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the brochure entitled "Responsible Action. Renewable Energies Today and Tomorrow"

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RWE Aktiengesellschaft

Opernplatz 1  
45128 Essen  
Germany

T + 49(0)201/12-00  
F + 49(0)201/12-1 51 99  
I www.rwe.com

RWE AG 2001 Environmental Report

## 2001 Environmental Report



### About this report



The RWE Group has contributed to the progress of sustainable development in more ways than one. One key area of focus is the field of environmental protection. It is in this light that our report for July 2000 to December 2001 will prominently feature our environmental management concept and activities, shedding light on the environmental accomplishments that we have tracked throughout the Group via our Environmental Reporting and Information System (ERIS). Data disclosed in this report is based on the management holding companies' input-output balance sheets, which took foreign majority holdings into consideration for the first time for inclusion in this report. The input-output tables and the companies' environmental programs are available on the Internet (> [www.rwe.com](http://www.rwe.com)).

We used the Global Reporting Initiative's guidelines (> [www.globalreporting.org](http://www.globalreporting.org)) as well as the recommendations of the Association of European Certified Public Accountants as a point of reference when compiling this report. Due to the high significance we attach to ecological aspects, however, the report continues to concentrate on environmental protection. Readers interested in our company's commercial development may want to consult our annual report. Information on personnel and social issues can be found in RWE's annual personnel report.

The 2002 ranking of environmental reports compiled by the Chamber of Certified Public Accountants in Berlin, which placed us first, gave us some additional pointers on how to improve the presentation of our enterprise with regard to environmental matters. Useful ideas were gleaned from questionnaires prepared by rating agencies such as Sustainable Asset Management (SAM), Zurich, Oekom Research, Munich, and the Institute for Management, the Environment and Society, Hanover.

Highlights in a nutshell ►

## Highlights in a nutshell



July 2000	RWE and VEW merge to form <b>Germany's largest power utility.</b>
September 2000	RWE's acquisition of Thames Water makes the company the <b>world's third-largest water utility.</b>
October 2000	<b>RWE</b> concludes its <b>restructuring program</b> , which is dedicated to splitting its activities along the value-added chain into powerful operational units.
February 2001	RWE's subsidiary Harpen commissions its first wind park—thus making further progress en route to stepping up <b>renewables-based power generation</b> in the RWE Group. RWE sells RWE Dea's chemicals division to Sasol Ltd. (South Africa).
March 2001	RWE announces the planned integration of its petroleum distribution and sales operations into a joint venture with Shell. RWE Umwelt Group company Trienekens commissions the world's first fully automated waste paper reuse plant in Cologne. <b>Innovative sorting technology</b> increases yield from 80 percent to 90 percent.
June 2001	The „ <b>agreement on the future use of nuclear energy</b> “ is signed. Consequently, RWE's Mühlheim-Kärlich power plant will not come back on stream. The agreed residual volume can be transferred to other RWE plants. The <b>Climate Conservation Action Program</b> proposed by the energy industry to offset the quota system for combined heat and power generation envisioned by the German federal government is signed. It envisions an annual 45 million metric ton reduction in CO <sub>2</sub> through 2010. Harpen focusses on generating power from renewable and regenerative energy sources.

Responsibility for the electricity business with industrial and special-rate customers is transferred to TESSAG, which is operating as RWE Solutions since September 2001.

Located in the north of downtown Essen, the RWE Fuel Cell Pavilion opens its doors to the public. Visitors can view a 100 kilowatt fuel cell that supplies the neighboring Meteorite with electricity, heat and refrigeration.

RWE makes an offer to acquire American Water Works, the USA's leading water utility. It has since received majority approval from American Water Works' shareholders. On completion of the acquisition, RWE will provide 58 million customers with water the world over.

RWE is included in the **Dow Jones Sustainability Index World** for the third time in a row. Moreover, RWE is the only German utility featured in the newly established **Dow Jones Sustainability Index STOXX** that lists Europe's corporate leaders in sustainable development.  
RWE Solar starts constructing the Smart Solar Fab, **Germany's largest solar cell manufacturing plant**, located in Alzenau.

RWE is awarded the bid to privatize Czech-based gas utility Transgas along with the country's eight regional gas utilities. Thames Water wins a license to operate the Chilean water service provider Empresa de Servicios Sanitarios del Maule S.A.(ESSAM), which serves 560,000 residents, lifting its share of the Chilean market to 20 percent.

July 2001

August 2001

September 2001

October 2001

December 2001

### Gas Business Area

**RWE Dea Aktiengesellschaft für Mineralöl und Chemie, Hamburg**  
DEA Mineralöl AG, Hamburg

### RWE Gas AG

### Water Business Area

### Thames Water Plc, London

### Environmental Services Business Area

**RWE Umwelt Aktiengesellschaft, Essen**  
RWE Umwelt Norddeutschland GmbH & Co., Melsdorf  
RWE Umwelt Mecklenburg-Vorpommern GmbH, Schwerin  
RWE Umwelt Berlin/Brandenburg GmbH, Berlin  
RWE Umwelt Sachsen-Anhalt GmbH, Halle  
RWE Umwelt Sachsen GmbH, Dresden  
RWE Umwelt Thüringen GmbH, Erfurt  
RWE Umwelt Hessen GmbH, Bad Nauheim  
RWE Umwelt Rheinland-Pfalz Nord GmbH, Wüschheim  
RWE Umwelt Rheinland-Pfalz Süd GmbH, Pirmasens  
RWE Umwelt Baden-Württemberg GmbH, Villingen-Schwenningen  
RWE Umwelt Bayern GmbH, Munich  
Trienekens AG, Viersen  
Buchen Umweltservice GmbH, Cologne

### Corporate Services

**RWE Systems AG, Dortmund**

### Other subsidiaries

**Harpen AG, Dortmund**

### Financial investments

**HOCHTIEF Aktiengesellschaft, Essen**  
**Heidelberger Druckmaschinen AG, Heidelberg**

## Imprint

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RWE Aktiengesellschaft

Opernplatz 1  
D-45128 Essen

T +49(0)201/12-00  
F +49(0)201/12-15199  
I www.rwe.com

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RWE's annual report, personnel report and additional information are available on the Internet at www.rwe.com.

This Environmental Report also appears in German.

(Name)  
\_\_\_\_\_  
(Address)  
\_\_\_\_\_  
(City, state, ZIP)  
\_\_\_\_\_  
(Country)  
\_\_\_\_\_

To  
**RWE Aktiengesellschaft**  
PO Box 10 30 61  
D-45030 Essen

(Name)  
\_\_\_\_\_  
(Address)  
\_\_\_\_\_  
(City, state, ZIP)  
\_\_\_\_\_  
(Country)  
\_\_\_\_\_

To  
**RWE Aktiengesellschaft**  
PO Box 10 30 61  
D-45030 Essen

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## Joint foreword of the Chief Executive Officer and the Environmental Coordinator

"We are making headway." The 2000 Environmental Report began with these words of self-assessment. RWE AG's 2001 environmental report, now our third, validates our efforts. It clearly reflects both the changes and the continued development underway in our company.

In the last year and a half, RWE has undergone fundamental changes. The Group itself was restructured and we refocused our attention on our core businesses of electricity, gas, water and environmental services. In addition, internationalization played a more important role during this period, manifested in the acquisition of the international water services company, Thames Water; the Czech company, Transgas; the planned acquisition of the US company, American Water Works and the UK-based company Innogy. Transactions of this scope and a distinct commitment overseas in the utility sector created all types of new challenges for the Group, including environmental ones. As a result, this environmental report focuses not only on sustainable development and the continued development of our energy services but also on the incorporation of the Group's environmental management policies into our overseas companies. In this area, we also have established international standards.

Capital markets players, in addition to customers and the public, have shown increasing interest in our commitment to environmental protection and sustainable development. Analysts from around the world have begun to inquire about the ideas we have and the concrete measures we have taken to safeguard our natural resources and ensure that development meets future needs. These inquiries are based on the idea that companies pursuing economically, ecologically and socially responsible policies will be more successful on the market than other companies in the long run. RWE's business activities have always been based on this belief. Increasingly intensive global competition lends further significance to this belief: environmental protection and increasing shareholder value are not mutually exclusive. This is why we at RWE are pleased to be listed in the Dow Jones Sustainability Index which includes about 200 of the largest companies who lead their respective industries in the area of sustainable development worldwide.



**Dr. Dietmar Kuhnt**  
President and  
Chief Executive Officer



**Jan Zilius**  
Director of HR and Law  
Environmental Coordinator

As part of our plan to promote sustainable development in Germany, in the summer of 2000 we became a founding member of Econsense, the Forum for Sustainable Development. This forum was initiated by the Federation of German Industries which is committed to promoting sustainable management in Germany. We continued to develop our internal Group strategy for sustainable development and incorporated it more firmly in our operations through several pilot studies that are described in detail in this report.

In spite of our wide-ranging activities this year, we have kept this report brief and concise. After an assessment of our overall Group strategy on sustainability and our environmental policy, you will find detailed information on each business area. Our key environmental statistics can be found on the Internet where they are now updated annually. This report, unlike the 2000 Environmental Report, contains extensive information on the Group's overseas interests.

The report refers to detailed information on the Internet (> [www.rwe.com](http://www.rwe.com) > Environmental Policy). This enables us to provide information geared toward specific target groups and promotes an exchange with our shareholders. To further this exchange, we invite you to share your opinion on the environmental report or the Internet reports with us either using the feedback card in this report or directly per e-mail ([info-umweltbericht@rwe.com](mailto:info-umweltbericht@rwe.com)).

We hope you enjoy reading this report.

## Successful structural change

**One of the stated goals of the RWE Group is continuously increasing the value of the company over the long run. The company is on the right track. Internationalization, cost-cutting initiatives and concentration on our four core businesses allow for steady growth through products and services tailored to meet future needs.**

RWE has successfully overcome the changes that accompanied the deregulation of energy markets. More than 100 years ago, Rheinisch-Westfälisches Elektrizitätswerk (RWE) was founded in Essen, Germany. Today, RWE is one of the leading multi-utility companies. We are constantly striving to meet the changing needs of our customers with the services we offer in our four core business areas of electricity, gas, water and environmental services. This puts us first among our competitors. In Germany, RWE is number one in both electricity and environmental services and number two in gas. Internationally, RWE ranks third in the water sector. RWE is also one of the leading providers of infrastructure concepts and solutions for the Euro-

pean energy industry. As a holding company, RWE AG is responsible for Group-wide management, strategic planning and coordination functions. Company headquarters are in Essen, Germany.

### Integrated products and service offerings

In the year 2000, the operating activities of the Group were divided into 12 distinct management companies under the umbrella of the holding company: electricity generation, supply and distribution, primary energy source and derivatives trading, energy-related services, gas and water services, gas and oil transport and waste disposal and recycling. These services have been restructured along the value added chain into the following management companies: RWE Power, RWE Rheinbraun, RWE Trading, RWE Net, RWE Plus, RWE Solutions, Harpen, RWE Gas, RWE Dea, Thames Water, RWE Umwelt and RWE Systems. One example of how RWE has been able to achieve attractive and integrated offerings as a multi-utility supplier is the turnkey solution for supply and disposal services it is providing to a paper company in North Rhine-Westphalia. Based on the provisions

## RWE's foreign investments\*



### Foreign investments

Region	Number
Western Europe	23
Eastern Europe	12
Turkey and Asia	9
North America	9
South America	1
Australia	1

\*RWE stake exceeds 50 percent.

in the supply contracts, RWE Solutions will provide 330,000 megawatt hours of electricity per annum and the overall process steam. The neighboring power plant, RWE Rheinbraun, will guarantee this supply. Waste disposal and recycled paper delivery will be handled by RWE Umwelt. RWE Aqua, part of Thames Water, is responsible for water and wastewater services.

HOCHTIEF and Heidelberger Druckmaschinen are not part of RWE's core business and were managed as financial investments. The RWE Dea Downstream Division (filling stations and refineries) was integrated on January 2, 2002 as part of a joint venture with Deutsche Shell GmbH. RWE Dea's chemical operations had already been transferred to Sasol Ltd. as of March 1, 2001.

**Internationalization and sustainability**

Our international business is one focus of our growth strategy. Today, RWE is active in more than 120 countries via its subsidiaries and interests and we achieve approximately one-third of our sales abroad. Forty-two percent of our 155,634 employees work in our overseas companies. As an internationally active Group that ranks high in its core businesses in Germany and across Europe, RWE is in an excellent position for continuing to play a leading role in the deregulation of the European market. The positive assessment of stakeholders and analysts alike is a reflection of the great strides that RWE has made in the area of sustainability. RWE is represented both in the Dow Jones Sustainability Group Index (DJSGI) and in the newly created European Sustainability Index. This is further evidence that RWE's environmental and social performance is above average compared to other companies active in the industry (see p. 54).

**Highlights: Trapping the international water market**

The acquisition of the UK based international water services company, Thames Water, in the fall of 2001 and the planned takeover of the leading private water supplier in the USA, American Water Works, has provided RWE with access to one of the industries of the future. Clean water, a raw material often called the "liquid gold of the third millennium," is becoming more and more scarce as a result of worldwide population growth and increasing industrialization. Because governmental organizations can often no longer provide financing to ensure the availability of clean drinking water, more and more private companies are providing water management solutions.

The World Bank estimates that approximately 600 billion US dollars must be invested in water supply in the newly industrialized and developing countries over the next ten years. Approximately 1.2 billion people do not currently have access to clean water due to a lack of availability or wastewater treatment facilities. In the developing countries, up to 95 percent of the wastewater from private homes and 70 percent of industrial waste flows untreated into rivers and lakes.

▶▶ [www.worldwaterday.org](http://www.worldwaterday.org)

**Managing value-added services**

One way RWE is meeting the requirements of the future is with its products and services. The company is also constantly adapting to meet the changing needs of its customers, it has established a systematic and comprehensive approach to environmental management, offers numerous opportunities for employees to enhance their skills and takes its social responsibility seriously. These ideas, found in the corporate guidelines for sustainability, are firmly rooted in RWE's day-to-day operations. The guidelines, which are mandatory for all companies and majority interests, take on an even more concrete form in, for example, Group-wide framework specifications on environmental and risk management (see p. 38).

It is particularly important for more complex companies with a comparatively high level of international activity to demonstrate how they will achieve responsible management and guide their value-added services. "Disclosure and transparency" is the central requirement of the OECD principles on corporate governance. This environmental report, created using the UBIS environmental reporting and information system, makes a contribution to these principles. For more information on environmental protection, corporate structure and the Boards, please see our Web page.

▶▶ [www.rwe.com](http://www.rwe.com)

**The RWE Group in figures** (in millions of €)

	2001 <sup>*)</sup>	2000/01
Sales	33,301	62,878
Operating result	2,029	3,953
Investments in fixed assets	2,295	3,518
Financial investments	1,411	9,890
Employees (number)	155,634	169,979

\* Truncated fiscal year (Jul. 1 to Dec. 31, 2001)

**External Power sales** (in Mio. of kWh)

	2001 <sup>*)</sup>
Privat and commercial customers	18,099
Corporate customers	17,544
Industrial key accounts	28,285
Distributors/Power utilities	41,985
Power trading	44,540

\*Truncated fiscal year

# Corporate policy on sustainability

A continuous learning process



## A continuous learning process

**In the 2000 Environmental Report, RWE introduced its model of sustainable development. The company's primary challenges, whose core business areas are electricity, gas, water and environmental services, include economical use of natural resources, prevention of climate change and responsible internationalization.**

As early as 1998, RWE defined its key action areas for sustainable development. The corporate guidelines, created in 2000, were based on these areas (see p. 14). To firmly establish these action areas in employee consciousness by way of examples, RWE used seven case studies to identify concrete sustainability aspects in corporate activities.

