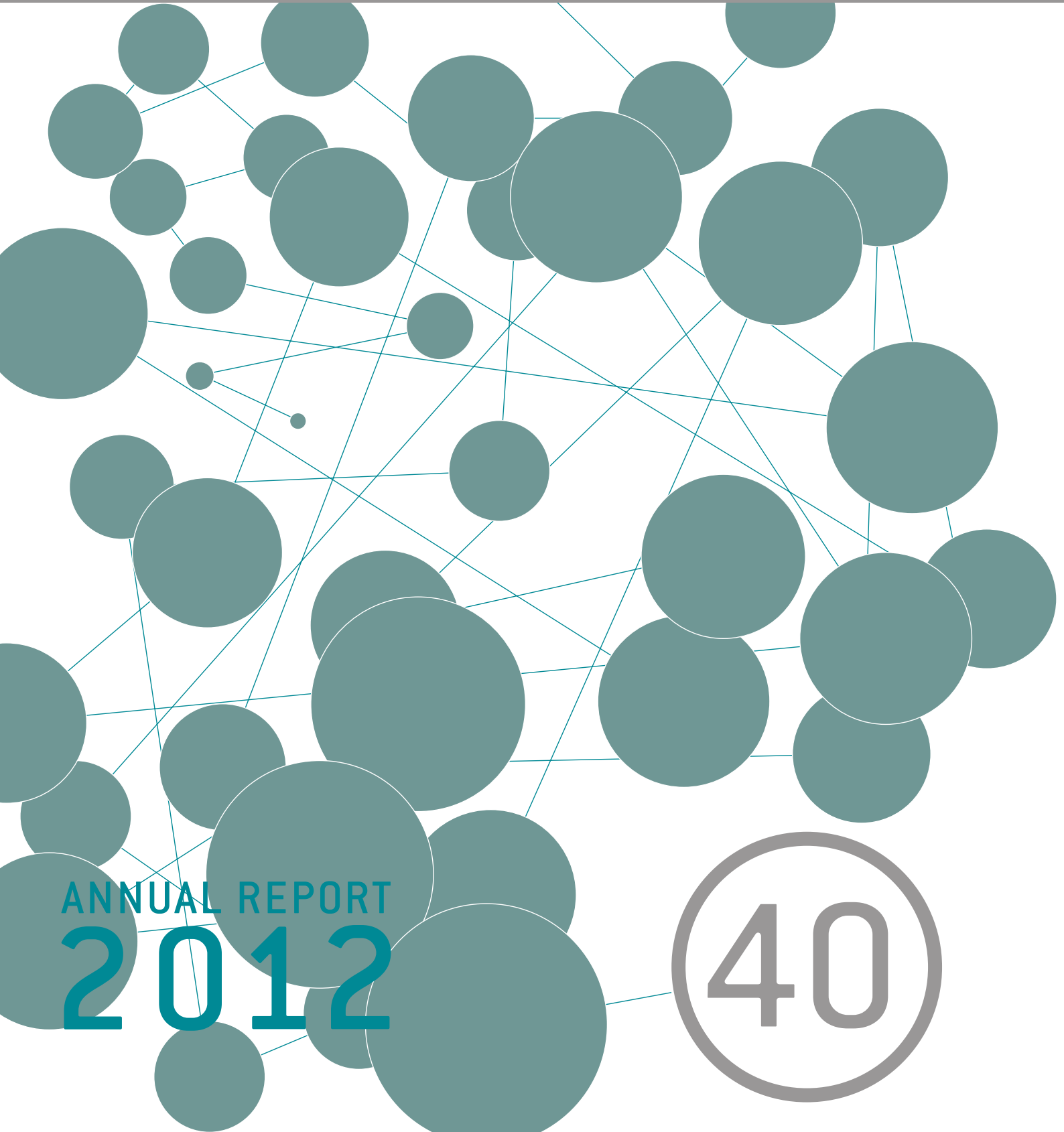




Fraunhofer

ISI

FRAUNHOFER INSTITUTE FOR SYSTEMS AND INNOVATION RESEARCH ISI



ANNUAL REPORT
2012

40



FRAUNHOFER INSTITUTE FOR SYSTEMS AND INNOVATION RESEARCH ISI

FRAUNHOFER ISI

The Fraunhofer Institute for Systems and Innovation Research ISI analyzes the origins and impacts of innovations. We research the short- and long-term developments of innovation processes and the impacts of new technologies and services on society. On this basis, we are able to provide our clients from industry, politics and science with recommendations for action and perspectives for key decisions. Our expertise lies in a broad scientific competence as well as an interdisciplinary and systemic research approach.

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40 YEARS OF INNOVATION RESEARCH – THE FRAUNHOFER ISI THROUGH THE AGES

In 2012, the Fraunhofer Institute for Systems and Innovation Research ISI celebrated 40 successful years of innovation research. Since its foundation in 1972, the Fraunhofer ISI has brought together social, economic and technical perspectives in its systemic and interdisciplinary research.

Looking back on the past decades also draws attention to changes and processes of change. Also in 2012, the Fraunhofer ISI addressed change from a technological, ecological, economic, social and political perspective in more than 350 projects. At the end of the anniversary year approximately 230 staff worked for the Fraunhofer ISI, taking care of an annual budget of over 21 million euros.

The establishment of the new Competence Center (CC) Energy Policy and Energy Markets under the direction of Wolfgang Eichhammer at the beginning of the year has strengthened another focus of the Fraunhofer ISI. At the same time, the business units of the former CC Energy Policy and Energy Systems, which have remained under the direction of Harald Bradke, were reorganized and renamed Energy Technology and Energy Systems.

In 2012, we worked on networking in Germany and abroad and also within the Fraunhofer-Gesellschaft. In addition to the existing alliances and associations, the Fraunhofer ISI became a member of the Alliance Batteries.

During the past decades, the Institute has researched the pressing issues and challenges of the 21st century, shown requirements and options for action, particularly also in the anniversary year: As part of the festivities marking its 40th anniversary, the Fraunhofer ISI organized in addition to the ceremony in the sound dome of the Center for Art and Media Karlsruhe (ZKM) the conference of the “European Forum for Studies of Policies for Research and Innovation”,



Eu-SPRI Forum for short. The central question “Towards Transformative Governance? Responses to mission-oriented innovation policy paradigms” gave impulses for fundamental transformation processes and made suggestions for the definition of the necessary framework conditions. More than 200 scientists from Europe and the US discussed approaches and measures how the upcoming challenges, which by far exceed the customary planning processes and political cycles, can be addressed effectively and efficiently by a new orientation of research and innovation policies. It must meet the requirements of transition-oriented research which realizes a link of socio-technical and systemic approaches in international associations in a transdisciplinary, participatory manner and furnished with the necessary degrees of freedom.

Change can be considered from different angles, in terms of the system and with a focus on the individual, on the city or the region or on the challenges which enterprises face by being involved in processes of change – to mention but a few of the issues which we have addressed in our annual report.

We not only wish to look at the past year, but also at the past four decades. The family tree of the development of our Competence Centers and a time line of four decades of the Fraunhofer ISI throw light on some of the important milestones of the Institute. We hope you enjoy reading our annual report.

Prof. Marion A. Weissenberger-Eibl
Director of the Institute

Dr. Harald Hiessl
Deputy Director of the Institute

INNOVATION RESEARCH ALSO MEANS DEALING WITH CHANGE

In 2012, the Fraunhofer ISI celebrated its 40th anniversary – four decades of research into the origins and impacts of innovations. The Director of the Institute and the Chairman of its Board of Trustees discussed current developments in this context.

This interview was conducted at the beginning of March 2013.

Discussion between the Chairman of the Board of Trustees, Dr. Manfred Wittenstein, and the Director of the Institute, Professor Marion A. Weissenberger-Eibl

Frau Weissenberger-Eibl, how did the Fraunhofer ISI come about?

Weissenberger-Eibl: The Fraunhofer ISI was founded because of the request made at that time for the Fraunhofer-Gesellschaft to evolve its research portfolio in terms of what it did. In his paper “The function of the Fraunhofer-Gesellschaft in the innovation system of the Federal Republic of Germany”, Helmar Krupp, then Professor at the Battelle Institute in Frankfurt am Main, described the innovation potentials and deficiencies in the early 1970s. Given the particular relevance of innovations for society, the later founding director of the Fraunhofer ISI requested a Fraunhofer institute to deal with the origins and impacts of innovations – which is exactly what we are still doing today.

“IT IS CRUCIAL TO STUDY INNOVATIONS IN THEIR DIFFERENT DIMENSIONS.”

Herr Wittenstein, do you think this request is still relevant today?

Wittenstein: Of course it is. Krupp displayed considerable farsightedness and not just with this request. It is still essential to study innovations in their different dimensions and to accompany them scientifically, especially the more comprehensive innovation complexes, from initial ideas through their realization and right up to market diffusion. I fully endorse the Fraunhofer ISI's approach.

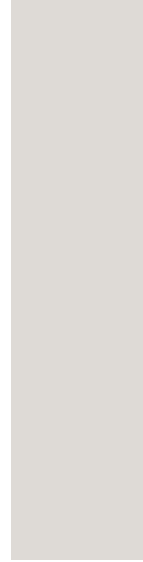
Frau Weissenberger-Eibl, the Fraunhofer ISI still has a special place in the Fraunhofer-Gesellschaft today. How important do you think it is for the Fraunhofer-Gesellschaft?

Weissenberger-Eibl: I believe the foundation of a “complementary institute”, extending pure technology development to comprehensive innovation orientation, has helped the Fraunhofer-Gesellschaft to evolve because it ventured beyond technological research and development by setting up the Fraunhofer ISI. As Krupp demanded, it was then able to tackle the consequences and potentials of technologies and innovations. This made Fraunhofer a pioneer in this – at that time – still young research field.

Herr Wittenstein, as a businessman, what do you ask of science and research? What do you think these should be concentrating on in the next few years?

Wittenstein: I think that the next few years will place more and more demands on the adaptability of companies and will do so in different areas. Not just the flexibility, but also the versatility of companies will increasingly become strategic competitive advantages in a globalized economy. Science and research should help companies to align themselves accordingly. I believe that cooperation with science can mean a decisive competitive advantage for companies on national and international markets, especially on future markets.

What can innovation research contribute here?



Weissenberger-Eibl: Being able to react flexibly to rapidly changing market and environmental conditions is a decisive factor for the competitiveness of German industry. Innovation research can provide support here. At the Fraunhofer ISI, for instance, we did research for the high-tech industry in one project on dynamically controlling the adaptability of integrated value chains in medical engineering (DyWaMed). In another project, we examined the willingness to change and the internal as well as external flexibility with sustainable concepts (VITNESS).

“ONLY THOSE WHO ARE WELL CONNECTED INTERNATIONALLY CAN SURVIVE GLOBAL COMPETITION.”

Herr Wittenstein, the history of your company is a wonderful example of extensive and successful change. You turned your father's sewing machine firm into a successful company for high-precision drive systems. Today, your concern has around 60 subsidiaries world-wide. How did you manage the leap to become a high-tech company?

Wittenstein: When I took over my father's company, I had to face that there was no future in the manufacture of sewing machines. So I had to find out where the true potential of the company lay and which market chances this had. It made sense to take that step in the direction of drive systems. To this day, I have not regretted making this decision and the company has continued to develop technologically over the years.

Which challenges does change hold for German industry?

Wittenstein: In our globalized world, we face ever-changing challenges which we will no longer be able to solve nationally. In order to keep up internationally and make Germany more attractive as a place to do research, the country has to continue to support knowledge acquisition through international cooperation.

Weissenberger-Eibl: This also applies to the increasing degree of networking in science and research. Only those who are well connected internationally can survive global competition. Not only the total expenditure for research and development (R&D) is relevant here. Examples like Japan, whose innovation system performs poorly in an international comparison despite substantial spending on R&D, clearly reveal the tremendous importance of an internationalization of knowledge. Too little cooperation today can lead to greater difficulties in the future.

How do you assess Germany's innovative capacity? In which fields is Germany ahead?

Wittenstein: I think Germany has a solid, effective scientific orientation. Branches in which we are ahead include mechanical engineering, the automotive industry or energy and environmental technologies.

Let's look at the implementation of academic research in commercial applications – where can we position Germany here?

Weissenberger-Eibl: Implementing academic research functions well in Germany. Current studies of our Institute confirm the performance strength and efficiency of the German innovation system. For example, the data from the Innovation Indicator 2012, which the Fraunhofer ISI collected on behalf of the Deutsche Telekom Stiftung and the Federation of German Industry (BDI): This certifies Germany's high system productivity, in other words, a relatively high output in relation to investments. The productivity of our innovation system puts Germany in one of the top places in an international ranking.

Wittenstein: Programs encouraging knowledge and technology transfer are certainly helpful here as well. A successful example is the “KMU-innovativ” funding program, which aims to make cutting-edge research easier, particularly for small and medium-sized enterprises (SMEs). I consider support for SMEs to be especially useful, because these types of companies hold considerable potential.

How have you experienced the cooperation between science and companies? How can we improve how science and industry work together?

Wittenstein: I see an urgent need for improvement in removing the inhibitions companies have in addressing a research institution. This is often especially the first step of finding the right contact. The aim must be to bring together and unite the seemingly varying motivations of companies and research institutions which are often seen as an obstacle.

Weissenberger-Eibl: After the initial contact, companies often have the impression that research institutions can actually help them with their questions. To facilitate this initial contact, therefore, it makes complete sense to have institutions like the "Innovation Alliance for the TechnologieRegion Karlsruhe", which has been co-founded by the Fraunhofer ISI. The cooperation between the IHK Karlsruhe and the various research organizations in the TechnologieRegion support effective exchange and lead to successful cooperation.

Which technologies will influence the competitiveness of Germany in the next few years?

Wittenstein: Germany's competitiveness on international markets in the next decades will be decisively influenced by key technologies. Examples include lightweight construction or renewable energies. The challenges are the questions already being asked today about the resources needed for them. Take the example of the diffusion of electric and hybrid vehicles: A considerable increase in the demand for rare earths can be anticipated here.

Into which future is the Fraunhofer ISI headed?

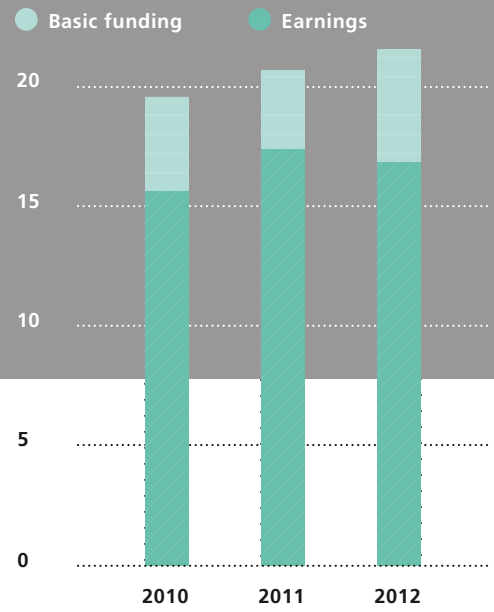
Weissenberger-Eibl: From our viewpoint, there are still many exciting questions we want to address together with our partners and clients. The ever increasing number of requests means that the Institute continues to grow and shows us every day

that the systemic research of the connections, causes, impacts and consequences of innovations will remain relevant in the future. I therefore hope that the systemic perspective used at the Fraunhofer ISI will catch on even more. We want to continue to advise companies and be a contact in and for industry, science and society.

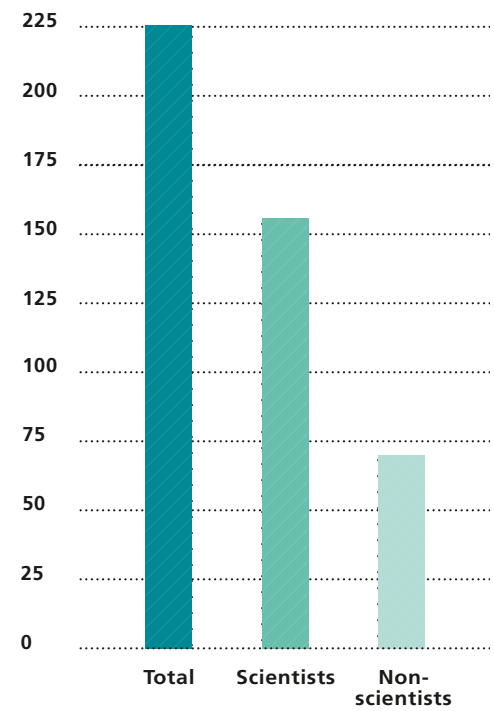
Wittenstein: In the past four decades the Fraunhofer ISI has succeeded in providing important impulses in industry and politics. I am quite sure that the Institute is not only able to look back over a successful past, but also ahead into a promising future.

Thank you!

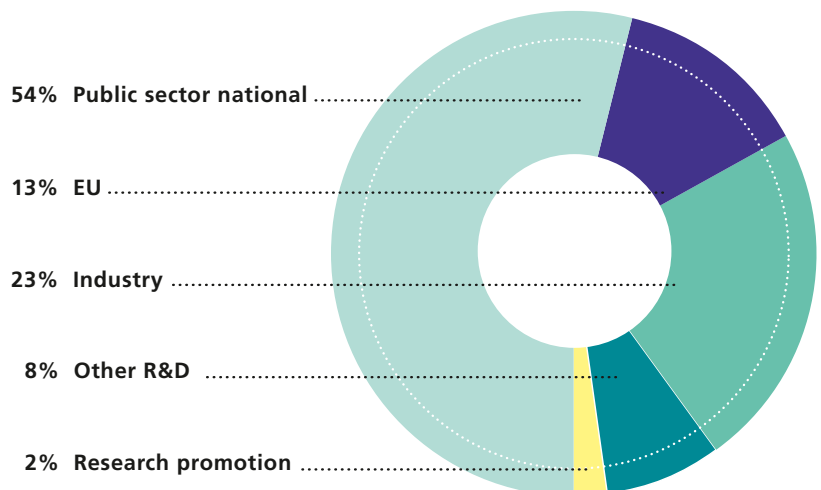
This interview was conducted by Anne-Catherine Jung.



Development of turnover 2010–2012 (in million euros)



Number of staff



Clients

In early 1972, the innovation researcher Helmar Krupp advised the techno-scientific Fraunhofer-Gesellschaft to establish a new institute to conduct research into the impacts and potentials of technologies and innovations. The foundation of the Fraunhofer Institute for Systems Technology and Innovation Research ISI in Karlsruhe on April 1st, 1972 implemented this recommendation – with Helmar Krupp as its director. The objective was to consolidate and systemize information and not to stop with analyzing problems and technology assessments but to develop solutions. Right from the beginning, the Fraunhofer ISI has made use of an interdisciplinary approach to address systemic questions such as energy supply, resource efficiency and sustainable developments.

After Eberhard Jochem had been acting director for one year, Frieder Meyer-Krahmer was appointed director in 1990. He was instrumental in further developing the profile of the Institute towards systems innovation and firmly establishing research in innovation systems which has made the Fraunhofer ISI one of the internationally leading innovation research institutes.

Ahead of the times with sustainable research

In 1992, the directors of the Institute reflected positively on two decades during which the Fraunhofer ISI had contributed to drawing attention to the opportunities, risks and obstacles of new technologies and to promoting socially desired technology developments. In 2004, the Institute was renamed “Fraunhofer Institute for Systems and Innovation Research”. The narrow technical term “systems technology” was no longer an adequate description of what the Fraunhofer ISI is about.

After Frieder Meyer-Krahmer left the Institute at the beginning of 2005, Hariolf Grupp, Stefan Kuhlmann and Thomas Reiß were acting directors for more than two years before Marion A. Weissenberger-Eibl became the director of the Institute in April 2007. Under her directorship, futures research was extended to a core competence, at the same time, the departments were turned into Competence Centers with focused Business Units.

In 2012, society’s main concerns were the transformation of the energy system, new mobility concepts and a sustainable economy – issues which require the cooperation of many actors and the careful consideration of many options. The Fraunhofer ISI researches these.

On the page opposite you’ll find figures from 40 years of research at the Fraunhofer ISI. When you open the page, you’ll see a time line with important events since 1972 and our scientists’ biggest achievements.



- The Fraunhofer ISI is part of the European Foresight Monitoring Network, later European Foresight Platform, which is active until 2012.
- Foundation of the BSR Sustainability GmbH, now Institute for Resource Efficiency and Energy Strategies (IREES).



2007

Marion A. Weissenberger-Eibl takes over as director of the Fraunhofer ISI

- The Fraunhofer ISI is one of the members of the European Techno-Economic Policy Support Network funded by the European Commission.

2005

2005 to 2007

Acting directors Hariolf Grupp, Stefan Kuhlmann and Thomas Reiß.

1990 to 2005

Frieder Mayer-Krahmer is director of the Institute (Deputy director Eberhard Jochem, from 1996 onwards together with Hariolf Grupp)

- Between 1989 and 1995, Hariolf Grupp is vice chairman of the scientific technical board of the Fraunhofer-Gesellschaft.



1989

1989 to 1990 Eberhard Jochem is acting director

- Hariolf Grupp, Olav Hohmeyer and Ulrich Schmoch receive the Joseph von Fraunhofer special award for their methodology to determine technology indicators.

1988

1990

- Study on the strengths and weaknesses of research in the GDR in an international comparison including patent statistics.
- The Fraunhofer ISI develops strategies to reduce greenhouse gas emissions resulting from energy use in industry for the Enquête Commission "Global Warming Climate Protection Measures" of the German Parliament.

1991

- Olav Hohmeyer receives the Joseph von Fraunhofer Award for his methodology to analyze and internalize the social costs of electricity generation.

1986

1972 to 1989 Director of the Institute Helmar Krupp



1972

● **1 April 1972**

The "Fraunhofer Institute for Systems Technology and Innovation Research" is established. Helmar Krupp is its director and the first seven staff members move to Breslauer Strasse 48 where they take four rooms. Between January 1973 and the middle of 1977 an additional four residential houses are rented in the vicinity.

1971-1972

- Helmar Krupp of the Battelle Institute in Frankfurt/Main proposes in a study for the Federal Ministry of Education and Science to set up a Fraunhofer Institute which addresses issues of systems and innovation research.

2007

Marion A. Weissenberger-Eibl takes over as director of the Fraunhofer ISI

- Joseph von Fraunhofer award for Harald Hiessl, who developed solutions for sustainable water use together with the Fraunhofer IGB.
- The Fraunhofer ISI directs the BMBF Foresight Process.
- Cofounding of the Fraunhofer Water Systems Alliance (Syswasser).
- The Fraunhofer ISI becomes a member of the Fraunhofer Alliance Transport.

2008

- Cooperation agreement with the Institute of Policy and Management (IPM) at the Chinese Academy of Sciences.
- PhD program to support young scientists.
- Member of the Fraunhofer Alliance Materials/Components – MATERIALS.
- Between 2008 and 2010 Marion A. Weissenberger-Eibl is a member of the Innovation Council Baden-Württemberg.



- The Fraunhofer ISI is the institutional partner of the Office for Technology Assessment at the German Bundestag (TAB).

2003



- Technology foresight in cooperation with the National Institute of Science and Technology Policy in Tokyo is set up and Kerstin Cuhls is sent to Tokyo.

1992

- The Fraunhofer ISI is a founding member of the International R&D Dynamics Network.

1984



1975



- Member of the Fraunhofer Alliance Nanotechnology.
- Foundation of the Joint Research Group with the Fraunhofer ISE; Mario Ragwitz takes over as its director.
- The Fraunhofer ISI becomes a member of the European Technology Assessment Group and carries out assessments of technology impacts for the European Parliament.
- LEEN GmbH is established with the aim to support the implementation and expand the network concept developed as part of the project "30 Pilot-Networks" through training courses.

2009

- From 2002 to 2007 Eberhard Jochem is a member of the first German Council for Sustainable Development.

2002

2010

- First German Russian summer school on innovation political topics with the participation of almost all Competence Centers.

- Closer cooperation between the University of Karlsruhe as Hariolf Grupp is appointed to the Department of Systems Dynamics and Innovation at the Institute for Economic Policy Research.

2001

- Ulrich Schmoch and Knut Koschatzky receive the Fraunhofer special award for developing a patent information system for medium-sized businesses.
- The series "Technology, Economy and Politics" edited by the Fraunhofer ISI and published by the publishing house Physica (Heidelberg) is set up.
- The study "Technology at the beginning of the 21st century" is published, which is the first to identify the origins of innovations at the interfaces between established technologies.



- To mark its tenth anniversary, the Fraunhofer ISI finally relocates to Breslauer Strasse 48. Its research is differentiated into selected technology areas.

1994

2011

- The Fraunhofer ISI has more than 200 staff.



- **1991-1999** Studies are published, which are significant for innovations and innovation policies, for example the first German Delphi report "Study on the development of science and technology" is published in 1993. In 1998, an extensive Delphi study on the global development of science and technology systemized key topics for the future. This study was much cited by the media.

2000

- The joint research group "Innovation Economics" is set up together with the TU Bergakademie Freiberg; it exists until 2004.

1982



1981

● **1977-1981**

Publications about anticipated events: for example the expectations regarding future electricity and fuel demand, the emerging climate change, the international competitiveness of energy-intensive industries, the revolution in the world of employment due to micro electronics and IC technologies and the great significance of SMEs for innovations in Germany.

1978



2011

- Patent registration "Processes for the production of light-weight concrete, granular ingredients and appliance to classify granular material".
- Frieder Meyer-Krahmer is chairman of the scientific technical board of the Fraunhofer-Gesellschaft.
- From 1999 to 2002 Eberhard Jochem is a member of the Energy Enquête Commission of the German Parliament.

1999

- The research groups which up to then had been external are given more autonomy and operate as independent departments.
- Several members of staff create the association "ISI Power". In January 1997, donations and grants are used to finance a photovoltaic installation which is extended in the following 15 years.

1996



1998

- From 1997 to 2002 Eberhard Jochem is Vice Chair of the working group III of the Intergovernmental Panel on Climate Change.
- Marion A. Weissenberger-Eibl is appointed to the supervisory board of HeidelbergCement AG.

2012



- The Fraunhofer ISI becomes a member of the Fraunhofer Alliance Batteries.
- Harald Bradke is appointed by the German federal government to the German Advisory Council on the Environment.
- The Fraunhofer ISI celebrates its 40th anniversary and hosts the Eu-SPRI-conference "Towards Transformative Governance? Responses to mission-oriented innovation policy paradigms".

