



Fraunhofer

SUSTAINABILITY REPORT 2013 EXECUTIVE SUMMARY

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Imprint

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Dear readers,

Major challenges lie ahead for the world's population, which is set to grow from seven billion people to more than nine billion by the year 2050. Against the backdrop of dwindling resources and global shifts such as climate change, the transition to a new energy economy and socio-demographic changes, the demand for water, food, energy and raw materials is rising.

As one of the largest applied research organizations in the world, Fraunhofer in particular has a duty to provide sustainable solutions that help ensure society remains viable in the future. Sustainability is not only a top priority in our research topics; it is also firmly anchored in our organizational structures. What started out some six years ago as a bottom-up initiative that brought 20 Fraunhofer Institutes together to form the sustainability network has now developed into a structured, guided process. Having been adopted at the executive level, this process is gradually embracing Fraunhofer in its entirety, and spreading through more and more areas of the organization.

Fraunhofer provides a multilayered contribution to sustainable development: Our 67 institutes and research units form a worldwide network that supports social value, stability and prosperity by providing original research results. According to a recent study conducted by the Thomson Reuters media group, we are one of the 100 most innovative companies in the world – and developing innovative solutions for sustainability plays a big role in what we do. For instance, our research aims to conserve resources, streamline processes and improves product usability and recyclability. When dealing with our employees, customers and partners, we place particular emphasis on fairness, equal opportunity and long-term relationships based on trust.

Last year, we faced a number of challenges that we were able to successfully address on the basis of sustainable management principles. In addition to refocusing our international activities to center more on scientific gain for Fraunhofer and value added for society, we also implemented an integrated HR management approach that provides our employees with an attractive framework for shaping their work environment to meet their needs. At present, our strategy is to raise the profile of selected Fraunhofer locations over the long term by working with local universities, scientific partners and regional industry.

Going forward, we want to make our commitment to sustainability more clearly visible – for our customers and partners, who consider it part of Fraunhofer's duty to tackle the issue of sustainability, and for our employees, as an incentive to take on responsibility for enhancing efficiency and conserving resources at work. An important step in this direction is the first ever Fraunhofer Sustainability Report, which presents our sustainability-related activities from the 2013 financial year and provides information about the objectives and actions to which we are committed.

We intend to further expand our commitment to sustainable development in the future, and to continue establishing sustainability as a concept.