These case studies were examined for transferability in a workshop with management teams from all company divisions including employees from strategic development, marketing, human resources and environmental protection. It was also discussed how these case studies could be incorporated in practical terms into the sustainable development objectives at RWE. The following is a list of the central prerequisites and success factors for sustainable development identified in this workshop:

- Credibility and openness in communication
- An active market strategy oriented to future needs
- Long-term, visionary planning
- Integration of social and environmental issues

## Highlights: Pilot study on line maintenance

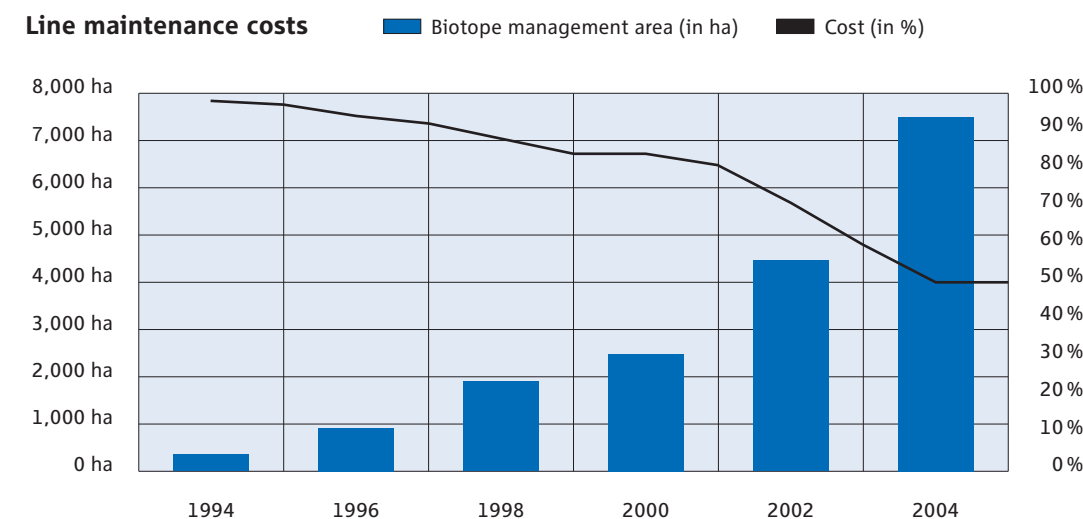
To demonstrate what it means in concrete terms for RWE to incorporate sustainability considerations, line maintenance was subjected to an in-depth analysis. As an operator of aerial wire networks and voltage transformer facilities, RWE has a large effect on its natural surroundings. However, an essential component of a viable electricity business is a network free of problems. In addition, line maintenance, at 40 percent, represents a considerable portion of the overall maintenance costs for the high-voltage grid.

Public sensitivity for environmental issues rose, leading to a rejection of complete deforestation in the forestry and line maintenance sectors. And, problems with supervisory authorities increased in scope. As a result, RWE decided to be the first network operator to try a new approach. We developed biotope management plans for maintaining lines through forests in cooperation with experts at the University of Freiburg. RWE included the local authorities responsible, the environmental protection agencies and the owners when applying these plans on location. Meanwhile, more than 50 percent of the overall line area is maintained based on these new measures.

**Environmental aspects:** The plans for line maintenance require selective maintenance measures so that a stable biotope with low growing trees develops over the long term. The solution is beneficial to the environment because it provides valuable shelter to both plants and animals.

**Social aspects:** Intensive and early communication with the authorities, the population and environmental protection agencies considerably improved mutual trust. This trust has opened the door to finding satisfactory solutions to other problems unrelated to line maintenance for all parties involved.

**Economic aspects:** As the results of the pilot project show, this new type of line maintenance is also advantageous from an economic perspective. Modern line maintenance measures cost about 50 percent less than methods used in the past. There is less of a need for long, drawn-out disputes with the associations and authorities thanks to increased appreciation of these measures.





The transfer workshop participants recommended pursuing RWE's current path. They also recommended determining evaluation criteria for sustainable development within the Group. This was no easy undertaking during the restructuring process. Ultimately it meant developing a strategic planning mechanism that would help all corporate divisions harmonize a project's environmental compatibility, social acceptance and financial results. Two pilot studies were used to determine how sustainability requirements had been manifested so far in our business processes. In a three-

phase analysis model, the relevant shareholder requirements were determined for business activities in the fields of maintenance of high-voltage lines and future production of fuel cell systems. In addition, a check was performed to determine how these were included and implemented in operations. If shareholder concerns are addressed early in the process, project costs can be reduced considerably. By consistently including sustainability factors in planning, acceptance of both actions and products improves, and this can have a beneficial effect on business activities.

To what extent different requirements affect operating activities might be surprising for some (> Pilot study on line maintenance, see p. 11). However, both pilot projects showed that, without a doubt, taking environmental and social factors into account makes a concrete contribution to increasing a company's value – an improvement that is measurable in financial terms. In addition, companies that expand their business activities and are able to react flexibly have a value that should not be underestimated. At the very least, this represents a worthwhile option for the future.

## Roadmap to sustainability

**We have set concrete milestones for achieving our sustainability objectives. We were able to record the first steps in the 2000 Environmental Report. In the meantime, we have been able to go beyond the basic building blocks. Strategy, implementation and communication are becoming increasingly integrated.**

	▶ 1998	▶ 1999	▶ 2000	▶ 2001	▶ 2002	▶ 2005			
<b>Strategy</b>	Coordinating environmental protection and the corporate headquarters' staff department	Corporate guidelines on environmental management	Group-wide transfer seminar on sustainability	Corporate guidelines on sustainable development	Further development of sustainable development plan	International negotiating guidelines			
<b>Implementation</b> Environmental management in the operating companies	Fixed standard set by environmental protection officials	ERIS implementation	Data collection	Case studies	Framework specifications for environmental management in the RWE Group	Environmental management reviews	Pilot projects	Indicator plan for sustainable development	Sustainable development reviews
<b>Communication</b>	First systematic environmental report	Inclusion in Dow Jones Sustainability Index World	Environmental focus on the intranet	Second environmental report	Inclusion in Dow Jones Sustainability Index STOXX	Third environmental report			

## Guidelines for the future

**RWE has accepted a special role in contributing to sustainable development. To make this responsibility a reality in all Group business areas and companies, we have defined key action areas in which we want to set ourselves apart through special commitment and innovative solutions. They are reflected in the following guidelines.**

We have provided concrete examples to illustrate our guidelines. Along with the figures, they reveal the extent to which we have made our visions reality. The figures were selected on the availability of basic data. In the future, we plan to identify

suitable control mechanisms and integrate them into an effective early recognition system. We are expecting a crucial boost from work conducted by the Union of the European Electricity Industry, EURELECTRIC (> see p. 41).

## The key to ensuring stable economic development in our Group is long-term planning.

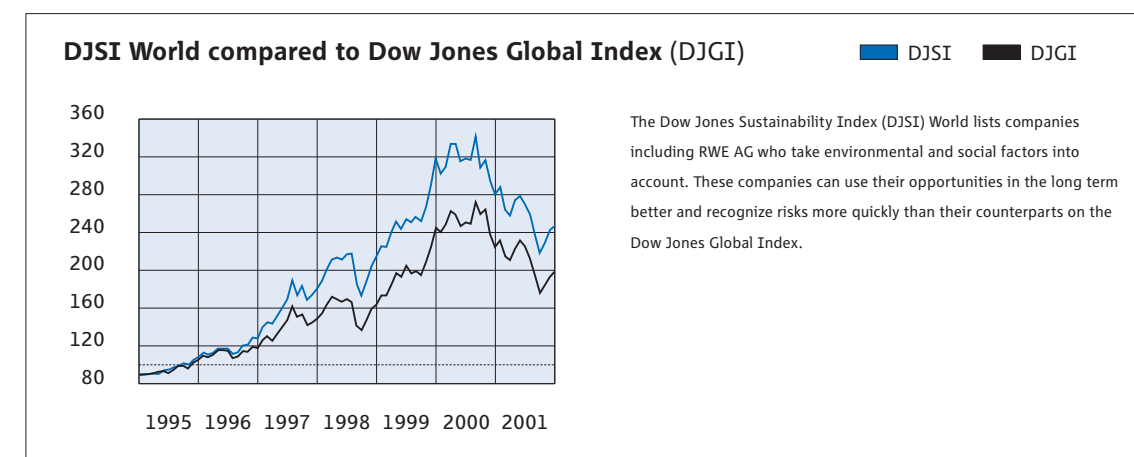
**Increasing shareholder value over the long term lies at the core of our stated objectives. To fulfill our customers' and shareholders' expectations and maintain the existing workforce, we must have stable and successful economic development in our Group. At the same time, visionary planning will allow us to protect existing business areas, develop new ones and create additional employment opportunities.**

**New markets:** The acquisition of Thames Water and the planned takeover of American Water Works have given RWE access to the international water market, one of industries of the future. Even now, RWE ranks among the three largest suppliers of water services in the world.

**Economics and climate change:** RWE is participating in the MIT Joint Program on Science and Policy of Global Change. This program attempts to identify economic and environmental aspects of climate change by linking natural science and economic models.

**Venture capital funds:** RWE Dynamics began its work in April 2001. It acquired interests totaling 50 million euros in young companies with clear growth perspectives related to our core businesses.

**Turnkey solutions:** RWE Solutions developed a compact voltage transformer facility designed to connect wind farms to high-voltage networks. Planning, construction and a comprehensive post-sales plan for the wind farms network infrastructure are all part of the "Wind Farm Package."



By promoting developments in the energy industry using innovative technology and new products, we are contributing to improvements in environmental protection.

The energy industry has a special role to play when it comes to using resources wisely and reducing toxic emissions. We are making an important contribution by using energy efficiently. We want to tap into new potential in part by increasing the use of new technologies, renewable energy sources and cogeneration (> Special feature on page 24).

**Largest solar sail in the world:** A photovoltaic system was installed in the "Auf Schalke" major league soccer stadium in Germany in September 2001. More than 50 percent of this project was financed by RWE Power and ELE Emscher Lippe Energie, a subsidiary of RWE Plus.

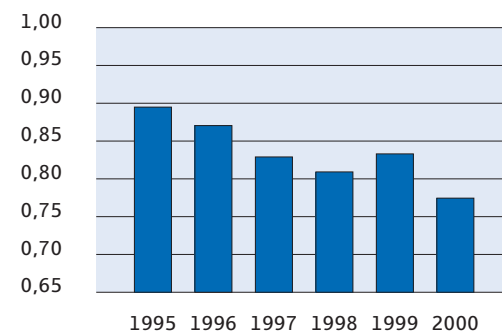
**Expanding renewable energy capacities:** RWE Solar is expanding its production capacity from 30 to about 100 megawatts annually with its new solar cell factory in Alzenau and is creating up to 400 new jobs. Harpen is building its first overseas wind farm in Saragossa, Spain, and has already put

18 of the 22 total wind turbines into operation.

**Heating for Berlin:** In 2003, Harpen will supply heat to the Berlin Gropiusstadt apartment complex with 20,000 units. To meet these needs, the company is building a biomass heating plant that will supply 300 gigawatt hours of heat per annum and reduce CO<sub>2</sub> emissions by 150,000 metric tons.

**Awards in innovation:** The Financial Times awarded CONSOL Energy, a subsidiary of RWE Rheinbraun, its Global Energy Award 2001. The award was given in recognition of the innovation used to extract methane gas from coal seams.

Spezific CO<sub>2</sub> emissions for electricity produced by RWE (in kg per kWh)



Since 1995, specific CO<sub>2</sub> emissions have been decreasing due to ongoing retrofitting measures in lignite power plants among other things. RWE's CO<sub>2</sub> emissions are still relatively high because we use comparatively less nuclear power than our German and European competitors and we have limited opportunities for generating hydropower (unlike, for example, France, Sweden or Austria).

We contribute to efficient resource planning by applying closed loop economic models.

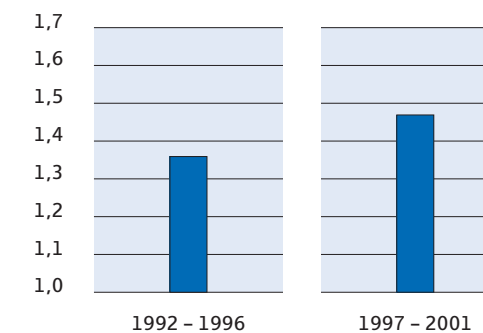
Sustainability requires above all else that business be based on closed loop principles. Also required are intelligent production processes which help to reduce raw material and water consumption and keep waste levels as low as possible. Dealing with resources responsibly leads to cost savings which, in turn, contributes to economic success.

**Paper recycling:** In Cologne, our Trienekens subsidiary opened the first fully automated paper sorting facility in the world. Compared to other systems that use modern sorting technology, this system improves output by 60 percent and puts 65,000 metric tons of recycled paper back into the production cycle annually.

**Reuse:** RWE Mechatronics and RWE Solar, both companies belonging to RWE Solutions, started supplying recycled packaging and transport frames to their customers at the beginning of the year 2000.

**Substitute fuels:** RWE burns around 40,000 metric tons of used wood and 350,000 metric tons of sewage sludge annually in its power plants. In this way, RWE Rheinbraun preserves valuable raw materials and disposes of waste safely. It is also worthwhile economically: burning sewage sludge in lignite fired power plants is much less costly than building new incineration facilities.

Investment in sewage and sewage sludge facilities (in tsd. million of €)



Treating water and sewage is not only a cost-intensive process but also part of a complex cycle. Since 1992 Thames Water Utilities has invested 3,061 mio. € to upgrade the treatment of wastewater in the Thames catchment (1£ = 1.61 €). This investment is primarily required to comply with EU Directives. The development over the last 10 years also reflects the implementation of the EU directives.

## We are bringing our product policy in line with environmental factors.

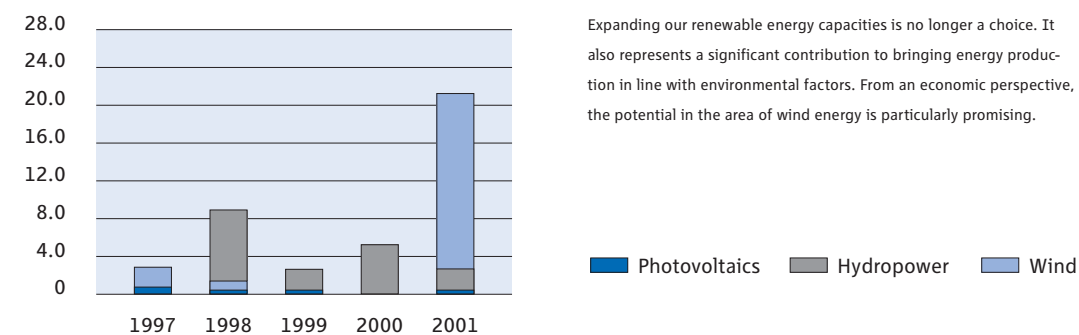
**Environmental factors must be taken into account during the product planning stage so that environmentally sound products and services can be provided each step of the way. To this end, the future needs of our customers and of society as a whole must be identified and taken into consideration early on in the process.**

**Centers of excellence:** With Harpen as its center of excellence, RWE plans on expanding the area of distributed and renewable energy supply. Its focus is on planning, construction, financing and operation of decentralized, local heating supply facilities and systems for generating electricity from renewable energy sources.

**Eco-power:** The RWE Group offers certified eco-power through three of its subsidiaries (RWE Plus, LEW, envia). The TÜV certification given by the German Technical Certification Association confirms that the electricity was produced from renewable energy sources.

**Environmentally-aware purchasing policies:** RWE Systems, responsible for procurement within the Group, regularly performs a systematic check of the Group's suppliers. Moreover, the subsidiary created a manual containing environmentally-aware purchasing guidelines and checklists.

**Annual increase in renewable energy output (in megawatts)**



## We take our social responsibility very seriously.

**As a large corporate Group, social responsibility is our concern. To show that we take this responsibility seriously, we offer hands-on training programs, we are helping to shape forward-looking infrastructures, participating in the debate on social issues and problems and developing consensus-based solutions.**

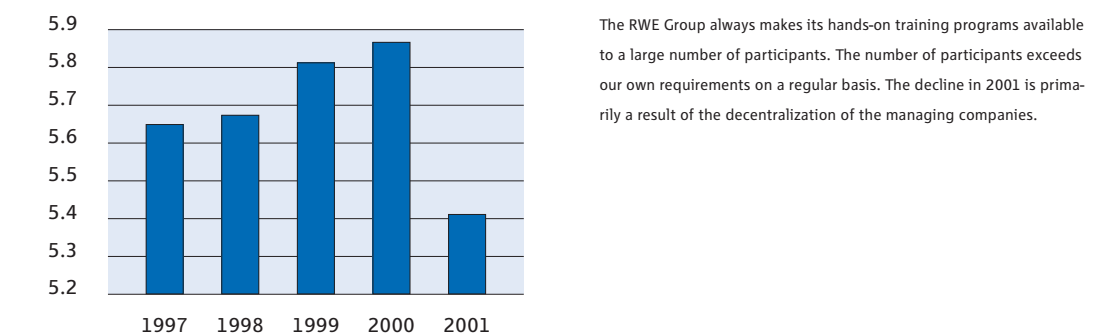
**Corporate citizenship:** The RWE Youth Foundation promotes projects in the Essen region of Germany that are designed to create a more secure future for children and young people. The projects are funded by some 15 million € in income from the foundation's capital every year.