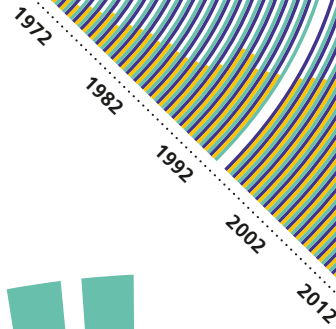
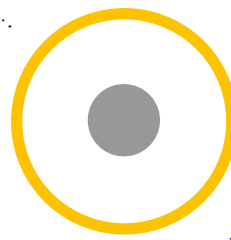
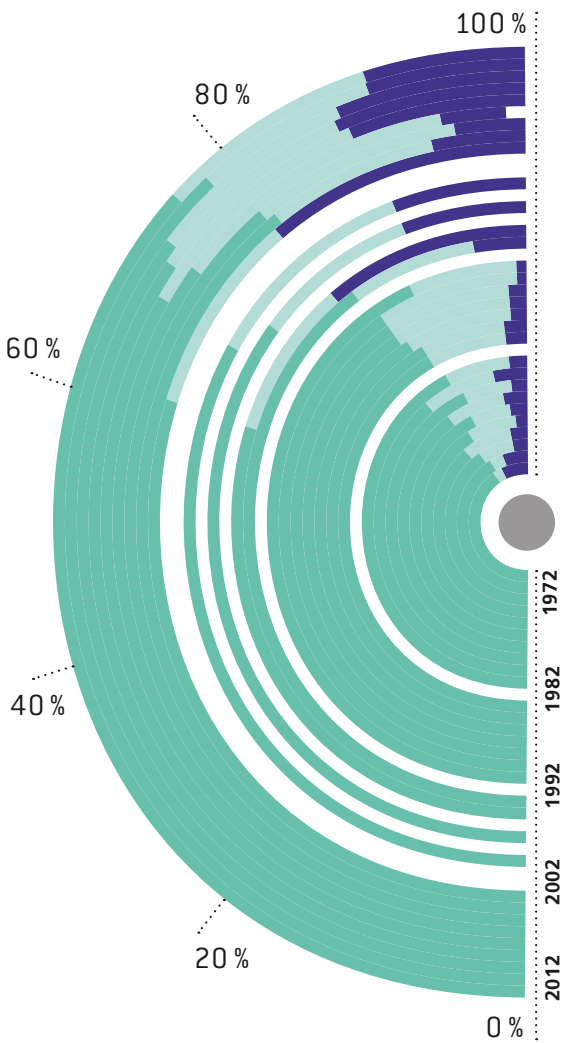
1997

FACTS AND FIGURES 1972–2012

22 MILLIONS

BUDGET

- Earnings
- Basic funding
- Budget



350 PROJECTS

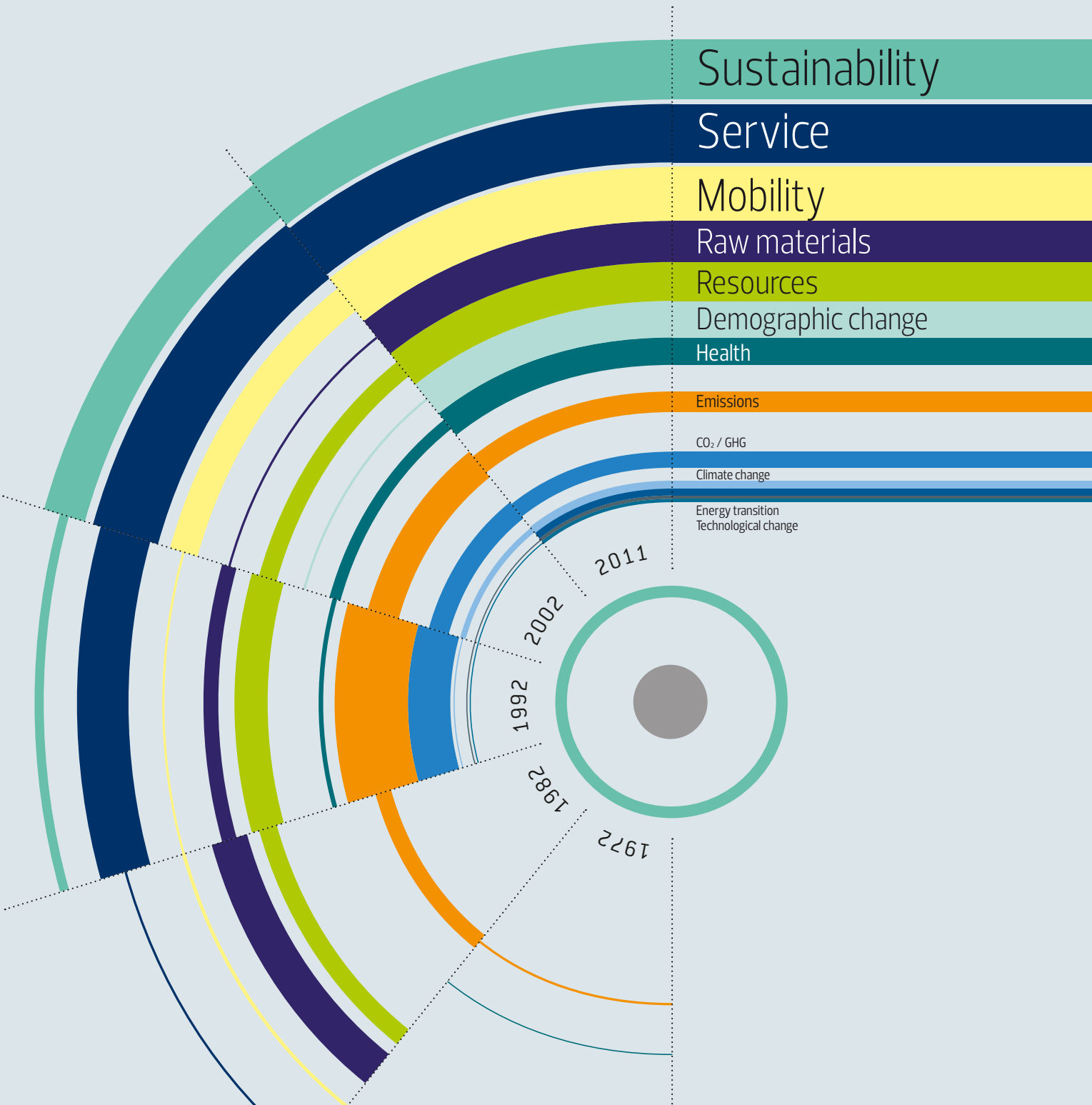
CLIENTS

- Public clients (EU, local government, local authorities)
- Industry
- Research promotion

PROJECTS

- Number





SHAPING SYSTEM CHANGE

The world is changing and it needs change: climate change, shortages of resources and demographic change are even today casting their shadows. The necessary adjustment to a sustainable economy and way of life is a task which requires systems to fundamentally change. In order to do this, detailed knowledge of innovation systems and the technologies which are available in the future as well as experience with change processes are necessary. Even today the Fraunhofer ISI accompanies these transformation processes as a central actor.

A basic understanding of their operating methods is necessary for the focused development of systems and their organization in harmony with external demands.

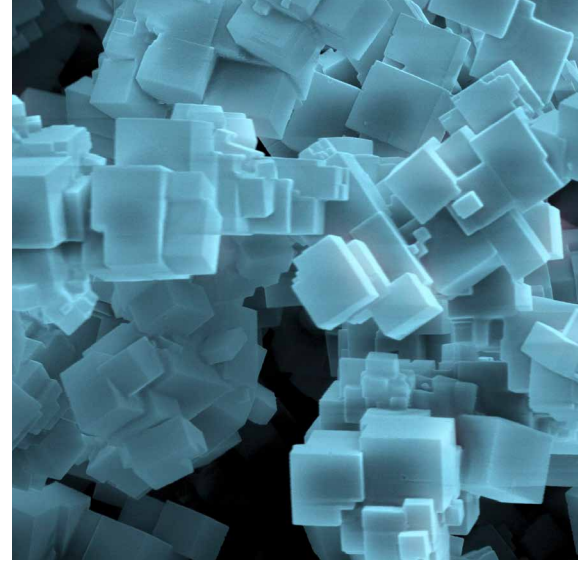
From the perspective of systems and innovation research, any change of large socio-technical systems is first of all a question of developing and implementing innovations on a technological, social and political level. Only when these levels mesh can actual innovations on the system level be realized. For this to happen, the prerequisites are not only technical expertise, but also ideas and objectives for a desirable and realistic development of the future.

Understanding the system as a prerequisite for change

A basic understanding of their operating methods is necessary for the focused development of systems and their organization in harmony with external demands. The health care system is one example of a complex system facing great challenges due to technological and demographic change. Actors from politics, medicine, industry, science, the insurance sector, administration and society have debated the future viability and need for reform of the German health care system for years, but have not, however, reached a fundamental consensus about their objectives. This makes the realization of existing innovation potentials difficult. The Fraunhofer ISI has analyzed the aims the respective actors pursue, conflicting goals and potentials for goal-specific actor alliances so that options to develop the health care system can be derived.

Overall goals pursued by all actors – albeit with different emphases – could be identified. These include, for example, comprehensive, affordable health care with guaranteed quality. Nevertheless, there are also conflicting goals, for example, the issue of organizing the conditions for competition, the division of responsibilities between different health care professions or the financial burden of the insured. All in all, however, it can be seen that if innovations are tested early enough, if they fit the actors' overall goals, the potential for conflict can be reduced and the chances for their dissemination can be increased.

Notes on the diagrams of the four key subjects see page 63.



Visions as a basis for sustainable change

Ambitious aims are the basis of current major projects such as the implementation of electric mobility or the change in energy policy. The reduction of greenhouse gas emissions by 80 per cent by 2050, or a million electric vehicles by 2020 – such goals are always controversial and also generate resistance. However, at the same time, they are also a point of reference for the participating actors who can react accordingly.

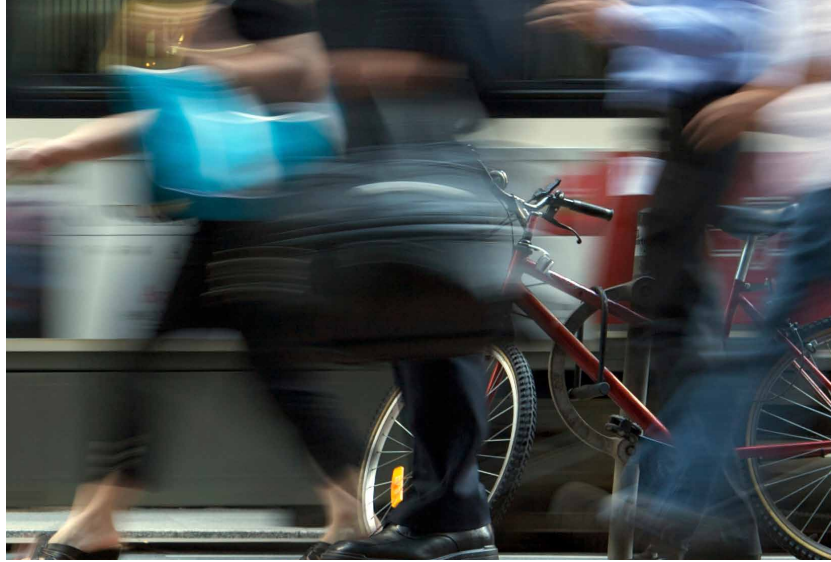
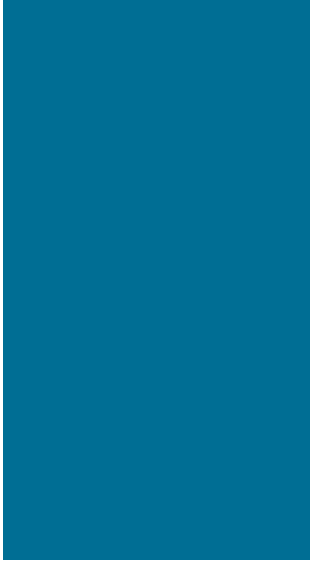
More comprehensive visions support the communication of sustainable development aims to the respective target groups in society and have a strong appeal rather than awaken fears of change. The Fraunhofer ISI has autonomously developed “VIVER”, a vision of sustainable transport in Germany for the year 2050. The result showed that sustainable transport in Germany can only be achieved by the compatible combination of technological change and change in behavior. A sustainable transport system will stabilize passenger and freight transport in the coming decades – freight transport sooner than passenger transport. In fact, passenger transport will decline noticeably. This watershed can be mainly traced back to the change in behavior and structural changes in production and globalization processes. These changes have their root in a change of values in society (for example the trend towards the greater importance of climate protection and the quality of life), changed framework conditions (for example caused by an increased shortage of fossil energy carriers) and political strategies (for example transport taxes oriented towards environmental aspects, user charges and town planning).

Sustainable transport in Germany can only be attained with a compatible combination of technological change and a change in behavior.

Thinking economically today means thinking in systems

The future of mobility is not only crucial for Germany from an economic perspective. The automotive industry makes a significant contribution to the gross domestic product and provides a large number of industrial jobs. Commissioned by the Office for Technology Assessment at the German Bundestag (TAB), the Fraunhofer ISI analyzed the challenges for the German automotive industry. The innovation and market dynamics which can be expected will not just lead to a diversification of propulsion concepts, but will also make the introduction of new mobility concepts attractive. For the introduction of electric mobility it is therefore absolutely crucial to involve the industrial actors along the entire value added chain. It is, however, also crucial that mobility is considered in a wider sense and appropriate offers are placed on the market.

Alternatives to owning a car such as car or bike sharing are becoming increasingly significant and combining different modes of transport opens up opportunities for the German automotive industry in the mobility services market. The loss of the value-added from product sales can be compensated by participating in innovative service concepts. In order to make use of these opportunities, it is highly important that the German automotive industry takes part in developing sustainable business models in good time. The course for a successful positioning will be set in this decade.



Making optimum use of resources

Implementing electric mobility and other future technologies will only be successful if the necessary resources are available. In view of primary resources which are becoming scarcer and increasingly fluctuating prices for raw materials, the German federal government's National Sustainability Strategy has the objective to double the raw material productivity of the German economy between 1994 and 2020. In order to overcome such challenges, a number of technological innovations are necessary. To support these objectives, the German Federal Ministry of Education and Research (BMBF) has realized the funding measure "r² – Innovative technologies for resource efficiency – resource-intensive production processes". In addition to the planned technology development, an integration and transfer project was carried out led by the Fraunhofer ISI. It increased the participants' innovative capacities by systematic networks of the funded collaborative projects and the identification of concrete interfaces between value-added chains. The future implementation of the developed solutions was supported by technology roadmaps and analyses of product-related service models. A comprehensive sustainability assessment quantified the potentials to increase the raw material productivity and the macroeconomic effects. Realizing production which conserves raw materials is not only a technological task. It will only be successful if technical development processes, economic application and political framework conditions are closely interrelated.

Realizing production which conserves raw materials is not only a technological task. It will only be successful if technical development processes, economic application and political framework conditions are closely interrelated.

Thinking in alternatives

The systems change necessary in many areas demands that all actors think in alternatives. This does not mean, however, that everything which has proven to be successful is thrown overboard. It already looks as if, under the conditions of the Grand Challenges of the 21st century, this change is going to follow less and less the logic of "more of the same" – more output, more efficiency. The Fraunhofer ISI accompanies these complex transformation processes. It offers expertise from a single source, from identifying trends to mediating between actors and practical application: for an economically sustainable and ecologically and socially reasonable shaping of our future.



1972

1982

1992

2002

2011

INNOVATIVE, INTELLIGENT, INDIVIDUAL: ADAPTABLE VISIONS FOR THE FUTURE

Almost every area of life is subject to constant, ever faster changes. This often requires individuals to be flexible and open to new developments and address the application of new technologies and innovations. This increases the need for scientifically sound predictions about future developments to prepare society for new requirements and possible risks. Due to the interlocking of all areas of life, it is vital not only to limit the view into the future to one area, but to consider innovations and their consequences systemically.

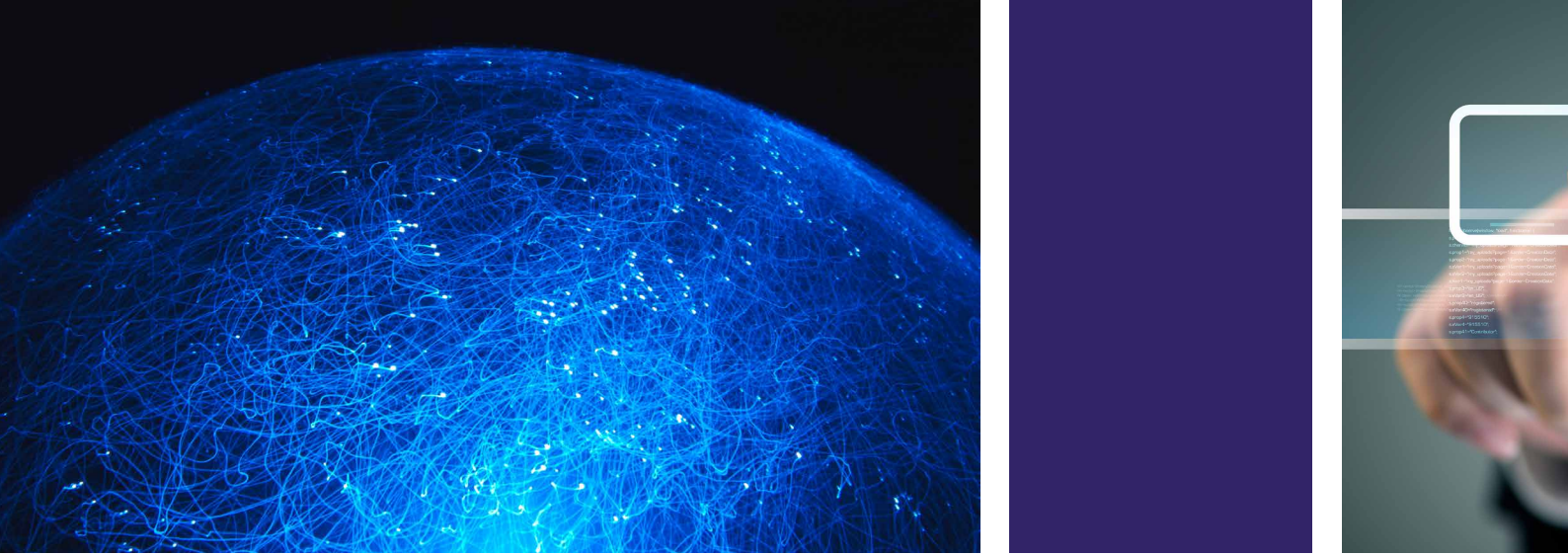
In the areas of health, transport, education and administration, smart grids play a major role for many even today and they are becoming increasingly important.

One example of fascinating changes which are relevant to everybody are smart grids. Smart grids connect decentralized electricity generation with smart consumption control and make sure that the battery for the electric vehicle is always charged as the planned route requires. Is this what our future will look like? The Fraunhofer ISI's vision for the future describes exactly this. For example, in the areas of health, transport, education and administration, smart grids play a major role for many even today when keeping diet plans or taking medication, for e-learning or using services and data from public administration offices and they are becoming increasingly important. The benefits of smart grids are only gradually becoming noticeable; calculations by the Fraunhofer ISI are based on a time frame of ten years. This could amount to an overall economic benefit to the German economy of approximately 336 billion euros by 2022.

In addition to the expected impulses for growth, smart grids can also lead to an increase in efficiency. But is increased energy efficiency really an effective way to meet targets in energy and climate policies? Or do energy-efficient domestic appliances only lead to an increase in consumption and thus to lower energy savings than hoped for and therefore to a rebound effect? The research project REBOUND, funded by the Ministry of Education and Research (BMBF), looks for answers to this question. The objective is to better understand the causes of rebound effects in private households and to contribute to adapting energy and climate policies.

New dimensions of the private sphere through social networks

Not only smart grids controlling light and heat in the home have to have access to personal data. Data protection needs to be adapted to current developments in social media. The new technologies make it easy to collect, save, process and combine personal data and thus, for example, enable identity theft or profiling individual life style habits. These possible attacks on the private sphere have to be legally defined and their social and cultural dimensions need to be considered. To this end, the Fraunhofer ISI is developing the so-called Privacy Impact



Assessment (PIA). This allows the assessment of social, personal and economic issues of data protection, the understanding of which has changed due to new technologies. The results are integrated into decision-making processes in economics and politics.

More safety but not at the expense of privacy

Although many people willingly make personal data available, be it when shopping on the internet, using a customer card or when using social networks, conflicts can result from having to divulge personal information in the interest of public security – as the introduction of full body scanners at airports has shown. For a number of years, politicians have suggested that increased safety is only achievable at the expense of privacy. The Fraunhofer ISI wants to clarify with the EU project PRIMIS what the public's perception of safety and privacy looks like. The research focuses on a representative survey of 27,000 people from all EU member states. The aim is to use the results to derive a compromise to ensure the possible maximum amount of safety with the possible maximum amount of privacy and at the same time increase the appropriateness of new safety technologies.

Mobility is changing

We also have to change the way we think about mobility. In addition to new propulsion technologies and vehicle concepts, new business models and mobility concepts affect individual mobility behavior. But who, for example, changes from a conventional car to an electric vehicle? The Fraunhofer ISI arrived at the following conclusion: They are mainly well educated males, aged between 40 and 50, who have a good income, are technically-oriented and live in a multi-person-household in the country or a suburb. Electric vehicles are also popular in the wider population, particularly due to their positive environmental effects and innovative image.

Against this background, new mobility concepts are becoming more and more popular: the motto for the future is use, not own. The private car is increasingly losing its importance as a status symbol. New mobility concepts such as rental bicycles or car sharing have more and more users. In addition, climate protection is becoming more and more important and this brings with it a change in values. People cannot and do not want to do without mobility. However, mobility should be environmentally friendly and adapted to actual needs. New offers have to allow simple and comfortable use and a combination of different modes of transport to do justice to the diverse day-to-day requirements.

Individual medicine for every individual person

Medical care also has to adapt to the trend towards an individualized solution for each individual person. Even today it is becoming apparent that, in about twenty years' time, "individualized health care" will be widespread. Medical services which can be adapted to the individual more specifically than before make more targeted therapies possible. However, a critical political and

Who changes from a conventional car to an electric vehicle? They are mainly well-educated males, aged between 40 and 50, who have a good income, are technically oriented and live in a multi-person-household in the country or a suburb.



social discussion is needed to determine if individual risk profiles should also be determined. These could make precautionary measures for health maintenance possible, adapted to the individual's physical condition and life style. This could also lead to a "compulsion to be healthy".

In future, mobile diagnostic systems can support individualized health care. These enable laboratory tests at the hospital bedside, at the chemist's or even by the patients themselves. Pregnancy tests or blood sugar test sticks are already widespread. Many mobile diagnostic systems are, however, technically far more sophisticated. Scientific-technological, economic and regulatory challenges have to be overcome before their successful market launch. The Fraunhofer ISI coordinates the accompanying research project "Mobile diagnostic systems", which aims to identify these obstacles and find possibilities to overcome them.

The studies on smart grids, electric mobility or individualized medicine are current issues which were unthinkable in 1972 when the Fraunhofer ISI was founded. However, the scientists' systemic approach recognized and accompanied central changes even then – and today, 40 years later, they still have their finger on the pulse.

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COMPANIES CAUGHT BETWEEN ADAPTABILITY AND STABILITY

The ability to adapt to changed contexts is a fundamental requirement for the survival and evolution of a species. But it is not only species which have to learn to adapt in an environment of constant rivalry. Adaptability is also a strategic competitive factor for companies due to the volatility of their environments on globalized markets. It is essential that companies manage to balance the relationship between adaptability and stability in a forward-thinking and systematic way.

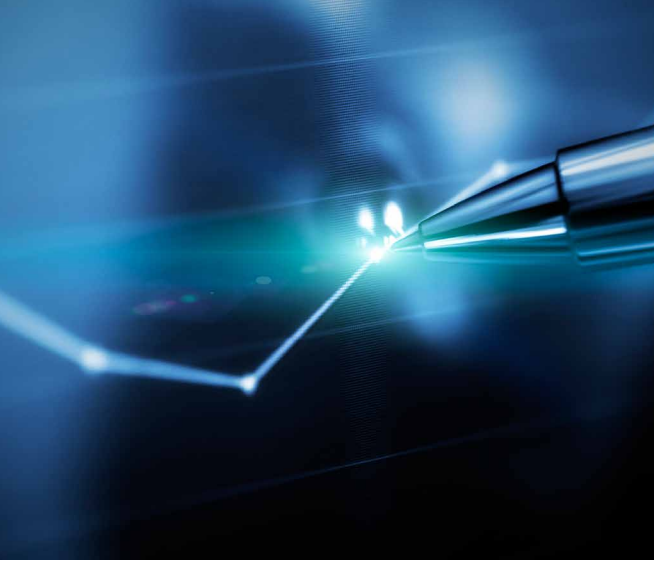
Production systems in companies today are largely planned under the influence of rapidly changing customer requirements regarding quantity, quality and delivery capacity. Enterprises are therefore very flexible in the short term within the given margins. However, it became clear during the financial and economic crisis that this previously installed flexibility does not allow sufficient freedom to act, especially during turbulent economic times. The production systems, which are indeed flexible in the short term, are frequently too fixed-cost intensive and are usually only customizable if high costs and long lead times are accepted. Instead of providing flexibility margins for existing structures, companies are better advised to develop the capability to structurally adjust to changed framework conditions, with minimum effort and rapidly – in other words to develop their adaptability.

Structural adjustments to flexibility corridors

Flexibility is defined under the premises of existing structures from the achievable range of key performance parameters of an enterprise – such as the production capacity or workpiece flexibility. In contrast, adaptability at a higher level refers to possible shifts of the flexibility corridors in the enterprise due to structural adjustments to existing flexibility ranges. As a rule, such adjustments can only be made at a much slower pace. A systematic management of structural adaptability requires the development of suitable concepts. The willingness to continually test routines in company processes and the service portfolio is one of the principle ways to improve adaptability. Scenarios of developments in markets and framework conditions have to be constructed at regular intervals to support the ability to adapt to potential changes in good time.

Measurement concepts that support a manageable operationalization of adaptability as strategic objectives and target figures are also necessary – like the management toolset developed by the Fraunhofer ISI in the DyWaMed project, which is concerned with providing the means to plan the adaptability of integrated value chains in medical engineering. The adaptability benchmarking, for instance, shows which concrete technological and organizational measures

The willingness to continually put business routines and service portfolios to the test is one of the principle ways to improve adaptability.



may have the potential to improve the adaptability of manufacturing enterprises. Adaptability can usually be improved in many different ways – and is not limited to “just” technical measures. A company’s adaptability can be improved by pulling technical levers, e.g. by introducing automation technologies to link production and assembly processes in a flexible way, or by using versatile production facilities to make fundamental changes to production procedures and sequences without having to make structural changes to the buildings themselves. Other potentials can be exploited by organizational measures, such as introducing flexible work times on an operational level, or by focusing on flexible in- and outsourcing strategies for complete production stages on a strategic level.

Stability as a complementary factor should not be neglected

Besides the ability to change, the, at first sight, seemingly contradictory factor of stability should not be neglected. Adaptability and stability are in no way conflicting objectives, but are indeed complementary. The stability of processes and routines includes both internal (such as personnel development, quality assurance) and external stability (such as long-term relationships with customers and suppliers, networks). Even if standards and controls seem to hinder the flexibility of companies, stable processes and procedures which can be planned in a predictable way form the foundation for flexible, scalable and adjustable production systems. Routines and organizational concepts play an important role here and support continuous learning in enterprises in the long term and thus additionally promote the capacity for adaptation.