Sincerely,

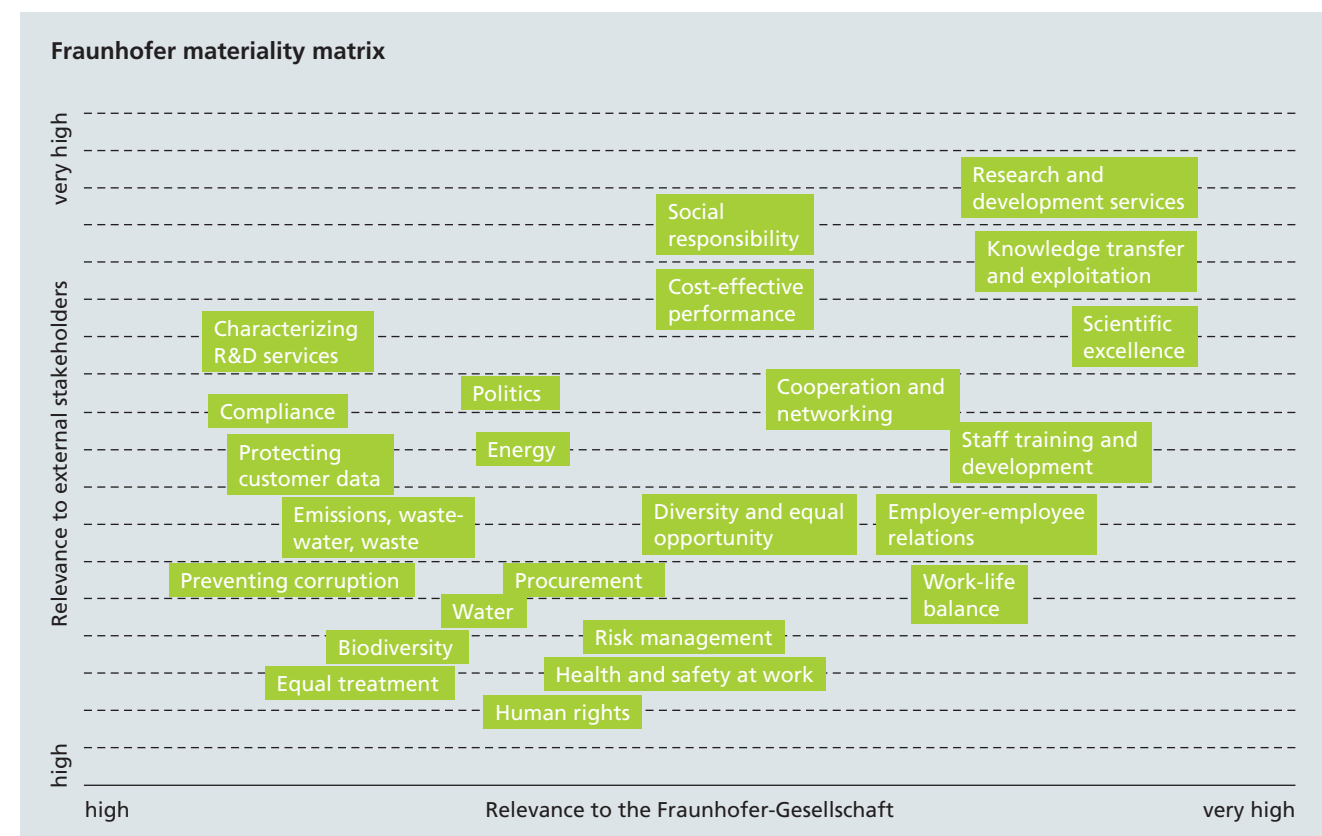
Reimund Neugebauer
President of the Fraunhofer-Gesellschaft

ABOUT THE FRAUNHOFER SUSTAINABILITY REPORT 2013

This Executive Summary provides a brief overview of the Fraunhofer Sustainability Report 2013, which was published in September 2014. The Fraunhofer Sustainability Report 2013 represents the first time we have showcased our organization's strategies, objectives and measures for sustainable development. To ensure success as we gradually implement our objectives, we formulated specific measures in relation to science, industry, employees, society and resources. These are listed on the following pages. All measures take as their reference the status in the reporting year of 2013. The report covers our 2013 financial year, which ran from January 1 to December 31, 2013, and is based on the internationally recognized G4 Sustainability Reporting Guidelines

of the Global Reporting Initiative (GRI). Taking the first sustainability report as a starting point, we plan to release a new report every two years.

The content of the Sustainability Report 2013 was put together with the help of internal and external stakeholder groups. A series of discussions was held in order to ascertain what external stakeholders expect Fraunhofer-specific sustainability management to be about, while input from internal stakeholders was collected from Fraunhofer-wide online surveys and expert workshops. We used the results of this participatory process to select and assess the report content and to record it in a Fraunhofer materiality matrix.



ORGANIZATION

In legal terms, the Fraunhofer-Gesellschaft is registered as a non-profit association. To ensure that the principle of sustainability is strategically integrated and implemented at an operational level in our organizational structures and processes, we established a system for comprehensive sustainability management.

Our profile

Founded in 1949, the Fraunhofer-Gesellschaft carries out applied research for the benefit of business and society. Contractual partners and customers include industrial companies, SMEs and public bodies. We currently operate a total of 67 institutes and research units in Germany, where over 23,000 staff, the majority of whom are qualified scientists and engineers, work with an annual research budget of some 2 billion euros. Our international locations and representative offices in Europe, the United States and Asia ensure close contact with the major scientific and economic hubs.

Funding and business activity

The Fraunhofer-Gesellschaft's funding rests on three pillars: base funding, revenue from contracts with industry, and revenue from public-sector project funding. Our strong growth in recent years means we are currently facing challenges regarding the long-term stability of our financial model.