**Children and the environment:** Over the last three years, RWE Umwelt has been supporting a project called "Together for You" in Hungary. The aim is to develop environmental awareness by making it fun. Every year, about 1,500 children from Budapest and the surrounding area participate in the project.

**Employment initiative:** In cooperation with the German Labor Office, RWE helps young people with little or no formal education or with social problems by offering a nine-month long, hands-on training program designed to prepare them for entrance into training and educational programs.

**Eco funds 2000:** In September of 2000, RWE Gas awarded eco funds totaling some 10,000 euros. Reward recipients were a project called "Saving Energy in Schools" and two energy projects run by local authorities.

**Number of vacancies in training programs (in thousands)**



## We place importance on the skills and participation of our employees.

The key to successful corporate development are highly skilled, motivated employees. We promote employee skill development at all levels by offering targeted training opportunities. A wide range of measures exists to help enhance our employees' sense of accountability, encourage individual initiative and meet their specific needs.

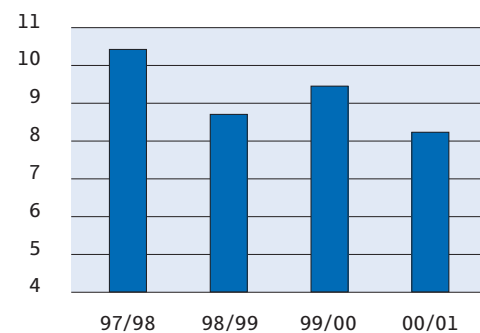
**Environmental award:** To motivate our employees in the area of environmental protection, RWE Solutions awards an environmental prize every year for outstanding commitment. The award is given to individuals or business units.

**Idea management:** Trienekens AG, part of RWE Umwelt, introduced idea management in 1999. The suggestions for improvement submitted during the first year identified a savings potential of 500,000 euros.

**Codes of conduct:** RWE Power established Group-wide "playing rules" to promote an open and trusting atmosphere for strengthening corporate culture during the period of transition.

**Part-time jobs:** In December 2001, the RWE framework agreement on part-time jobs was concluded. This agreement not only provides the foundation for part-time work, but also gives employees the right to return to their jobs.

Number of improvement suggestions (in thousands)



RWE Systems introduced an intranet-based idea management system designed to make it possible for employees to both submit and implement their ideas without being hampered by bureaucracy. The "Idea of the Month" is published here on a regular basis.

## We promote sustainable development worldwide by transferring our knowledge.

A lot can be done in the area of sustainable development if knowledge and standards are transferred to countries whose infrastructure and economies have not yet reached our standards. We can contribute in two ways: through our subsidiaries and affiliates and by providing advice and support for development projects.

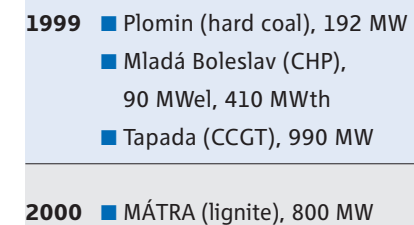
**E7 Group:** As a member of the E7 Group (> see p. 41), RWE is committed to building infrastructures in underdeveloped regions of the world. The E7 Group helped to construct a network-independent energy supply system from water and wind energy in a region of Indonesia.

**Energy for Rwanda:** In Rwanda, RWE Solutions was contracted to improve energy supply by expanding its electricity networks. RWE Solutions has assumed responsibility for overall project management, is building the lines, supplying the material, assembling the network on location and is putting it into operation.

**Knowledge transfer:** Thames Water holds a "Global Technology Workshop" several times a year, the goal of which is to exchange knowledge and technology in a worldwide forum. This workshop recently made it possible for a proven technology from the USA to be implemented both quickly and easily in Great Britain and China.

**Water for the world:** Thames Water supports the charity "WaterAid" whose aim it is to supply the poorest people in the world with clean drinking water and sanitary facilities (> see p. 83).

Overseas power plants



In its foreign power plant interests, RWE does its part to reduce the environmental impact of its operations. RWE helped to retrofit the fossil fuel power plants of MÁTRA (Hungary), Plomin (Croatia) and Mladá Boleslav (Czech Republic) so that they now meet the EU requirements on emission limits. The Tapada power plant in Portugal is one of the most modern gas power plants in the world.

**Special feature:**  
Energy for the future



## Energy for the future

**One focus of our business and the topic of this year's environmental report is continued development of energy services in the RWE Group. Energy services that meet future needs are not only the foundation for long-term company success, but are also the key to environmentally-compatible development that creates worldwide prosperity.**

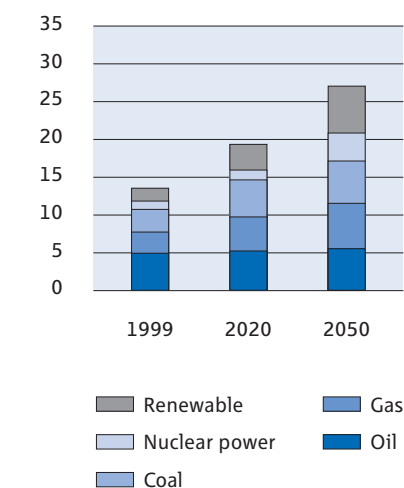
Since 1970, world energy consumption has almost doubled and, in the next few decades, global energy demand will continue to increase, above all in the Asia-Pacific region. According to the World Energy Council (> [www.worldenergy.org](http://www.worldenergy.org)), by 2020, world energy consumption, which is today 14 billion metric tons of coal units, will increase to 20 billion metric tons. This development will be driven by the continuous increase in the world's population from 6 billion to 7.5 billion people by the year 2020, and the steady growth of the global economy. One of the crucial challenges in the coming decades will be addressing, in particular, the justified desire of developing countries for access to a secure and affordable supply of energy and for economic development, prosperity, social security and equal opportunities for both countries and individuals. The central task will be to satisfy and secure the increasing demand for energy in line with environmental concerns.

▶▶ [www.worldenergy.org](http://www.worldenergy.org)

### Energy consumption and environmental protection

Despite all efforts to promote renewable energy sources and efficient energy use, the majority of our future energy consumption will still rely primarily on fossil fuels and nuclear power. In all likelihood, renewable energy will not be able to make a significant contribution until the middle of this century in part because it is associated with comparatively high costs in the long term.

**World energy consumption**  
(in billion metric tons of coal units)



Source: WEC, 2000

Using fossil fuels is, however, also inevitably connected to toxic emissions. It is true that the industrial countries were able to make a lot of progress in the last few years in "traditional" air pollution emissions such as sulfur dioxides, nitrous oxides, dust and volatile organic matter. However, air pollution, accompanied by an increase in energy consumption, is rising dramatically in large metropolitan areas and concentrated industrial centers in the newly industrialized countries as a result of emissions from cars, household heating and industry. Preventive technology is still frequently too expensive as a quick remedy to bring standards up to Western levels. Despite the public's resistance to the idea of nuclear power, the World Energy Council continues to believe that it is one of the best options for a secure, long-term and environmentally-safe energy supply.

### Preventing climate change and energy efficiency

Preventing climate change is just as urgent as clean air. Greenhouse gases, the most important of which are CO<sub>2</sub>, methane and nitrogen oxides have a global effect and have been on the agenda of international negotiations for years. It is true that the extent to which the increase in global temperatures has been caused by human beings has not been determined. Regardless of this fact, the Intergovernmental Panel on Climate Change (> [www.ipcc.ch](http://www.ipcc.ch)) assumes that the increasing concentration of greenhouse gases in the atmosphere will result in a further increase in average global temperatures. This panel, made up of members of the international scientific community, anticipates a far-reaching climate change. The first measures taken to avert this change were discussed and adopted at the Climate Conferences in **Kyoto** (1997), **Bonn** (2001) and **Marrakesh** (2001).

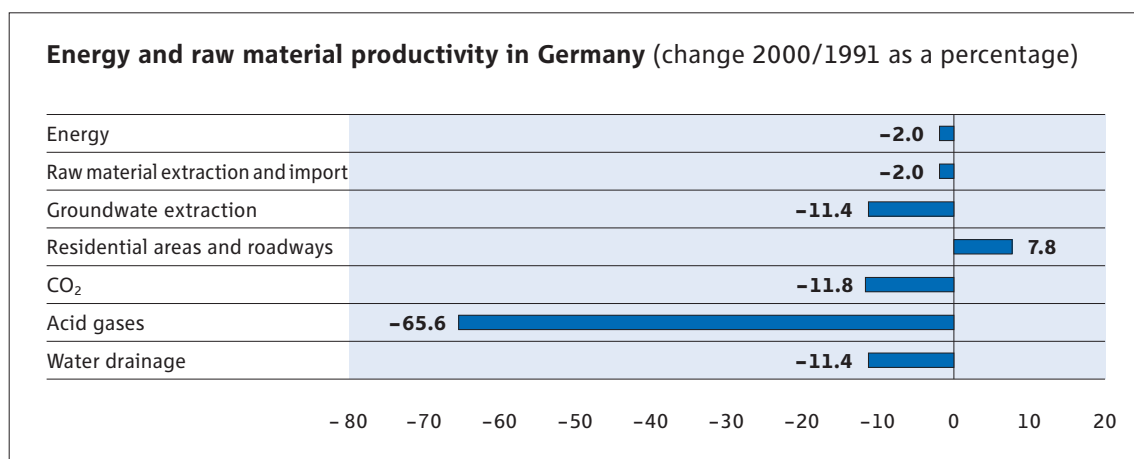
▶▶ In Kyoto, Japan, the **Kyoto Protocol** for reducing global greenhouse gas emissions was adopted in 1997. It requires industrialized countries to reduce 1990 emission levels of greenhouse gases by 5.2 percent by 2008 to 2012. In July 2001, after several small tussles, the "Bonn Agreement" was created which paved the way for ratification of the protocol, albeit without the USA. The concrete protocol was adopted in November 2001 in Marrakesh. (> [www.unfccc.int](http://www.unfccc.int) > sessions)

▶▶ [www.ipcc.ch](http://www.ipcc.ch)

Germany, the frontrunner in efforts to prevent climate change, is responsible for 80 percent of all EU reduction targets for greenhouse gas emissions. Between 1990 and 1999, energy productivity increased in Germany by about 15 percent. CO<sub>2</sub> emissions decreased during the same period by approximately 16 percent. Based on calculations provided by the Fraunhofer Institut für Systemtechnik's Division for Energy Technology and Energy Policy, only about half of these reductions were a result of German reunification. There was still a net reduction of nine percent. The Federal Office of Statistics emphasized in its assessment of environmentally relevant economic factors for 2000 that "significant contributions had been made to the reduction of CO<sub>2</sub> emissions between 1991 and 1998" particularly in the areas of coal mining, energy

supply, chemical industries as well as coking plants and mineral oil processing. In addition, German companies continued to do their part to increase **energy efficiency**. Between 2000 and 2020, economic growth and energy consumption will be able to continue to balance each other out as, according to scenario I of the energy report prepared by the German Federal Ministry of Economic Affairs, primary energy consumption will decrease in absolute terms by 3 percent despite an increase in the real gross domestic product of about 45 percent.

►► Based on the "Sustainable Energy Policy to Meet the Needs of the Future" report, **energy efficiency** in the German economy is exemplary compared to other industrialized countries. This report was presented in November by the Federal Minister of Economics, Dr. Mueller. It can be downloaded from the Internet. ([-> www.bmwi.de](http://www.bmwi.de) > Publications)



### Highlights: Prototype Carbon Fund

RWE is the only German industrial company participating in the Prototype Carbon Fund (PCF) set up in January 2000 to test the practical implementation of **mechanisms** established in the **Kyoto Protocol**. Backed by 145 million US dollars, the fund is a joint project of the World Bank, national governments and companies. The aim of the fund is to finance energy projects in both industrialized as well as newly industrialized and developing countries which implement measures to prevent climate change. The resulting emission rights are credited to PCF participants depending on the amount of their capital interest. The first project financed converted landfill gas to electricity in Latvia. Planning is underway for additional Clean Development and Joint Implemen-

tation projects. A PCF Fellowship Program was set up to promote knowledge sharing among the participants. In the first half of 2002, RWE seconded an employee with first hand experience from the PCF in the implementation of some of the Kyoto mechanisms.

►► The purpose of the **Kyoto mechanisms** is to tap into targeted efficiency potential. They include projects between industrialized countries (Joint Implementation), joint projects between industrial and developing countries (Clean Development Mechanism) as well as emissions trading between industrial countries in accordance with UN framework conventions on climate change. ([-> www.unfccc.int](http://www.unfccc.int))

►► [www.prototypecarbonfund.org](http://www.prototypecarbonfund.org)

For the purpose of reducing CO<sub>2</sub> emissions, the associations of the German energy industry and the energy-intensive industries agreed to an "Action Program on Climate Protection" with the federal government in the spring of 2001. This action program supplemented the voluntary measures imposed in 2000 (for information in German, see [www.strom.de](http://www.strom.de) > Presse > Positionen). The objective of this program is to reduce CO<sub>2</sub> emissions by 45 million metric tons per year by the year 2010 using a combination of voluntary measures and publicly promoted plans in a series of concrete and quantifiable steps ([-> www.rwe.com](http://www.rwe.com) > Environmental Policy > Climate Protection)

►► [www.strom.de](http://www.strom.de) > Presse > Positionen  
 ►► [www.rwe.com](http://www.rwe.com) > Environmental Policy > Climate Protection

### RWE is meeting challenges head-on

As Europe's third-largest energy supplier, RWE wants to secure and expand its markets. To achieve this goal, RWE must have a supply of power and gas that is competitive, secure and environmentally compatible. In fact, RWE is still convinced of the environmental value of nuclear power because it is the only competitive type of energy free of CO<sub>2</sub> emissions that will be available in Germany in the near future. RWE is, however, also aware of social realities and, as a result, decided to gradually phase out nuclear power on the basis of an agreement concluded in June 2001.

To continue expanding its core businesses and meet its sustainable development goals, the RWE Group relies on various types of electricity generation for the European market with a strong domestic production base. One of RWE's biggest advantages is having lignite as a long-term, competitive, domestic energy source in its portfolio because importing energy sources is associated with political risks and oil and gas prices are unpredictable. To meet climate protection standards, RWE will increase the energy efficiency of



its power plant facilities through expansion and modernization. At the same time, current output will be expanded using **renewable energy** sources, innovative solutions such as fuel cells will be brought to market, and a distributed energy supply system will continue to be developed based on cogeneration. According to an optimistic prognosis, decentralized energy which relies on renew-

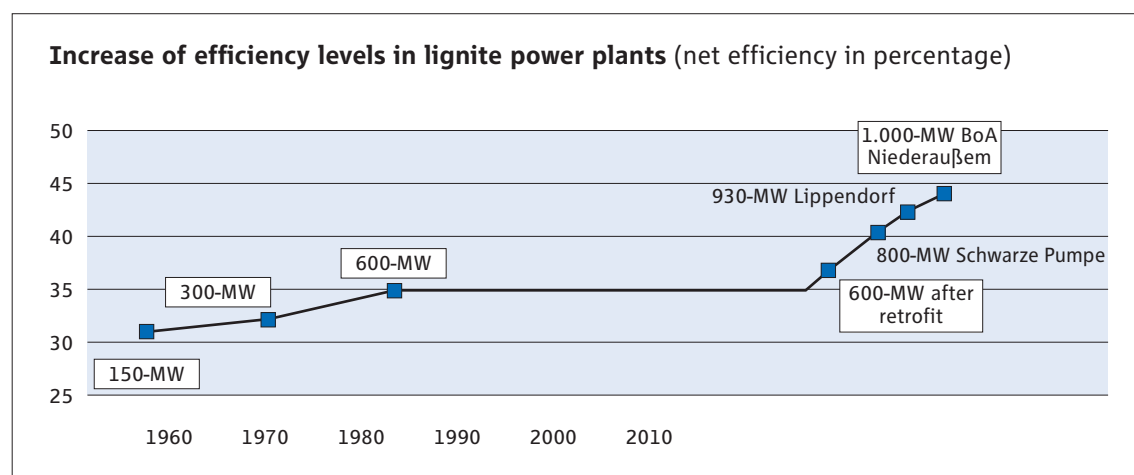
►► The brochure entitled "Responsible Action. Renewable Energies Today and Tomorrow" describes the development of world energy consumption, the role of **renewable energies** and the commitment of the RWE Group. You can get a free copy from RWE or download it from the Internet.  
(> [www.rwe.com](http://www.rwe.com) > Environmental Policy)



able energies, cogeneration and fuel cells could reach 30 percent of the overall power market in Germany by the year 2015.