Adaptability and stability are by no means contradictory objectives, but complement each other.

Analyses of the survey *Modernization of Production* by the Fraunhofer ISI show that owner-run family companies are often especially successful in managing the interplay between long-term stability and adaptability. The production processes in these companies are kept up to date by constant investments in emerging technologies, which is conducive to efficient and competitive production. As process specialists, especially non-research-intensive family companies are in the position to design specific solutions for their customers. Their stability is achieved through having a better level of in-firm training, employing temporary workers less often and to a lower extent, achieving greater vertical integration of manufacturing and treating domestic suppliers preferentially when making purchasing decisions. Building on this stability, they also manage to ensure the right degree of adaptability.

Robust through efficiency improvements

Making an enterprise more resilient to external influences is one way to help increase its stability. Enhancing resource and energy efficiency in production can contribute to improving stability. The Fraunhofer ISI addresses this topic, for example, in the projects within the German Ministry of Education and Research’s Resource Efficiency funding program (r² and r³). The use of modern technologies in combination with suitable organizational concepts helps to realize efficiency



potentials by optimizing existing processes and introducing new ones. These savings are increasingly relevant for critical raw materials, or those about to become so, as discussed in various studies of raw material security at the Fraunhofer ISI. Increasing resource and energy efficiency results in cost savings as well as increasing non-dependence on raw materials.

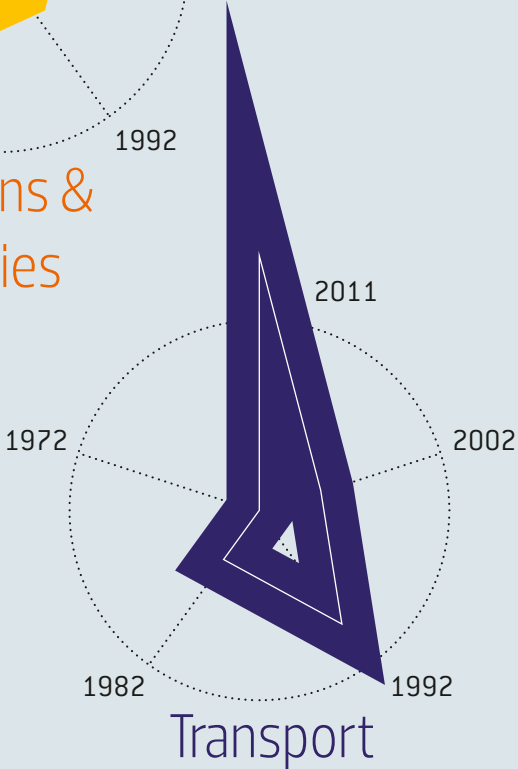
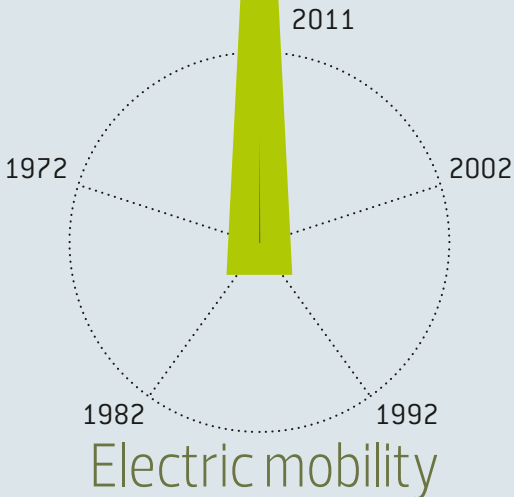
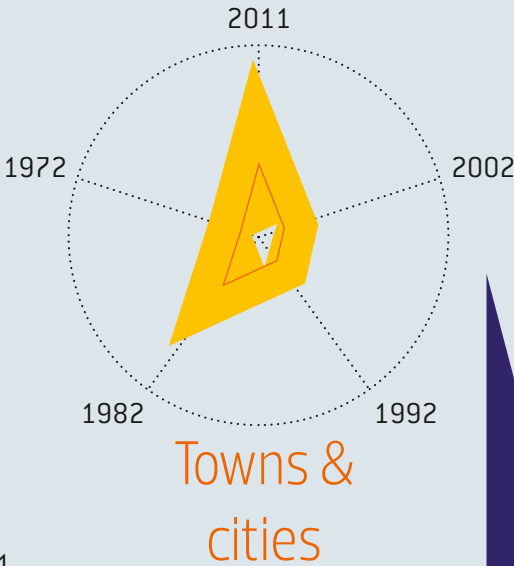
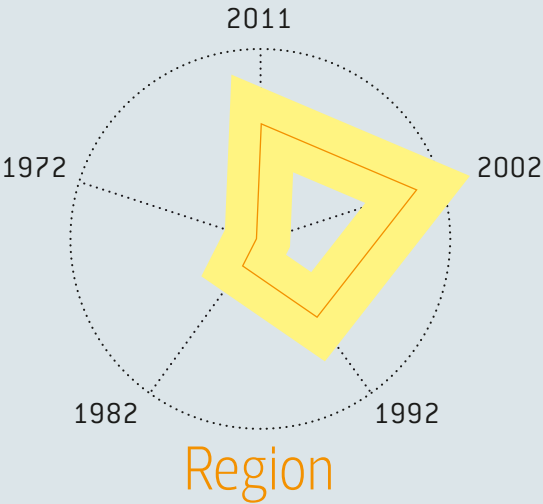
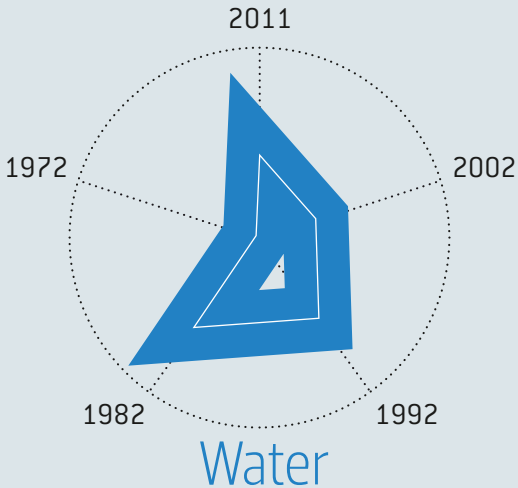
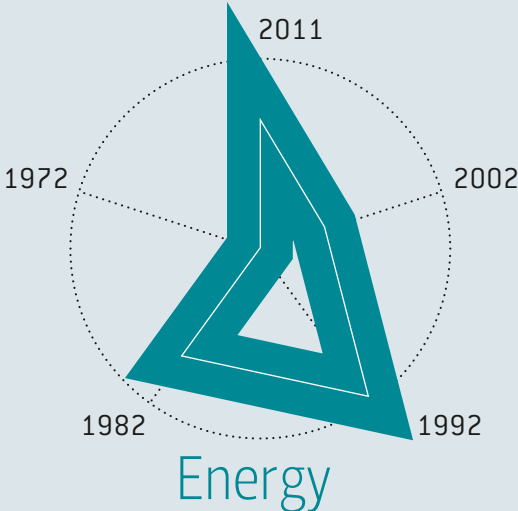
The capability of companies to absorb new process technologies is a prerequisite for the success of measures to improve energy efficiency. In addition, these kinds of measures are linked with certain planning horizons and therefore also with a forward-looking view of the company's own future demands and the development of market and framework conditions. In this context, the Fraunhofer ISI is the contact for enterprises conducting foresight processes on the one hand, and, on the other hand, contributes to improving the transfer of results from research to businesses, for example, through its research accompanying the "Efficiency Factory" transfer platform, commissioned by the German Ministry of Education and Research.

Individual balance of adaptability and stability

The results of the survey *Modernization of production* show that for the medium- and long-term success of enterprises, it is necessary to achieve an individually adjustable balance between flexibility and adaptability on the one hand and robustness and stability on the other. To achieve this holistic objective, a forward-thinking and systematic management of adaptability and stability is required. The Fraunhofer ISI supports enterprises in analyzing and evaluating their service portfolio and with foresight studies of market conditions. In this context, simulation-based methods help to make decisions, recognize the ideal relationship between adaptability and stability and ultimately implement this with the help of relevant measures.

The use of modern technologies combined with suitable organizational concepts can help to realize efficiency potentials by optimizing existing processes and introducing new ones.

MAIN TOPIC 4



NETWORKS CREATE A BETTER QUALITY OF LIFE IN THE CITY OF THE FUTURE

More than half of the world's population already lives in cities and this urbanization will continue to increase in the coming decades. In order to create, maintain and improve a good quality of life in cities, water, energy and transport infrastructures have to adapt to rapid change. Great challenges – and the Fraunhofer ISI conducts research in these very areas.

While the cities above ground change relatively quickly, the water infrastructures underground were mostly constructed to last several decades. However, it is now known that it is necessary to plan infrastructures more sustainably, so that their functions can be flexibly adapted to climate and demographic changes.

Adapt water infrastructures to change

How can infrastructures in densely populated regions be used in a way that is adapted to change? In the long run, all actors – politicians, public utility companies and residents – have to cooperate closely. This can work as demonstrated by the project NAUWA, in which the Fraunhofer ISI together with four municipalities in North Rhine-Westphalia developed solutions for the sustainable use of existing water infrastructure systems. This project can be used as an example for other German cities.

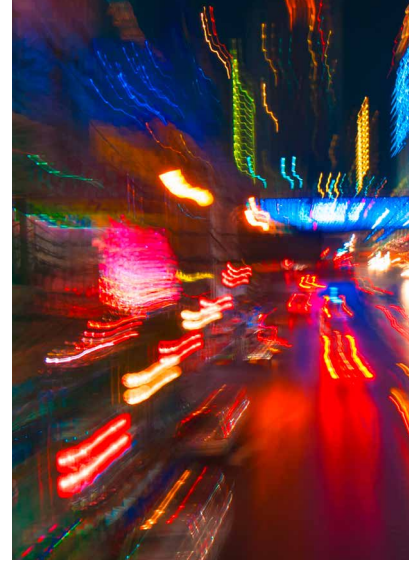
Existing infrastructure systems can be adapted to change. This is often expensive and complex but also inevitable. New housing areas, in contrast, offer the chance to try out innovative concepts during their construction. One example is the project DEUS, which involved the Fraunhofer ISI and Fraunhofer IGB, and supplied a new housing area in the town of Knittlingen in Baden-Württemberg with a new type of water infrastructure.

Intelligent distribution of regional energy produced from renewable sources

Not just water infrastructures but also energy networks need to be adapted to the changing conditions in cities. The German federal government's change of energy policy, which was decided in 2011, increases the trend towards decentralized energy production.

Energy should ideally be produced regionally and by renewable sources. It should also be distributed via smart grids. For this purpose, traditional infrastructures are supplemented by information technologies. The Fraunhofer ISI has calculated that this decentralized, intelligent energy distribution can save more than ten billion euros every year. Particularly large saving

In the long run, all actors have to cooperate closely in order to use infrastructures in densely populated regions in a way that is adapted to change.



potentials can be achieved by networks of infrastructures in the areas of health, education, administration, energy and transport – for the latter two, for example, by linking electricity grids with the storage cells of electric vehicles, so that electric cars are always charged in good time and for the distance they need to cover.

Technological developments for electric mobility

Electric mobility can make a major contribution to improving the quality of life in cities. Even today, traffic in cities is one of the biggest challenges. Particularly the increasingly motorized private transport causes enormous problems for the environment and health. Compared to conventional vehicles, the CO₂ emissions of electric cars are lower and are even lower still if the electricity comes from renewable sources. Electric vehicles are also quieter than conventional vehicles and can thus contribute to noise reduction, which improves the quality of life in residential areas, especially during night-time hours.

A number of improvements are still necessary to achieve the objective of a million electric vehicles by 2020, aimed for by the German federal government: Several studies by the Fraunhofer ISI have found that electric vehicles score on driving fun and a green image, however, the limited driving distance, long charging times and high costs are impeding their diffusion. The use of plug-in hybrids, which combine an electric and conventional engine, is therefore promising.

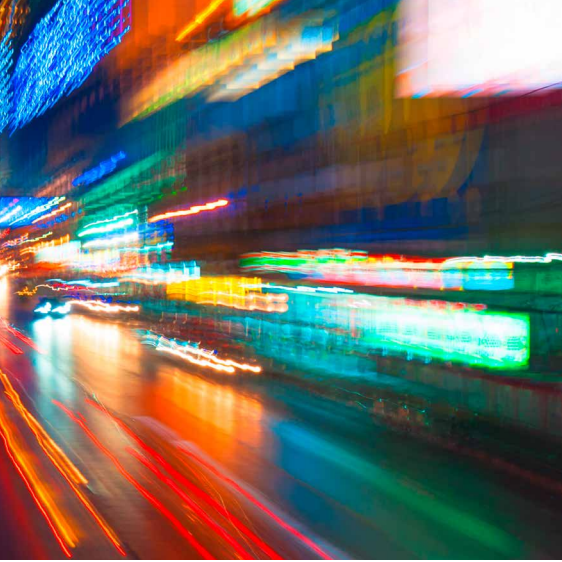
In cooperation with industry, the Fraunhofer ISI has developed several roadmaps and examined the development of the lithium-ion batteries necessary for the new engines. The scientists discovered that significant technological leaps in terms of driving distance cannot be expected before 2025 – for the next ten years, electric vehicles will still run on lithium-ion batteries of the already well-developed technology generation and rely on their quality and safety.

A further step for the sustainability of electric mobility is the recycling of engines. With the participation of the Fraunhofer ISI, the joint research project MORE explores the option to use old engines as a source of raw materials for rare metals. All the steps are taken into account here: starting with the dismantling of magnets from old engines to the repair and subsequent re-use of the electric engine or its components and the re-use of the magnetic materials and rare earth metals by recycling presorted and shredded material. In addition, concepts for a recyclable engine design are being developed and eco-efficiency analyses and models for material flow cycles devised.

In a collaborative project the Fraunhofer ISI explores the options to use old engines as a source of raw materials for rare metals.

The future of city traffic: use, not own

In addition to electric mobility, several studies by the Fraunhofer ISI have recognized a trend towards multi and intermodal mobility, i.e. combining different modes of transport. Public



transport is combined with rented electric vehicles, conventional cars and bicycles. The focus shifts from ownership to making use of all modes of transport.

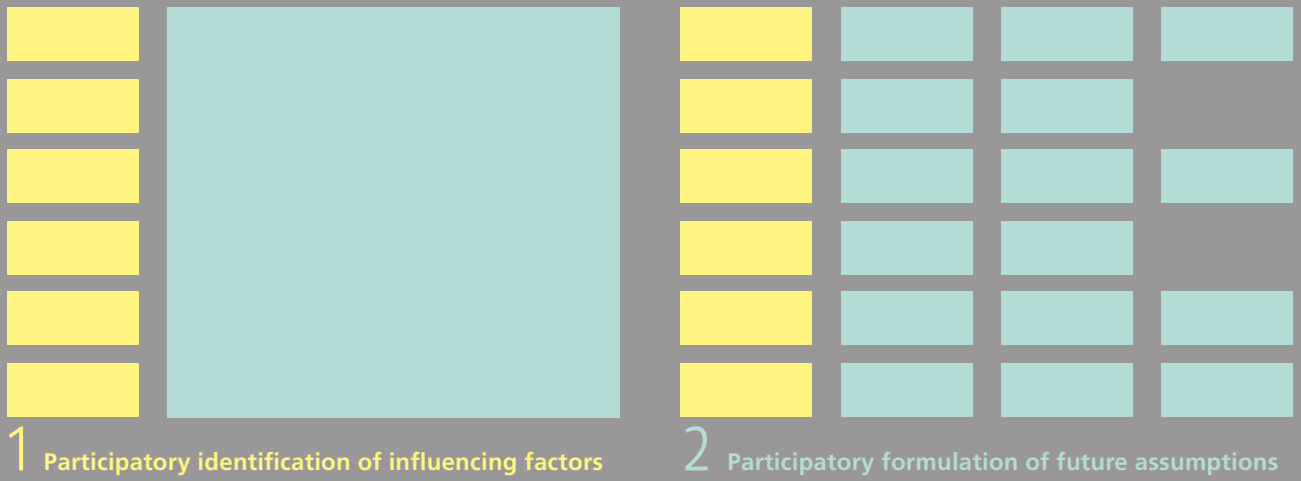
In the project REM 2030 the Fraunhofer ISI is part of an interdisciplinary team working on establishing sustainable and efficient regional mobility in Baden-Württemberg. Some of the objectives of the project are zero-emission vehicles in cities and built-up areas, developing efficient propulsion technology for electric vehicles and integrating the developed solutions into vehicle platforms for test purposes and enhancing the public image – it is difficult to gain user acceptance without test results and experience. REM 2030 is also a partner in the eMobility Center in Karlsruhe, which displays practical examples of the research results on electric mobility.

Visions for cities of the future – small and large

Another project is “SmarterCity Karlsruhe”. The objective of this initiative is to increase the quality of life for residents and the innovation capabilities of companies in Karlsruhe by using the latest technologies, particularly information and communication technologies. The Fraunhofer ISI is accompanying the initiative by developing a vision and a roadmap and planning and moderating a series of workshops. The first workshop identified these urgent priorities: the creation of a standard data infrastructure, the intelligent expansion of intermodal transport, the affordability of the energy transition and the total removal of barriers.

The project “Tomorrow’s city” of the Fraunhofer-Gesellschaft considers what is happening in Karlsruhe in more detail: realistic visions for tomorrow’s sustainable and livable cities are developed which also profit substantially from existing international experiences. This project also shows that decentralization, networks of all infrastructures and the collaboration of all actors are the best options to meet the challenges of growing global urbanization and to create, maintain and improve the quality of life in sprawling cities.

Some of the objectives of the project REM 2030 are zero-emission vehicles in cities and built-up areas as well as developing efficient propulsion technology for electric vehicles.



PARTICIPATORY METHODS IN FUTURES RESEARCH

A VARIETY OF METHODS FOR NEW PERSPECTIVES

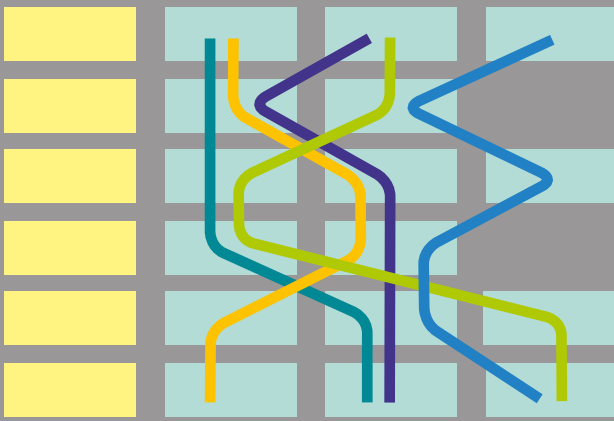
Participation – the latest buzz word? The participation in decision processes of the general public or affected parties seems to be growing in importance in many different ways. Which group of people is affected varies greatly. Those involved can be stakeholders, the average citizen, or the employees or experts of a specific community. The integration of citizens is not only receiving media attention in a political context; the deliberate use of participatory methods is also making inroads in NGOs, academia, research and companies.

Participatory methods are used in political contexts as well as NGOs, academia, research and companies.

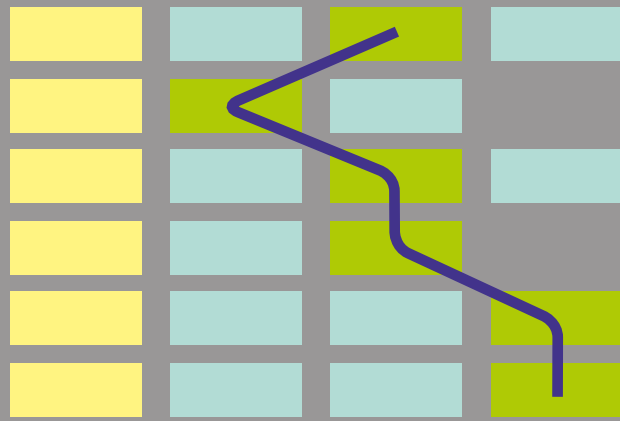
What does this signify for futures research? How does an innovation research institute use participatory methods? Futures research uses such methods to consciously deal with and address the future. In addition, the different approaches pursue the objective of coordinating and harmonizing the activities of different actors.

The Fraunhofer ISI has been including participatory methods in its work for decades. In doing so, it has set methodological standards, for example with the Delphi studies conducted in the 1990s, one of the best known foresight approaches. The Fraunhofer ISI has been researching and further developing different participatory methods for four decades, for instance, Future Search or future workshop instruments, roadmapping and workshop-based scenarios, to name but a few. In a Future Search, representatives of the involved groups discuss future issues in order to reach a consensus, for instance, interested citizens discuss urban life. This is the basis for then developing joint activities, measures or plans of action for a desirable future. Similar concepts are used in enterprises to involve employees in a creative development process.

Other examples of using participatory methods at the Fraunhofer ISI are to be found in roadmapping. This method has been tried and tested in different applications across the Competence Centers. Whether roadmapping is the main focus of a project or an accompanying element, it plays an important role at the intersection between foresight and innovation and technology management. This planning instrument can integrate either different actors from one sector or



3 Scenarios as a bundle of future assumptions



4 Setting the orientation scenario

different research departments of one company in planning processes. The participatory elements of the workshop are essential components in the process of creating the map.

The workshop-based scenario method is another tried and tested tool for dealing with uncertainties in strategic planning. The intention here is to derive options for action and provide orientation points for planning. At the Fraunhofer ISI, a distinction is made between including experts in external scenarios – which deal with changes in the surrounding environment – and including stakeholders, the affected actors, in internal scenarios.

When developing surrounding scenarios, bringing together actors from different fields plays a big role. When developing strategy scenarios, it is very important to create a shared basis of communication about future issues. This helps to identify areas of conflict and promotes the discussion of different values in the company and thus facilitates the later transfer of the scenarios into the organization due to greater acceptance among all the participants.

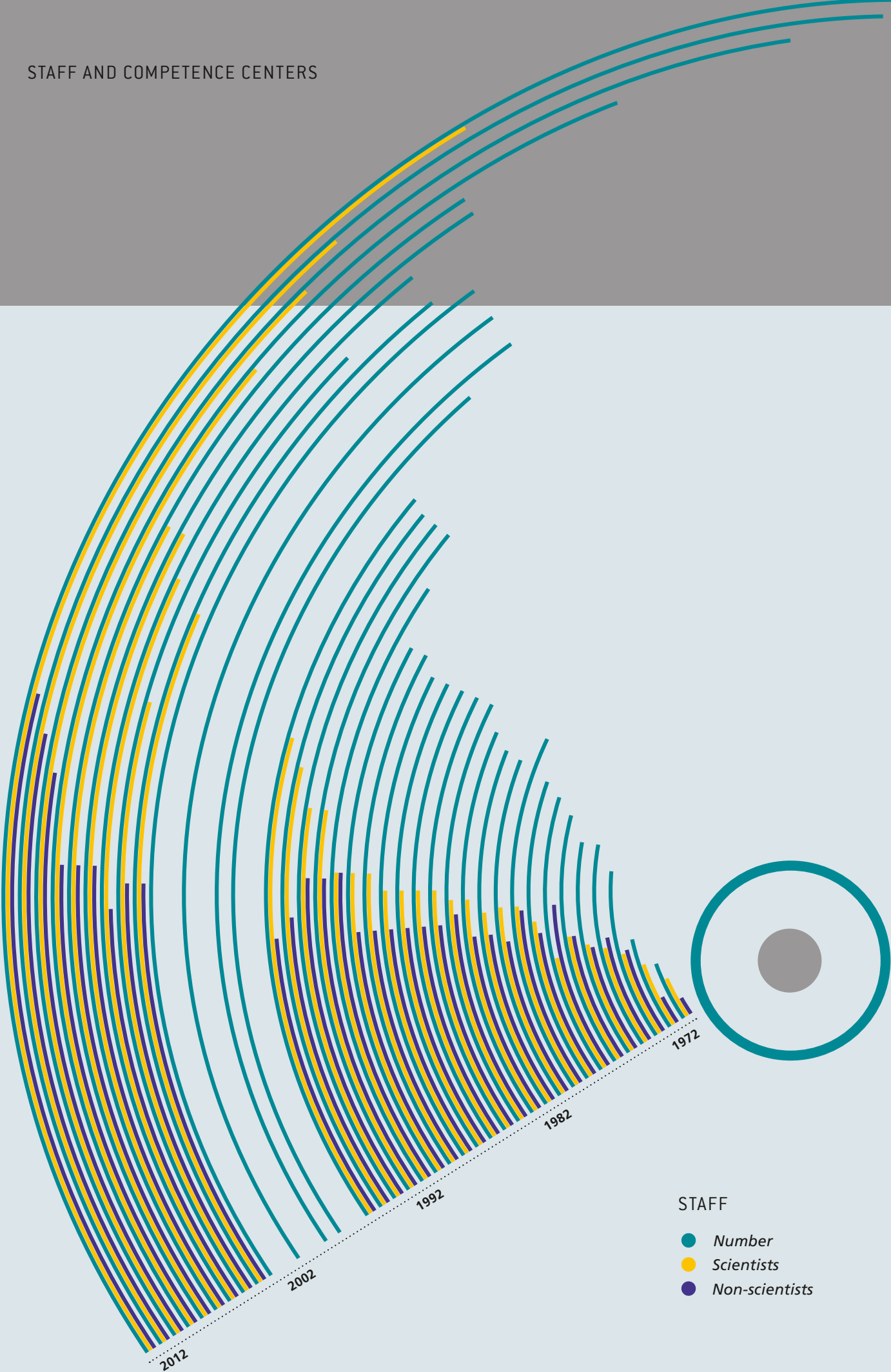
Although participatory processes are especially suited to creating a joint vision, when developing strategy for instance, their significance is frequently still underestimated by companies. Because of the greater effort involved, they tend to choose foresight methods with no or only a few participatory elements. And yet it has been clearly proven that especially those companies perform better which employ more bottom-up foresight activities.

The Fraunhofer ISI advises politics, science and companies and supports participatory decision processes. In studies on the use of participatory methods, the Fraunhofer ISI works on continuously further developing and improving the methods. The researchers identify potential methodological weak points and are constantly working on refining workshop-based approaches. While participation is attracting more and more attention, among future research methods as well, its importance has been recognized at the Fraunhofer ISI for four decades already.

*Diagram:
Illustration of a scenario
process based on the
example of the Fraunhofer
Orientation Scenario 2025*

*The researchers at the
Fraunhofer ISI are working
to continuously further
develop and improve
participatory methods.*

STAFF AND COMPETENCE CENTERS



A STRONG COMBINATION – EMPLOYEES AND COMPETENCE CENTERS

When it was founded in 1972, the Fraunhofer Institute for Systems and Innovation Research ISI was an unusual member of the techno-scientific Fraunhofer-Gesellschaft. The new institute expanded the research organization's spectrum of expertise by economic and social-scientific work and has thus over the decades become a "think tank" for innovation research.