Sustainability management

To ensure that the sustainability principle is strategically integrated and implemented at an operational level, we have been working since 2013 to embed a comprehensive sustainability management system in our structures. Sustainable development as a concept is firmly established in our mission and in our corporate strategy, and at a strategic level has been directly adopted by the President and the executive corporate strategy department.

In these matters, the President is advised and supported by a sustainability committee made up of members representing a cross-section of the entire organization. The committee is tasked with integrating sustainability across interfaces in a process-driven manner at Fraunhofer, and works with the President to establish strategic direction and sustainability objectives. Together, the corporate strategy department and the Fraunhofer sustainability representative serve as the interface between the sustainability strategy and the operational implementation thereof that occurs in the individual institutions. The Fraunhofer sustainability network consults with the company-wide sustainability representatives on all relevant topics.

RESEARCH TOPICS

By dynamically tailoring our research portfolio to suit current and future market potential and societal challenges, we are able to rapidly transfer our results to industry and society. In order to offer original system solutions, our institutions cooperate with one another and interlink their expertise as needed.

RESEARCH FOR THE FUTURE

For several years, many of the Fraunhofer Institutes have been collaborating with industrial companies and universities to develop solutions for issues that are relevant to society as a whole. The concept of sustainability permeates all six areas of research at Fraunhofer: health and the environment, safety and security, communication and knowledge, mobility and transportation, raw materials and energy as well as production and services.

Health and the environment

Projects within this field address issues such as how to feed the growing world population in a healthy and environmentally friendly way, or how to curb the spread of diseases or epidemics. The key objective is improving people's lives in the long term; to that end, researchers are developing new vaccine production methods to enable large quantities to be delivered quickly during an epidemic. Another important issue is the improvement of sanitary conditions, not only in our hospitals but also in developing countries.

Safety and security

Usually, we notice how reliably the technical systems around us function only after they fail during a natural disaster or due to a defect. The impact is particularly bad in situations where multiple systems fail in succession. Researchers are working

on making technical systems and infrastructures as crisis-proof as possible. We have to create technologies today to protect people in the event of natural catastrophes that may occur in the future.

Communication and knowledge

Many people surf the internet using their computer and smartphone as a matter of course, and yet much of the potential offered by the World Wide Web still goes unused. Developers aim to organize the widely dispersed knowledge that is currently to be found online and make it available to users. In addition, customers, companies and energy suppliers will be even more connected with one another in the future, which will end up saving energy, money and time. Many devices and machines will be operated and controlled remotely using mobile devices in order to increase consumer convenience. It goes without saying that protecting data, trade secrets and personal information must be a top priority in this regard.

Mobility and transport

In today's world there are around one billion cars and trucks on the road, burning large amounts of gasoline and diesel fuel, emitting carbon dioxide and producing noise. Increasing air traffic also contributes to the greenhouse effect. Fraunhofer-Gesellschaft researchers working in the field of

mobility and transport are therefore developing quiet, clean and economical electric vehicles and technologies for reducing the amount of fuel consumed by cars and planes. They are also devising more attractive public transit options, new transport concepts as well as ways to reduce the amount of traffic. By creating more sophisticated logistics solutions, large amounts of energy could also be saved in the transportation of goods.

Raw materials and energy

Mankind's demand for resources, ores, crude oil and water is considerable. The main reasons are the inordinately fast growth of the global population and the transformation of major emerging economies into developed countries. As a result, the global demand for energy has doubled since 1970. Similarly, the demand for metals such as germanium or tantalum – important for high-tech products – continues to rise. Scientists in the field of raw materials and energy

are developing modern technologies that support the careful use of resources.

Production and services

For industry-based economies in countries such as Germany to thrive in the face of international competition, they must find ways to produce high-tech goods even more efficiently and cost-effectively. Given rising energy and resource prices, that's a real challenge. In the manufacturing sector, the price of materials already accounts for 43 percent of production costs. Overcoming these hurdles calls for the introduction of lean, resource-saving production methods. Another challenge facing Germany and many other industrialized nations is the aging population. If older employees are to be fully integrated into the production process until they reach retirement age, companies need new concepts for employment. Promising approaches are being developed in the production and services research field.