**Program for power plant modernization**

By investing in modernization and expansion, the energy efficiency of our power plant facilities will increase an additional 15 to 20 percent by 2010. Among the steps being taken are setting up lignite blocks with optimal facility technology (BoA) in Niederaussem in the Rhineland's lignite industry. This new power plant has an operating efficiency of over 43 percent and replaces old facilities with efficiency levels of about 31 percent. The continued development of this facility to BoA Plus is already being tested. Plus means that fluidized bed drying and mechanical-thermal lignite de-watering processes are used. These are preprocessing steps that further increase energy efficiency during combustion.



**Expanding renewable energy capabilities**

RWE intends to more than double its approximately 800 megawatts of current energy output from renewable energy sources to approximately 1,700 megawatts by the year 2010. For this reason, RWE is involved in testing large wind farm facilities in Germany. By the year 2020, this type of energy production will replace hydropower as the dominant renewable source since hydropower opportunities are limited and almost completely exhausted in Germany due to geographic factors. The percentage of energy produced from biomass and garbage, sludge, organic and waste gases as well as photovoltaic energy will increase. Harpen and RWE Solar, both management companies of RWE, put RWE in a unique position to further expand its capabilities in the field of renewable energy sources. RWE Solar is one of the leading solar cell manufacturers in the world and it is adding a third production line to its current capacity in Alzenau (see p. 69). Harpen relies on wind energy and put a wind farm into operation at the end of 2001 in Spain that will have a total capacity of 16.5 megawatts by the time it is finished.

**Current output of renewable energy (as of December 31, 2001)**

	Number	Capacity (in MW)	Annual output (in GWh)
Hydropower	155	673.00	3,250.00
Wind	49	38.48	77.65
Photovoltaics	38	2.91	2.85

**Fuel cell potential**

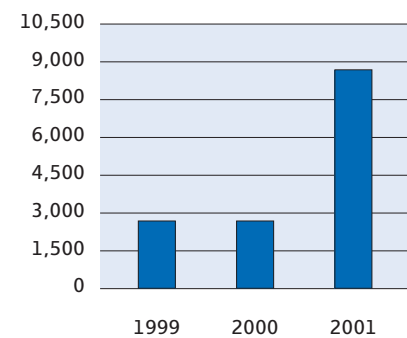
**Fuel cells** are ideal building blocks for distributed energy supply because they produce both power and heat at the same time. In addition, they can be flexibly integrated in systems of almost all sizes, have an extremely high operating efficiency regardless of their level of utilization, are quiet and almost completely maintenance free. On the basis of an optimistic prognosis, fuel cells could achieve a market share of up to 10 percent in Germany by the year 2015. The associated reductions in CO<sub>2</sub> emissions of between 20 and 40 percent mean that introducing fuel cell technology would make a contribution to achieving German climate protection targets. Since 1991, RWE has cooperated with manufacturers of fuel cells systems and has built up knowledge at an early stage. In the Fuel Cell Pavilion in Essen, the first units were tested for their day-to-day use potential. In addition, RWE equipped North Rhine-Westphalia's state representative office in Berlin with a fuel cell.

**Fuel cell market plan**

Year	Project
2004	<ul style="list-style-type: none"> <li>Initial manufacturing capabilities</li> <li>Market introduction household energy</li> <li>Market introduction industry/commercial</li> </ul>
2007	<ul style="list-style-type: none"> <li>First competitive products</li> </ul>
2010	<ul style="list-style-type: none"> <li>Significant market shares</li> </ul>

►► A brochure published by the ASUE, a German association that promotes energy conservation and environmentally-sound energy consumption, describes how **fuel cells** work and how they can be used. It can be viewed in German on the Internet or downloaded.  
(> [www.asue.de](http://www.asue.de) > Brennstoffzellen)

**Electricity generation from CCGT facilities (in GWh)**



In the summer of 2002, the Ruhr region of Germany will conduct the first field tests on 25 fuel cells in the five-kilowatt class. In the area of fuel cell plants, RWE is striving for the top ranking and will invest more than 100 million euros in this technology over the next few years. As part of its cooperation with other companies, essential elements required for series production will be supplied by German companies, thus creating additional jobs. Installation and maintenance of the units will be carried out by the local installation operations and offer new value-added opportunities.

**Efficient and decentralized energy supply using gas and steam turbines and cogeneration**

Combined cycle gas turbines (CCGT) and cogeneration (CHP) can pave the way for distributed, efficient energy supply, an area RWE has been active in for some time. CCGT power plants connect gas and steam turbines to each other to increase efficiency levels. These plants are usually powered by natural gas. If the low-temperature steam is additionally utilized by cogeneration, high energy efficiency levels of up to 87 percent can be achieved.

Building and operating these types of facilities is particularly interesting for industrial customers who have an ongoing need for heating and process steam, and can also direct part of the electricity produced into their own networks or connected

networks. In addition to the CCGT facilities operated by RWE at BASF, Bayer and Opel, the RWE operating management company, Harpen, has constructed several cogeneration facilities that work with different types of energy sources and generate both power and heat. This distributed supply strategy was enhanced by the law for the Maintenance, Modernization and Expansion of Cogeneration, which went into effect on April 1, 2002. This law provides compensation for electricity produced by particularly efficient cogeneration facilities that is then fed into the general power supply network.

**Outlook**

RWE will make considerable efforts in the future to reduce CO<sub>2</sub> emissions just like all German industrial companies. In spite of this, it is our opinion that some demands made by individual parliamentary groups and the Federal Sustainability Council that want to reduce CO<sub>2</sub> emissions by 40 percent by the year 2020 are unrealistic. In light of the scheduled shutdown of some nuclear power plants, this objective will result in structural problems that jeopardize Germany as a business location and will endanger its workforce significantly. These types of goals can no longer be set within national borders but must instead be set within the European framework.

**Highlights: RWE position on emissions trading**

The Kyoto Protocol uses the flexible instruments of Joint Implementation (JI), Clean Development Mechanism (CDM), and Emissions Trading (ET) for emissions trading rights. The inclusion of all climate gases, all regions and all emissions provides for the highest level of flexibility and the most cost-efficient reduction of climate gas emissions in line with global standards.

The draft guideline presented by the European Commission on October 23, 2001 for an EU-wide emissions trading system does not meet these requirements and should be rejected. This is the standpoint of German industry as a whole (cf. statement issued by the German Federal Association of Industry on January 21, 2002). The draft EU Directive. Only includes current EU member states, affects only a few sectors (electricity and heat production over 20 MW, iron and steel, glass, paper and cement), includes only CO<sub>2</sub> and ignores other greenhouse gases – particularly methane and nitrous oxide. Moreover, it is not clear whether the EU draft is compatible with the existing mechanisms in Germany for preventing climate change (self-imposed measures, cogeneration law, renewable energies law, environmental tax, etc.) with which the national targets for reducing gas emissions by 2010 will most likely be reached. Rather, the fear is that the existing mechanisms will not be replaced and that an additional strain will be placed on companies and consumers leading to a loss of jobs and a decline in prosperity. As a result, the implementation of the emissions trading system should not be mandatory and should instead be optional if climate protection targets are reachable.

If the EU Commission sticks to its plan, a guarantee must be provided that the European economy is not put at a disadvantage because it is acting unilaterally. In addition, the burden of European climate change prevention policies must be distributed evenly among all affected sectors, the companies affected must have as much flexibility as possible and the cost of the system kept as low as possible. The minimum requirements are:

- An "opt out" clause for EU member states capable of achieving targeted emission figures even without introducing an ET system
- Free issuing of emission rights (grandfathering) taking into account what steps have already been taken to reduce emissions in accordance with the EU-wide standards
- Establishment of a link to the system of voluntary agreements being practiced successfully in Germany
- Inclusion of the other greenhouse gases mentioned in the Kyoto Protocol
- Inclusion of the EU member candidates
- Inclusion of project-related Kyoto mechanisms (Joint Implementation, Clean Development Mechanism).

## “Innovating and putting innovations into practice.”

### An interview with Dr. Klaus Töpfer

**Dr. Töpfer, when you were Federal Minister of the Environment, you swam across the Rhine to publicly demonstrate that the water quality has once again attained a high level. How do you assess the development of environmental protection over the past years? What environmental problems are urgently in need of solutions at the national and global levels?**

Environmental protection in the industrialized countries of the world has witnessed a very positive development. All levels of policy-making – community, state and federal, but also that of the European Union – have helped bring about fundamental improvements in water and air quality, reducing the amount of waste produced while at the same time recycling more of it, effectively dealing with chemical substances and acting to preserve still-remaining varieties of plant and animal life thanks to an improved statutory footing and a lot of voluntary commitment.

The most pressing problems which need to be solved now are those which individuals do not readily see, smell, hear or feel. Here I especially have in mind the immense challenges facing us as a result of climatic change and cooperation with the developing countries in the area of environmental and development policy, since these countries are much more dependent on economic development than the developed countries. But the range of issues here also includes soil protection and the increasingly urgent need to alter consumer behavior and mobility patterns.

**You frequently stress that sustainability is more than just environmental policy. At the same time it is important to carefully demarcate this whole notion and not use it as a “catch-all for everything.” In your capacity as UNEP Executive Director, where do you believe the focus needs to be placed in the future for the German economy, keeping in mind its high degree of interdependence with other economies?**

The term “sustainable development” must not be allowed to lose its meaning through inflationary use, as this would have a negative effect on our ability to take concrete



**Dr. Klaus Töpfer**  
Executive Director of the United Nations  
Environmental Program

action. The message needs to be communicated everywhere that poverty is the most poisonous substance of all, that it translates into even more population growth in the poorest countries and – what’s more – intensified urbanization. The German economy needs to come up with technical innovations on the basis of renewable energy and put these into practice, especially with respect to water use, mobility-related issues in major urban centers and distributed energy-supply systems, above all in rural areas.

**Market economy tools to protect the environment, for instance greenhouse gas emission certificates, are a subject of intense debate at present. What role do the market and economy play in solving our global problems?**

One can even say with regard to environmental challenges that objectives need to be achieved at the lowest possible cost. Flexible market economy tools, which include certificates along with an intelligently designed tax system, are frequently able to achieve such goals in a more effective manner. That is why the market and global trade are essential to solving global problems.

You have voiced a plea for more development aid. But what possibilities do you see for global trade to help the poorer countries?

Without a doubt development cooperation, which used to be erroneously referred to as development aid, urgently needs to be stepped up. This is not some kind of hand-out – it is an investment in a peaceful future for the world. Nor can one deny that globalization needs to do more to overcome the huge discrepancy between rich and poor and conserve the environment in a more proactive manner. Global trade and direct private investment are indispensable elements of this effort, but we also need to make use of private-public partnership and other innovative solutions, especially in the area of water and energy.

Which of the newly industrialized countries' and developing nations' problem areas do you feel are in especially dire need of support from the private sector?

Drinking water has already become one of those environmental goods access to which is increasingly becoming a source of conflict – a conflict which even portends war. Population pressure and burgeoning prosperity as a result of economic development and urbanization translate into a disproportional increase in the demand for water. The fact that the tourist industry is an especially intensive water guzzler poses special problems for many developing countries already beset by water shortages. This is why we need to invest in improved, more efficient usage of water. Water-distribution systems in major African cities lose over 50% of the water they transport through leakage. There is no wastewater treatment at all in many places. So the poorest of the poor have to pay premium prices for bad drinking water – prices far and above any values based on economic calculations when we consider the dramatic number of fatalities due to water-borne disease, especially among children.

For multinational enterprises, what challenges emanate from the demand for unwavering adherence to the principle of sustainable development?

All enterprises, with the global players at the top of the list, first need to ensure sustainability in a transparent, credible manner in their own back yard. One very real challenge has already been spelled out in the guise of Kofi Annan's global compact initiative. Enterprises which enlist in the global compact must comply with nine specific principles in the areas of human rights, social policy and environmental policy everywhere they operate. The UNEP is in charge of the environmental policy components in the initiative.

At present you are working on a draft proposal for a global organization which is to map out a concept for sustainable development. But hasn't the policy arena already seen some of its options dissipate in this sphere?

The member countries decide on the types of organizations they consider to be necessary to deal with various tasks within the framework of the United Nations. At the UNEP we seek to help global environmental organizations however we can. Decision-making power, however, lies in the domain of the member countries. The fact that the United Nations and its extraordinary Secretary General, Kofi Annan, received a Nobel Peace prize this year clearly indicates, however, that this unique and important organization spanning the globe is endeavoring to meet the challenges facing it.

# Environmental management in the Group:

Acting jointly



## Acting jointly

The adaptation of RWE environmental management and the environmental reporting and information system to the new Group structure has posed a major challenge. Why? Because it requires us to incorporate VEW and Thames Water's sites and activities. And we have made progress in this effort. Data on foreign affiliates has been incorporated in the reporting for the first time.

Purposeful management of environmental protection is a top priority at RWE, and not only to avoid risk in the operative business. In order to prevent unpleasant surprises in the area of acquisitions, new framework criteria were set out in December 2001 to review prospective acquisitions on the basis of "due environmental diligence." Basic rules and arrangements were laid down in a Group guideline which is to be adhered to by all management companies and their financial investments. The same applies to the additional framework specifications for the structural design of environmental management. All companies in the Group are subject to the following requirements:

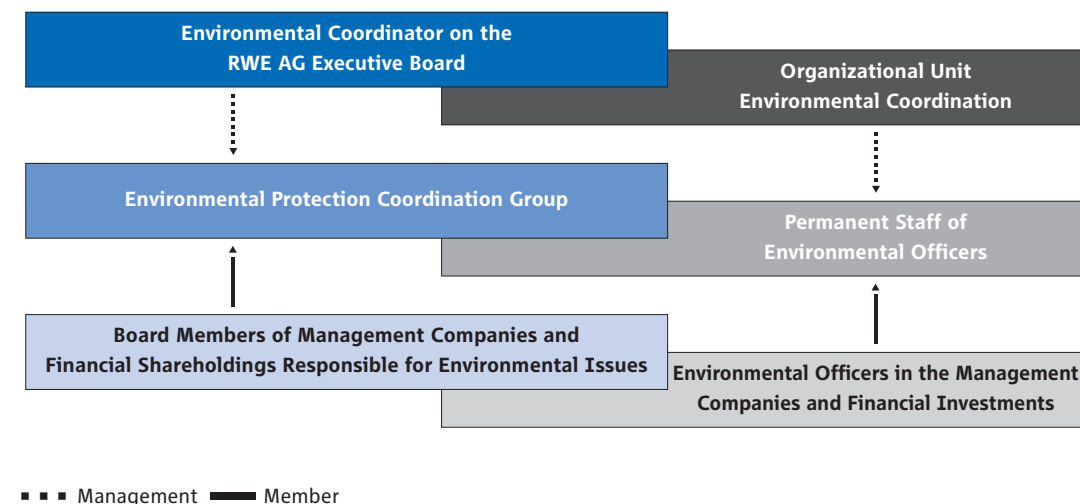
- Issue of a specific company environmental policy
- Creation of environmental programs with objectives and measures
- Drafting of a structural and process organization manual for environmental protection
- Appointment of persons to be in charge of environmental management and environmental protection

- Documentation of obligations emanating from public-law requirements, planning permissions, etc. when these involve environmental protection
- Description of the measures needed to incorporate environmental protection in business processes
- Launch of a reporting, review and guidance system to implement the required measures and optimize environmental management
- Training of staff to conduct activities relating to the environment
- Arrangements on how to proceed in dealing with incidents and crisis management

### Orientation towards a new international structure

The task was to adapt this global set of rules to the new structures, which meant both the fundamental restructuring of the Group into four business areas with a total of twelve management companies and the integration of the VEW and Thames Water. It was at the same time necessary

## Organization of environmental protection in the RWE Group



to compare this set of rules with the international orientation of the Group. Even though this has now been done, the determined inclusion of foreign subsidiaries and affiliates still constitutes a major challenge for the RWE Group's environmental management. Here the task is not only to transfer standards and stipulate reporting requirements – it is also necessary to learn from one another and to develop a common understanding. That is why the international exchange of opinions is to be assigned greater importance in the RWE Group in the future.