Today more experts than ever before in its 40-year history conduct research at the Fraunhofer ISI. Currently 156 scientists from the natural sciences and technology as well as the humanities and social sciences work interdisciplinarily on over 350 research projects a year. They combine many years of experience, a systemic approach and scientific methodology with unconventional fresh perspectives. Supported by 70 non-scientists, they explore socially-relevant issues such as the maintenance and expansion of companies' competitiveness, resource-efficient processes or innovative future scenarios. They develop insights into a world which will be totally different in five, ten or forty years time – and develop creative solutions to problems in politics and economy which are already foreseeable.

STAFF AND COMPETENCE CENTERS

Since its foundation, a lot has changed in the internal structure of the Fraunhofer ISI: At the beginning, there were only a few research areas which represented the specific expert fields of some scientists. The organizational structure of the Fraunhofer ISI has diversified significantly over the decades. Now, the Fraunhofer ISI carries out interdisciplinary work in seven Competence Centers with a total of 22 business units.

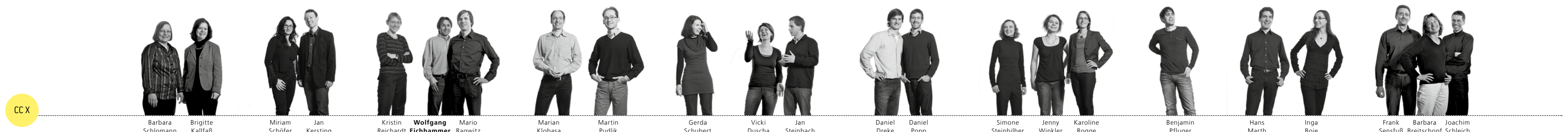
- The CC Energy Technology and Energy Systems (CC E) makes a contribution to the development of new technologies for a sustainable energy system.
- The CC Energy Policy and Energy Markets (CC X) researches solutions for the political and institutional framework for a sustainable energy system.
- The CC Industrial and Service Innovations (CC I) researches the security of technical and organizational innovations in Germany.
- The CC Innovation and Technology Management and Foresight (CC V) develops methods to identify and analyze long-term developments in society, the economy and technology.
- The CC Sustainability and Infrastructure Systems (CC N) analyzes conditions and possibilities of emission reduction, improvement of resource efficiency and the sustainability of infrastructure systems.
- The CC Emerging Technologies (CC T) analyzes the potentials, impacts and organizational conditions of new technologies and develops policy options.
- The CC Policy and Regions (CC P) investigates the functioning of and change in research and innovation systems.

The Institute also profits from the cooperation in international networks and with other national institutions. Today the Fraunhofer ISI is a member of the Group for Materials and Components – MATERIALS, a guest institute in the Fraunhofer Network for Defense and Security VVS and in the Fraunhofer Alliances Batteries, Energy, Nanotechnology, SysWasser and Transport. Cooperations with several universities and research institutions in Europe, Asia and the US and membership in international networks and committees emphasize the Institute's international orientation.

Over the decades, however, the close cooperation and networking of the Competence Centers or research areas in multidisciplinary projects which also integrate external specialists have remained crucial. The expertise and the success of the Fraunhofer ISI are based on this interdisciplinary and systemic research approach.



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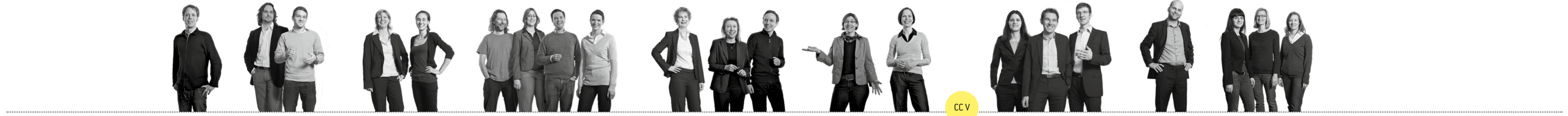
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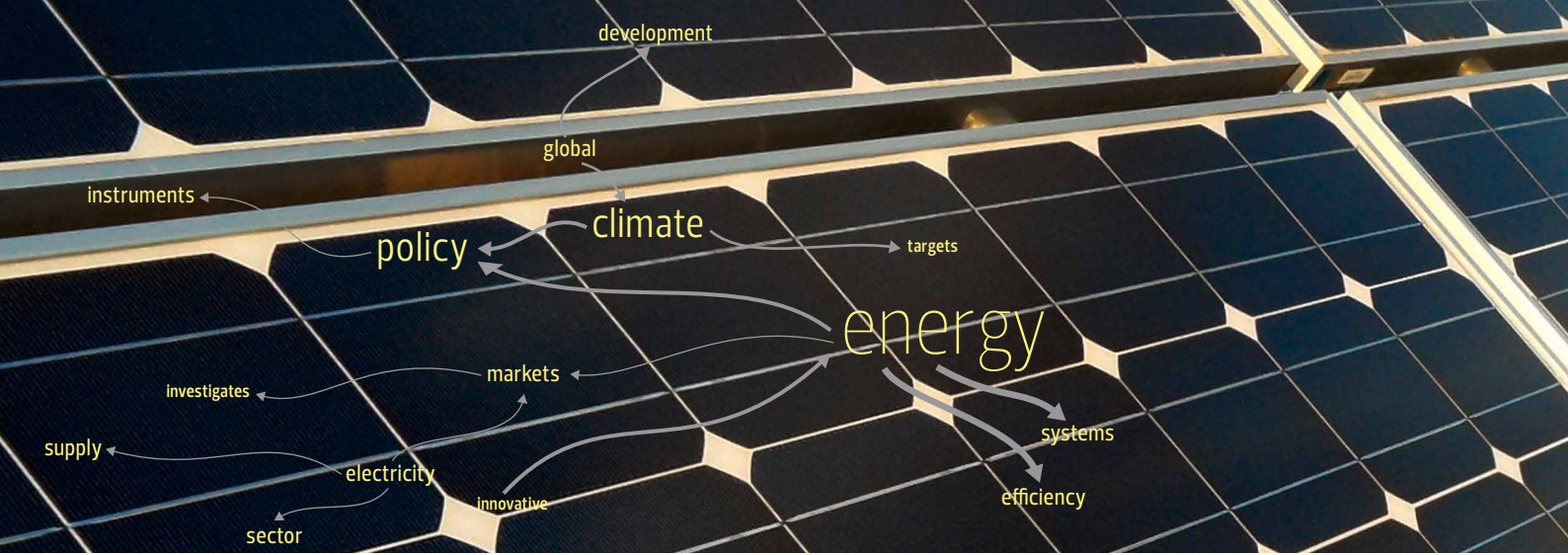
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CREATING THE FRAMEWORK FOR THE ENERGY TRANSITION IN GERMANY AND EUROPE

CC ENERGY POLICY AND ENERGY MARKETS

The Competence Center Energy Policy and Energy Markets investigates how the political, economic and institutional framework of sustainable energy systems can be shaped, further developed and evaluated. In order to meet the international climate targets, Germany and the European Union have to halve primary energy consumption and reduce today's greenhouse gas emissions by at least 80 percent by 2050. This is technically and economically feasible and offers European industries global development opportunities through the creation of new markets for innovative energy technologies. The Competence Center addresses the opportunities for employment and economic growth on these new markets.

The energy transition in Germany and Europe is not a foregone conclusion: In times of tight public budgets, European support programs for energy efficiency and renewable energies are coming under pressure; the ongoing impacts of the economic and financial crisis hinder business decisions and represent an increasing burden for lower income households. At the same time, however, rapid cost reductions and technology developments were able to be observed for key technologies like photovoltaics and wind power.

European funding systems for energy efficiency and renewables are coming under pressure in times of tight public budgets.

The political framework for a future sustainable energy system has to be developed under these frame conditions in an efficient and coordinated way. The Competence Center Energy Policy and Energy Markets, which was formed in 2012, addresses this task in three Business Units.

Renewable energies are absolutely essential for climate protection, supply security and competitiveness. The team of the Business Unit *Renewable Energies* identifies the costs, benefits and potentials of these energy sources, develops and evaluates policy instruments for their effective and efficient promotion and constructs scenarios of future energy systems with high shares of renewable energies. As part of the continued development of the German Renewable



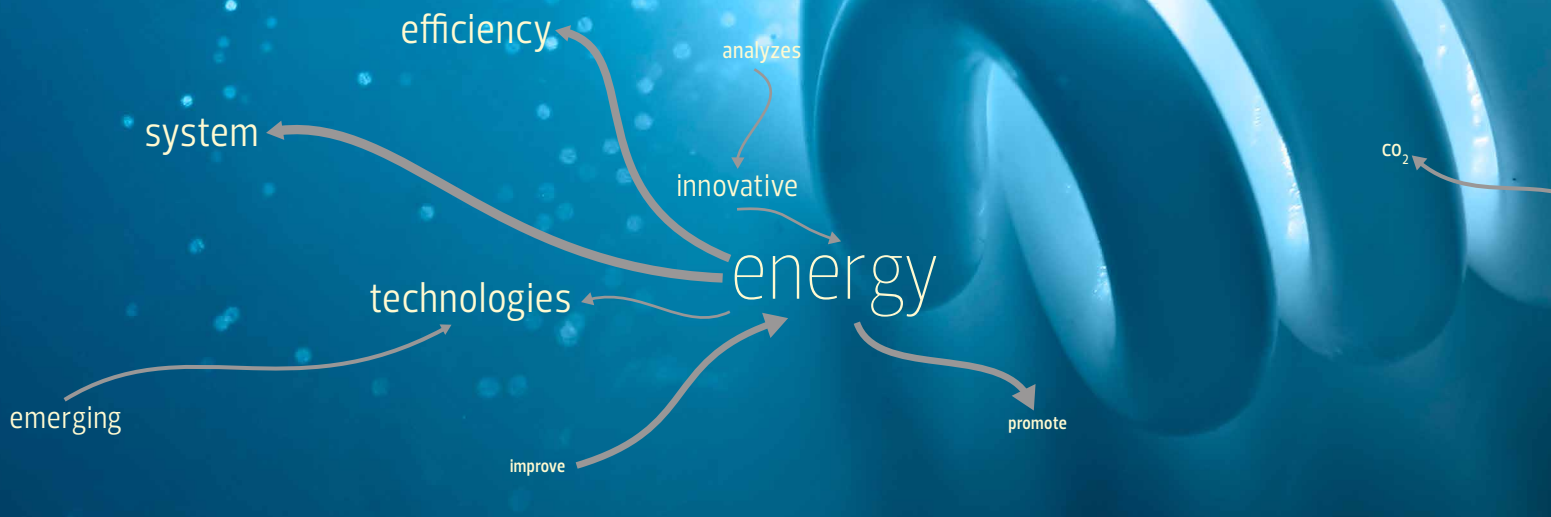
Energies Act, the researchers examined the proposed reforms for promoting renewable energies in the electricity sector for the German government and worked on how to design elements to improve their market and system integration. They are accompanying the implementation of the Renewables Directive on behalf of the European Commission and compiled suggestions for innovative support and financing instruments. Furthermore, concepts for the market development of renewable energies in North Africa including the export to Europe are being developed for private and public clients.

The researchers of the Business Unit *Energy and Climate Policy* develop and evaluate energy and climate policy instruments to reduce energy consumption and greenhouse gas emissions. In Germany, they are accompanying the energy transition; at European level, research focuses on the implementation of a new energy efficiency directive and the further development of the EU's emissions trading scheme. Political decision-makers assign increasing importance to regular checks and controls of the success of national and European energy and climate programs. The Business Unit develops monitoring concepts and indicators for this purpose. An important orientation for innovation activities and thus new market opportunities is offered by long-term energy and climate targets such as those laid down by Germany in its Energy Concept of September 2010 and by the EU in its Low Carbon Roadmap 2050 and the Energy Roadmap 2050. With regard to international climate policy, the main issues concern a new global climate agreement as discussed most recently at the Climate Change Conference in Doha in December 2012.

Integrating growing amounts of fluctuating power from renewable sources makes increasing demands of markets and infrastructures. In the light of this challenge, the team of the Business Unit *Electricity Markets and Infrastructures* develops strategies and conducts analyses for policymakers and companies in the power sector. In this context, recommendations about the market integration of renewable energies were elaborated and evaluated. On behalf of the Federal Ministry for the Environment, Nature Conservation and Nuclear Safety (BMU), possible developments of the power sector in the EU were modeled and design options analyzed. Alongside the interaction of the markets for power and heat, another main work focus is the complete hourly-based analysis of the electricity supply system in the EUMENA region (Europe – Middle East – North Africa).

Examining and testing the success of national and European energy and climate programs on a regular basis is becoming ever more important.

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TECHNOLOGIES FOR THE LONG-TERM TRANSFORMATION OF THE ENERGY SYSTEM

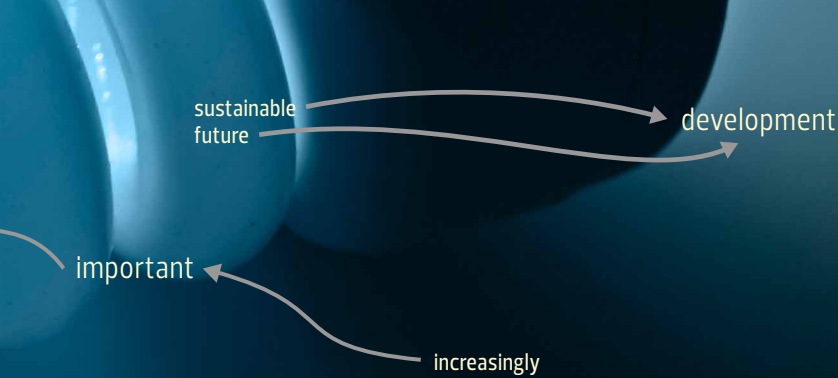
CC ENERGY TECHNOLOGY AND ENERGY SYSTEMS

The transformation of the energy system will not be successful and climate targets will not be able to be met without radical technical and organizational innovations. The Competence Center Energy Technology and Energy Systems analyzes innovative energy technologies and their contribution to a sustainable energy system from a strategic perspective. The researchers develop concepts for introducing these new technologies and monitor them scientifically. One major focus is energy efficiency, especially in industry: A large number of measures have already been implemented here, but many unexploited economic potentials still remain.

The transport sector is also a focal point for future changes. So far, this sector has been almost exclusively dependent on oil, but it can make an important contribution to a more sustainable development through the use of emerging technologies such as batteries or fuel cells. This sector is becoming increasingly important for the energy system as a whole, for example due to the utilization and storage of electricity. To be able to systematically transform the energy system, those responsible need information about the future development of energy demand, which is influenced, among other factors, by the emerging technologies and their penetration of the market. The Competence Center Energy Technology and Energy Systems, which was founded in 2012, provides this information.

Information about the future development of energy demand is necessary to be able to plan the transformation of the energy system.

The researchers in the Business Unit *Energy Efficiency* concentrate on technologies and measures which help to improve energy efficiency. They assess the costs and benefits of efficiency technologies and identify indicators of efficient energy use in both a corporate and national context. Strategies for companies and political decision-makers are derived from their analyses. In an international setting, the Business Unit is accompanying the preparation and implementation of important EU Directives to promote energy efficiency.



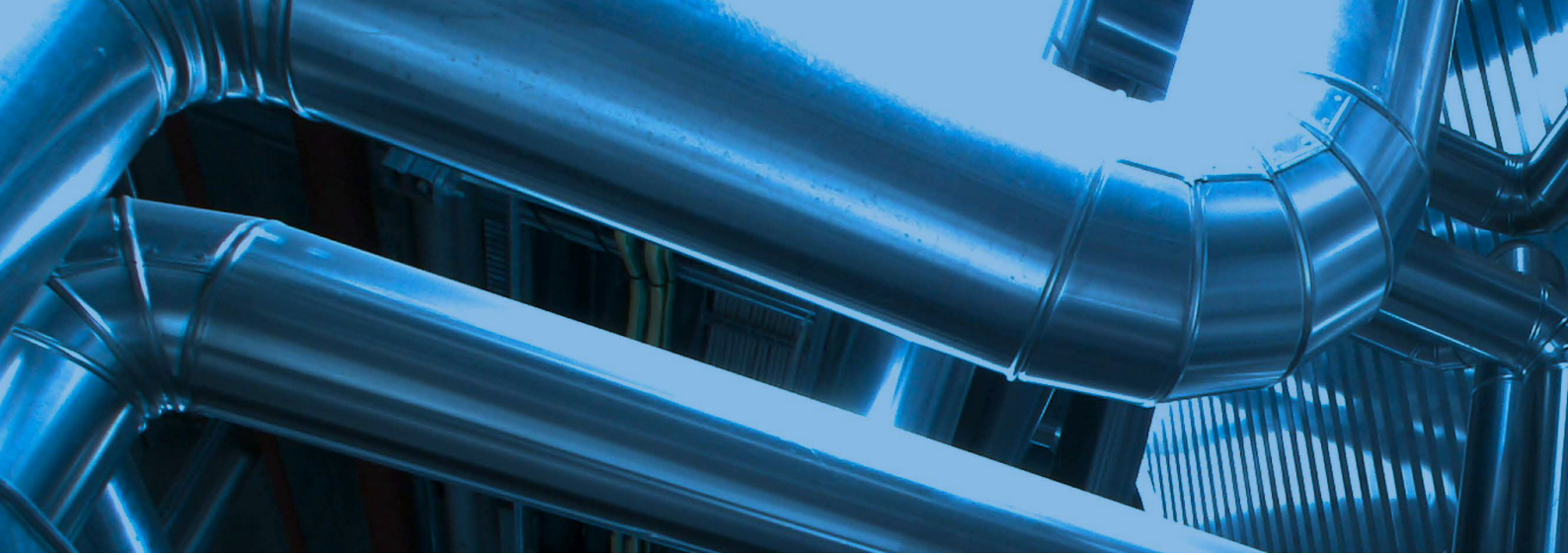
On a national level, developments arising from the transition of the energy system are the main focus of research. It is particularly important to realize the highly profitable energy efficiency potentials to start with. Because many enterprises are only partially implementing these due to high transaction costs, cooperations of companies are being launched which learn from each other with the support of professionals. The “30 Pilot Networks” project, sponsored by the Germany Ministry for the Environment, Nature Conservation and Nuclear Safety (BMU), revealed that these learning companies can more than double the increase in their energy efficiency compared to the industrial average. The Business Unit is also scientifically monitoring several research programs on energy and resource efficiency and thus helping to sustainably transfer knowledge from research into practical applications.

At present, there is an increasing convergence taking place between the energy sector and the transport sector. New propulsion energies for mobility services need electricity, for example, for battery vehicles, or hydrogen for fuel cell vehicles. Because these propulsion energies are able to be stored, these technologies can also contribute to a better system integration of fluctuating renewable energies, among other things. These kinds of issues are dealt with in the Business Unit *Energy Economy* in studies for industry and policymakers. Other topics include the assessment of innovative energy technologies and analyses of the acceptance of affected parties and the general public, which is playing an ever greater role in the energy system’s transition.

The development of energy demand is not only an important lever for the success and costs of the energy transition, but also the foundation for planning investments in the energy sector. With the help of energy models, the Business Unit *Demand Analysis and Projections* investigates how future energy demand could develop depending on various framework conditions and influencing factors like energy prices, emerging technologies or energy policy instruments. For instance, for the BMU, it was calculated how the planned and implemented instruments and measures will affect the energy demand and CO₂ emissions of industry, households and commerce in Germany. Beyond Germany, scenarios were constructed for pan-European companies on the long-term development of electricity demand in the EU and in up-and-coming economies like Turkey. These kinds of scenarios are an important basis for the investment decisions of energy supply companies and for their strategies to develop new business models.

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Battery and fuel cell vehicles can help to better integrate renewable energies into the grid using the storage capacity of their drive energy.



TRANSFER OF RESEARCH RESULTS TO BUSINESS

CC INDUSTRIAL AND SERVICE INNOVATIONS

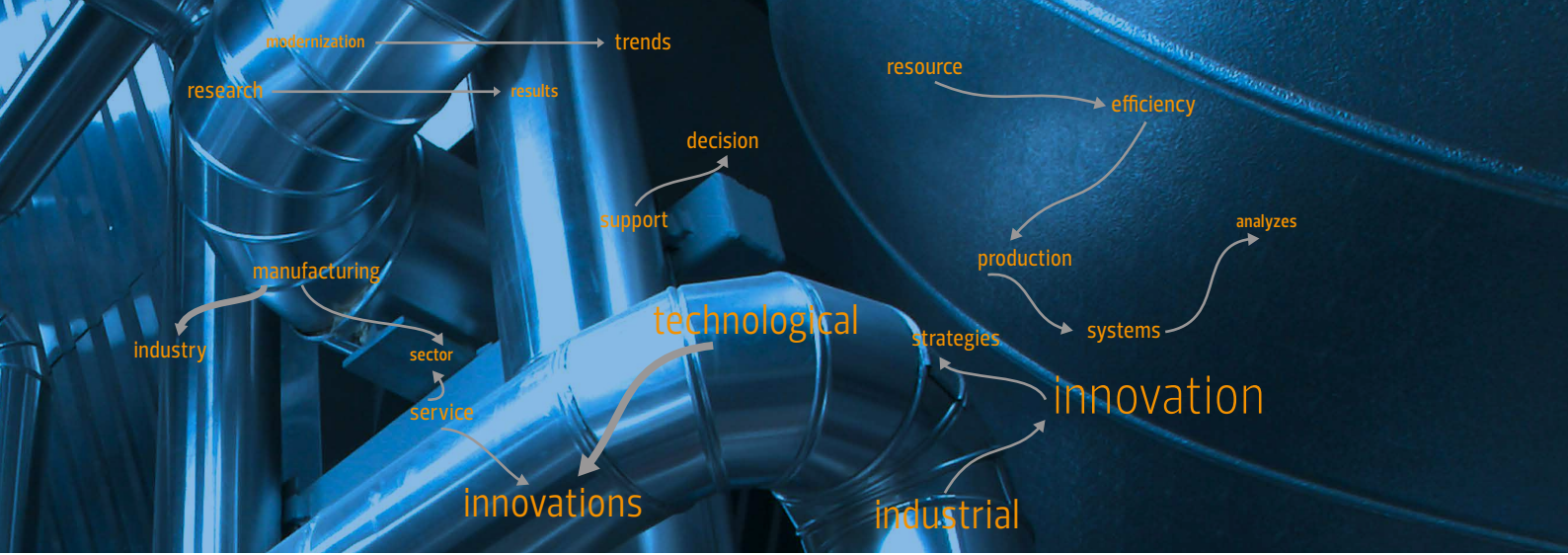
The Competence Center Industrial and Service Innovations develops future-oriented and tailor-made strategies which help firms to sustainably improve the industrial added value in Germany and Europe. The scientists also investigate which research and technology policy framework conditions are conducive here. Innovation is seen as an integral part of all phases of the industrial value added: research and development, production and logistics, service and recycling.

One core element is the survey *Modernization of Production*, which has been analyzing the innovation and modernization trends in the manufacturing industry for almost 20 years. This database together with comprehensive knowledge about key future trends in the manufacturing industry form an ideal basis for scientifically-based and practice-oriented decision-making support in questions of industrial innovation.

In the international project INNO-GRIPS, the Business Unit *Industrial Innovation Strategies and Systems* analyzes the extent to which non-technological forms of innovation and marketing innovations are affected by specific obstacles and barriers. The results of this analysis are intended to support decision-makers when developing and implementing measures which promote innovation.

Using quantitative operating data and 15 European company case studies, the scientists found that innovations in organization and marketing – comparable to technological innovations – are hampered by insecurity, high investment costs, lack of company internal know-how as well as the insufficient diffusion of knowledge in innovation networks. Unlike technological innovations, organizational and marketing innovations are a more reactive strategy in the surveyed companies: Appropriate measures are introduced if specific problems occur. However, the results of the Fraunhofer ISI show that especially those companies that integrate and coordinate technological

Great uncertainty, high investment costs, lack of in-house know-how and the insufficient diffusion of knowledge in innovation networks restrict innovations.



and non-technological innovations within a holistic innovation strategy are particularly successful. Therefore, a future innovation policy should give greater consideration to the interplay of technological and non-technological innovations.

The Business Units *Industrial Innovation Strategies and Systems and Innovative Production Systems and Value Chains* work together on the “Efficiency Factory” to support the German Ministry of Education and Research (BMBF) funding program “Resource Efficiency in the Manufacturing Sector”. Here, manufacturing companies together with research institutes have developed solutions for resource-efficient production in 31 joint projects.

The innovation platform www.effizienzfabrik.de, supported by the Fraunhofer ISI, communicates the latest research results, which makes it an important point of contact for companies who want to find out more about current trends and concrete solutions for resource-efficient production. As a scientific partner of the “Efficiency Factory”, the Fraunhofer ISI has also provided input with multi-disciplinary analyses, specific studies and environmental monitoring – for example with complementary studies on topics such as company energy management and benchmarking.

The innovation platform of the “efficiency factory” communicates the latest research results and delivers information on current trends and concrete solutions for resource-efficient production.

The Business Unit *Industrial Services* was active not only in Germany but also on an international level with the project “Developing Proposals for Foshan New Town Industrial Services Demonstration Area”. The city of Foshan in the Chinese province of Guangdong wants to strengthen its industry by introducing a service sector which complements the existing manufacturing industry. It is planned to set up a special zone to establish service industries. The provincial government has commissioned the Fraunhofer ISI to identify the service potential of the city of Foshan and the neighboring region. First of all, the needs of the manufacturing industry are investigated by means of a written survey. The findings about which services are needed in the region will help the scientists to make recommendations for establishing suitable and complementary service industries.

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FORESIGHTED STRATEGIC ADVICE FOR DECISION-MAKERS FROM INDUSTRY AND POLITICS

CC INNOVATION AND TECHNOLOGY MANAGEMENT AND FORESIGHT

The constant change in society, industry and government continuously poses new challenges. The development of methods to analyze these changes in interaction with technical developments is the main research area of the Competence Center Innovation and Technology Management and Foresight. Its scientists develop blueprints and strategies for the future for political actors and decision-makers in companies, associations and NGOs. They use a sophisticated set of methods that includes the scenario method, dialog processes, Delphi surveys and technology roadmapping.

In 2012, the team of the Business Unit *Futures Research and Foresight* also developed the tried and tested scenario methodology further in numerous European research projects with innovative scenario concepts. For example, a two-step concept was developed and used initially to analyze the tensions between stakeholders in explorative scenarios and subsequently to describe potential structural changes as transformative scenarios. In addition, the scenario methodology was combined with bibliometric analyses and with roadmaps in a German-Chinese comparison. The scenario methodology plays a vital role in the canon of foresight methods of the Fraunhofer ISI as it makes possible a systematic examination of different futures.

Scenarios and their innovative further development are an important basis for foresight research at the Fraunhofer ISI, also as part of international projects.