SOLUTIONS FOR THE MARKETS BEYOND TOMORROW

Fraunhofer's special Markets Beyond Tomorrow program was set up to promote cross-institute contributions to current global challenges. The program's primary focus is on the actual benefits that results will achieve, defined in terms of a specific contribution to a significant improvement in a relevant social, economic or environmental problem area. One example is the Molecular Sorting project, which bundles Fraunhofer's broad-based expertise in the field of materials recycling in order to address the problem of waste material at a higher

level for a variety of generic procedures. We are funding a total of seven such Beyond Tomorrow projects. In keeping with the breadth of our portfolio, they naturally cover a range of very different problems, with topics stretching from affordable health to the detection and management of natural disasters.

Further information on our research topics can be found online at <http://www.fraunhofer.de/en/research-topics.html>

SCIENCE

Scientific excellence is a must if we are to overcome the challenges of the future. Our success stems from university networking as well as national and international collaboration with high-caliber research partners. Global issues such as energy, nutrition and health are at the heart of our international activities, and we place a particular emphasis on collaboration with emerging and developing countries.

Scientific excellence

The Fraunhofer-Gesellschaft is a major figure within the international scientific community and takes an active role in shaping it. Our scientific excellence and close ties with research partners around the world have been instrumental to our success within this community. In a bid to measure and evaluate our scientific character, in 2013 we launched an internal project together with our institutes. The goal is to develop an applicable set of Fraunhofer indicators as well as a standardized methodology for compiling and analyzing them.

Networking within the scientific community

Over the last few decades, Fraunhofer has been successful in establishing close and far-reaching ties between its institutes

and university research. The particular success of this cooperation is due to the functional way in which work is divided. Covering everything from teaching, academic training and basic research to knowledge transfer and contract work, the specialist areas of both partners overlap enough and complement each other to form a successful whole that promotes excellence and innovation on the regional level.

International collaboration

Collaborating with high-caliber research partners and innovative companies around the world serves as a benchmark for Fraunhofer's own ability to perform, and is a major factor in consolidating our position within the international scientific community. Fraunhofer seeks to collaborate with the best in order to come up with innovative answers and original solutions to global challenges.

Objectives and measures

Guiding principle	Objective	Measure	Status	Date
Opening up space for research	Support high-risk research techniques and original ideas	Launch new internal support program »Discover«	✓→→	2017
Application-oriented sustainability	Measure scientific excellence using Fraunhofer-specific indicators that are compatible with international criteria of excellence	Implement an internal pilot project that develops, compiles, analyzes and validates Fraunhofer-specific indicators	✓✓→	2014
→→→ Implementation not yet underway				
✓→→ Implementation underway				
✓✓→ Implementation at an advanced stage				

ECONOMIC IMPACTS

Successful application of results is an important measure of success, as it tells us to what extent our innovations are finding acceptance. By placing the emphasis on application-oriented research, we operate at the interface between science and industry and actively help shape innovation along the value chain.

Adding value through originality

In the medium to long term, the Fraunhofer-Gesellschaft's continued existence and economic stability rely heavily on the successful application of project results. To ensure our long-term business success, we are strengthening our interfaces with the markets and are continuously optimizing our internal processes for managing commercial exploitation.

Number of inventions, patents and exploitation contracts

Inventions and patents	2011	2012	2013
Active patent families ¹	5657	6103	6407
Inventions	671	696	733
Patents granted	2605	2794	2847

¹ Portfolio of active rights (patents and utility models) and active patent applications at year-end.

For years now, Fraunhofer has been one of the most important sources of patent applications in Germany.

Boosting ability to compete with enhanced profile

If Germany is to continue to develop as a place of business equipped for the future, it will require considerable innovation from its companies. Fraunhofer operates at the interface between science and industry and is thus instrumental in shaping innovation. Bringing together research organizations, investors and businesses leads to the creation of networks and collaborative partnerships, which accelerate the transfer of research findings into specific applications and inspire new business ideas or even new companies.