### Organization of areas of responsibilities

The environmental coordinator for the Group is Jan Zilius, Executive Vice President for Human Resources and the Legal Department on the RWE AG Executive Board. He is assisted by the Environmental Coordination Unit. Members of the Executive Board in charge of the management enterprises and environmental coordinators meet in the Environmental Protection Coordination Group twice a year or so. This Group is furnished with technical support by the permanent staff of environmental officers – a group of experts who meet on a quarterly basis or as required. The new companies have put in place appropriate arrangements.

### Assuming personal responsibility for environmental management

All management companies have introduced environmental management. What this looks like at particular companies and how it is put into practice in actual operations is up to the companies themselves. They are free to decide whether their management system is to be certified or not. This is also a good idea because requirements facing the companies vary considerably. For a mining company which is subject to stringent government supervision, certification is of much less importance than for business areas subject to less government supervision and which stand in closer contact to end customers. The decision on which type of management system to opt for can also differ from business area to business area. For instance, RWE Umwelt Group companies also offer a quality

### Externally audited sites in the RWE Group (as of december 31, 2001)\*

	1999	2000
ISO 14001	3	26
ISO 9001/9002		154
EMAS	6	6
Certified waste-disposal sites	79	186
SCC	7	22

\* Including financial investments.

management system, as safety and the outcomes of the recycling process obviously constitute the raison d'être of these business areas. Occupational health and safety are being integrated into the management system in other enterprises at present.

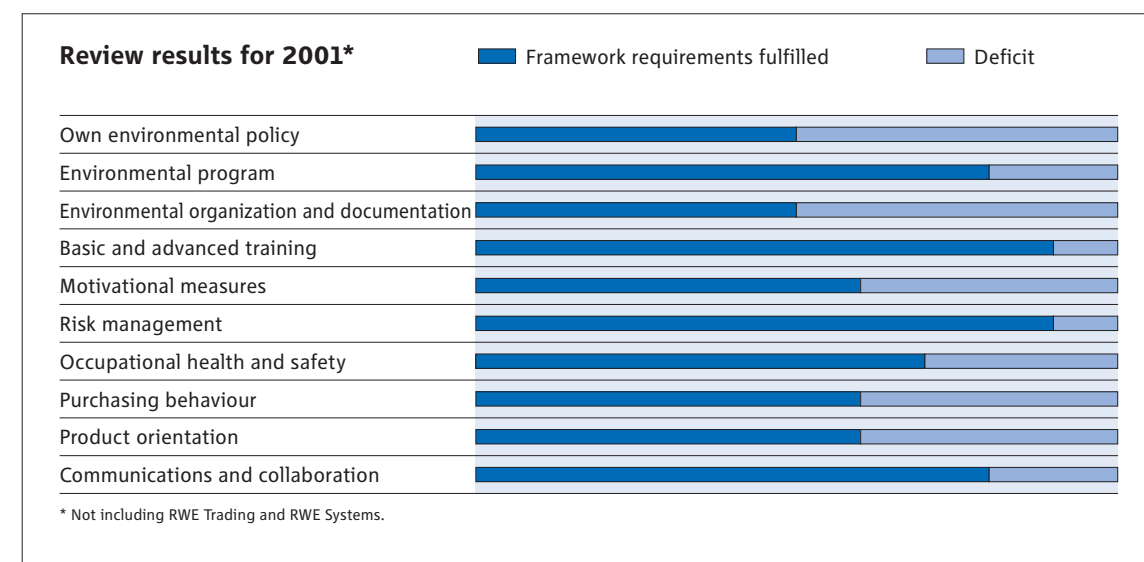
**Regular reviews**

In addition to being adapted to conform to the new structure, the environmental reporting and information system (UBIS) has also been expanded to encompass global affiliates. At the heart of RWE environmental management, UBIS systematically records the current status of environmental management in the management companies, makes environmental data available and supports the reviews which take place in regular intervals. Thus, corporate headquarters use questionnaires each year to determine how framework requirements are to be put into practice, for example with regard to the documentation of the structure and

process organization or in basic and advanced training programs which relate to environmental protection. At the same time, targeted questions are posed on how environmental protection is integrated into business processes, which targets are generally achieved and which new objectives the companies have set in the area of environmental protection.

**Information and communication**

In order to establish legal security in day-to-day work and facilitate access to information on current changes in laws and regulations, RWE has set up a Group-wide, intranet-based legal database. It is available to all staff interested in this kind of data, offering a rapid, complete overview of pertinent laws and regulations from the entire field of environmental protection and occupational health and safety. Comparing notes and communication of topics and challenges in the environ-



**Highlights: Inter-sectoral collaboration**

Anyone who wants to make progress in the area of environmental protection and sustainable development can only succeed by working together with others. RWE has actively worked in international and national institutions in its sector for years to develop viable positions and devise strategies on this basis. For instance, RWE is involved in the E7 initiative, an amalgamation of nine of the leading power-supply enterprises from the G7 countries drafting guidelines for a sustainable energy economy and the implementation of international climate-protection projects (>[www.e7.org](http://www.e7.org)). The goal of the initiative is to forward the positions of the power economy in the global discussion and to foster innovation. To cite one example, the E7 has acted within the scope of a UN framework convention to set up a power-supply system in Indonesia which operates independently of any power grid and is based on hydroelectric, wind and solar energy. A project aimed at increasing efficiency and reducing emissions of fossil fuel-fired power plants in Jordan has also been concluded on a successful note. In order to promote the transfer of

know-how, the E7 established a scholarship program for students from developing countries in 2001.

RWE is currently involved in setting up guidelines and compiling environmental statistics in the European sectoral association, EURELECTRIC (>[www.eurelectric.org](http://www.eurelectric.org)). The aim is to create a sector-specific key data system to record and present performance statistics. The precondition for this is that each company always has to apply the same statistical standards. Standardized key data allow environmental performance to be traced over time and show how guidelines are being implemented. Key data thus not only make a significant contribution to communication between individual enterprises – they also improve information policies for the entire energy supply sector. After all, this sector is increasingly being called upon to quantify its contribution to sustainable development.

- ▶▶ [www.e7.org](http://www.e7.org)
- ▶▶ [www.eurelectric.org](http://www.eurelectric.org)

mental area are just as important. "Focus Umwelt" ("Focus Environment"), a company site on RWE's intranet, has developed into a tool providing comprehensive support throughout the Group. This information interface was expanded in 2001. "Focus Umwelt" has not only expanded its scope – it now also offers the opportunity to quickly and easily place current information on the intranet "with a click of a mouse." The next step is to expand the discussion platform to include the program.

**Working group for environmental protection**

At the same time, discussions are not only supposed to take place in the virtual realm in the future. Personal get-togethers are essential – especially when the task is to devise a common strategy. That is why working groups comprised of staff from the holding company and the environmental experts in the subsidiaries are being set up to address ever-changing topics in the Group. Thus, for example, a working committee was set up for emissions trading to meet a current need. Management companies also support the internal exchange of opinions by holding inter-company meetings attended by persons in charge of environmental issues or groups of experts formed to tackle a certain problem.

## At a glance:

More than just meeting requirements





## More than just meeting requirements

The strict standards applied by German environmental laws have without a doubt contributed to our leading role. Even if the question is often raised as to the usefulness of national laws and regulations in the face of global problems, we regard adherence to these to be self-evident and to constitute the basis for sophisticated, future-oriented environmental management.

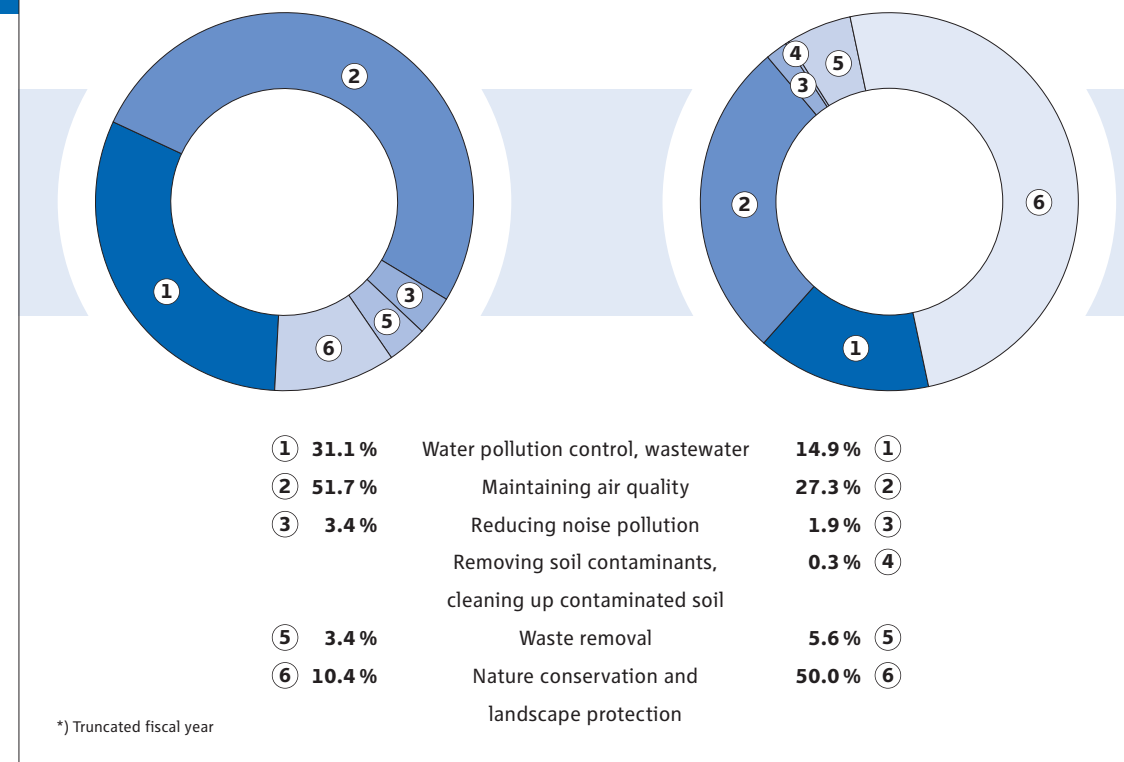
Acting in compliance with German and European laws requires companies to carry out measures, invest in technology improving environmental protection on a continuous basis and meet wide-ranging reporting obligations. A steadfast, all-encompassing organization of environmental protection constitutes the basis for this (> p. 38), and is supplemented by constructive collaboration with government authorities in a manner characterized by trust and confidence. This provides enterprises with legal security and a stable environment so that they can plan, take action quickly when future requirements dictate such and achieve acceptance of company activities on the part of the public. At present investigations are taking place over the violation of environmental regulations in the field of operations of three subsidiaries. Regardless of the outcome of these procedures, however, we have taken the tangible measures and staff-related action we deem to be necessary.

### Relevant environmental factors

For the RWE Group with its Business Areas of Electricity, Gas, Water and Environmental Services, the following environmental factors are of particularly great importance: climate protection and energy efficiency, emissions, noise protection, water pollution control, soil protection, nature conservation and landscape protection, minimizing use of resources and environmentally safe products and services (> table, p. 46/47). Even if the fields of climate protection and energy efficiency and environmentally safe products and services are not included among the classic environmental factors, special attention needs to be devoted to these in all business areas. After all, these areas are considered to be key factors in a responsible, forward-looking environmental protection policy which means more than just adhering to laws and regulations.

### Investment in environmental protection\*

### Costs of providing environmental protection\*



### Environmental costs and investment

According to recommendations issued by the EU Commission, enterprises should provide details on costs, investments and obligations involving environmental protection in their reporting in the future. This requires statistics on this to be recorded more effectively by bookkeeping and accounting departments, however. Thus far merely investments and ongoing expenses relating to environmental protection have been subject to reporting requirements under the German Statistics Act. Expenditures on the operation of environmental protection facilities, environmental protection staff and external services and fees during the reporting period (July 20 to December 2001) was 322 million € for the entire RWE Group. Investment in new environmental protection facilities, which is to say downstream technology, accounted for about 29 million € over the same time period. This figure does not include expenditures on new facilities integrating environmental protection.

### Savings and benefits

Savings resulting from environmental protection are difficult to quantify. This can only be done in individual cases and for this reason figures are not representative of the Group as a whole. A consistent orientation towards environmental protection in the area of waste and recycling, construction and the operation of energy-production facilities or in the water economy also holds out new market opportunities. Viewed in this manner, environmental protection constitutes a significant factor affecting the success of the Group.

## Environmental protection at a glance (as of December 31, 2001)

Statutory provisions and objectives	Degree of compliance by RWE
<b>Climate protection and energy efficiency</b>	
<p>With the climate protection program of October 18, 2000, the federal government has submitted a concept on how it intends to reduce the six most important greenhouse gases by 21 percent by 2012 compared to 1990. The most important tool here is the agreement concluded with German industry. In addition, the Climate Protection Action Program will lead to a reduction in CO<sub>2</sub> amounting to about 45 million metric tons. The measures planned are: modernization of power plants, expansion in the use of renewable energies, promotion of the use of combined-cycle power plants (CCGT), etc.</p>	<ul style="list-style-type: none"> <li>■ An approximately 2.5 million reduction in tonnage of annual CO<sub>2</sub> emissions by the lignite-fired power plant with optimized technology (BoA) in Niederaußem.</li> <li>■ Expansion in power production using renewable energies from the present level of 3.5 to 6.5 terawatt hours.</li> <li>■ Expansion in combined cycle power plants (CCGT) and distributed energy production.</li> <li>■ Development of fuel cells</li> </ul>
<b>Emissions</b>	
<p>With regard to air quality, the 13th Federal Emissions Protection Regulation and the corresponding EU Directive establish the maximum limits for SO<sub>2</sub>, NO and dust in the operation of large fossil fuel-fired facilities. In the area of opencast mining, operating plans set out in consultation with the supervisory authorities for mining are binding.</p>	<ul style="list-style-type: none"> <li>■ All power plants and refineries are equipped with the required filters, plants for cleaning flue gas and denox catalytic converters and are below maximum levels. They are even 70% below maximum SO<sub>2</sub> levels.</li> <li>■ Sprinkler equipment is used to reduce the dust nuisance in opencast mines.</li> </ul>
<b>Noise protection</b>	
<p>The technical guideline for noise specifies maximum levels for mixed industrial/residential areas and exclusively residential areas, inter alia. These levels are 60 db(A) during the day and 45 db(A) at night for mixed industrial/residential areas.</p>	<ul style="list-style-type: none"> <li>■ Measurement of noise levels at stipulated measurement points.</li> <li>■ Noise-protection walls having a total length of 26 kilometers in the area of opencast mining.</li> </ul>
<b>Water protection</b>	
<p>The protection of water and groundwater is set out in the German Water Protection Act and in several EU directives. As the water situation depends greatly on regional factors, maximum values and requirements for approval and licensing are laid down by the respective government authorities in charge.</p>	<ul style="list-style-type: none"> <li>■ All lignite-fired power plants and refineries have their own wastewater-treatment plants where the quality of water reintroduced into the environment is monitored.</li> <li>■ Seepage measures maintain the required groundwater levels in the area of mining.</li> <li>■ All transformer stations in water catchment areas are fitted with oil-capture vats.</li> <li>■ Phosphate reduction installed at wastewater treatment sites in the River Thames Catchment.</li> </ul>

## Environmental protection at a glance (as of December 31, 2001)

Statutory provisions and objectives	Degree of compliance by RWE
<b>Soil protection</b>	
<p>The Federal Soil Protection Act stipulates among other things when soil contaminants must be removed. Actual measures are carried out in consultation with government authorities.</p>	<ul style="list-style-type: none"> <li>■ Soil-protection measures at all service stations and oil-storage sites.</li> <li>■ All management enterprises have systematically recorded and assessed soil contaminants, are consulting with the authorities over the measures which must be taken and are setting up reserves for this purpose.</li> <li>■ A review of soil contaminants is carried out for all new acquisitions</li> </ul>
<b>Nature conservation</b>	
<p>Qualitative stipulations regarding landscape, flora and fauna are spelled out in the Federal Nature Conservation Act, the Federal Mining Act and EU directives (FFH – Flora, Fauna, Habitat – and Bird Protection).</p>	<ul style="list-style-type: none"> <li>■ Exemplary international recultivation programs in all former mining areas.</li> <li>■ There are biotope management plans for 50 percent of these areas (&gt; p. 11).</li> <li>■ 98 percent of medium-voltage overhead wires are fitted with protective facilities.</li> <li>■ Action plan to protect and manage the biodiversity in the River Thames Catchment.</li> </ul>
<b>Resource use, waste and recycling</b>	
<p>The German Recycling and Waste Act states that the avoidance of waste is the top priority. Moreover, removal is only allowed if waste cannot be recycled. The Act requires that waste management concepts be drafted and assigns responsibility for waste: The economy, especially the waste-removal sector, is increasingly being forced to manufacture secondary raw materials out of waste and to set up additional material recycling systems.</p>	<ul style="list-style-type: none"> <li>■ Waste management concept for all sites with more than 2,000 metric tons of waste requiring surveillance or 2,000 kg waste requiring special surveillance.</li> <li>■ RWE has developed a small incineration plant to implement the technical guideline on residential waste (TASI).</li> <li>■ Up to 90 percent of the REA gypsum produced by power plants is used as building material.</li> <li>■ 100 percent of the sewage sludge arising from wastewater treatment put to beneficial use by Thames Water.</li> </ul>
<b>Environmentally sound products and services</b>	
<p>The EU Green Book on integrated product policy (IPP) focuses attention on the entire life cycle and calls for collaboration between all actors along the entire value-creation chain. The objective is to take environmental protection into account as early as in the conception and design stage of products and services.</p>	<ul style="list-style-type: none"> <li>■ Decision not to use substances posing a hazard to the environment in transformers.</li> <li>■ Design of preprint and direct imaging equipment to allow it to be recycled.</li> <li>■ Consulting with private and industrial customers on the issue of energy efficiency.</li> </ul>

## Status and outlook

**We have already made sustainable development a requirement ourselves: We want to manage growth in an environmentally and socially sound manner and find innovative new paths. Our environmental program demonstrates that we have achieved a lot and that there is still a lot we want to achieve.**

We have been able to meet most of the requirements we specified in our environmental program on schedule. The area where the going has perhaps been the toughest is the measurement and assignment of environmental costs. We would like to have proceeded further in the systematic identification of energy-savings potential as well. On the whole, however, we are very satisfied with our performance, especially given the fact that we have had to digest the restructuring of the Group and face the major challenge which the quickening pace of globalization poses to our systematic environmental management. In adapting not only the framework requirements for the Group, but also the environmental reporting and information system (ERIS), we have created an excellent foun-

dition for the systematic inclusion of all our sites and affiliates. Of course the globalization of the Group requires that additional measures be taken, for instance in the area of communications or transfer of know-how. We will be taking increasing advantage of our possibilities here, too.