The second cycle of the Foresight Research by the Federal Ministry of Education and Research (BMBF) was launched with a new two-year search and analysis phase in May 2012. While the first cycle gave priority to future developments in research and technology and their actors ("Technology Push"), the focus is now on the demand side ("Demand Pull"). For this, the Fraunhofer ISI was commissioned together with the VDI Technology Center. The Business Unit *Futures Research and Foresight* combines different search strategies to identify hidden trends (e.g. marginal source analysis, interviews with lead users and other experts in new developments of social needs, needs experts workshop) and updates the perspectives for technology and



research in comparison with the first cycle. The objective is to develop foci and missions for the German research and innovation policy.

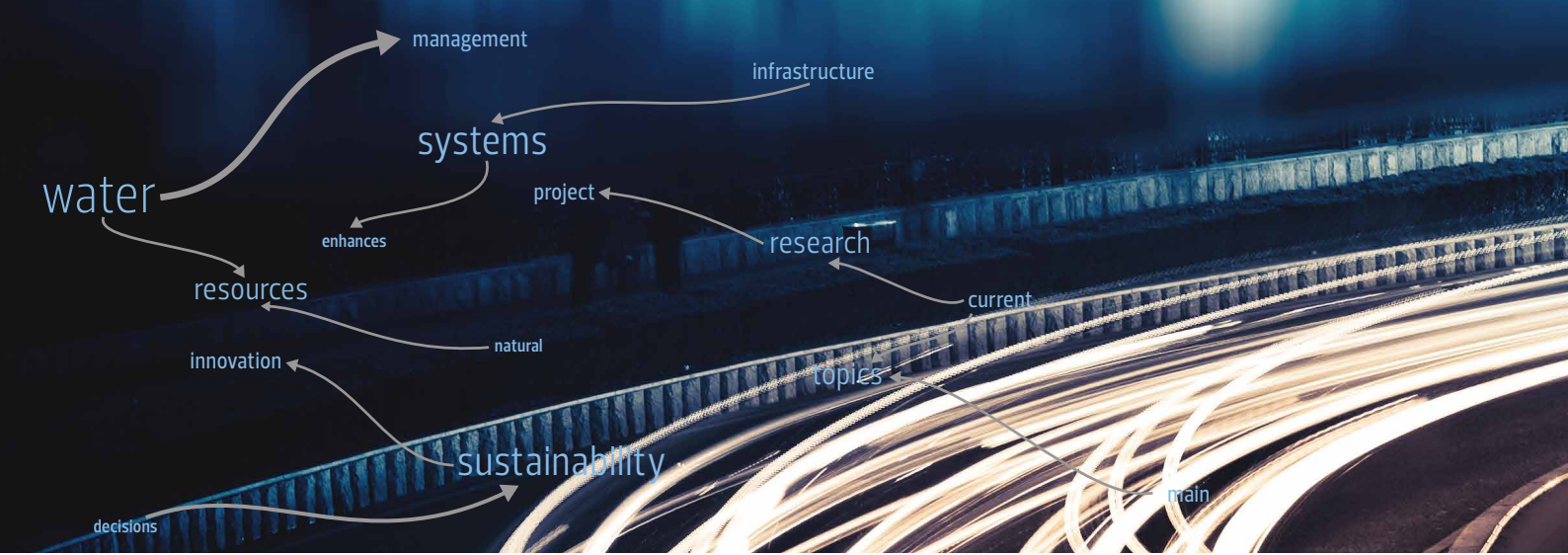
The Business Unit *Innovation and Technology Management* develops methods for companies which successfully shape the innovation process in the early phase. To this end, foresighted thinking, technological competence and the appropriate contact with experts and their expertise are crucial.

Various projects were conducted with companies from the automotive and automotive component supplier industries to develop the expert organization. On behalf of a technology-intensive enterprise, the Fraunhofer ISI assessed its idea management on the basis of an employee survey. Also, a series of workshops entitled "Methods of Innovation and Technology Management" was conducted for member companies of the Commercial Vehicle Cluster – Nutzfahrzeug GmbH (CVC). The aim of this series of workshops was to interactively communicate operationally usable process approaches in support of innovation success.

Companies are competitive when innovations are recognized and implemented early. Suitable methods in the form of an idea or technology management are a guarantee for success.

Materials are the basis for many emerging technologies. The scientists of the Business Unit *Strategies for Material Technologies* research the development of user-oriented strategies for the application of material technologies at the interface of new application opportunities and innovative material developments. A "market watch" was carried out at the Fraunhofer ISI for an electrical industry association of global scope to assess the future potentials of nanomaterials – applied to developments in solar energy generation (photovoltaic and solar energy) and energy storage. To this end, an extensive bibliometry was conducted, on the basis of which central technologies were identified and their application potentials analyzed. A roadmapping process on this basis revealed potential development paths and shows how developments in nanomaterials and nanotechnologies can make a contribution in response to global developments such as the increasing need for energy, the shortage of resources or the rising demand for mobility. The pathways established in the project enable the client to predict developments in the aforementioned areas and have a regulating effect on the use of new nanomaterials and technologies.

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RESEARCH FOR A SUSTAINABLE FUTURE IN A GREEN ECONOMY

CC SUSTAINABILITY AND INFRASTRUCTURE SYSTEMS

Resource scarcity and diverse pollutant emissions discharged into the atmosphere, water bodies and soil are only some of the keywords which make it clear that we need to handle finite natural resources sustainably and avoid polluting our environment. The required shift towards a Green economy also opens up new economic opportunities on environmentally-friendly future markets. These were at the center of the fourth United Nations Conference on Sustainable Development (Rio+20) held in the summer of 2012. The research conducted by the Competence Center Sustainability and Infrastructure Systems enhances the knowledge about the necessary innovation processes so that policymakers and companies can make decisions which help to promote sustainability. To do so, the researchers examine the ecological, economic, political and social aspects of sustainable developments and design solutions for efficient resource use.

In the Green economy concept, the economic opportunities on environmentally-friendly future markets are emphasized for industrialized, emerging and developing countries. The integration of environmental protection into processes, products and systems plays a decisive role for synergy effects between economic and ecological benefits. The environmental protection function is achieved through a multitude of interacting effects. In the Business Unit *Sustainability Innovation and Policy*, the Fraunhofer ISI researches how to reliably estimate the environmental benefits of very young, integrated technologies. Resource efficiency has an important role to play in the transition to a Green economy and is a central, interministerial policy goal in Germany. To evaluate the sustainability of resource efficiency strategies, the quantitative impacts on raw material productivity as well as the macroeconomic effects on growth and employment are examined, among other things.

The influence of the Green economy on processes, products and systems increases the protection of the environment and the economic chances for environmentally-friendly future markets.

The path to sustainable water management is one of the primary topics of the Business Unit *Water Resources Management* as well as the title and subject of a current research project for the Office



of Technology Assessment at the German Bundestag (TAB). The changes and challenges accompanying climate change, urbanization and the problems of increasing pollution are identified for global water management as well as possible approaches to solving them. Another important topic is the analysis of the innovation system of German water management with regard to its competitiveness and the conditions for the development and diffusion of new technologies. The particularly sensitive issue of “Water pollution due to micropollutants” in Germany is also being examined in a research project for the Federal Environment Agency and industrial clients.

Our highly networked, knowledge-intensive society relies on the existence of a robust base in the form of energy and water distribution networks, transport networks and non-energy raw materials. Understanding and reducing the risks these systems are exposed to is the main focus of work in the Business Unit *Systemic Risks*. The researchers describe the affected systems, examine the impacts of changing frame conditions and identify and evaluate possible measures and actions for clients from industry and politics. Current topics include the stability of the electricity grids as the integration of renewable energies progresses, the evaluation of the costs and benefits of adapting transport infrastructures to climate change, approaches to further develop the German raw materials strategy, the links between technology change and raw material demand, as well as the dynamic modeling of global and regional raw material cycles.

Climate protection in transport is one of the main topics in the Business Unit *Transportation Systems*. On behalf of the European Commission, the innovativeness and policy measures needed to achieve a climate-friendly transport system by 2050 were investigated for all transport modes in the project GHG-TransPoRD. Europe-wide greenhouse gas emission reduction targets were derived from this for each mode of transport. A climate scenario up to 2030 was compiled for the Federal Ministry for the Environment, Nature Conservation and Nuclear Safety (BMU) in the Renewbility-II project and its macroeconomic effects were analyzed. This was done together with stakeholders from the automobile, energy and logistics industries as well as environmental and transport associations. This was also able to demonstrate that the transition to a Green economy is feasible and advantageous for Germany. What the “Future of the Automobile Industry” could look like was investigated in the innovation report of the same name for the TAB. Efficient and alternative drives for lightweight premium vehicles, new sales markets in China, Brazil/South America and India and new mobility concepts form the pillars of a sustainable automobile industry in Germany.

The issue of the stability of electricity supply systems against the background of the German government's change of energy policy requires extensive risk assessment.

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FOCUS ON NEW TECHNOLOGIES

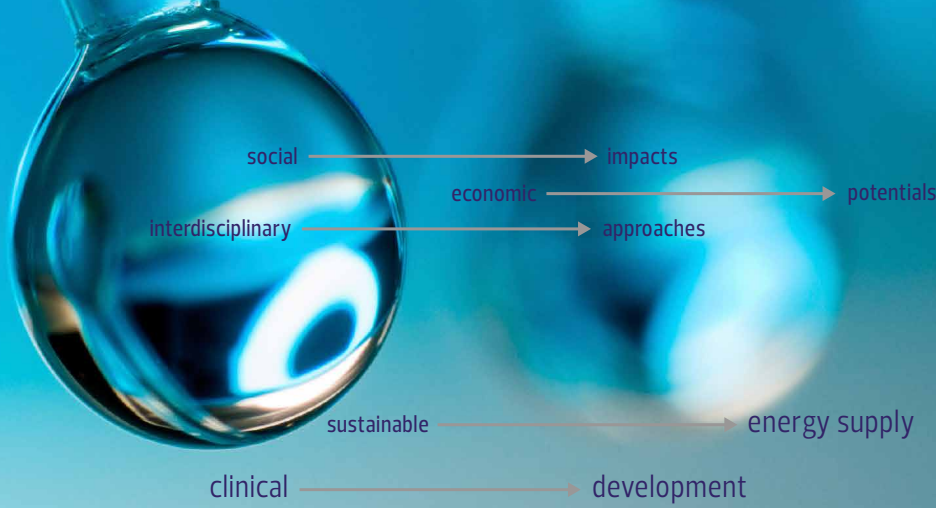
CC EMERGING TECHNOLOGIES

New technologies can contribute to sustainable energy supply, preservation of the environment, mobility, health and secure communication. The Competence Center Emerging Technologies analyzes the scientific and economic potentials of new technologies and evaluates their possible applications. It investigates the societal and political framework conditions as well as the economic, ecological and social impacts resulting from the utilization of new technologies. The research focuses on biotechnology, nanotechnology, health technologies, information and communication technologies as well as new interdisciplinary approaches which result from the interaction of these fields.

The increasing use of biotechnology in medicine, agriculture, food production, industrial production, energy conversion and environmental protection leads to new societal issues and the need for political action. The Business Unit *Biotechnology and Life Sciences* shows possibilities for decision-makers to exert influence. For example, in synthetic biology, biological modules are designed and constructed using engineering principles which can change or even newly create organisms specifically for different applications. On the one hand, this creates hope that biofuels, new materials and medication can be developed and produced resource-efficiently. On the other hand, there is great uncertainty regarding possible health-related and ecological consequences as well as social and economic effects. The Fraunhofer ISI systematically evaluates the strengths and weaknesses of existing assessment methods, e.g. in synthetic biology, in the relevant applications and policy contexts. It also develops these methods further and thus makes an important contribution to the early assessment of synthetic biology and other emerging technologies. This assessment is done responsibly and based on a socially robust innovation policy.

Biotechnology is increasingly used in different areas of society. This poses questions but also calls for action. Assessment methods show how policies can have a significant impact.

The Business Unit *Information and Communication Technologies* studies IT-based innovations and new media and formulates recommendations for changing political, economic and legal



framework conditions. In a study for the Federal Ministry of Economics and Technology (BMWi), the Fraunhofer ISI investigates the extent of the innovation capability and its potential for the cultural and creative economy. The digital value chain is quantified and the quality assessed; economic and business strategic recommendations for actions are defined.

The health system is facing major challenges in view of demographic change, new diagnosis and therapy methods and increasing cost pressure. In the Business Unit *Innovations in the Health System*, the Fraunhofer ISI examined the extent to which translational research as an interface of pre-clinical research, clinical development and care is in fact a solution to current challenges of biomedicine. It was shown that good structural conditions exist for translational research, but that strategic management can still be improved.

In order to increase the efficiency of the Federal Ministry of Education and Research (BMBF) funding programs, the Fraunhofer ISI coordinated two accompanying research projects in the area of health/biomedicine: The Fraunhofer ISI supports five consortia funded by the BMBF and six which are not funded by the BMBF with the projects "Healthcare regions of the future" and "Mobile diagnosis systems" by scientifically analyzing and actively promoting mutual learning processes, by integrating efficient structures and processes into regional research and development and health care or by successfully developing sophisticated micro systems for fast diagnoses at the patients' bedside to market maturity.

Nanotechnology holds many opportunities and challenges. Thus material innovations or new production processes can change a resource-intensive economy into a knowledge-intensive one.

The thematic field of nanotechnology, which is coordinated in the Competence Center Emerging Technologies, deals with the innovations and chances resulting from nanotechnology, as well as the challenges and design possibilities inherent in the diffusion of new or improved nanotechnology-based products. The potential to change a resource-intensive economy in Europe into a knowledge-intensive economy is attributed to nanoscience and technologies, material science and new production methods (NMP). New applications, business models, products, production processes and services are expected. The Fraunhofer ISI together with the Fraunhofer Alliance Nanotechnology conducted an analysis for the European Commission in order to get an improved information base for these expectations about the future. Qualitative and quantitative scenarios for the future importance of NMP technologies were developed with a view to the value added and employment as well as exports.

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STRATEGIC KNOWLEDGE FOR INNOVATIVE RESEARCH POLICY

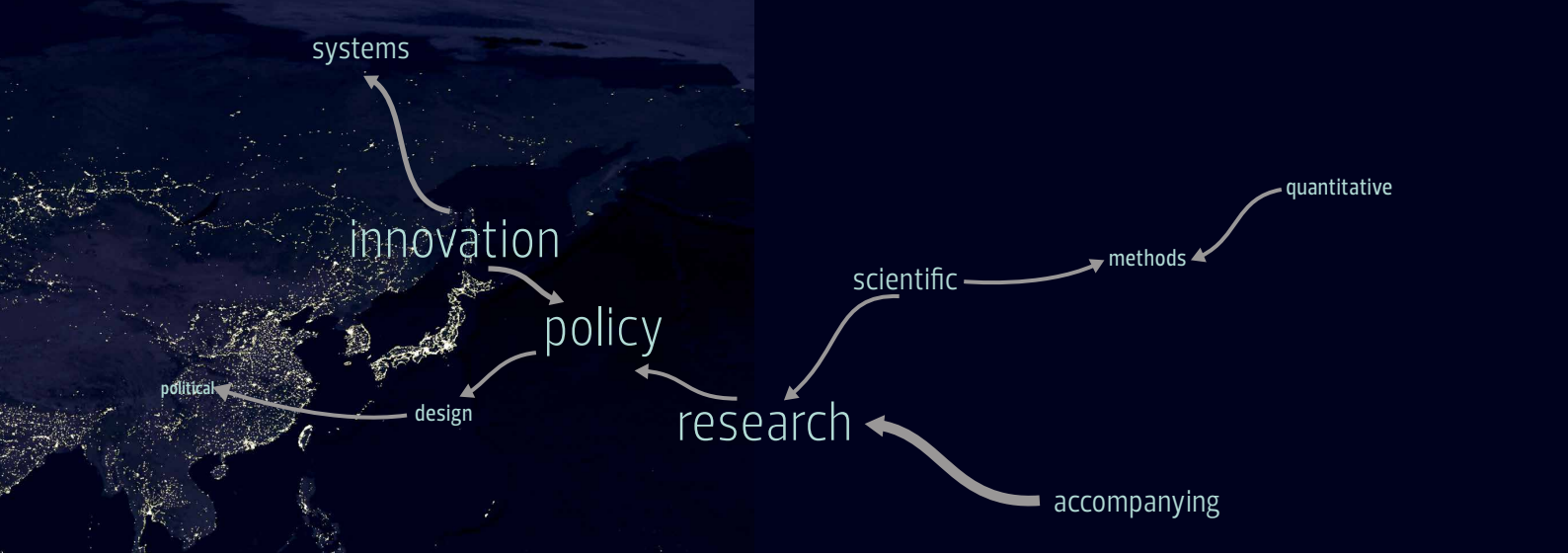
CC POLICY AND REGIONS

The Competence Center Policy and Regions investigates the way research and innovation systems work and change on the supranational, national and regional level. The aim is to design political decision processes more systematically and to justify decisions more rationally. To this end, it analyzes the actors and strategies in industry and science which produce knowledge and innovations and designs and evaluates instruments which are used by the state to support innovations. The necessary qualitative and quantitative methods comprise surveys, benchmarks, cluster analyses, evaluations, multiple view approaches and document, patent and publication analyses.

The Business Unit *Policy and Evaluation* evaluates primarily innovation policy measures and programs and conducts policy analyses in the fields of research, technology and innovation policy (RTI). Based on the concept of (inter)national research and innovation systems, the Fraunhofer ISI analyzes the contexts and conditions for successful innovations and the policy design initiatives taken by political institutions and actors.

Crowdfunding and other forms of micro financing are new drivers for the success of innovations and design initiatives of political institutions and actors.

Important activities in the past year were the generation of new insights on the topic of crowdfunding and other forms of informal microfinance and global challenges through technology-driven foreign direct investments and their implications for international investment agreements or the economic factor university. The Business Unit was also involved in the organization of workshops and conferences which addressed current challenges of the innovation system. One example is "The Future of the Science and Society Programme" of the European Commission and the European EuSPRI Conference on the topic "Towards transformative governance? Responses to mission-oriented policy paradigms", which was organized by the Fraunhofer ISI and took place in Karlsruhe.



Research in the Business Unit *Regions and Cluster* includes the analysis and assessment of innovation- and technology-related potentials and processes in regions and functional areas. The Fraunhofer ISI creates scientifically sound analyses of the structure and dynamics of regional innovation systems and technology clusters and assesses regional funding programs and initiatives on innovation and structural policy.

In 2012, the Saxon Technology Report 2012 was published, which describes and analyzes the innovation activity in the Free State of Saxony using multiple innovation and technology indicators. This makes it possible to compare Saxony's position with other Federal States and assess it in the international context as well as to evaluate its innovation activity and its location as a center of technology. An international study on public research and innovation funding institutions was conducted on behalf of the World Bank. The aim of the study was to analyze and compare the central research funding institutions in industrial nations (USA, Finland, Germany) and developing countries (Thailand, China, Mexico, Brazil) regarding their funding objectives, organizational characteristics, instruments and modes of operation.

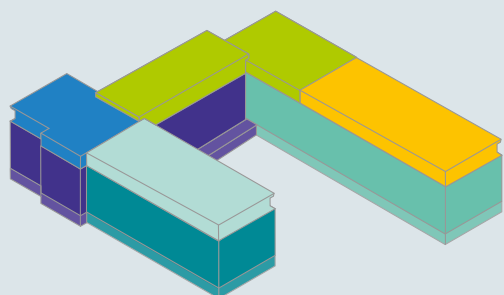
The Business Unit *Innovation Indicators* uses quantitative economic and socio-scientific methods to describe and analyze innovation systems and assess their competitiveness. Within the scope of the Competence Center Bibliometrics, the Fraunhofer ISI researches the migration and return of German scientists to and from abroad with the help of publication data on behalf of the Federal Ministry for Education and Research (BMBF). Approximately 13% of the German authors who published in scientific journals in 2000 also publish at least once in the following ten years exclusively at the address of an institution outside Germany. An even bigger number keep their German affiliation and simultaneously publish at an address abroad. Another project together with the "Stifterverband Wissenschaftsstatistik" on behalf of the BMBF differentiates the expenditure on research and development by technology field. R&D statistics differentiated by technology field are not only very interesting for scientific research questions, but can also help policymakers to tailor and focus funding programs.

Differentiation by technology field can be interesting for focusing R&D programs.

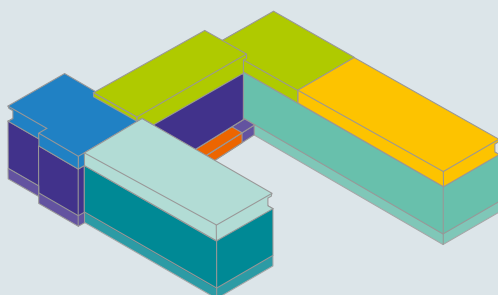
2012 saw the beginning of the accompanying research for the support measure "Research Campus – public-private partnership for innovations" for the BMBF. The objective of the accompanying research project is to support the exchange of information between the ten funded research campus models and to review topics from cross-disciplinary perspectives such as the regulation of property rights for specific target groups.

Head: Professor Knut Koschatzky, Phone: +49 721 6809-184, knut.koschatzky@isi.fraunhofer.de

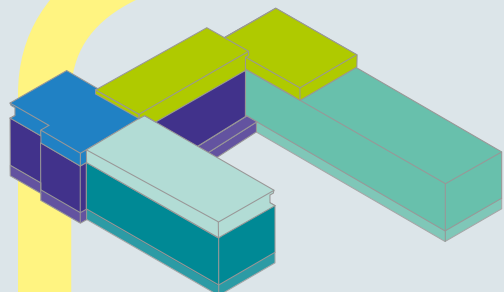
THE FRAUNHOFER ISI'S OFFICES – FROM THE BEGINNING TO THE PRESENT



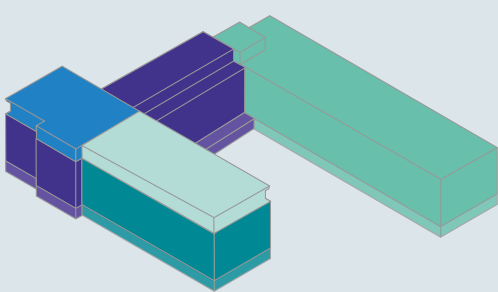
7 2002
ADDITIONAL STOREY
WEST WING



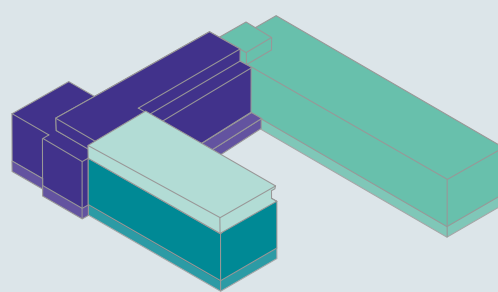
8 2009
CONVERSION OF UNDERGROUND
PARKING LOT INTO OPEN-PLAN OFFICE



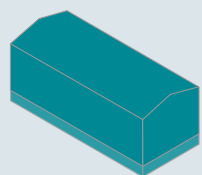
6 1998–1999
TOP STOREY CONVERSION
CENTRAL WING



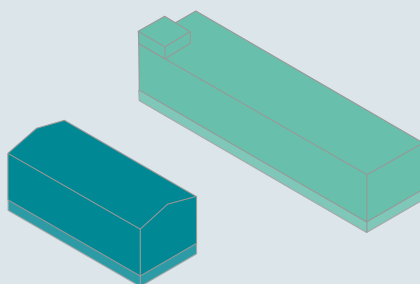
5 1993
ADDITIONAL STOREY
SOUTH



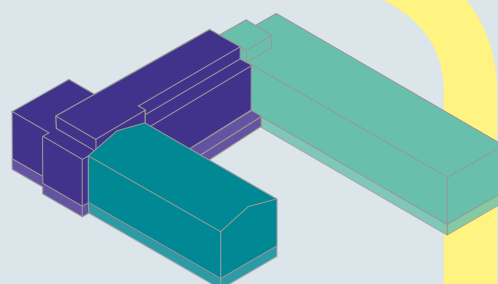
4 1992
ADDITIONAL STOREY
EAST WING



1 1961–1962
CONSTRUCTION OF
EAST WING



2 1968
WEST WING



3 1970
CENTRAL WING AND
SOUTH EXTENSION

ACADEMIC TEACHING

ACADEMIC TEACHING

Simon Berner

LECTURE

Lebensmitteltechnologie
University of Würzburg

Harald Bradke

LECTURE

Energiewirtschaftliche Aspekte der Energietechnik I
University of Kassel

SEMINAR

Energiewirtschaftliche Aspekte der Energietechnik II
University of Kassel

Tanja Bratan

LECTURE

E-Health
Hochschule Furtwangen University

Barbara Breitschopf

LECTURE

Socio-economic aspects of development planning
Karlsruhe Institute of Technology

Kerstin Cuhls

COURSE

Fachwortschatz: Gesellschaft, Staat und Politik
Universität Heidelberg

LECTURE

Geschichte Ostasiens in der Welt II
Universität Heidelberg

COURSE

Implementation von Ergebnissen der Zukunftsforschung
Freie Universität Berlin

KOLLOQUIUM

Kolloquium für BA, Master, Magisterkandidaten
Universität Heidelberg

SEMINAR

Management ausländischer Unternehmen in Japan
Universität Heidelberg

HAUPTSEMINAR

Zeitkonzepte und der Umgang mit der Zeit in Ostasien
Universität Heidelberg

Ewa Dönitz

SEMINAR

Innovations- und Projektmanagement
Femtec Berlin

LECTURE AND SEMINAR

Methoden der Zukunftsforschung
University of Kassel

Cheng Fan

LECTURE

Chinesische Sprache, Kultur und Geschichte
Duale Hochschule Mannheim

LECTURE

Volkswirtschaftslehre
Hochschule Karlsruhe – Technik und Wirtschaft

Eberhard Jochem

LECTURE CONTRIBUTION

Environmental impacts of energy conversion and use
ETH Zurich, Switzerland

Simone Kimpeler

SEMINAR

Einführung in die Soziologie
Hochschule Furtwangen University

SEMINAR

Empirische Methoden der Sozialforschung
Hochschule Furtwangen University

SEMINAR

Open Innovation
University of Potsdam

Daniel Jeffrey Koch

LECTURE AND SEMINAR

Roadmapping
University of Kassel

LECTURE AND SEMINAR

Unternehmensnetzwerke
University of Kassel

Knut Koschatzky

SEMINAR

Angewandte Wirtschaftsgeographie
Das deutsche Innovationssystem – theoretische Grundlagen, empirische Beispiele und politische Gestaltung
Universität Hannover

SEMINAR

Angewandte Wirtschaftsgeographie
Globalisierungsprozesse aus Sicht der New Economic Geography
Universität Hannover

SEMINAR

Angewandte Wirtschaftsgeographie
Regionale Innovationspotenziale und Instrumente der Innovationsförderung – Aktuelle Beispiele regionaler Innovationsforschung aus dem Fraunhofer ISI
Universität Hannover

Henning Kroll

SEMINAR

Angewandte Wirtschaftsgeographie
Strategien Regionaler Innovationsförderung in der EU vom Konvergenzziel zur Intelligenten Spezialisierung
Universität Hannover

Ralf Lindner

LECTURE

Akteure der Interessenvertretung und Parteien
Quadriga University of Applied Sciences Berlin

SEMINAR

Akteure und Rechtssetzungsverfahren auf europäischer Ebene
Quadriga University of Applied Sciences Berlin

LECTURE

Grundlagen und Prinzipien der Europäischen Union
Quadriga University of Applied Sciences Berlin

LECTURE

Grundlagen und Prinzipien der Gesetzgebung
Quadriga University of Applied Sciences Berlin

SEMINAR

Verfassungsorgane und Gesetzgebungsverfahren
Quadriga University of Applied Sciences Berlin

Carolin Michels

TUTORIAL

Übungen zu Wissensmanagement
Karlsruhe Institute of Technology

Emmanuel Muller

SEMINAR

Creativité, Innovation et Décision
Université de Strasbourg, France

Peter Neuhäusler

TUTORIAL

Management neuer Technologien – Technikbewertung mit Patentanalysen
Karlsruhe Institute of Technology

Katrin Ostertag

LECTURE

Socio-economic aspects of development planning (Masterstudiengang Resources Engineering)
Karlsruhe Institute of Technology

Anja Peters

SEMINAR

Umweltpsychologie
University of Basel, Switzerland

SEMINAR

Umweltpsychologie
University of Koblenz-Landau

Patrick Plötz

SEMINAR

Elektromobilität – Konzepte, Treiber und Potenziale
Karlsruhe Institute of Technology

Mario Ragwitz

LECTURE

Erneuerbare Energien in Europa
University of Freiburg

LECTURE

Renewable Energy – Resources, Technologies and Economics
Karlsruhe Institute of Technology

Thomas Reiß

LECTURE

Management neuer Technologien
Karlsruhe Institute of Technology

Karoline Rogge

LECTURE

Introduction to Ecological Economics
ETH Zurich, Switzerland

Clemens Rohde

SEMINAR

Energie und Ressourcenmanagement im Rahmen der Lehrveranstaltung Grundlagen des Planens, Entwerfens und Konstruierens
Technische Universität Darmstadt

LECTURE

Planung und Betrieb von Abfallbehandlungsanlagen
Technische Universität Darmstadt

ACADEMIC TEACHING | DISSERTATIONS | PRESENTATIONS

Hans-Dieter Schat

LECTURE

Business Excellence

FOM Hochschule für Oekonomie und Management, Mannheim and Stuttgart

LECTURE

Einfache Anwendungen der Statistik

AKAD Bildungsgesellschaft, Frankfurt a. M.