Partnerships of trust with our customers

Fair and responsible conduct towards our business partners and competitors is crucial to our long term success. Besides adhering to national and international rules, Fraunhofer requires all its employees throughout the organization to comply with internal guidelines and sets out principles of conduct for interacting with customers and business partners. These individual regulations are part of the Fraunhofer-wide compliance management system. The Fraunhofer culture and its most important tenets are expressed in the statutes, our declaration of principles and our mission statement.

Objectives and measures

Guiding principle	Objective	Measure	Status	Date
Assuring mid- and long-term economic stability and ability to overcome future challenges	Strengthen interface to markets and businesses by supporting institutes in establishing strategic partnerships and transferring project results into specific applications	Create new board function »Technology marketing and business models« as well as a new department »Strategic acquisitions, business models and property right clusters«	✓→→	2014
	Increase internal synergies by supporting interdisciplinary and cross-institute projects in a bid to generate system solutions	Coordinate preliminary research in the form of at least five cross-institute »lighthouse projects« with average funding of 10 million euros	✓→→	2016
	Optimize internal processes for management of commercial exploitation with emphasis on spin-offs and licensing of patents	Implement internal »Integrated commercial exploitation management« project to analyze internal processes	✓→→	2016
	Achieve focused growth through portfolio analysis	Develop analysis techniques for evaluating core competencies and business areas, in a bid to direct growth in areas that display a high degree of potential for commercial exploitation	→→→	2016
	Carry out thematic profiling for improved leverage of potential synergies in locations that boast a high density of Fraunhofer Institutes, universities and enterprise	Draw up concept for and implement national centers of excellence at four locations within Germany: Fraunhofer's attempt to reach out to collaboration partners and policy makers	✓→→	2016
Compliance with regulation plus values-oriented and responsible conduct	Communicate what the Fraunhofer compliance system is about and discuss the form it should take in specific institutes	Compliance training sessions held by the Compliance Office at the individual institutes	✓→→	2015
→→→ Implementation not yet underway				
✓→→ Implementation underway				
✓✓→ Implementation at an advanced stage				

EMPLOYEES



Motivated and well trained employees are critical to our success. That’s why we offer our employees attractive positions tailored to their stage of life. We practice diversity management and so play our part in fostering a wide range of skills, new ideas and innovative work.

Integrated human resources management

We consider it important to establish a framework that fits the employee’s stage of life, whether that’s valuable qualifications and development opportunities, an active say in career direction or working arrangements to suit individual needs. To do this, the Fraunhofer-Gesellschaft is continually fine-tuning its integrated human resources management policy to overcome current and future requirements. These include equal opportunities for men and women, the integration of people with disabilities, international HR activities and other measures designed to raise the Fraunhofer-Gesellschaft’s profile as an attractive employer.

Developing potential

We develop and nurture our employees with valuable opportunities for training. Training measures revolve around three key criteria: scientific excellence, strategic and entrepreneurial thinking, and social intelligence. We also develop and implement modern HR tools specific to Fraunhofer. This includes, for instance, supporting our institutes as they develop their own management guidelines and implement institute-specific specialist career paths, as well as tightening up the Fraunhofer-wide system for training management.

Diversity

Diversity management at Fraunhofer aims to create an open and creative atmosphere in order to innovate by recognizing

and valuing the diversity and uniqueness of its employees. It adopts an integrative approach and is a consideration in all the HR functions.

Fraunhofer cascade

Proportion of women in management positions	2011*	2012	2013
Management level 1	–	77	75
Percentage of women	–	3.9	4.0
Management level 2	–	1596	1651
Percentage of women	–	10.7	10.2
Researchers	–	6583	7111
Percentage of women	–	20.5	21.2
*no data			

Women remain underrepresented in the Fraunhofer-Gesellschaft’s research activities. We are making it one of our top priorities to increase the proportion of women among the research staff and in management.

Workplace safety and health

Protecting our employees is one of our priorities, and that’s why we have such stringent requirements when it comes to workplace safety and quality. Guidelines and work aids dealing with the topic of workplace safety are an integral part of our risk management and control systems.