### **What we have achieved ...**

The increase in energy and resource efficiency needs to be stated straight away as a major success in environmental protection. Additional achievements include improved efficiency in the production of energy thanks to new facilities, combined-cycle power plants and improved recycling rates for waste, which is drawing close to one hundred percent for some material flows. Measures to clean up the air, to protect the soil and water or foster nature conservation continue to be implemented – in many instances by virtue of heavy investments.

A summary of what the RWE Group has achieved in the period under review by way of encouraging staff to help guarantee safer, healthier working

conditions and live up to their social responsibilities in society is offered in the HR report (see in addition p. 55).

We are also making a crucial contribution to the successful economic development of RWE by increasingly incorporating our concept of sustainable development in business processes. We are convinced that enormous potential for increasing the value of the Group is to be found here. Our decision to become involved in fuel-cell technology, expansion into the market for combined-cycle power plants and especially our entry into the international water market have already had a positive effect on our business result. At the same time we are committed to a fundamental idea behind sustainable development: making vital resources available to as many people in the world as possible in an environmentally sound manner at reasonable prices.

### **... and what we are planning**

We want to intensify our international commitment and are therefore involved in an initiative sponsored by the Federal Ministry of the Environment to draft basic principles for foreign direct investment. After all, the transfer of know-how and responsible action on-site are key factors in promoting a type of global development which creates prosperity without over-exploiting resources. This requires that we push ahead with innovations and look for new paths in all the areas we work in. It is in this sense that we aim to promote innovative capabilities in our area of operations by openly exchanging experience and opinions. Thus we have also scheduled a Group conference on the topic of sustainability for 2002 (> Roadmap Sustainability, p. 12).

## Group environmental program

	Deadline	Progress	Comments
<b>Design for framework conditions</b>			
Adjustment of environmental management to new Group structure	6/2001	Completed	
Adjustment of external reporting to meet international standards (e.g. Global Reporting Initiative)	6/2002	Internal coordination of content contained in Annual and HR reports	
Setting out basic RWE principles for global conduct	12/2003		
<b>Further development of environmental management</b>			
Structured survey on the status of implementation	Beginning in 1/2001	Completed	Annually in the future
Incorporation of global sites in the reviews	Beginning in 1/2003	ERIS adjusted globally	
Development of an environmental indicator system	12/2002		
<b>Implementation of sustainable development in business processes</b>			
Concept for systematic inclusion of sustainable development in business processes	12/2002	Pilot studies initiated	Group expansion under preparation
Improvement in the measurement and assignment of environmental costs	12/2001	Under consideration for introduction in environmental cost statement	
Take account of entire life cycles in planning and designing our products and services	6/2002	Integral element of the sustainable development concept	See highlight "Further development of the energy economy"
Testing of new instruments and tools to attain a global reduction in greenhouse gases (clean development mechanism, joint implementation, trade in certificates)	12/2002	Participation in Prototype Carbon Fund, joint implementation projects in the Czech Republic, internal model estimates, establishment of an "Environmental Trading" department	

## Group environmental program

	Deadline	Progress	Comments
<b>Implementation of sustainable development in business processes</b>			
Identification and assessment of energy savings potential in operations, transport and logistics	6/2002	Not systematically pursued thus far	
Increase in efficiency of lignite power production by introducing lignite-fired power plants with optimized plant technology (BoA)	6/2002	Test operation of the first 1,000 MW block beginning in 8/2002	See page 28
Diversification of the power plant portfolio by means of: - Expansion in the market for combined-cycle power plants	Continuously	Incorporation of Harpen as center of excellence for regenerative and decentralized industrialized power plants put into operation	See page 30
- Expansion of alternative energies	Continuously	Expanded every year	See page 29
Testing of fuel cells	Continuously	Demonstration of various fuel cell types in operation since August 2001. Field test under preparation	See page 29
Expansion of innovative services for our customers such as: - Energy management - Energy controlling, plant monitoring - Energy contracting	Continuously	Integral element of the services offered by RWE Plus, RWE Solutions and Harpen	

## Communication and responsibility: Being a good neighbor



## Being a good neighbor

**The response to the last RWE environmental report was very positive – a sign that we are on the right path. The feedback from employees, shareholders and environmental management experts provided a valuable stimulus for this report. That is why we want you to let us know about your opinion this time around as well!**



We were especially pleased by the prize we were awarded for our Environmental Report 2000 by the German Chamber of Auditors: In the "German Environmental Reporting Award" contest, our report won first place, coming in ahead of the reports of other large renowned German corporates. Even if the Environmental Card is our business card demonstrating the commitment we have made to sustainable development, we also carry on a dialogue with all levels of society. Here surveys conducted by rating agencies which – usually commissioned by fund companies – examine our branch on the basis of environmental, social and

economic criteria are gaining in importance. We have been included in the **Dow Jones Sustainability Index World** for the third time in a row as a result of our excellent rating. RWE will be listed on the newly established Dow Jones Sustainability Index STOXX right from the outset as well. The new index series for European stocks comprises the leading 20 percent of enterprises from the STOXX 600 which have assumed the obligation of promoting sustainable development.

Aspects of responsible business also feature prominently in our Annual Report and HR report, which comes out once a year.

►► The **Dow Jones Sustainability Index World** was set up in 1999 as a global sustainability index by the Swiss rating agency SAM Research and the index provider Dow Jones. Three hundred and thirty of the world's 2,500 largest companies were listed on it at the time. They are now reviewed each year, after which time the list is updated. The Dow Jones Sustainability Index STOXX is the European variant of the global sustainability index, which was created in 2001. (> [www.sustainability-index.com](http://www.sustainability-index.com).)

## Highlights: Forum for sustainable development

Together with 20 other major German enterprises in various sectors, RWE established the Forum for Sustainable Development, dubbed "Econsense," in July 2000. With this initiative the chairmen of the boards of these companies are underscoring their commitment to sustainable development. The initiative, which has been set up under the auspices of the Federal Association of German Industry (BDI), promotes social dialogue and seeks to create an open, trustworthy atmosphere for innovation. Econsense serves as the contact for the policy-making arena and society as far as issues involving sustainability are concerned – and not only in the lead-up to the conference slated to follow Rio taking place in Johannesburg in September 2002. Nine action fields are on the agenda in which joint solutions are to be devised: sustainable products, energy and climate, mobility and transport, social aspects of sustainability, sustainability and the financial sector, sustainability and management, health and nutrition, basic and advanced training and innovation.



**econsense**  
Forum Nachhaltige Entwicklung  
("Forum for sustainable development")

►► [www.econsense.de](http://www.econsense.de)

The HR report provides an overview of health-promotion measures, investment in training and retraining and strategic issues in personnel management:

- Given the increasing globalization of the Group, integration management has become an important task and the precondition for an increase in its value over the long term.
- Promotion of young staff is crucial when it comes to getting in shape for future challenges in the area of human resources.
- In order to strike a balance between family and profession, a skeleton agreement on part-time work was issued on January 1, 2002.

■ The promotion of severely handicapped persons is a "permanent company task" for the RWE Group. A company agreement was concluded pursuant to this in March 2002.

The HR report is thus not only directed at our staff – it also explains to people outside the company what we are doing in order to increase shareholder value in our company.

**Dialogue with target groups**

Because communication serves as the basis for motivating people, our staff magazine, "team:" provides current information on events and developments in the Group every month. The staff at Group headquarters also have the opportunity to speak directly with the Executive Board. This series of events, dubbed "Talk in the Tower," aims at promoting an open discussion of different strategic issues and every-day problems. Our intranet furnishes readers with up-to-date information and background reports on general Group issues. Environmental protection has received its own platform with "Focus Umwelt."

In order to carry on this dialogue with investors, customers, policy-makers and society, RWE has a host of informational brochures on offer. The topic "energy economy of the future" is the subject of a regularly appearing publication on "Opportunities and Risks in Energy Supply" and the publication "Act Responsibly. Regenerative Energy Now and in the Future." These brochures along with the annual and HR report can be obtained free of charge from RWE (hotline: 0-800-070-3700).

**Think responsibly, act innovatively**

RWE views itself as a "corporate citizen" which assumes responsibility for its business environment. This is why the company established the RWE Youth Foundation in 1998 upon the occasion of its one hundredth anniversary. It has a basic capital stock of 15 million euros and promotes projects which help children and youth (especially in the vicinity of Essen) lead a better life now and in the future. (>222.rwe-jugendstiftung.de).

RWE entered into a partnership with the Essen Folkwang Museum to promote contemporary art in 1999. The company is in this way expressing its desire to shape the future and foster creativity, innovation and open modes of thinking. RWE is already staging numerous exhibitions including one in the Tower with the direct involvement of its

staff. Group headquarters and its exhibitions are open to the people of Essen every third Saturday, 10.00 a.m. to 3 p.m. It has proven to be a real attraction with about 20,000 visitors coming to admire the view of the Ruhr region from the 120 look-out point (hotline 08 00/0 70 37 00).

Youth is the focus of the RWE "Dream Team" program. RWE trainees work autonomously on interdisciplinary topics in the area of business and society within the framework of a project taking place every two years. Jan Zilius, RWE Executive Vice President for Human Resources and Essen's mayor, Annete Jäger, found a lot of creativity and potential on the part of the young people involved: the jury selected 31 out of a total of 76 projects (>www.rwe.com > Career > From School to RWE > DreamTeam).

▶▶ [www.rwe-jugendstiftung.de](http://www.rwe-jugendstiftung.de)

▶▶ [www.rwe.com](http://www.rwe.com) > Career > From School to RWE > Dream Team

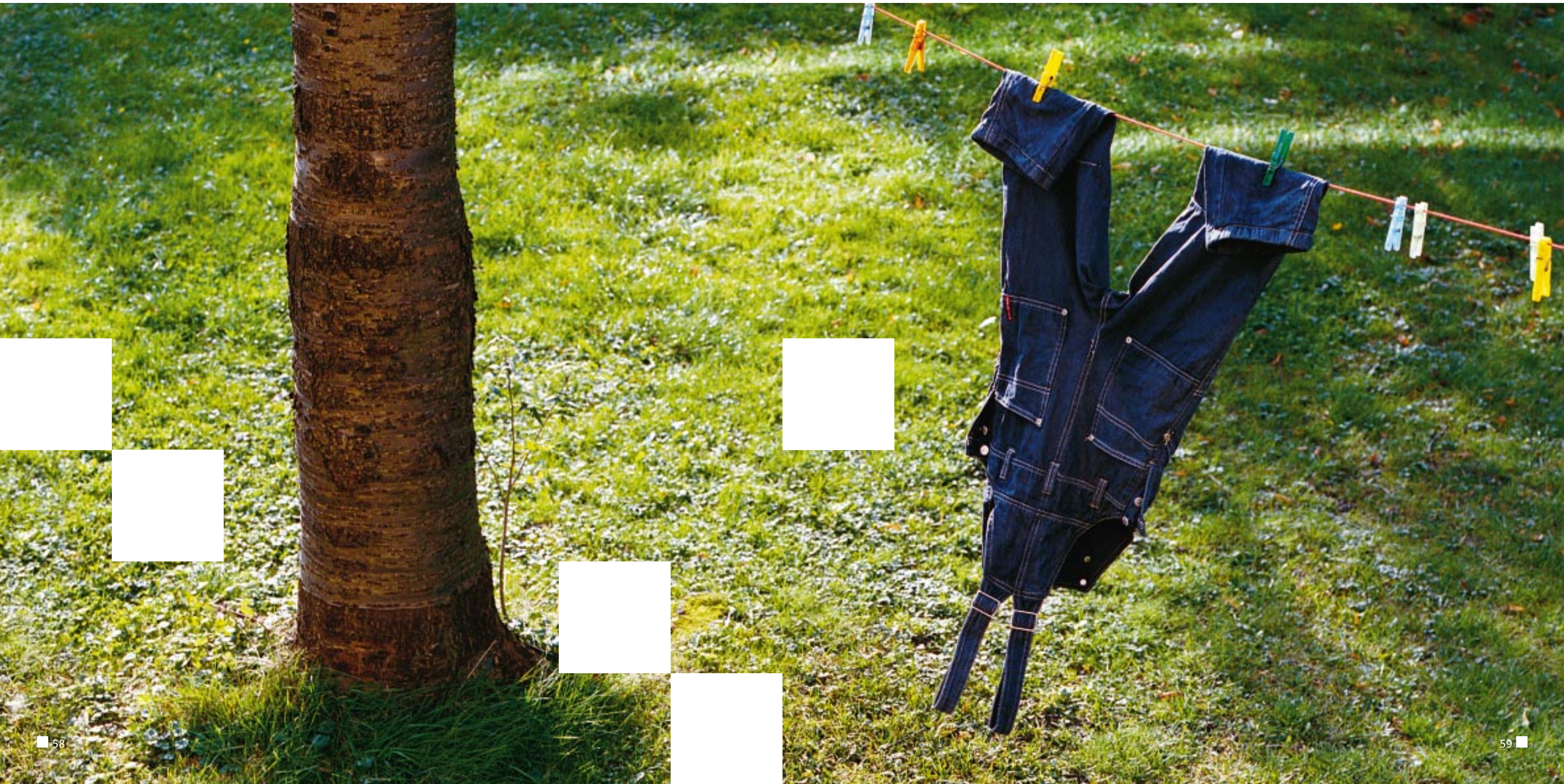
**RWE publications**



**Additional forums promoting social intercourse**

- |                      |  |
|----------------------|--|
| <b>Sponsoring</b>    | <ul style="list-style-type: none"> <li>■ RWE Power (concerts in the region, promotion of young staff in the fields of classical music, World Children's Organization and UNICEF)</li> <li>■ RWE Dea (driver's education)</li> </ul>  |
| <b>Open dialogue</b> | <ul style="list-style-type: none"> <li>■ Thames Water (rooms at the corporate business center are open for public social use weekday evenings)</li> <li>■ RWE Rheinbraun (innovative program for involving citizens in resettlement procedures and informational events on the region).</li> </ul> |

## Environmental protection in the business areas





## Along the output chain

**RWE is Germany's largest electricity supplier, with revenues generated from a total of 269 terawatt hours in the 2000/01 financial year. A little over half of that was produced in our own power plants.**

**At about 50 percent, the biggest share of self-generated electricity still comes from lignite.**

**Further energy sources include nuclear power, hard coal, gas, water and renewable energies.**

**To distribute power to city utility companies, industrial and private customers, RWE operates Europe's biggest private power grid.**

**Energy-related services such as industrial installation planning, contracting and energy controlling round off the RWE range.**

To organize our energy business along the output chain and ensure both efficient production and customer-centric marketing, RWE has broken down this business area into seven units. The units are independently managed and developed by management companies which all must uphold the framework standards of the Group regarding environmental management and hedging risks, including their international investments.