LECTURE

Güterwirtschaft

Hessische VWA Verwaltungs- und Wirtschafts-Akademie, Offenbach

LECTURE

Human Resource

FOM Hochschule für Oekonomie und Management, Stuttgart

LECTURE

Human Resource Management

FOM Hochschule für Oekonomie und Management, Mannheim

LECTURE

Personalcontrolling und -forschung

FOM Hochschule für Oekonomie und Management, Stuttgart

LECTURE

Personalmanagement

FOM Hochschule für Oekonomie und Management, Stuttgart

Joachim Schleich

LECTURE

Business Statistics

Grenoble Ecole de Management, France

ASSOCIATE ADJUNCT

PROFESSOR

Energiemanagement

Virginia Polytechnical Institute Blacksburg University, USA

LECTURE

Energy Marketing and Strategy

Grenoble Ecole de Management, France

OPEN UNIVERSITY COURSE

Internationale Klimapolitik

University of Koblenz-Landau

OPEN UNIVERSITY COURSE

Planspiel Emissionshandel

University of Koblenz-Landau

Torben Schubert

LECTURE

Innovation

Technische Universität Berlin

BLOCK SEMINAR

Survey of quantitative data techniques

Lund University, Sweden

ÜBUNG

Innovationsökonomie

Technische Universität Berlin

Oliver Som

LECTURE

Managing Organisational Boundaries

Hochschule Furtwangen University

LECTURE

Managing Organisational Change

Hochschule Furtwangen University

SEMINAR

Organisation und Innovation

Technische Universität Darmstadt

Thomas Stahlecker

SEMINAR

Angewandte Wirtschafts-geographie. Regionale Innovationsförderung in Deutschland am Beispiel der Strukturpolitik
Universität Hannover

Rainer Walz

LECTURE

Umwelt- und Ressourcenpolitik

Karlsruhe Institute of Technology

LECTURE

Umweltökonomik und Nachhaltigkeit

Karlsruhe Institute of Technology

Marion Weissenberger-Eibl

SEMINAR

Fallstudienseminar Innovationsmanagement für Wirtschaftsingenieure

University of Kassel

LECTURE AND SEMINAR

Grundlagen des Innovationsmanagements

University of Kassel

LECTURE AND SEMINAR

Unternehmensnetzwerke im Spannungsfeld von Hierarchie und Markt

University of Kassel

LECTURE AND SEMINAR

Wissensmanagement im Unternehmen – Strategie, Konzepte und Methoden

University of Kassel

Martin Wietschel

LECTURE

Energiepolitik

Karlsruhe Institute of Technology

LECTURE

Technologischer Wandel in der Energiewirtschaft

Karlsruhe Institute of Technology

SEMINAR

Themenfelder Energie und Umwelt

Karlsruhe Institute of Technology

Sven Wydra

LECTURE

Arbeitsmarkt und Soziale

Sicherung

International University of Co-operative Education, Darmstadt

LECTURE

Volkswirtschaftslehre

Hochschule Karlsruhe – Technik und Wirtschaft

DISSERTATIONS

Antje Bierwisch

Patente in Innovationskooperationen – Strategische Funktionen, vertragliche Gestaltung und Anforderungen an das Innovationsmanagement

Univ.-Prof. Dr. Marion A.

Weissenberger-Eibl

David Dallinger

Elektromobilität – Beitrag zur Integration von fluktuierenden Erzeugern aus Erneuerbaren Energien

Prof. Dr.-Ing. Jürgen Schmid

University of Kassel

Vicki Duscha

Developing countries and an international agreement on climate change

Prof. Dr. Karl-Martin Ehrhart

Karlsruhe Institute of Technology

Tobias Fleiter

The adoption of energy-efficient technologies by firms – An integrated analysis of the technology, behavior and policy dimensions

Prof. Dr. Ernst Worrell

Utrecht University, The Netherlands

Fabio Genoese

Energiewirtschaftliche Bewertung von Stromspeichern

Prof. Dr. Martin Wietschel

Karlsruhe Institute of Technology

Oliver Kleine

Planung von Strategien gegen Produktpiraterie. Ein systemdynamischer Ansatz

Prof. Dr. Thomas S. Spengler

Technische Universität Braunschweig

Arne Lüllmann

Einfluss dezentraler Erzeugung und erneuerbarer Energien auf die Vulnerabilität des Stromübertragungsnetzes

Prof. Wolfgang Kröger

ETH Zurich, Switzerland

Peter Neuhäusler

IPRs, Economic Performance and the Value of Patents – Five Essays from Different Perspectives

Prof. Knut Blind

Technische Universität Berlin

Michael Schleinkofer

Entstehung von akademischen Ausgründungen. Eine empirische Untersuchung zu fördernden und hemmenden Faktoren im Prozess der Gründungsvorbereitung

Prof. Dr. Jürgen Schmude

Ludwig-Maximilians-Universität München

Felix Tettenborn

Aspects of a system for separate urine collection and treatment – Selected techniques and potential implementation in an urban context

Prof. Ralf Otterpohl

Hamburg University of Technology

Benjamin Teufel

Der Einfluss von Mikropolitik auf das Produktentwicklungsportfolio technologieintensiver Unternehmen – Eine theoretische und empirische Analyse

Univ.-Prof. Dr. Marion A.

Weissenberger-Eibl

University of Kassel

PRESENTATIONS

EXAMPLES

Antje Bierwisch

Die Herausforderungen multikriterieller Bewertung technologischer Innovationen im Bereich der Luftverkehrssicherheit unter Berücksichtigung nicht-technischer Dimensionen

- ▶ Innosecure, Velbert

Foresight – structured engagement with complex futures

- ▶ Technology Management and Assessment, Hanoi, Vietnam

Managing Technology for the success of researchers, enterprises, economy and society – national perspective

- ▶ Technology Management and Assessment, Hanoi, Vietnam

Esther Bollhöfer

Product-Service Systems: Added Value for Productivity and Raw Material Efficiency at one Blow? Status Quo and Potentials in Resource-Intensive Production Processes

- ▶ GIN (greening of industries) conference 2012, Linköping, Sweden

Tobias Boßmann

Analyse von Verschiebungen in der Stromlastganglinie durch neue Energieanwendungen und Lastmanagement

- ▶ 12. Workshop des Student Chapters der GEE, Düsseldorf

Forecast of the European electricity demand until the year 2050 and the related impacts on the electricity load curve

- ▶ 1st KIC InnoEnergy Scientist Conference, Leuven, Belgium

Wieviel Energieeffizienz steckt in der EU Energy Roadmap 2050?

- ▶ 12. Symposium Energieinnovation, Graz, Austria

Harald Bradke

Energiewende – Im Alleingang wohin?

- ▶ Collège des Ingénieurs, Baden-Baden

Learning Energy Efficiency Networks LEEN – sharing experiences to rapidly reduce energy consumption

- ▶ International Conference on Building Performance icbp 2012, Berlin

Tanja Bratan

Opportunities, challenges and financial implications of assistive technologies and the provision of integrated healthcare

- ▶ 72. International Atlantic Economic Conference, Istanbul, Turkey

Potentiale von E-Health Anwendungen für eine patientenorientierte Versorgung

- ▶ Pharma Group Europe Conference, Colmar, France

Barbara Breitschopf

Capitalising on Renewables: Short- and Medium-term Opportunities and Economic & Employment Benefits. The German and European RE Policy – Motivation, Targets and its Economic Implications

- ▶ IEA-RETD, Ottawa, Canada

Contribution to the special session: Renewable energy policies – modelling challenges and economic results: Guidelines for employment impact assessment of renewable energy deployment – general aspects and net employment studies

- ▶ Econmod 2012, Seville, Spain

Methodological guidelines for estimating the employment impacts of renewable energy use in electricity generation

- ▶ IRENEC 2012, Istanbul, Turkey

Susanne Bühler

Frauen im Innovationssystem – im Team zum Erfolg

- ▶ Macherinnen! Wir brauchen Sie alle! Wirtschaftsstiftung Südwest, Kontaktstelle Frau und Beruf, Karlsruhe

Gender-Aspekte in der Forschung: Wie können Gender-Aspekte in Forschungsvorhaben erkannt und bewertet werden?

- ▶ Die Thematisierung von Geschlecht in der sportmedizinischen Forschung, German Sport University Cologne, Interdisziplinäres Genderkompetenzzentrum in den Sportwissenschaften, Cologne

Daniela Buschak

Defining service-based business models in manufacturing: A property rights perspective

- ▶ EUROMA Konferenz, Amsterdam, The Netherlands

Kerstin Cuhls

Demografischer Wandel und Innovationsfähigkeit im Unternehmen

- ▶ Unternehmensvortrag, Molsheim/Strasbourg, France

Methodologies for Integrating Foresight into Policies: The Case of Germany

- ▶ OECD-HSE International Conference, Moscow, Russia

Robotik in Japan

- ▶ Abendvortrag der FH Ludwigs-hafen und der Deutsch-Japanischen Gesellschaft Rhein-Neckar, Ludwigs-hafen

Stephanie Daimer

(with Miriam Hufnagl)

Konzepte zur Nutzung der Potenziale regionalen Engagements

- ▶ Workshop: Relevanz regionaler Aktivitäten für Hochschulen und das Wissenschaftssystem, Berlin

(with Miriam Hufnagl, Philine Warnke)

Strategic policy making and innovation system theory: Beyond systemic instruments

- ▶ 2012 Eu-SPRI Conference Towards Transformative Governance? Responses to mission-oriented innovation policy paradigms, Karlsruhe

David Dallinger

Grid integration of intermittent renewables using price-responsive plug-in electric vehicles

- ▶ Lawrence Berkeley National Laboratory, University of California and U.S. Department of Energy, Berkeley, USA

Friedrich Dornbusch

Academic patenting in Germany: A new comprehensive approach for the identification and analysis of academic patents

- ▶ ESF-APE-INV workshop: Scientists & Inventors, KU Leuven, Leuven, Belgium

Academic patenting in Germany:

Identification and analysis of university-firm collaborations under different local knowledge bases and technological regimes

- ▶ Econ Geo seminar, University of Utrecht, Utrecht, The Netherlands

Vicki Duscha

Can no-lose targets contribute to a 2 °C target?

- ▶ IAEE 2012, Venice, Italy

Incentives and effects of no-lose targets for including non-Annex I countries in global emissions reductions

- ▶ 4th Workshop on Game Theory in Energy, Resources and Environment, Montreal, Canada

Elisabeth Dütschke

Adoption of electric mobility – an analysis of likely early adopters in Germany

- ▶ 5th International Conference on Traffic and Transport Psychology 2012 (ICTTP 2012), Groningen, The Netherlands

Who will use electric vehicles?

- ▶ Future mobility. Theoretical, empirical and political aspects of the first stage of electric mobility evolution, Bremen

Wolfgang Eichhammer

Die Entwicklung der Stromnachfrage: Trends auf nationalen und internationalen Märkten

- ▶ dena Energieeffizienzkonferenz 2012, Berlin

German energy efficiency policy

- ▶ Low Carbon Society Research Network 4th Meeting, Oxford, UK

The industrial policy rationale of German low carbon policies

- ▶ Globelics Conference 2012, Hangzhou, China

Lorenz Erdmann

ICT and Sustainability: Exploring Indirect and Rebound Effects

- ▶ RESPONDER – Green ICT for Growth and Sustainability?, Vienna, Austria

Sustainable Innovations Living Labs

- ▶ Sustainable Innovation 12, Alanus Universität, Bonn

PRESENTATIONS

Wie kritisch ist die Versorgung mit Rohstoffen?

- ▶ Ressourceneffizienz-Kolloquium der Hochschule Pforzheim

Tobias Fleiter

Adoption of energy-efficiency measures in SMEs – an empirical analysis based on energy audit data

- ▶ ECEEE – industry summer study, Arnheim, The Netherlands

The German energy audit

program and the adoption of energy-efficiency measures by small and medium-sized firms

- ▶ AIEE – 12th IAEE European Energy Conference, Venice, Italy

Michael Friedewald

A new way of looking at privacy

- ▶ Conference: Privacy and Emerging Technologies, Berlin

Future Technologies – Future Privacy Challenges

- ▶ International Conference: Computers, Privacy and Data Protection, Brussels, Belgium

Supporting fundamental rights, privacy and ethics in surveillance technologies

- ▶ Policy Meeting: Monitoring the Internet. The Challenges of Cyber-Surveillance, Data Protection and Privacy in the EU, Brussels, Belgium

Fabio Genoese

Medium-term flexibility options in a power plant portfolio – Energy storage units vs. thermal units

- ▶ 9th International Conference on the European Energy Market (EEM), Florence, Italy

Matthias Gotsch

Anforderungen für Produktivitätsmessungen bei innovativen und wissensintensiven Unternehmensdienstleistungen

- ▶ Dienstleistungsmodellierung 2012, Bamberg

On the current state of knowledge transfer related to Service Innovations in Europe

- ▶ EPISIS Evaluation Workshop, Venlo, The Netherlands

Bruno Gransche

Der Einfluss von Konsumgenetik und Neuropädagogik auf Potentialitätsregime der Akzidenzkultur

- ▶ IV. Tagung Technik und Kultur, Hochschule Hannover

Dara Hallinan

Citizens' perceptions of data protection

- ▶ SAPIENT Review, Brussels, Belgium

Neurodata and Data Protection

- ▶ LiSS Berlin

Neurodata and Surveillance

- ▶ Security, Ethics and Justice Conference, Tübingen

Andrea Herbst

Bridging macroeconomic and bottom-up energy models – the case of efficiency in industry

- ▶ ECEEE – industry summer study, Arnheim, The Netherlands

Nils Heyen

Die Behandlung gesunder Patienten. Zur Rekonstruktion von Behandlungsbedürftigkeit am Beispiel genetischer Diagnostik

- ▶ Qualitative Gesundheitsforschung, Universität Magdeburg

Thomas Hillenbrand

Ökonomische, ökologische und soziale Auswirkungen unterschiedlicher Wassertarifstrukturen

- ▶ BDEW Informationstag Wasser „Neue Wassertarif-Modelle“, Mainz and Potsdam

Potenziale nachhaltiger Wasserinfrastrukturen für die Energiewende

- ▶ Workshop Wasserinfrastrukturen der Zukunft – Sozial und ökologisch verträgliche Lösungen bei Bevölkerungsrückgang, Potsdam

Stand und Perspektiven dezentraler Abwassersysteme

- ▶ 13. Kölner Kanal und Kläranlagen Kolloquium, Cologne

Miriam Hufnagl

Challenge-oriented policy making and innovation systems theory: reconsidering systemic instruments

- ▶ 2012 Eu-SPRI Conference Towards Transformative Governance? Responses to mission-oriented innovation policy paradigms, Karlsruhe

Regional engagement of German higher education institutions: relevance, potential and governance challenges

- ▶ 2012 Eu-SPRI Early Career Researcher Conference INTERACT UNI: New perspectives on enduring research questions in university-society interaction? University of Twente, Enschede, The Netherlands

What's strategic in today's

innovation policy strategies? Conceptual thoughts on challenge-oriented innovation policies

- ▶ 4th Department of Business and Politics Paper Seminar, Copenhagen Business School, Copenhagen, Denmark

Bärbel Hüsing

ESF-ESA Forward Look Techbreak Biotechnology Contributions

- ▶ TECHBREAK – Technology breakthroughs for scientific progress in Space Research, Thematic Workshop on Biotechnologies. European Science Foundation, European Space Sciences Committee, Brussels, Belgium

Individualisierte Medizin – ein Überblick

- ▶ Ganz automatisch zur Diagnose? Laborautomation als Motor für die molekulare Diagnostik und die individualisierte Medizin. Promega GmbH Journalisten-Workshop, Mannheim

Personalised Medicine in the Future Health Care System

- ▶ Swiss National MD-PhD Scientific Meeting 2012: Translational, Stratified and Personalised Medicine: Realities, Eventualities and Implications for Physician Scientists. Schweizerische Akademie der Medizinischen Wissenschaften, Solothurn, Switzerland

Ralf Isenmann

Mit Roadmaps auf der Erfolgsspur zu Multi Cross Industry Innovation

- ▶ Symposium Kunden verstehen – Chancen nutzen: Multi Cross Industry Innovation, EWE ZentrumZukunft, Emstek

Eberhard Jochem

Effiziente Lösungen durch Energieeffizienz-Netzwerke verdoppeln

- ▶ Motor Summit – Umsetzung Switzerland, Zurich, Switzerland

Energieeffizienz als Erfolgsfaktor – neue Geschäftsfelder zur Senkung der Energiekosten bei Geschäftskunden

- ▶ HEA Jahrestagung 2012, Berlin

Energieeffizienz in der Produktion – Anregungen zur Forschung

- ▶ Berliner Energietage 2012, Berlin

Petra Jung Erceg

Business Excellence Modelle – Wer setzt sie ein? Was nutzen sie?

- ▶ 58. Kongress der Gesellschaft für Arbeitswissenschaft, Kassel

Organisational and Marketing Innovation – Costrained Drivers of Growth

- ▶ Conference on nontechnological Innovation, Ljubljana, Slovenia

Oliver Kleine

Planung von Strategien gegen industrielle Produktpiraterie – ein Simulationsinstrument

- ▶ VDMA Zentraler Arbeitskreis Konstruktion, Frankfurt a. M.

Producing construction equipment in Europe

- ▶ CECE CONGRESS Berlin 2012 Making it in Europe, Berlin

Ressourceneffizienz in der Produktion – Potenziale und Herausforderungen für den deutschen Mittelstand

- ▶ Mittelstandsforum Ressourceneffizienz, Stuttgart

Marian Klobasa

Contribution of Demand Response in a future Power System

- ▶ 3rd IEEE PES Innovative Smart Grid Technologies (ISGT) Europe Conference, Berlin

Die Direktvermarktung im System der Energieregulierung

- ▶ Das EEG2012 – Schwerpunkt: Direktvermarktung, Jubiläumsveranstaltung der EEG Clearingstelle, Berlin

The Relevance of Load Management in the Smart Grid Discussion

- ▶ Smart Grid Development & Regulation – Experiences from China, the US and Germany, Workshop der GIZ und der NDRC, Beijing, China

Knut Koschatzky

Actor diversity and policy coordination in regional innovation systems – Challenges for smart specialization?

- ▶ 7th International Seminar on Regional Innovation Policies (RIP 2012), Porto, Portugal

Kooperation zwischen Wissenschaft und Wirtschaft im Wandel: Ansatzpunkte zur Etablierung neuer Kooperationsformen

- ▶ Arbeitstagung des Verbandes der Hochschullehrer für Betriebswirtschaft e.V. Akquisition von Drittmitteln, Frankfurt a. M.

Location pattern of the headquarters of research-oriented multinational enterprises in Europe

- ▶ Eurolio European Seminar Geography of Innovation 2012, Saint-Etienne, France

Michael Krail

Alternative Antriebskonzepte – Ökonomische Wirkungen

- ▶ Alternative Antriebskonzepte bei sich wandelnden Mobilitätsstilen, Karlsruhe

Reducing the climate impact of transport – technologies and policies for road transport

- ▶ 30. Internationale Konferenz der System Dynamics Society, St. Gallen, Switzerland

The potential of alternative fuel technologies and of fuel efficiency technologies for heavy goods vehicles

- ▶ 12th International Symposium on Heavy Vehicle Transport Technology, Stockholm, Sweden

Henning Kroll

Academics' Regional Engagement in Germany

- ▶ CHEPS International Conference – New Perspectives in Higher Education and Regional Development, Twente, The Netherlands

Making sense of alleged fuzziness – diverging framework conditions and policy rationales shaping cluster policies in Germany

- ▶ Eurolio European Seminar Geography of Innovation 2012, Saint-Etienne, France

The role of public R&D funding in innovation systems of Asian catch-up countries

- ▶ ASIALICS Conference, Manila, Philippines

Marianne Kulicke

Innovationsfinanzierung als unternehmerische Herausforderung

- ▶ Innovationsfinanzierung im Mittelstand (Wirtschaftsförderung der Region Stuttgart), Stuttgart

Methoden und Vorgehensweisen zur Wirkungsmessung in Evaluationen – Querschau über die Evaluationspraxis von Forschungs-, Technologie- und Innovationsprogrammen

- ▶ 15. Jahrestagung der Gesellschaft für Evaluation (DeGEval), Potsdam

Wirkungsmodelle in klassischen Evaluationen und anderen Ansätzen zur Bewertung von Innovationspolitik – ein Überblick

- ▶ Frühjahrstagung des Arbeitskreises Forschungs-, Technologie- und Innovationspolitik der Gesellschaft für Evaluation (DeGEval), Berlin

Timo Leimbach

Developing policy strategies for emerging technologies

- ▶ VTT Innovation Studies Seminar, Espoo, Finland

Die Entwicklung der Softwareindustrie in Deutschland

- ▶ Konferenz Zeitgeschichte der Informationsgesellschaft, Zentrum für Zeithistorische Forschung (ZZF), Potsdam

Christian Lerch

A dynamic model about service innovations in industrial firms – Evolution, potentials and strategic implications

- ▶ International Schumpeter Society Conference, Brisbane, Australia

Linking Innovation and Service Productivity – An analysis of interactive-effects in knowledge-intensive business services

- ▶ International System Dynamics Society Conference, St. Gallen, Switzerland

Technologieeinsatz richtig planen – Lösungsansätze für KMU

- ▶ Innovationsallianz Technologie-Region Karlsruhe

Ralf Lindner

The transformative potential of new media: between hype and reality

- ▶ Marshall McLuhan and Harold A. Innis: Communication Theory for a Multicultural World? University of Augsburg

Frank Marscheider-Weidemann

COHIBA – Projektergebnisse und Maßnahmen zur Reduzierung von gefährlichen Stoffen in der Ostsee

- ▶ Meeresumwelt Symposium, Hamburg

COHIBA – Regionale Stoffstromanalysen

- ▶ Abschlussveranstaltung Mecklenburg-Vorpommern, Güstrow

Katharina Mattes

Improving the research and knowledge transfer as a means to improve energy efficiency in production – the German approach Effizienzfabrik

- ▶ ECEEE – industry summer study, Arnheim, The Netherlands

Material Efficiency in the German Manufacturing Industry: Which Strategic Stimuli Facilitate the Tapping of the Saving Potentials?

- ▶ EUROMA/Production and Operations Management World Conference, Amsterdam, The Netherlands

Carolyn Michels

Something old, something new, something borrowed ... and a new scientific topic in her shoe?

- ▶ 17th Nordic Workshop on Bibliometrics and Research Policy, NBW 2012, Helsinki, Finland

The tell-tale title: How to track topics over time with a two-step approach

- ▶ STI Conference 2012, Montreal, Canada

Emmanuel Muller

Evaluation des projets pilotes Innov 30 et Innov 60

- ▶ Atelier de diffusion des résultats de la phase pilote de management de l'innovation, Tunis, Tunisia

Grenzüberschreitend anders denken: Das Beispiel der Universität de Strasbourg am Oberrhein

- ▶ Workshop Relevanz regionaler Aktivitäten für Hochschulen und das Wissenschaftssystem, Berlin

Emmanuel Muller (with Andrea Zenker)

Wege der methodischen Unterstützung bei Evaluationen: Pilotaktivitäten Innovationsmanagement in Tunesien

- ▶ Vortrag und Diskussion bei der Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH, Eschborn

Peter Neuhäusler

Innovationsindikator 2011 – Ergebnisse und Methode

- ▶ Stipendiaten- und Alumni-treffen, Bad Honnef

Benjamin Pfluger

Impact of renewable energies on conventional power generation technologies and infrastructures from a long-term least-cost perspective

- ▶ 9th International Conference on the European Energy Market (EEM), Florence, Italy

Modellgestützte Betrachtung möglicher Pfade für eine Dekarbonisierung des europäischen Stromsektors bis 2050

- ▶ 12. Symposium Energieinnovation, Graz, Austria

Patrick Plötz

A function-based approach to stock modeling with application to compressed air systems

- ▶ Group seminar Lawrence Berkeley National Laboratory, Berkeley, USA

Comparison of charging infrastructures for fuel cell and battery electric vehicles

- ▶ f-cell Konferenz 2012, Stuttgart

Energy Efficiency Policies for Different Firm Sizes: Challenging Current Policies with Empirical Data

- ▶ ECEEE – industry summer study, Arnheim, The Netherlands

Martin Pudlik

Fostering renewable energy technologies in emerging countries

– Integrated policies to exploit economic benefits and increase the innovative potential

- ▶ EMIS – Solar Energy & Energy Efficiency Forsee, Tunis, Tunisia

PRESENTATIONS | PROJECTS

Renewable energy technologies in emerging countries – Aspects of policy development and local manufacturing based on a modeled scenario for 2050

- ▶ EnerSol – World Sustainable Energy Forum, Tunis, Tunisia

Mario Ragwitz

European experiences in designing policies for renewable energy: Where do we stand today?