Objectives and measures

Guiding principle	Objective	Measure	Status	Date
Excellence in management and leadership culture	Train new management personnel (target: 100 percent from 2015) and gauge employee satisfaction with management (target value above 80 percent)	Introduce enhanced Fraunhofer management training in 2014, with participation by all new management personnel from 2015	✓→→	2014
		Introduce Fraunhofer leadership principles in 2014 plus institute-specific embedding by means of management guidelines by 2016	→→→	2016
		Regular employee surveys	✓✓→	2015
Valuing diversity and exploiting the potential of a diverse workforce	Increase percentage of female researchers by around 3 percentage points by the year 2017 (relative to 2012)	Raise awareness and communicate relevant content relating to diversity via systematic management training sessions	✓✓→	2016
		»TALENTA« support and development program to increase the percentage of female researchers and managers (400 positions over five years)	✓→→	2019
		Each year 70 percent women in the Fraunhofer mentoring program	→→→	2014
		30 percent female researchers in the internal »Attract« and »Vintage Class« programs from 2016	✓→→	2016
		Optimize arrangements to allow for a combination of work and family	✓✓→	2015
Attractive career prospects	Introduce and institute a specialist career path from 2014	Implement new measures designed to encourage hiring more people with disabilities	✓✓→	2015
		Institute-specific specialist career paths to offer a new career path alongside the conventional management routes	✓→→	2016
Preserving health and ability to work	Create a safe and healthy workplace	Develop management principles for workplace safety into a management system	✓→→	2015
		Introduce a policy for workplace health management	✓→→	2016

- Implementation not yet underway
✓→→ Implementation underway
✓✓→ Implementation at an advanced stage

As an application-oriented research organization, it's particularly important for us to stay in touch with politics, science and society. That's why we voice our opinions and maintain an active dialog with our interest groups. What's more, we try to communicate our findings in an accessible way so that we can kindle enthusiasm for research.

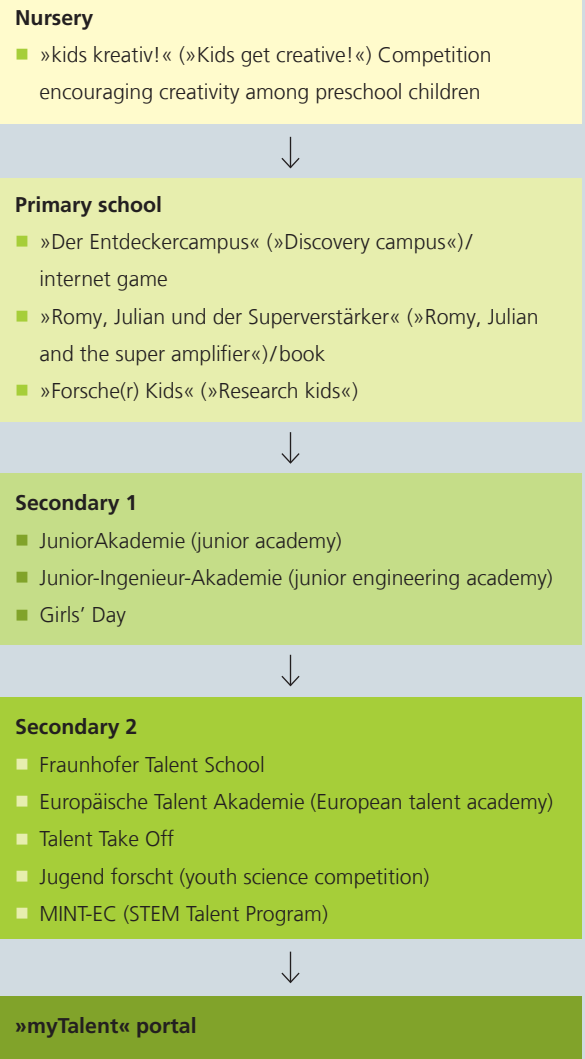
Public communication

The Fraunhofer-Gesellschaft has a public mandate that it fulfils in two ways: through its high-caliber research and development activities as well as through its communications. We go through a variety of media channels to ensure that our findings are expressed clearly: not just to our partners and customers from politics, science and industry, but also interested members of the general public.