**RWE Power:** Created from the merger with VEW, RWE Power (3,877 employees\*) comprises power plant activities with the exception of the lignite plants. The operating management company is responsible for the Group energy strategy, power plant resources planning, and power plant construction. At the end of June 2001, output from the power plants operating in the RWE Power portfolio totaled 33,016 megawatts (MW), one third of which came from the lignite-fired power stations of RWE Rheinbraun. In addition to the company's own domestic power plants – mainly plants running on nuclear power, on hard coal, natural gas and renewable sources of energy – RWE Power holds a majority stake in a new gas and steam-based plant in Portugal and, together with RWE Rheinbraun, in the lignite power plant MÁTRA in Hungary. It also has a 50 percent stake in a hard-coal fired plant in Croatia.

\* Employee figures as of December 31, 2001.

**RWE Rheinbraun:** The business of RWE Rheinbraun and its holdings (23,982 employees) encompasses lignite mining, conversion and processing as well as hard coal and mineral raw materials. Annual yields from open-pit mining in the Rhenish lignite range are between 95 and 100 million metric tons of coal. The company converts some 90 percent of the coal into electricity in the Frimmersdorf, Neurath, Niederaussem, Goldenberg and Weisweiler power plants. The remaining 10 percent is processed at three processing plants into briquettes, pulverized lignite, fluidized solid lignite and lignite coke. The rubble byproducts of mining such as sand, gravel and clay find use as construction material. RWE Rheinbraun is represented abroad by the Hungarian lignite power plant MÁTRA and the American subsidiary CONSOL Energy. CONSOL is the fourth-largest coal producer in the USA and also has a participating interest in two open-pit mines in Canada and one underground mine in Australia.

**RWE Plus:** The primary function of RWE Plus (16,066 employees) is the marketing of electricity and energy-related services. To perform that function, RWE Plus is a partner to private and commercial customers, business customers and municipal public utility companies. Furthermore, RWE Plus manages the domestic and international electric joint ventures of the RWE Group. RWE Plus's major domestic shareholdings include "ELE," Emscher Lippe Energie (Gelsenkirchen), "envia," Energie Sachsen Brandenburg (Chemnitz), "KEVAG," Koblenzer Elektrizitätswerk und Verkehrs-AG (Koblenz), "LEW," Lechwerke (Augsburg), "Süwag," Energie (Frankfurt/Main) and "MEAG," Mitteldeutsche Energieversorgung (Halle). The most important international holdings include ELMŰ and ÉMÁSZ in Hungary and Kelag in Austria. Across Europe the RWE Plus Group has over 200 operating sites with more than 500 transformer stations and over 56,000 local power transformers.

### Construction of temporary storage facilities for fuel elements

The "agreement on the future use of nuclear energy" from June 2001 is the basis of a compromise between the federal government and German utility companies on how to achieve the politically motivated withdrawal from the nuclear energy program. To reduce the transport of spent fuel elements, the agreement stipulates that spent fuel elements will be processed abroad and/or deposited in the central intermediate storage facilities in Ahaus and Gorleben only until 2005. Beginning no later than 2005, power plant operators are obligated to store the fuel elements in temporary storage facilities to be constructed on the power station sites until a suitable final storage site is constructed in Germany.

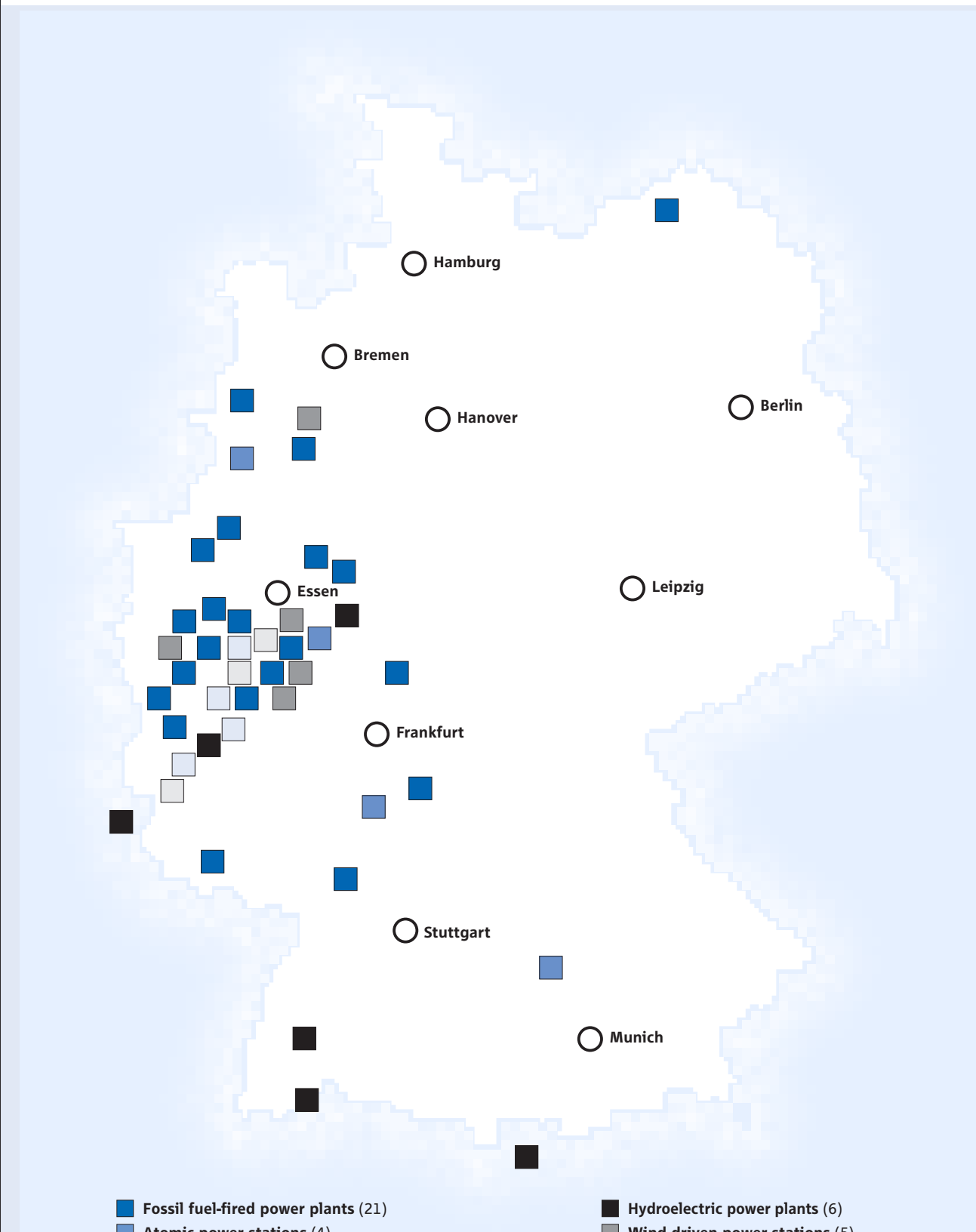
RWE Power has already begun the construction of a temporary storage facility at the nuclear power station in Emsland; licensing procedures are ongoing for the Biblis and Gundremmingen power stations. The intermediate storage facility in Emsland is scheduled for completion by spring 2002. When stored, the surface temperature of the fuel element containers is 50° C to 70° C. As they decay during intermediate storage, which lasts about 40 years, the generation of heat decreases to the point that they can ultimately be stored underground. RWE Power is investing some €25 million in the construction of the intermediate storage facility. An additional €55 million will be spent on the intermediate storage facilities in Gundremmingen and Biblis.

**RWE Net:** RWE Net (5,871 employees) handles all activities of the RWE Group electricity grid, i.e., all functions that have to do with planning, construction, operation, use and marketing of the network as well as related network services. To function with as much market proximity as possible, activities are organized into two grid regions, 13 regional centers and a number of local operating centers. The RWE Net transmission line network covers some 185,000 kilometers and connects around 1,500 cities and municipalities. It is one of the biggest self-contained private electricity networks in Europe, a hub between north and south, east and west.

**RWE Solutions:** RWE Solutions (13,805 employees) is one of Europe's leading service providers for the planning, setup and management of energy infrastructure for utilities (electricity, gas, water, steam, heating and cooling). The company, which in 2001 grew out of TESSAG Technische Systeme und Services, offers complete integrated systems in energy and media infrastructure for utilities and industry. A strong presence in many countries outside Europe is the basis for increasing cooperation with customers who are active in growth markets and also want to take advantage of proven packages from RWE Solutions at their new international sites.

**RWE Trading:** Trading in electricity, gas and coal is still a young branch of business, and one that is handled by RWE Trading (387 employees), founded in July 2000. Trading floors were set up in Essen, where the company is headquartered, and in London. Moreover, the company operates sales offices in Hoofddorp near Amsterdam as well as in Warsaw, Paris, Madrid and Vienna. RWE Trading Americas was founded in Houston in 2001. Already, RWE Trading has captured the lead among trading companies active in the promising field of energy trading.

**Harpen:** Harpen (494 employees), one of the leading German companies in the local heating supply business, is new to the RWE Group. For the purpose of decentralized energy supply, Harpen operates plants in Germany, Poland and the Czech Republic with thermal output totaling some 900 MW. In the field of regenerative energies, the company has over 24 hydroelectric power plants in France, Italy and Portugal and wind parks in Germany and Spain. The plants generate a total electric output of 100 MW. All wind and photovoltaic activities of RWE Power were transferred to the Harpen center of excellence for distributed regenerative power production in the RWE Group on January 1, 2002, as well as 45 smaller run-of-river power stations with output of around 100 MW.



**Environmental aspects of mining and power generation**

Every mining operation above ground is associated with a temporary claim to land, the creation of dust and a lowering of the groundwater table necessary for safety. In addition, dust and noise emissions occur during plant operation, drying and briquetting, and handling and transport. Accordingly, strip-mining operations and factories are subject to strict mining regulations.

Strip mining is perceived as being very invasive by the people affected by relocation measures. Long-term planning undertaken by RWE Rheinbraun together with the licensing authorities, municipalities and – most importantly – with the resettlers themselves, has created as much acceptance as possible in such cases. In late 2000, resettlement began in Otzenrath, Spenrath and Holz, which belong to Jüchen. A lignite planning process has also been started for the resettlement of four additional localities. A total of over 7,000 people will be finding a new home.

When fossil fuels are burned for energy production, power plants emit into the air the pollutants sulfur dioxide (SO<sub>2</sub>), nitrogen oxides (NO<sub>x</sub>), carbon monoxide (CO) and dust. This was recognized as early as the 1970s and filters and flue gas dust collectors as well as special low-emission firing technologies were developed and incorporated to reduce these emissions. Increasingly, the discussion focuses on the production of carbon dioxide (CO<sub>2</sub>). In the "Climate Conservation Action Program,"

an agreement between the energy industry and the federal government, RWE committed itself to extensive measures to reduce CO<sub>2</sub> emissions effectively. In the power plants, these primarily include modernization measures that boost the efficiency of conversion, i.e., increase the energy yield per unit of primary energy (> p. 28).

In nuclear power stations, which emit no air pollutants, safety is the issue. Strict safety measures and regular monitoring are therefore conditions of their operation. Yet despite the safe operation of Germany's nuclear power plants, political acceptance for this type of power production had dropped so low that the gradual phase-out of the plants – staggered according to length of operation and power production volume – was agreed between the federal government and the power plant operators. The main task regarding safety will be the intermediate storage of spent fuel elements in the coming years (> p. 61). In the dismantling of decommissioned plants, the accumulated materials will be decontaminated using a special process to enable them to be reused. This will significantly reduce the amount of radioactive waste.

The production of power by means of water, wind and sun is also nearly emission-free. The main environmental issue in this case is the interference with nature. In the case of hydroelectric power plants, specifically, there is a risk that the fish habitats will be disrupted. Fish ladders help migrating fish make their way past dams and into spawning waters. Wind-driven power stations are facing increasing resistance from local residents due to the consumption of land involved. Specific areas are to be set aside to counteract this problem.

**Thorough environmental management**

Because coal mining and processing have an impact on the environment, RWE Rheinbraun has added guidelines specific to mining to the Group-wide standards for environmental protection, which are accessible to employees via the company intranet. RWE Solutions has already undertaken a similar specification and supplementation of Group standards, and this is currently being done at RWE Power and Harpen as well.

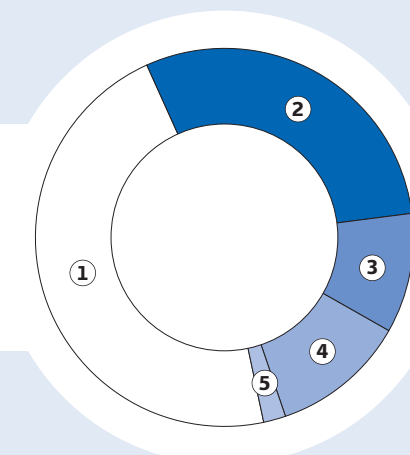
In accordance with the framework standards of the Group, RWE Power, RWE Rheinbraun, RWE Net and RWE Solutions have a structured environment management program that manifests itself in descriptions of environment-related activities and instructions for daily operations. RWE Net has integrated concerns about environmental protection and the responsibilities of occupational safety as well as crisis and emergency management. At RWE Plus and Harpen the creation of an environment organization according to the framework standards of the Group is under development. The organization and procedure for company environmental protection has already been certified according to the environmental management standard ISO 14001 in two of RWE Power's power plants and at eight RWE Solutions sites. The power plants, in which RWE Plus has a participating interest, as well as its subsidiary LEW, are also using the ISO 14001 standard as the guideline for their environment management program. Regular meetings by those responsible for the environment ensure an exchange of experience on the issue of environmental protection in all companies.

**Employee training and motivation**

To supply employees with the necessary specialist knowledge about environmental protection, together with other management companies, RWE Power is developing a modular training program to be launched in mid-2002. Today, in nearly all companies environmental topics are already included in regular internal instruction and comprehensive training is conducted for those employees who handle assignments that may have an impact on the environment. At RWE Plus, the training program covers matters of internal communication such as the treatment of environmental protection issues in routine company meetings. RWE Net has in its program a seminar for man-

agers on "Responsibility in occupational safety and environmental protection." Whereas Harpen and RWE Plus subsidiary LEW offer their employees driver's education that includes fuel-efficient driving techniques, RWE Plus' associated companies in Hungary are encouraging the creation of carpools and the use of reduced-fare rail passes to scale back the amount of traffic caused by their employees.

RWE Rheinbraun and RWE Power want to systematically utilize the knowledge of their employees to improve environmental protection through "idea competitions." RWE Rheinbraun regularly evaluates submitted suggestions for a focus on occupational safety, health protection, environmental protection, labor saving and material conservation. Last year, RWE Power awarded the highest prize for an environmental protection idea: At the suggestion of an employee, the nuclear power plant in Emsland succeeded in optimizing the circulation of its cooling water, resulting in a reduction in water consump-



1 Lignite	46.6 %
2 Atomic power	29.7 %
3 Hard coal	10.3 %
4 Gas	11.5 %
5 Water power, other	1.9 %

July to December 2001

tion and wastewater by 3.5 million cubic meters per year. The cost of taking water from the Ems River and processing it dropped by 20 percent annually. Each year, RWE Solutions distinguishes employees for particularly exemplary performance in environmental protection with the designation "Environment Champion."

#### Environmental protection and nature conservation in open-pit mining

Limiting possible dust and noise pollution in residential areas close to strip mines is an avowed goal of RWE Rheinbraun. During the dry seasons, excavated material and coalfields are sprayed with water or landscaped to reduce dust emissions. Comprehensive emission measuring provides evidence for how high the actual pollution level is and what effect the measures have had. Noise is reduced to a large degree at the source through the use of sonically optimized drive assemblies, gears and conveyor roads, electric motors or enclosure of driving units. Moreover, at the edges of the mine, protective dams or walls were erected with a total length of around 26 kilometers. To protect the wetlands in the Maas-Schwalm-Nette Nature Reserve and in the area around the Niers and the Erft, RWE Rheinbraun will allow some 50 million cubic meters of treated well water to drain into the subsoil or pipe it directly into the affected ponds every year. The extensive network of branching water lines and discharge and absorbing installations was expanded by the end of 2001 to approx. 150 kilometers. To shape the post-mining landscape, RWE Rheinbraun recultivated a total of 535 hectares from July 2000 to December 2001. This land compensates for the acreage that is currently being used for mining.