- ▶ 5th MENA Renewable Energy Conference (MENA-REC 5), Marrakesh, Morocco

Gleitende Marktprämie: Der Anfang ist gemacht, wie kann es weitergehen?

- ▶ BDEW-Tagung: Smart Renewables 2012, Berlin

Integrating renewables, energy markets and infrastructure

- ▶ Annual workshop of IEA Renewable Energy Working Party & Renewable Industry Advisory Board, Paris, France

Thomas Reiß

Energiespeicher Monitoring für die Elektromobilität (EMOTOR)

- ▶ Statusveranstaltung Elektromobilität, Bonn

Trends in synthetic biology based on patent data

- ▶ Visions of Synthetic Biology – 2nd Workshop of SynBioTA, Bremen

Zukunftstrends – Neue Technologien

- ▶ Erfinder, Tüftler, Visionäre – Herausforderungen in der Zukunft der Region Rhein-Main-Neckar, Darmstadt

Clemens Rohde

Der Beitrag der Energieeffizienz zur Energiewende

- ▶ Neues aus der Umwelttechnik und Infrastrukturplanung, Darmstadt

Energy Efficiency Targets for Industry – Evaluating Implementation Options

- ▶ ECEEE – industry summer study, Arnheim, The Netherlands

Andreas Sauer

Roadmapping of disruptive technologies – using the example of advanced energy storage for electric mobility

- ▶ 1st KIC InnoEnergy Scientist Conference, Irish College, KU Leuven, Belgium

Wolfgang Schade

Developing a European strategy in transport to achieve energy efficiency and GHG emission targets

- ▶ Sitzung der Ausschussvorsitzenden für Energie, Gebäude und Verkehr aller nationalen Parlamente der EU auf Einladung der dänischen EU-Ratspräsidentschaft, Copenhagen, Denmark

Europäische Rahmenbedingungen für die deutsche Mobilitäts- und Kraftstoffstrategie

- ▶ BMVBS-Werkstattgespräch „Die Mobilitäts- und Kraftstoffstrategie im Spiegel internationaler und europäischer Entwicklungen“, Berlin

VIVER – Vision für nachhaltigen Verkehr 2050

- ▶ vivavelo – Jahreskongress der Fahrradbranche, Berlin

Hans-Dieter Schat

Ageing workforces as a challenge for enterprises

- ▶ Expert Workshop: Ageing and Innovation. Conference Documentation (Bundesinstitut für Bevölkerungsforschung und KfW Entwicklungsbank), Berlin

Demografie und Innovation: Konzepte und empirische Erkenntnisse

- ▶ Frühjahrstagung der Gesellschaft für Arbeitswissenschaft, Kassel

Exzellentes Ideenmanagement

- ▶ Ideenmanagement Erfahrungsaustauschgruppe bei Firma Westag & Getalit, Rheda-Wiedenbrück

Joachim Schleich

Does smart metering reduce residential electricity demand?

- ▶ European Energy Markets, Florence, Italy

Effects of feedback on residential electricity demand – Results from a smart metering field trial in Austria

- ▶ Jahrestagung International Association of Energy Economists, Venice, Italy

Effects of feedback on residential electricity demand

- ▶ Jahrestagung European Association of Environmental and Resource Economists (EAERE), Prague, Czech Republic

Barbara Schlomann

Are the Energy Savings Sufficient? Impact of Energy Efficiency Policies Included in the 2011 NEEAPs

- ▶ International Energy Program Evaluation Conference (IEPEC), Rome, Italy

Das Instrument der Energieeinsparquote

- ▶ EED-Umsetzungskonferenz der DENEFF, Berlin

Energy Saving Potential of Converged ICT and CE

- ▶ 2012 IEEE International Conference on Consumer Electronics (ICCE), Las Vegas, USA

Esther Schnabl

Factors driving engagement in politically supported clusters and networks of firms

- ▶ 7th International Seminar on Regional Innovation Policies (RIP 2012), Porto, Portugal

Innovative Formen der Mitgestaltung regionaler Entwicklung – zusammenfassender Überblick aus deutschen Fallstudien

- ▶ Workshop Relevanz regionaler Aktivitäten für Hochschulen und das Wissenschaftssystem, Berlin

Gerda Schubert

Modeling hourly electricity generation from PV and wind plants in Europe

- ▶ 9th International Conference on the European Energy Market (EEM), Florence, Italy

Torben Schubert

(with Stephanie Daimer)

Third-party funding as a challenge to international academic co-publishing

- ▶ 2012 Eu-SPRI Conference Towards Transformative Governance? Responses to mission-oriented innovation policy paradigms, Karlsruhe

(with Peter Neuhäusler)

Towards a richer specification of the exploration/exploitation trade-off

- ▶ DRUID-Conference, Copenhagen, Denmark

(with Peter Neuhäusler)

Towards a richer specification of the exploration/exploitation trade-off

- ▶ R&D Management Conference, Grenoble, France

Jana Schuhmacher

Privacy and security in the media – a European-wide analysis

- ▶ 4S-EASST Conference 2012, Copenhagen, Denmark

Ralph Seitz

Future Research in Germany

- ▶ Technology Management and Assessment, Hanoi, Vietnam

Roadmap methodology

- ▶ Technology Management and Assessment, Hanoi, Vietnam

Oliver Som

Absorptive Capacity of non-R&D intensive firms in the German manufacturing industry

- ▶ 14th International Schumpeter Society Conference, Brisbane, Australia

Changing patterns of R&D relocation activities in the course of the global economic crisis

- ▶ DRUID-Conference, Copenhagen, Denmark

Innovation without R&D – heterogeneous innovation patterns of non-R&D performing firms in the German manufacturing industry

- ▶ 2012 Eu-SPRI Conference

Towards Transformative Governance? Responses to mission-oriented innovation policy paradigms, Karlsruhe

Thomas Stahlecker

Agriculture and innovation – a neglected sector in innovation research and innovation policy

- ▶ 2012 Eu-SPRI Conference Towards Transformative Governance? Responses to mission-oriented innovation policy paradigms, Karlsruhe

Jan Steinbach

Die Novelle des EEWärmeG 2011 – Erkenntnisse aus der wissenschaftlichen Begleitforschung
▶ dena Dialogforum – Energieeffizienz und erneuerbare Energien im Gebäudebestand, Berlin

Konzeption Haushaltsunabhängiger Förderinstrumente für EE-Wärme

▶ Forum Erneuerbare Energien auf der Hannover Messe, Hannover

Luis Tercero Espinoza

Criticality of mineral raw materials and sustainability assessment
▶ Expert Workshop on Security of Supply and Scarcity of Raw Materials, Ranco, Italy

How could the EU's methodology for defining critical raw materials be enhanced?

▶ EU-US Expert Workshop on Mineral Raw Materials Flows & Data, Brussels, Belgium

Kritische Rohstoffe – Anwendungen, Herausforderungen und Chancen

▶ IHK Region Stuttgart – Industrieausschuss, Stuttgart

Felix Tettenborn

Action strategies – cost-effective solutions to reduce emissions to the Baltic Sea (Åtgärdsstrategier)
▶ COHIBA nationella seminarium, Stockholm, Sweden

Urban water infrastructure – Need for action and perspectives
▶ m:ci-Workshop II, Stuttgart

Wasserinfrastruktursysteme für morgen

▶ Sulzer Pumpen Akademie, Bruchsal

Axel Thielmann

Batterie-Roadmapping und Monitoring
▶ Workshop Technologie-Roadmapping Batterieproduktion des VDMA, Frankfurt a. M.

Battery Technology Monitoring and Roadmapping – the German Perspective

▶ National Institute for Materials Science (NIMS), Tsukuba, Japan

Battery Technology Monitoring and Roadmapping – the German Perspective

▶ Germany-Korea Battery Technology Workshop, Dormagen

Roadmapping und Wirtschaftlichkeit dezentraler Energiespeicher

▶ IHK Veranstaltung: Dezentrale Energieerzeugung, Fraunhofer-Institut für Chemische Technologie, Pfingsttal/Berghausen

Trends and Prospects of Energy Storage Distribution Strategies in the EU

▶ The Battery Conference 2012 – KBIA (Korea Battery Industry Association), Seoul, South Korea

Marion A. Weissenberger-Eibl

Herausforderungen und Chancen des strategischen Innovationsmanagements in der Praxis

▶ Baden-Badener Unternehmergespräch, Baden-Baden

Innovationsindikator 2012 – Ergebnisse

▶ Vorstellung des Innovationsindikators, Berlin

Schaffung von Kristallisationskeimen für die großen Forschungsthemen in Bayern

▶ Innovationsgipfel der CSU-Landtagsfraktion und der CSU-Wirtschaftskommission, Munich

Ute Weißfloch

Multikriterielle Gruppenbewertung von Produkt-Dienstleistungssystemen: Eine Fallstudie über das Leckagemanagement von Druckluftsystemen

▶ Workshop Entscheidungsunterstützung durch Operations Research im Energie- und Umweltbereich, der GOR-Arbeitsgruppen Entscheidungstheorie und -praxis und OR im Umweltschutz, Goslar

Martin Wietschel

Impulsvortrag: neue Antriebe

▶ Wie fahren wir morgen? Mobilität im Zeichen der Energiewende Bürgertagung, Berlin

Nutzer von Elektrofahrzeugen aus wirtschaftlicher und psychologischer Perspektive

▶ Vortrag bei VW, Wolfsburg

The Future of Electric mobility

▶ National Conference on E-Mobility, Valletta, Malta

Sven Wydra

Potentiale regionaler Gesundheitswirtschaft

▶ MetaForum-Workshop für Landes- und Bundespolitiker der SPD, Berlin

The (potential) merge of industrial and systemic innovation policy

▶ Conference: Innovation as the source of international competitiveness, Poznań, Poland

Christoph Zanker

Innovationsstrategien im Mittelstand

▶ Forum Mittelstand der WHU Vallendar, Vallendar

Innovationsstrategien jenseits Forschung und Entwicklung

▶ ACENTISS Engineering Day, Ottobrunn

Neue Produktionsmodelle und Innovationen in Unternehmen

▶ Frankenthaler Sozialpartner Forum, Frankenthal

Andrea Zenker

New ways of solving problems in applied research: The example of a joint French-German research programme

▶ 2012 Eu-SPRI Conference Towards Transformative Governance? Responses to mission-oriented innovation policy paradigms, Karlsruhe

Research and innovation across the border: A comparative view on the contexts and selected indicators in France and Germany

▶ Dialog Science/Journées de la Science, Région Métropolitaine Trinationale du Rhin Supérieur, Strasbourg, France

Peter Zoche

Interdisziplinarität ziviler Sicherheitsforschung – Perspektiven und Probleme

▶ Was heißt interdisziplinäre Risiko- und Sicherheitsforschung? Forschungszentrum RISK – Universität der Bundeswehr, Munich

ENERGY POLICY AND ENERGY MARKETS

PROJECTS AND CONTACT PERSONS

• Analysis of the RES technology diffusion under the DP2050 and of future EU-MENA RES-E support schemes

Inga Boie

• Consultancy Services for a Combined Renewable Energy Master Plan for Egypt

Inga Boie

• Analyse zu übergreifenden einzel- und gesamtwirtschaftlichen Nutzen- und Verteilungswirkungen des Ausbaus der erneuerbaren Energien unter Berücksichtigung der Wechselwirkungen zwischen den Bereichen Strom, Wärme und Verkehr

Barbara Breitschopf

• Review of impact assessment studies and elaboration of guidelines to assess impacts of RE use

Barbara Breitschopf

• Einzel- und gesamtwirtschaftliche Analyse von Kosten- und Nutzenwirkungen des Ausbaus der erneuerbaren Energien im Strom- und Wärmemarkt

Barbara Breitschopf

• Überprüfung der aktuellen Ausnahmeregelungen für die Industrie im Bereich des EEG im Hinblick auf Treffsicherheit und Konsistenz mit anderen Ausnahmeregelungen im Energiebereich unter besonderer Berücksichtigung der internationalen Wettbewerbsfähigkeit und Strompreissituation

Barbara Breitschopf

• Vorbereitung und Begleitung bei der Erstellung eines Erfahrungsberichtes gemäß § 18 Erneuerbare-Energien-Wärmegesetz

Barbara Breitschopf

• Ausgestaltung des neuen Klimaschutzabkommens: Analyse der und Vorschläge für Verpflichtungen der Industriestaaten

Vicki Duscha

PROJECTS

- Ausweitung des Emissionshandels auf neue Sektoren und Kleinemittenten (zum Beispiel Gebäudebereich) – Potenziale, Ausgestaltung, Verbindung mit dem internationalen Klimaregime
Vicki Duscha
- Cooperative regimes for future climate policy (CORE) – Teilvorhaben 1
Vicki Duscha
- Emissionsminderung in Industriestaaten und Entwicklungsländern – Kosten, Potenziale und ökologische Wirksamkeit
Vicki Duscha
- Evaluierung und Weiterentwicklung des EU-Emissionshandels (EU-ETS-5)
Vicki Duscha
- Klimaschutzszenario 2050
Wolfgang Eichhammer
- Monitoring of EU and national energy efficiency targets
Wolfgang Eichhammer
- Technical support to the Commission in developing electricity consumption efficiency Benchmarks in the context of the Guidelines on state aid for indirect emission costs during the 3rd phase of the Emissions Trading System
Wolfgang Eichhammer
- Unterstützung der GIZ China im Programm Energiepolitik und Energieeffizienz (EPEE)
Wolfgang Eichhammer
- Verbesserung der methodischen Grundlagen und Erstellung eines Treibhausgasemissionsszenarios als Grundlage für den Projektionsbericht 2011 im Rahmen des EU-Treibhausgasmonitorings
Wolfgang Eichhammer
- Wissenschaftliche Unterstützung bei der Erarbeitung von Vorschlägen für eine EU Energy Roadmap (Erreichung der Klimaschutzziele der EU bis 2050 durch Strukturwandel, Energieeinsparungen und Effizienztechnologien)
Wolfgang Eichhammer
- Wissenschaftliche Unterstützungsleistungen bei der weiteren Ausgestaltung und Umsetzung des Energiekonzepts der Bundesregierung
Wolfgang Eichhammer
- Assessment of technologies and solutions for capacity adequacy and flexibility in future electricity markets
Marian Klobasa
- Direktvermarktung von Strom aus erneuerbaren Energien
Marian Klobasa
- Gutachten zur CO₂-Minderung im Stromsektor durch den Einsatz erneuerbarer Energien. Update für 2010 und 2011
Marian Klobasa
- Speichertechnologien und Schaltschranksysteme im Smart Grid
Marian Klobasa
- Rechtliche und instrumentelle Weiterentwicklung des EEG (Vorhaben III des EEG-Erfahrungsberichts)
Benjamin Pfluger
- Beyond 2020: Design & impact of a harmonised policy for RES(E) in Europe
Mario Ragwitz
- Definition of Pathways, Potentials and Policy Support Schemes of Renewable Energy Technologies in the EU
Mario Ragwitz
- Erarbeitung einer integrierten Wärme- und Kältestrategie für das BMU
Mario Ragwitz
- Fortschrittsbericht zur Erneuerbaren-Richtlinie der EU
Mario Ragwitz
- Komponenten und Systeme zur Gleichspannungskopplung von Erzeugern, Speichern und Verbrauchern im europäisch-afrikanischen Netzverbund (SuperGrid)
Mario Ragwitz
- Model based analysis of the impact of desert power on the EUMENA electricity markets
Mario Ragwitz
- Review of the production cost advice for the renewable energy incentive (SDE+) in 2013
Mario Ragwitz
- Support activities for assessment of progress in renewable energy and sustainability of biofuels
Mario Ragwitz
- Wissenschaftliche Begleitung und Unterstützung der International Feed-in Cooperation (IFIC)
Mario Ragwitz
- Wissenschaftliche Begleitung und Unterstützung der Umsetzung der flexiblen Mechanismen der Zielerreichung im Rahmen der EU-Richtlinie für erneuerbare Energien
Mario Ragwitz
- Wissenschaftliche Beratung Luxemburgs zur Ausgestaltung der Förderinstrumente für erneuerbare Energien im Strom- und Wärmesektor
Mario Ragwitz
- Wissenschaftliche Unterstützung bei Fragen der Weiterentwicklung der europäischen Rahmenbedingungen zur Förderung erneuerbarer Energien im europäischen Energiemarkt
Mario Ragwitz
- Zukunftswerkstatt Erneuerbare Energien
Mario Ragwitz
- RESPONSES: European responses to climate change: deep emissions reductions and mainstreaming of mitigation and adaptation
Kristin Reichardt
- The impact of the German policy mix on technological and structural change in renewable power generation technologies
Karoline Rogge
- The Relevance of Voluntary Efforts and Fairness Preferences for the Success of International Climate Policy: A Theoretical and Empirical Analysis at the Individual Level
Joachim Schleich
- Energieverbrauch des Sektors Gewerbe, Handel, Dienstleistungen (GHD) in Deutschland für die Jahre 2007 bis 2010
Barbara Schlomann
- Energieverbrauch des Sektors Gewerbe, Handel, Dienstleistungen (GHD) in Deutschland für die Jahre 2011 bis 2013
Barbara Schlomann
- Erstellung und Generierung von Treibhausgasemissionsszenarien als Grundlage für den Projektionsbericht 2013
Barbara Schlomann
- Kosten-/Nutzen-Analyse der Einführung einer Energieeinsparquote bzw. ähnlicher Instrumente zur Realisierung von Endenergieeinsparungen in Deutschland
Barbara Schlomann
- Methoden- und Indikatorenentwicklung für Kenndaten zum Klimaschutz im Energiebereich
Barbara Schlomann
- Instrumentelle und rechtliche Weiterentwicklung im EEG (Vorhaben IV)
Frank Sensfuß
- Kombinierte Modellierung der Strom- und Wärmeversorgung
Frank Sensfuß
- Perspektiven für die langfristige Entwicklung der Strommärkte und der Förderung erneuerbarer Energien bei ambitionierten Ausbauzielen
Frank Sensfuß
- Regenerative Energieträger zur Sicherung der Grundlast in der Stromversorgung – Beitrag, Perspektiven, Investitionen
Frank Sensfuß
- Fachliche und juristische Unterstützungsleistungen zur Prüfung eines neuen Instruments für erneuerbare Wärme in Umsetzung des Energiekonzepts vom 28. September 2010
Jan Steinbach

ENERGY TECHNOLOGY AND ENERGY SYSTEMS

PROJECTS AND CONTACT PERSONS

- Lernende Energieeffizienz- und Klimaschutz-Netzwerke: 30 Pilot-Netzwerke und Entwicklung von Investitionsberechnungshilfen
Harald Bradke

- iZeus (Intelligent Zero Urban System): Netzintegration von erneuerbaren Energien und Akzeptanzstudien
David Dallinger

- Chancen für und Grenzen der Akzeptanz von CCS in Deutschland
Elisabeth Dütschke

- Themenfeld Nutzerperspektive
Elisabeth Dütschke

- Entwicklung eines Konzepts zur jährlichen Ermittlung der Förderwirkungen des KfW-Energieeffizienzprogramms
Tobias Fleiter

- Erweiterung des Bottom-up-Modells FORECAST um die Entwicklung der Brennstoffnachfrage in der EU und der Türkei bis 2035
Tobias Fleiter

- Jährliche Aktualisierung von Szenarien zur Stromnachfrage in der EU und der Türkei bis 2035
Tobias Fleiter

- Get e-Ready – Potenzialanalyse, Akzeptanzforschung und Geschäftsmodelle
Patrick Plötz

- Zentrales Informationssystem Energieforschungsförderung
Patrick Plötz

- Best Practices in Energy Efficient Industrial Technologies
Clemens Rohde

- Entwicklung einer detaillierten Datenbasis zur Bewertung von Energieeffizienzmaßnahmen in der Zeitreihe
Clemens Rohde

- Erstellung von Anwendungsenergiebilanzen für das Verarbeitende Gewerbe
Clemens Rohde

- Integrated policy packages supporting energy efficiency and RES-H in the European building stock
Clemens Rohde

- Integriertes Energie- und Klimaschutzkonzept Baden-Württemberg. Erstellung der Datengrundlage und Vorschlagsentwicklung für ein Monitoringkonzept für die Bereiche Gebäude, Industrie und GHD
Clemens Rohde

- Mid-term Evaluation of The European Energy Efficiency Fund
Clemens Rohde

- Begleitende Akzeptanzstudie zum Projekt eTaxi
Martin Wietschel

- Begleitforschung zur grenzüberschreitenden deutsch-französischen Elektromobilität
Martin Wietschel

- Energienachfrage auf dem Wärmemarkt und dezentrale Erzeugung mittels Wärmekraftkopplung (WKK) in der Schweiz
Martin Wietschel

- Evaluierung der Verfahren und Technologien für die Bereitstellung von Wasserstoff auf Basis von Biomasse
Martin Wietschel

- Helmholtz-Energieszenarien
Martin Wietschel

- Integration erneuerbarer Energien durch Elektromobilität
Martin Wietschel

- Integration von Wind-Wasserstoff-Systemen in das Energiesystem
Martin Wietschel

- Kaufpotenzial für Elektrofahrzeuge bei sogenannten Early Adoptern
Martin Wietschel

- KIC InnoEnergy: Energy System Analysis Agency
Martin Wietschel

- REM 2030 – Regional Eco Mobility 2030
Martin Wietschel

- Speicherstadt/Der hybride Stadtspeicher – Integration erneuerbarer Energien, verlustarme Energieverteilung und effiziente Energienutzung durch hybride Ortsnetzspeichersysteme
Martin Wietschel

- Überleitung der Ergebnisse aus GermanHy in das Emissionsrechenmodell TREMOD
Martin Wietschel

- Update of the FORECAST model and development of a base case scenario of the electricity demand of the EU27+2 with a focus on 6 countries
Martin Wietschel

- Weiterentwicklung der Energienachfrageprognose für die EU27-Staaten sowie Norwegen, Schweiz, Türkei und die Balkan-Länder
Martin Wietschel

- Wir machen Baden-Württemberg e-mobil
Martin Wietschel

INDUSTRIAL AND SERVICE INNOVATIONS

PROJECTS AND CONTACT PERSONS

- CS-EDA-WP3.3 Eco-design guidelines
Esther Bollhöfer

- Dematerialised Manufacturing Systems: A new way to design, build, use and sell European Machine Tools
Matthias Gotsch

- Etablierung des European Manufacturing Survey (EMS) in China und Russland
Angela Jäger

- Entwicklung eines simulationsgestützten Werkzeugs zur dynamischen Steuerung der Wandlungsfähigkeit integrierter Wertschöpfungsketten in der Medizintechnik (DyWaMed)
Oliver Kleine

- European Robotics
Oliver Kleine

- Verbundprojekt: Innovationsplattform Ressourceneffizienz in der Produktion, Teilprojekt Fraunhofer ISI: Zielgruppenspezifische Aufbereitung und Bündelung der Projektergebnisse sowie Umfeldbeobachtung
Oliver Kleine

- Kreativität und Innovationsfähigkeit im Demografischen Wandel
Hans-Dieter Schat

- Evaluierung des Förderprogramms Forschung für die Produktion von morgen 2005–2010
Oliver Som

- Konzeptionelle und inhaltliche Neugestaltung des Online-Benchmarking-Angebots des CCI für Industrieunternehmen
Oliver Som

- Lot 2 – INNO-GRIPS-Economic and market intelligence on innovation
Oliver Som

- Veränderungsbereitschaft und interne sowie externe Flexibilität mit nachhaltigen EFQMplus-Konzepten stabilisieren und strategisch in den Geschäftsprozessen implementieren
Oliver Som

- Entwicklung und Erprobung eines innovationsorientierten Produktivitätsmesskonzepts für wissensintensive Dienstleister
Christoph Zanker

- Ganzheitliche Produktionssysteme in der deutschen Wirtschaft: Verbreitung – Typisierung – Bewertung
Christoph Zanker

PROJECTS

- Materialeffizienz in der Produktion. Einsparpotenziale und Verbreitung von Konzepten zur Materialeinsparung im Verarbeitenden Gewerbe in Baden-Württemberg (Modul 1)

Christoph Zanker

- VDI Verlagerungsanalyse 2012

Christoph Zanker

- Verbundvorhaben: Balanced GPS – Fraunhofer ISI Teilprojekt: Wissenschaftliche Konzeptentwicklung, Begleitung und Transfer

Christoph Zanker

INNOVATION AND TECHNOLOGY MANAGEMENT AND FORESIGHT

PROJECTS AND CONTACT PERSONS

- FoodManufuture: Conceptual Design of a Food Manufacturing Research Infrastructure to boost up Innovation in Food Industry
Simon Berner
- ETCETERA: Evaluation of critical and emerging technologies for the elaboration of a security research agenda
Antje Bierwisch
- SIRA: Sicherheit im öffentlichen Raum
Antje Bierwisch
- BJASt – Roadmapping
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- ESF TECHBREAK: Forward Look on technological breakthroughs for scientific progress
Kerstin Cuhls
- Foresight-Verlaufssystem: Konzeptionelle Entwicklung und Implementierung eines Verlaufssystems zum Foresight-Prozess des BMBF
Kerstin Cuhls

- IT Innovationsmanagement: Strategisches IT-Innovationsmanagement 2020 bei EnBW
Meike de Vries

- ETTIS: European Security Trends and Threats in Society
Ewa Dönitz

- NachhaltigkeitsLivingLab: Nachhaltigkeitsinnovationen in LivingLabs – Potenzialanalyse einer deutschen Forschungsinfrastruktur zur interaktiven Entwicklung ressourceneffizienter, umweltschonender und sozial verträglicher Produkte und Dienstleistungen
Lorenz Erdmann

- RIF: Research and Innovation Futures 2030: From Explorative to Transformative Scenarios
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- CVC Innovation: Workshopreihe Innovations- und Technologiemanagement
Daniel Jeffrey Koch

- InnoTALK: Innovación y Tecnología en América Latina y el Caribe
Daniel Jeffrey Koch

- Fraunhofer 2025: Entwicklung eines Orientierungsszenarios
Elna Schirrmeister

- SmarterCity Karlsruhe – Roadmapping
Elna Schirrmeister

- Zukunftskonferenz Bad Mergentheim
Elna Schirrmeister

- Allianz Vision: Strategieentwicklung für die Allianz Vision
Ralph Seitz

- Market and Technology Watch – Nanotechnology in the sectors solar energy and energy storage
Ralph Seitz

- Molecular Sorting: Scenarios and validation of technologies for molecular sorting
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- Roadmap Bio-Materials: Technology Roadmapping for Bio-Materials
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- Surface Technology Integration Roadmap: Roadmap Integration (product and technology) for Surfaces & Skins
Ralph Seitz

- INFU – Innovation Futures in Europe: A Foresight Exercise on emerging Patterns of Innovation. Visions, Scenarios and Implications for Policy and Practice
Philine Warnke

- Romanian foresight support: Quality and Leadership in Higher Education
Philine Warnke