Active dialog

We want to get relevant stakeholders from politics, science, industry, civil society and our workforce more involved in the processes that will shape our organization. Here we place particular emphasis on providing information about important topics as well as communicating our concepts and viewpoints. For this reason, we have developed a variety of attractive opportunities and instruments for dialog, which we will be implementing and establishing over the coming years.

Programs to foster young talent of all ages



Programs that appeal to young people

To awaken young people's enthusiasm for careers in research as early as possible, they need role models and life plans. Fraunhofer wants to encourage young people to study and

go on to work in STEM fields (science, technology, engineering and mathematics). Youth programs covering the whole educational spectrum are an integral part of our efforts to inspire young talent, and have been implemented and expanded over a period of many years.

Objectives and measures				
Guiding principle	Objective	Measure	Status	Date
Establishing an organization-wide understanding of the areas for action involved in research-specific sustainability management, paying particular attention to our social responsibility	Develop a system for research-specific sustainability management while involving society, politics, industry and employees	Have entire organization actively participate together with the Leibniz and Helmholtz associations in an initiative funded by the BMBF: »Sustainability management guidelines«	✓→→	2016
	Intensify cross-institute dialog with stakeholders on areas of research	Implement at least two cross-institute »research dialog sessions« per year dealing with areas of research	✓→→	2016
Get involved in the dialog among science, industry, politics and the public regarding key problems and issues by contributing our expertise in relevant research areas	Actively engage and discuss with stakeholders in the scientific community about how to shape research in Germany and in Europe	Set up the Wissenschaftspolitik (science policy) department under the President along with expansion of locations in Berlin and Munich in addition to the already established representation in Brussels	✓✓→	2014
		Two parliamentary discussion sessions per year addressing current topics relevant to research policy	✓→→	2015

→→→ Implementation not yet underway				
✓→→ Implementation underway				
✓✓→ Implementation at an advanced stage				

RESOURCES

Our approach to public resources is economical and frugal. Our goal is to make efficient use of resources – something we impress on all our employees. We consider protecting the environment an important task, and contribute both through our research findings and the efforts we make as an organization to protect our planet.

Optimizing operations

We view the global task of environmental protection as a challenge, and want to play our part not just through our research findings, but also through the efforts we make as an organization to reduce our environmental impact and use resources efficiently. Fraunhofer research is decentralized, and consequently environmental data is compiled and reported by the individual institutes. Since operating costs are financed from the institutes’ own budgets, it is very much in their own interest to optimize the way they consume resources, both from an environmental and a business point of view.

Greenhouse gas emissions from rail and air travel

CO ₂ equivalents in t	2011	2012	2013
Rail travel	–	1049	0*
Air travel	–	10349	11041

* As of 2013, CO₂ emissions have been offset by participation in the »bahn.corporate Umwelt-Plus« scheme.

Since 2013, every business trip taken by an employee of the Fraunhofer-Gesellschaft as part of the bahn.corporate agreement with Deutsche Bahn has been CO₂-neutral, thanks to participation in the »bahn.corporate Umwelt-Plus« scheme.

Waste generated by Fraunhofer Institutes

Waste in t	2011	2012	2013
Non-hazardous waste	3092	2171	3591
Hazardous waste	483	440	658

Across the organization, Fraunhofer appoints representatives to manage waste so as to better recognize opportunities to avoid, reduce and recycle it. Overall, however, an increase in the total amount of waste is to be expected due to the increasing number of employees and the larger number of projects.

Objectives and measures

Guiding principle	Objective	Measure	Status	Date
Reduce environmental impact through sparing use of resources	Encourage Fraunhofer Institutes to conserve resources by exchanging best practices and holding training sessions	Set up our sustainability platform, populated with examples of best practice, and support institutes in drawing up their own sustainability reports	✓→→	2015
		Roll out a Fraunhofer-wide campaign addressing sustainability management and resource efficiency	→→→	2015
		Sustainability training sessions held at the majority of Fraunhofer Institutes	✓→→	2016

→→→	Implementation not yet underway			
✓→→	Implementation underway			
✓✓→	Implementation at an advanced stage			

