerable. There is a real danger that violent conflict will lead to the release of radioactive substances – intentionally or unintentionally. Yet the subject is rarely reported on in public or even discussed.

The Oeko-Institut plans to address this with the donation-funded project "Crisis report and crisis barometer for nuclear risks" (which follows on from the project that you can read about on page 14) and to highlight the fact that nuclear risks not only exist but must be clearly specified. The aim is to make accurate information public, create a basis for discussion and propose ways of increasing nuclear safety worldwide. The researchers plan to collate information on potential risks to nuclear facilities on an interactive website. A global "nuclear risk barometer" will illustrate the impact of particular conflicts and show which nuclear facilities are affected. The team of experts at the Oeko-Institut will regularly update the information and when new conflicts arise will quickly indicate whether nuclear facilities are involved.

To continue working independently on projects that are particularly important to us and urgent from an environmental point of view, we need your help. Please support us with a donation!

There are plenty of opportunities for donations to the Oeko-Institut not linked to our donation-funded projects. Perhaps you are celebrating a birthday, wedding, summer fair, company anniversary or church festival and would like to request donations to a good cause in place of presents. Why not ask your relatives and friends for donations to the Oeko-Institut?

Or support us regularly and become a member of the Oeko-Institut!

For further information visit our members' website
http://mitglieder.oeko.de

Bank details for donations:
GLS Bank
IBAN: DE50 4306 0967 7922 0099 00
BIC: GENODEM1GLS

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