SUSTAINABILITY AND INFRASTRUCTURE SYSTEMS

PROJECTS AND CONTACT PERSONS

- Reducing railway noise pollution
Claus Doll

- Schätzung externer Umweltkosten und Vorschläge zur Kosteninternalisierung in ausgewählten Politikfeldern
Claus Doll

- Study on the effects of the introduction of LHVs on combined road-rail transport and single wagon load rail freight traffic
Claus Doll

- WEATHER: Weather Extremes: Assessment of impacts on Transport Systems and Hazards for European Regions
Claus Doll

- Wirtschaftliche Aspekte nichttechnischer Maßnahmen zur Emissionsminderung im Verkehr
Claus Doll

- Economic Perspectives on international transfer of climate technologies to newly industrializing and developing countries
Carsten Gandenberger

- Innovationsreport: Die Versorgung der deutschen Wirtschaft mit Roh- und Werkstoffen für Hochtechnologien – Präzisierung und Weiterentwicklung der deutschen Rohstoffstrategie
Carsten Gandenberger

- Morgenstadt: City Insights (m:ci) – Teilpaketleitung Urban water infrastructure
Harald Hiessl, Wolfgang Schade

- Auf dem Weg zu einer nachhaltigen Wasserwirtschaft
Thomas Hillenbrand

- Innovatives Wasserinfrastrukturkonzept im Rahmen einer geplanten Sanierung
Thomas Hillenbrand

- inWasif: Zukunftsfähiges integriertes Wasserinfrastruktur- und Nutzungskonzept für Stadtquartiere
Thomas Hillenbrand

- Konzeptstudie Bochum: Innovatives Wasserinfrastrukturkonzept für das geplante Neubaugebiet Havkenscheider Feld/Feldmark
Thomas Hillenbrand

- Maßnahmen zur Verminderung des Eintrages von Mikroschadstoffen in die Gewässer
Thomas Hillenbrand

- NRW-NAUWA: Nachhaltige Weiterentwicklung urbaner Wasserinfrastrukturen unter sich stark ändernden Randbedingungen
Thomas Hillenbrand

- Prio IV: Leitlinie für die Bestandsaufnahme gefährlicher Stoffe
Thomas Hillenbrand

- HAPPI: Small Hydropower Plants: Assessment of Climate Protection Potential and Improvement by Smart Technologies
Stefan Klug

- Integrated urban transport plans and cohesion policy
Stefan Klug

- Smart Cities Stakeholder Platform
Stefan Klug

- Fallstudie bezüglich der Ausgestaltung und Anwendung eines marktbasierendes Instrumentes zur Reduktion von Treibhausgasemissionen in der internationalen Seeschifffahrt

Jonathan Köhler

- GLOBIS: Globalisation Informed by Sustainable Development

Jonathan Köhler

- Market-up: Market uptake of transport research and role of actors and regions

Jonathan Köhler

- PACT: Pathways for Carbon Transitions

Jonathan Köhler

- Vermeidung von nachteiligen Effekten einer regionalen marktbasierendes Maßnahme in der Seeschifffahrt

Jonathan Köhler

- ASSIST: Assessing the social and economic impacts of past and future sustainable transport policy

Michael Krail

- FUTURE: Prospects for transport evolution: challenges for the competitiveness of the European transport sector in the long term

Michael Krail

- COHIBA: Control of hazardous substances in the Baltic Sea Region

Frank Marscheider-Weidemann

- Ermittlung von Substitutionspotenzialen von primären strategischen Metallen durch Sekundärmaterialien

Frank Marscheider-Weidemann

- IKU: Innovationspreis für Klima und Umwelt

Frank Marscheider-Weidemann

- LENA: Leitfaden Nachhaltigkeitsberichterstattung

Frank Marscheider-Weidemann

- Prioritäre Stoffe III: Prioritäre Stoffe der Wasserrahmenrichtlinie – europäische Regelung und nationales Maßnahmenprogramm

Frank Marscheider-Weidemann

- Produktverantwortung: Weiterentwicklung der abfallwirtschaftlichen Produktverantwortung unter Ressourcenschutzaspekten am Beispiel von Elektro- und Elektronikgeräten

Frank Marscheider-Weidemann

- ProLignocel – Neue nachhaltige Prozesse zur ganzheitlichen Verwertung und Materialentwicklung aus Lignocellulose

Frank Marscheider-Weidemann

- STROM-MORE: Recycling von Komponenten und strategischen Metallen aus elektrischen Fahrzeugen

Frank Marscheider-Weidemann

- CapChemRU 2: Dialogue among stakeholders

Eve Menger-Krug

- Modernisierungsstrategie für die deutsche Wasserwirtschaft – Maßnahmen zur Stärkung der Präsenz der deutschen Wasserwirtschaft auf internationalen Märkten für Wasserdienstleistungen

Jutta Niederste-Hollenberg

- PRYM-Park II: PRYM-Park Düren – Lebensphasen Wohnen

Jutta Niederste-Hollenberg

- z*dez: Zentraler Betrieb dezentraler Anlagen – Umsetzung eines innovativen Organisationskonzepts zur Abwasserentsorgung mittels Kläranlagen in Baden-Württemberg

Jutta Niederste-Hollenberg

- Cleantech CH: Optimierung der Wertschöpfungskette Forschung-Innovation-Markt im Cleantech-Bereich

Katrin Ostertag

- Modellversuch Flächenhandel: Vorbereitung eines Modellversuchs zum Handel mit Flächenausweisungszertifikaten

Katrin Ostertag

- r²: Innovative Technologien für Ressourceneffizienz – Integrations- und Transferprojekt

Katrin Ostertag

- Wirtschaftsfaktor Umweltschutz: Analyse der wirtschaftlichen Bedeutung des Umweltschutzes durch Aktualisierung und Auswertung wichtiger Kenngrößen

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- Konzepte der Elektromobilität und deren Bedeutung für Wirtschaft, Gesellschaft und Umwelt

Anja Peters

- Rebound-Effekte: Empirische Analyse von Rebound-Effekten und Folgerungen für die Gestaltung des umweltpolitischen Instrumentariums

Anja Peters

- REBOUND: Die soziale Dimension des Rebound-Effekts

Anja Peters

- APRAISE: Assessment of Policy Interrelationships and Impacts on Sustainability in Europe

Christian Sartorius

- Kosten und Nutzen von Anpassungsmaßnahmen an den Klimawandel

Christian Sartorius

- Cluster Umwelttechnologien.NRW: Bereitstellung eines Clustermanagements für die Entwicklung des Clusters Umwelttechnologien.NRW

Christian Sartorius

- Ökologische Modernisierung der Wirtschaft durch eine moderne Umweltpolitik

Christian Sartorius

- Economic aspects of sustainable mobility

Wolfgang Schade

- GHG-TransPoRD: Techno-economic analysis per mode and combined to meet GHG emission reduction targets at time horizon 2020 and beyond

Wolfgang Schade

- RENEWABILITY-II: Stoffstromanalyse nachhaltiger Mobilität im Kontext Erneuerbarer Energien

Wolfgang Schade

- TEN-T Large Projects – Investments and Costs

Wolfgang Schade

- Zukunft der Automobilindustrie

Wolfgang Schade

- Critical metals in low-carbon energy technologies

Luis Tercero Espinoza

- Development of a global copper flow model

Luis Tercero Espinoza

- POLINARES: Policy for natural resources

Luis Tercero Espinoza

- r³ – InTra: Innovative Technologien für Ressourceneffizienz – Strategische Metalle und Mineralien

Luis Tercero Espinoza

- Szenarien der zukünftigen Magnesium-Nachfrage

Luis Tercero Espinoza

- Value from waste

Luis Tercero Espinoza

- Efyciencia: Ökoeffizienz in der Brasilianischen Wasserwirtschaft – Energieeffizienz in der Wasserversorgung

Felix Tettenborn

- Schwermetalle Lippe: Modellierung des aus den Wirkungspfaden Luft-Wasser und Luft-Boden-Wasser resultierenden Schwermetalleintrags in die Lippe

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- STATUS: Schutz der Trinkwasserversorgung im Hinblick auf CBRN-Bedrohungsszenarien – Technik und Strategieentwicklung, Teilvorhaben 5: Sozioökonomische Ansätze zur Bewertung und Kommunikation von Maßnahmen zur Verbesserung der Sicherheit der Wasserversorgung

Felix Tettenborn

- T-IWARM: Taicang-Integrated Water and Resource Management

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- UBA-Maßnahmen: Effizienz von Maßnahmen zur Reduktion von Stoffeinträgen

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- Arbeitsplatzeffekte CH: Volkswirtschaftliche Bedeutung Erneuerbarer Energien in der Schweiz

Rainer Walz

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- Lead-Market-Strategien: First Mover, Early Follower und Late Follower, Teilvorhaben Lead-Market-Strategien und Systemdynamik
Rainer Walz

- Strategie Nachhaltigkeit: Strategie zur Umsetzung des Leitbilds Nachhaltige Entwicklung in der Fraunhofer-Gesellschaft
Rainer Walz

- Systemische Risiken: Analyse der Vulnerabilität von Elektrizitätsversorgungssystemen mit unterschiedlich ausgeprägter Integration Erneuerbarer Energien
Rainer Walz

EMERGING TECHNOLOGIES

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- ESF Material Science
Bernd Beckert

- Gigabitgesellschaft
Bernd Beckert

- IT2Green: Evaluation, wissenschaftliche Begleitung und Ergebnistransfer der Maßnahme IT2Green – Energieeffiziente IKT für den Mittelstand, Verwaltung und Wohnen
Bernd Beckert

- SIS Evaluation
Bernd Beckert

- Smart Cities
Bernd Beckert

- Gesetzliche Regelungen für den Zugang zur Informationsgesellschaft
Bernd Beckert

- Technischer Fortschritt im Gesundheitswesen
Tanja Bratan

- IRISS: Increasing Resilience in Surveillance Societies
Michael Friedewald

- LiSS: Living in a Surveillance Society
Michael Friedewald

- MARS: Mobile Authentifizierung mittels Retina Scan
Michael Friedewald

- Open Research: Boosting the exploratory power of open research in future and emerging technologies
Michael Friedewald

- PRESCIENT: Privacy and Emerging Sciences and Technologies
Michael Friedewald

- PRISMS: PRIVacy and Security MirrorS
Michael Friedewald

- SAPIENT: Supporting fundamental rights, privacy and ethics in surveillance technologies
Michael Friedewald

- Personalised Medicine: ESF Forward Look, Personalised medicine for the European citizen
Bärbel Hüsing

- Innovationsreport Weiße Biotechnologie – Stand und Perspektiven der Industriellen Biotechnologie für nachhaltiges Wirtschaften
Bärbel Hüsing

- TRI-Gen: Translational research in genomic medicine, Institutional and social aspects
Bärbel Hüsing

- Zellfreie Bioproduktion, BMBF: Zellfreie Bioproduktion – Etablierung einer Bioproduktionsanlage für die zellfreie Proteinsynthese mit integrierter Energieversorgung – Biomoleküle vom Band
Bärbel Hüsing

- Zellfreie Bioproduktion, FhG: Fraunhofer-Systemforschung: Basismodul für die zellfreie Bioproduktion „Die Industriezelle“
Bärbel Hüsing

- BMBF Foresight Zyklus 2 (zusammen mit VDI-TZ ZTC)
Simone Kimpeler

- Die Kultur- und Kreativwirtschaft in der gesamtwirtschaftlichen Wertschöpfungskette – Wirkungsketten, Innovationskraft, Potenziale
Simone Kimpeler

- Monitoring Kultur- und Kreativwirtschaft
Simone Kimpeler

- Analyse von Wachstumshemmnissen kleiner und mittlerer Unternehmen am Beispiel der IT-Branche
Timo Leimbach

- E-Infra: Development of impact measures for e-Infrastructures
Timo Leimbach

- ETTIS: European Trends and Threats in Society
Timo Leimbach

- IT-Trends und neue Technologien
Timo Leimbach

- Software-Atlas: Atlas der deutschen Software- und IT-Dienstleistungsbranche 2012
Timo Leimbach

- Softwarecluster-Benchmark
Timo Leimbach

- STOA – Potentials and Impacts of Cloud Computing Services and Social Network Sites
Timo Leimbach

- Elektronische Petitionen und Modernisierung des Petitionswesens in Europa
Ralf Lindner

- Strategiefondsprojekt Forschungsklausur Policy-Analyse am Fraunhofer ISI
Ralf Lindner

- Analyse des Gesundheitswesens aus Innovationssystemperspektive
Thomas Reiß

- Begleitforschung der Hightech-Strategie – Analyse zu ausgewählten Aspekten. Los 2: Rahmenbedingungen
Thomas Reiß

- Begleitforschung Gesundheitsregionen der Zukunft
Thomas Reiß

- EMOTOR: Energiespeicher-MONITORing für die Elektromobilität
Thomas Reiß

- ERACEP: Emerging Research Areas and their Coverage by ERC-supported Projects
Thomas Reiß

- ETEPS: European techno-economic policy support network
Thomas Reiß

- EU-RU-NET: Linking R&D strategies, foresights and stimulation of EU-Russia cooperation in nano-electronics technology
Thomas Reiß

- Fraunhofer-Lux Synthetic Biology Roadmap
Thomas Reiß

- Gesundheit 2013
Thomas Reiß

- Integrated EST Framework (EST-Frame)
Thomas Reiß

- ManETEI: Management of emergent technologies for economic impact
Thomas Reiß

- MetaForum 2012: MetaForum Innovation im Gesundheitswesen
Thomas Reiß

- NANORUCER: Mapping the nanotechnology innovation system of Russia for preparing future cooperations between the EU and Russia
Thomas Reiß

- NMP-Foresight: Economic foresight study on industrial trends and the research needed to support the competitiveness of European industry around 2025
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- Symposium Synthetische Biologie
Thomas Reiß

- Synthetische Biologie Fallstudien

Thomas Reiß

- Synthetische Biologie Patent-recherche

Thomas Reiß

- TA Synthetische Biologie

Thomas Reiß

- Thematische Schwerpunktbildung in den Life Sciences durch systemimmanente Prozesse

Thomas Reiß

- LIB2015: LIB2015-Roadmapping (Innovationsallianz Lithium-Ionen-Batterie, BMBF)

Axel Thielmann

- Strategiefondsprojekt Nanotechnologie

Axel Thielmann

- Barometer Sicherheit in Deutschland BaSiD

Peter Zoche

- Fachdialog Sicherheitsforschung

Peter Zoche

- Future Urban Security BW

Peter Zoche

- Privacy Dialog

Peter Zoche

- Changing cultures – Unternehmenskulturen verändern.

Karrierewege öffnen

Susanne Bühner

- Interim Evaluation and Assessment of Future Options for Science in Society Actions

Susanne Bühner

- Forward Visions on the European Research Area

Stephanie Daimer

- Strategiefondsprojekt: Internationalisierung von Forschung und Innovation

Stephanie Daimer

- Angebot für eine bibliometrische Analyse im Kontext des Projektes zur Evaluation der BMBF-Programme GLOWA und BIOLOG

Rainer Frietsch

- Aufbau eines bibliometrischen Kompetenzzentrums für die deutsche Wissenschaft, Teilvorhaben Erwartete Zitate und Klassifikationen sowie vollständige Erfassung von Patentanmeldungen aus Universitäten (mit Promotionsförderung)

Rainer Frietsch

- Begleitforschung der Hightech-Strategie – Analyse zu ausgewählten Aspekten – Los 1: Ökonomische Analyse der Bedarfssfelder der Hightech-Strategie

Rainer Frietsch

- Dienstleistungsauftrag zur Erfassung bibliometrischer Indikatoren für die PFI-Monitoringberichte 2011–2015

Rainer Frietsch

- Erarbeitung einer aktualisierten Liste wissens- und technologieintensiver Güter und Wirtschaftszweige

Rainer Frietsch

- Erfassung bibliometrischer Indikatoren von Universitäten

Rainer Frietsch

- Expertentätigkeit im Rahmen der chinesisch-deutschen Innovationsplattform

Rainer Frietsch

- Expertise: Patente im Maschinenbau

Rainer Frietsch

- Identifikation der Technologieprofile von FuE-betreibenden Unternehmen anhand eines Matchings von FuE- und Patentdaten

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- Indikatorensystem zur technologischen Leistungsfähigkeit Deutschlands – Ergebnisse von öffentlicher und privater Forschung: Fachpublikationen

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- Indikatorensystem zur technologischen Leistungsfähigkeit Deutschlands – Publikationen und Patente

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- Innovationsindikator Deutschland

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- Strategische Ausrichtung der wissenschaftlichen und industriellen Forschung in Baden-Württemberg

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- Strategiefondsprojekt: Systematisierung von Policy-Instrumenten in der Innovationspolitik

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- Begleitende Evaluierung der Fördermaßnahme Validierung des Innovationspotenzials wissenschaftlicher Forschung – VIP

Knut Koschatzky, Stephanie Daimer

- Forschungscampus – pro activ. Erfahrungsaustausch und Integration im Rahmen der Förderinitiative Forschungscampus – öffentlich-private Partnerschaft für Innovation

Knut Koschatzky, Thomas Stahlecker

- Regionale Netzwerketeiligungen und ihre Auswirkungen auf die internen Governancestrukturen von Hochschulen – Neue Governance der Wissenschaft – Forschung zum Verhältnis von Wissenschaft, Politik und Gesellschaft, Teil II

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- Sektorstudie zur Untersuchung des Innovationssystems der deutschen Landwirtschaft

Knut Koschatzky

- Strategiefondsprojekt: Vorbereitung und Durchführung eines Workshops zum Thema Bestandsaufnahme des deutschen Forschungs- und Innovationssystems

Knut Koschatzky

- Joint Project on Developing Proposals for Foshan New City Industrial Services Demonstration Area

Henning Kroll

- Survey of Regional Demand for Technology Transfer

Henning Kroll

- Venture Capital und weitere Rahmenbedingungen für eine Gründungskultur

Marianne Kulicke

- Wirtschaftlichkeit der Erweiterung der Antragsberechtigung auf Unternehmen bis zu 500 Beschäftigten bei im Rahmen des Zentralen Innovationsprogramms Mittelstand (ZIM) geförderten Projekten

Marianne Kulicke

- Wissenschaftliche Begleitung und Evaluation des BMWi-Programms „Existenzgründungen aus der Wissenschaft (EXIST)“

Marianne Kulicke

- The challenges of globalization: Technology driven Foreign Direct Investment (TFDI) and its implications for the Negotiation of International (bi- and multilateral) Investment Agreements

Niclas Meyer

- Indikatorensystem zur technologischen Leistungsfähigkeit Deutschlands – Ergebnisse von öffentlicher und privater Forschung: Patente

Peter Neuhäusler

POLICY AND REGIONS

PROJECTS AND CONTACT PERSONS

- Strategiefondsprojekt: Bereitstellung von PATSTAT für das gesamte Fraunhofer ISI im Jahr 2011 und Konzeptentwicklung eines User-Interface

Nadine Bethke

- Begleitende Evaluierung zum Impulsprogramm „Laura Bassi Centres of Expertise“

Susanne Bühner

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- Strategiefondsprojekt: Kreditrisiko und finanzielle Performance von Unternehmen in Abhängigkeit von Innovationsindikatoren: Verknüpfung von Finanzdaten, Patent- und EMS-Daten

Peter Neuhäusler

- Strategiefondsprojekt: Formen der Mitgestaltung in regionalen Innovationssystemen

Esther Schnabl

- Strategiefondsprojekt: Inhaltliche Ausarbeitung eines Innovationskurses für externe Kursteilnehmer

Esther Schnabl, Niclas Meyer

- Erhebung des Innovationsverhaltens der Unternehmen in der Produzierenden Industrie und in ausgewählten Dienstleistungssektoren in Deutschland in den Erhebungsjahren 2009, 2010, 2011 und 2012

Torben Schubert

- Metastudie: Wirtschaftsfaktor Hochschule

Torben Schubert

- Regionaler Wirtschaftsfaktor Hochschule

Torben Schubert

- Status und Entwicklungsperspektiven der Forschung an Hochschulen

Torben Schubert

- Strategiefondsprojekt: Potenzialerschließung Hochschulforschung

Torben Schubert

- Global Review of Competitive R&D Funding Consultant

Thomas Stahlecker

- Halbzeitbewertung des operationellen Programms für den Europäischen Fonds für regionale Entwicklung (EFRE) Berlin

Thomas Stahlecker

- Quantitative Analyse regionaler Branchen- und Technologiestrukturen in Baden-Württemberg

Thomas Stahlecker

- Regional Innovation Monitor

Thomas Stahlecker

- Sächsischer Technologiebericht 2012

Thomas Stahlecker

- Strategiefondsprojekt: Entwicklung eines Standards für Regionalprofile (Regional-Navigator)

Thomas Stahlecker

- Strategiefondsprojekt: Vorbereitung und Durchführung einer Konferenz im Themenfeld Clusteranalyse

Thomas Stahlecker

- Zukunftsstrategien Arbeitsmedizinermangel

Thomas Stahlecker

- Establishment of a european service innovation centre

Andrea Zenker

- Externe Evaluierung der Pilot-Innovationsmanagement-Programme Innov 30 und Innov 60

Andrea Zenker

- Publikationsvorhaben Strategies for bilateral research co-operations: German-French experience in applied research

Andrea Zenker

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PHOTO CREDITS

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- ▶ Marion A. Weissenberger-Eibl, Klaus Mellenthin
- ▶ Manfred Wittenstein, WITTENSTEIN AG

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NOTES ON THE DIAGRAMS

Key subjects

p. 12
For this diagram, central terms from the text “Shaping system change” were listed according to the number of occurrences in selected annual reports of the Fraunhofer ISI.

p. 16
For this diagram, all words containing the term “innovation” were listed according to the number of occurrences in selected annual reports of the Fraunhofer ISI as long as they occur three times. The color of the type corresponds to the color of the correlating bar, the type size to the number of occurrences.

p. 20
For this diagram, central terms from the text “Companies caught between adaptability and stability” were listed according to the number of occurrences in selected annual reports of the Fraunhofer ISI.

p. 24
For this diagram, central terms from the text “Networks create a better quality of life in the city of the future” were listed according to the number of occurrences in selected annual reports of the Fraunhofer ISI.

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The transformation of the Fraunhofer ISI building from 1972 to 2012. Between 1972 and 1977, the Fraunhofer ISI was accommodated by the then Fraunhofer IITB (today IOSB) in 4 rooms the building in Breslauer Strasse. As the institute grew, the Fraunhofer ISI rented up to four residential houses in the Waldstadt district of Karlsruhe until it relocated together with the Fraunhofer IITB to the newly constructed institute center in Sebastian Kneipp Strasse. Due to the growth of both institutes, the building became too small so that, in 1982, the Fraunhofer ISI moved back to Breslauer Strasse as the only tenant. In the meantime, the building had been let to a research institute of the defense ministry.

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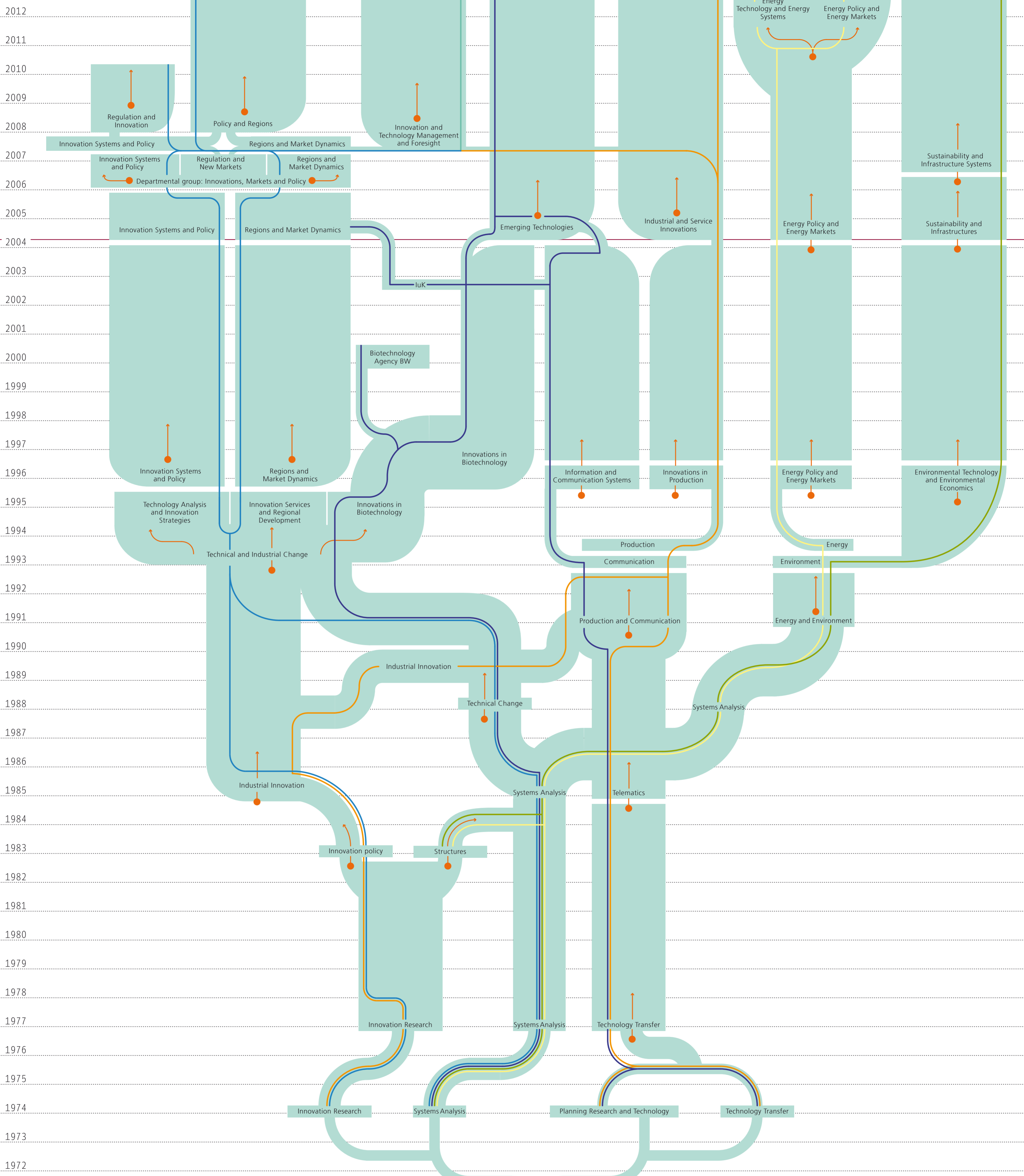
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Fraunhofer Institute for Systems and Innovation Research ISI

1972–2012

- ↑ Development of the research areas from the Institute's foundation up to today's Competence Centers (CC)
- New set-up/new name
- CC Energy Technology and Energy Systems & CC Energy Policy and Energy Markets
- CC Sustainability and Infrastructure Systems
- CC Emerging Technologies
- CC Policy and Regions
- CC Industrial and Service Innovations
- CC Innovation and Technology Management and Foresight
- Renaming the Institute and adaptation of the departmental structure