#### Measures for resource conservation

To reduce the consumption of natural fuel supplies while simultaneously cutting costs, alternative fuels are to be used increasingly in fossil fuel-fired power plants. These alternative fuels include production-related commercial waste such as carpet scraps, the parts of mixed waste that have high thermal power, and dried waste from households and commercial operations that can be burned directly. In the hard-coal fired power plant in Westphalia, RWE Power commissioned a plant that converts alternative fuels with high thermal power into the standard fuels, i.e. coke and process gas, by means of pyrolysis. RWE Rheinbraun is planning to erect an additional facility at the Frechen power plant for the joint incineration of sewage sludge and scrap wood (one such installation is already operating successfully at the Berrenrath power plant). Since December 2001, at the Frimmersdorf power plant, paper sludge is being test-burned together with other fuels. Harpen is increasingly utilizing biomass, and is currently constructing biomass plants in Berlin and Kehl am Rhein. Harpen is also making a significant contribution to the conservation of resources with its heat and electricity cogenerating plants, which achieve efficiency rates of up to 90 percent.

#### Efficiency gains and plant safety

In recent years, as part of a retrofitting program, RWE Rheinbraun has modernized its power plants' steam turbines and equipped them with three-dimensional blades with improved fluid dynamics that utilize the energy of the steam much more efficiently. The output of the power plants rose by 300 MW as a result, without the construction of new plants. Since the start of the program, RWE Rheinbraun has invested 280 million euros that resulted in a reduction in CO<sub>2</sub> emissions by 2 million metric tons per year. A reduction in emissions to the same degree is expected from the new 1,000 MW lignite block with an electrical efficiency of over 43 percent. It will go on stream in August 2002 after approx. four years of construction. The KOMET research project is currently testing materials with better heat resistance for power plant pipelines, turbine parts and valves. The goal is to produce higher steam temperatures, which will result in even higher efficiency rates for new power plants.

The safety of the atomic power station in Gundremmingen was the subject of a review in 2000 by an international panel of experts that certified the plant as having a high degree of technical safety. On September 8, 2001, Block B at the Biblis power plant went off stream so that extensive retrofitting and reconstruction measures could be conducted. These measures included a function and safety check of the reactor pressure vessel, the weld seams and the piping system. A number of components in the cooling system were replaced. In December 2001, the German Technical Inspection Association (TÜV) verified the safety of the plant following a thorough inspection.

#### Environmentally compatible electricity and heat supply

In addition to electricity, which is fed into the supply network from our own plants, turnkey plants for decentralized electricity and heat supply are also products from RWE. Thyssen in Hamborn, for example, will receive a gas-fired steam turbine power plant that uses flue gasses and surplus steam to supply electricity and process steam. RWE Power intends to add to the existing industrial power plant at the lubricant refinery in Salbergen a plant for the thermal utilization of waste. Household waste from the Weser-Ems Region is to serve as fuel. Also under development is a gas and steam plant for the Höchst chemical site in Frankfurt. Harpen is currently building a plant for the cogeneration of electricity, heat, steam and cooling for the hospital at the University of Heidelberg. Through efficient fuel utilization, CO<sub>2</sub> emissions from the clinic will be reduced by 23 percent. Furthermore, Harpen has converted all of its coal-fired plants to more environmentally friendly, lower-emission natural gas.

#### Research and know-how transfer

Research at RWE is focused on the continued development of power plant technology, regenerative energies and fuel cell technology. To make the conversion of lignite into electricity even more efficient, innovative technologies for coal drying are now being tested in a commercial-scale pilot facility at the Niederaussem power plant. At the photovoltaic plant in Koblenz, various solar modules from across Europe are in use and are being tested in long-term operation. At the commer-

#### Occupational safety and health protection

In an economic structure whose most important capital is human – qualified and motivated employees – measures for occupational safety and the promotion of good health improve the potential for high performance enormously. In 1989, the EU Occupational Health and Safety Directive set minimum standards that every company has to implement.

At RWE, making those guidelines meaningful is more than just preventing work accidents and job-related illnesses. It also includes designing the workplace and the work humanely. To that end, RWE Solutions, RWE Net and RWE Power are developing labor protection management systems and introducing them step by step. To make occupational safety management as realistic as possible from the outset, accidents that occur at workstations are recorded and their causes analyzed. Working methods and procedures that are effective in combating the risk and strain can then be drawn from this information.

A Group task force, to which the operating management companies' most senior safety engineers belong, has been created for the purpose of exchanging experiences.

cially sized installation in Toldeo, Spain, we are investigating the yield of photovoltaics under favorable climatic conditions. And in Essen, various fuel cell modules are being put through their paces at a demonstration facility to ensure their market launch as soon as possible.

The quest for technical innovation also benefits those sites that cannot afford comparable expenditure on their own. Harpen in the Czech Republic, for example, realized the first project to be financed in local currency in the field of distributed supply. In Poland, Harpen replaced inefficient heating boilers with state-of-the-art gas- and oil-fired boilers. At the Hungarian lignite power plant MÁTRA, RWE Power and RWE Rheinbraun have installed one of the most sophisticated flue gas desulfurizing plants and are currently recultivating the totally decarbonized strip mines according to the recultivation standards in place at RWE Rheinbraun.

**Environmental aspects of transmission and distribution**

Among the most important environmental aspects of electricity transport are the impact on the landscape, possible water contamination from leaking oil used to cool the substation transformers, noise and electromagnetic fields. RWE plants remain well below the critical limits stipulated by the Federal Pollution Control Act (BImSchG) for the latter two aspects. Comprehensive water protection measures and a new form of line management (> p. 11) ensure that the impact on the balance of nature is kept to a minimum.

Because the transport of electricity is a plant-intensive business, every improvement in efficiency results in a reduction in land and material consumption, less waste and less environmental impact. To achieve this, extensive reconstruction measures are planned throughout the RWE grid under the title "Network Concept 2020." The scheme, adopted in 2000, lays down plans for the reduction of surplus capacities. At the same time, one section of transformers is to be converted to a new type of self-cooling unit which will dramatically reduce the chances of water contamination by leaking oil. With the other transformers, concrete collecting tanks with seep-proof seams ensure safety.

**Environmentally compatible line management**

Planning, construction and operation of the lines are managed by RWE Net via an electronic network information system that will also create maintenance plans. These plans indicate the type, scope and schedule of measures necessary for line maintenance and safety. Appropriate measures for the protection of bird life are an integral component of line planning: high-voltage lines are erected such that they do not cross the paths of migrating birds. Medium-voltage installations are either constructed to be bird-friendly, or retrofitted with perches to keep the birds from coming in contact with any live components and being electrocuted. "envia," an RWE Plus shareholding, worked with German nature conservancy to develop a Web site that provides information on bird protection and features a "LiveCam" offering bird's-eye views of stork activity (> [www.storchennest.de](http://www.storchennest.de)).

**New products for private and industrial customers**

"RWEavanza comfort öko" is electricity offered by RWE Plus, 100 percent of which comes from regenerative energy sources as certified by the German Technical Inspection Association. Energy-saving tips inform private households of how to use electricity sparingly. RWE Plus has also developed a program for the city of Budapest regarding the use of energy-efficient light bulbs. Large customers benefit from maintenance and repair programs and measures for controlling energy

▶▶ [www.storchennest.de](http://www.storchennest.de)

usage. For example, RWE Plus determines the electricity consumption of all of the branches of the Douglas chain of drug stores and develops measures for reducing it. The German automobile club ADAC praised the integrated supply and safety package that RWE Solutions developed for the "Kaisermühltunnel" in Austria for creating the "safest tunnel in Europe." In addition to important instrumentation and controlling equipment, RWE Solutions also installed the tunnel lighting, air quality and airflow measuring devices, an emergency power-generating unit and special cameras for tunnel surveillance.

At Opel AG in Rüsselsheim, RWE Solutions installed a system that measures and analyzes power demand and feed as well as predicts consumption and improves allocation. Thanks to this new technology, Opel succeeded in shutting down an outmoded power plant and in cutting its total CO<sub>2</sub> emissions by half. A comparable process control technology for monitoring power consumption was set up at Deutsche Bahn AG in Hamburg. RWE Solar, a subsidiary of RWE Solutions, produces installations for the generation of electricity from the sun. It is benefiting from the German Renewable Energy Act (EEG) and in Alzenau is already operating the third production line for the manufacture of solar cells bringing production capacity to 14 million solar cells per year. Now, an investment of 150 million euros will go toward building a new solar plant that will expand capacities from 30 to a total of 100 MW annually. One special highlight: Since 2000, RWE solar cells have been providing "green" power from the roof of the German Lower House.

**Greater environmental protection through innovative financing**

Contracting, a field of activity at Harpen that promises lower costs and minimized risk, is gaining ground in the area of distributed power supply according to the principle of the cogeneration of heat and electricity. For many industrial customers and municipal facilities this represents the only option to expand their power supply for future needs independent of amortization periods and budget restrictions. As contractor, Harpen plans, constructs and finances the plants and in doing so can cut costs by using intelligent concepts and sophisticated technology. Capital costs incurred by Harpen are covered

by the energy price that is negotiated with the customers. Since contracting agreements are agreed long-term, solutions can be found that guarantee the contractor reasonable profits while still being financially advantageous to customers because they protect liquidity, create planning safeguards and reduce supply costs.

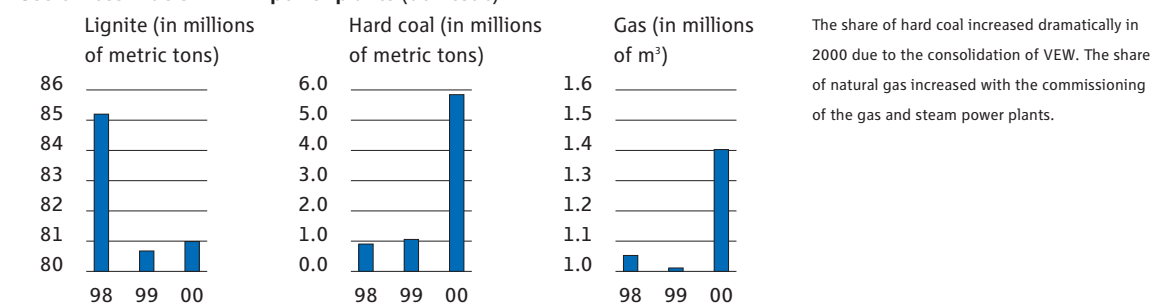
**Energy trading**

Well before the deregulation of European markets, electricity and gas were commodities in demand. Electricity trading in particular is showing high growth rates. In Germany alone, the volume of electricity traded in the last two years rose from around 150 to some 2,500 terawatt hours. RWE Trading has been a player from the beginning, active as a partner to industrial companies and wholesalers on the electricity exchanges in Frankfurt (EEX), Leipzig (LPX), the Netherlands (APX) and Scandinavia (Nordpool). RWE Trading trades electricity, natural gas, oil and coal in physical and derivative form. RWE Trading will also participate on the newly created markets for environmental certificates. The recently founded "Environmental Trading" Division will trade "green" energy throughout Europe and emission certificates in England and Denmark.

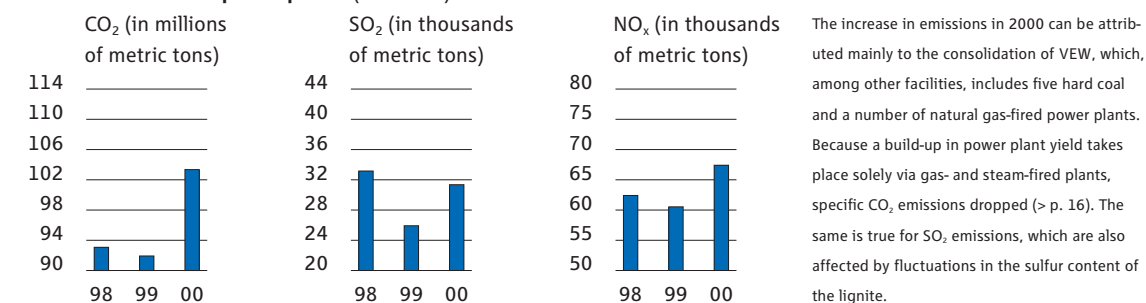
## Electricity Environmental data

Input-output data of all companies can be found on the Internet > [www.rwe.com](http://www.rwe.com) > Environmental Policy

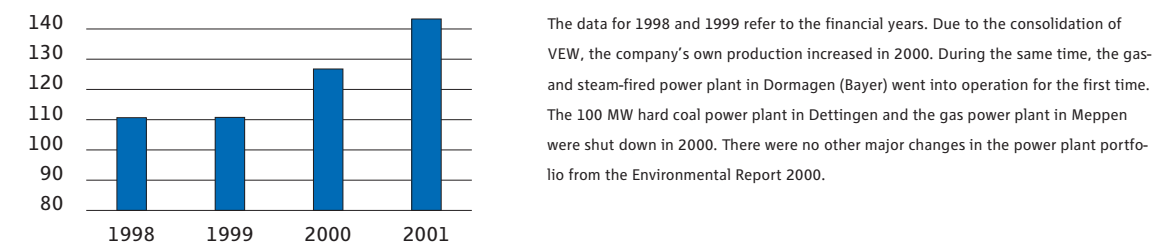
### Use of fossil fuels in RWE power plants (domestic)



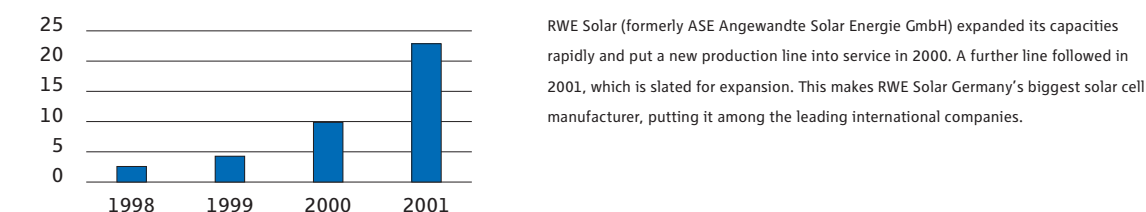
### Emissions from RWE power plants (domestic)



### Electricity volumes generated by RWE power plants (electricity in TWh)



### Solar cell-based production (in MW)



## Electricity Environmental program

Environmental programs of all companies can be found on the Internet > [www.rwe.com](http://www.rwe.com) > Environmental Policy

Program	Time frame	Company responsible	Implementation
<b>Climate protection and energy efficiency</b>			
Construct the first 950 MW lignite block with improved systems technology (BoA) resulting in an annual reduction in CO <sub>2</sub> emissions of 2.5 million metric tons	2002/03	RWE Rheinbraun	complete
Replace all existing lignite blocks with improved plants	2030	RWE Rheinbraun	planning of 2 <sup>nd</sup> BoA begun
Increase efficiency of lignite conversion through prior lignite drying in fluidized bed process	2003	RWE Rheinbraun	pilot drying plant in operation
Test innovative materials and technologies to achieve higher boiler efficiency rates	2003	RWE Power	project KOMET underway
Testing of fuel cells	2010	RWE Power	demonstration operation since 08/2001
Improve efficiency rates of 10 hydroelectric plants through modification of process control technology	12/2003	RWE Power	90 percent
<b>Reduction in emissions</b>			
Reduce emissions by installing stationary and mobile vacuum cleaners in the power plants	2003	RWE Rheinbraun	
Construct a 520-meter noise abatement dam in the Inden open-pit mine	2003	RWE Rheinbraun	under construction
<b>Protection of soil and groundwater</b>			
Improve the anti-leak properties of collecting tanks at additional distribution stations	by 2010	RWE Net	on schedule
<b>Landscape and nature conservation</b>			
Continue to increase the annual water seepage and filling volume to 100 million cubic meters per annum for the protection of wetlands north of the Rhine district	2030	RWE Rheinbraun	50 million cubic meters
Equip high-voltage overhead lines with markings to ward off birds in affected habitats	2003/04	RWE Net	on schedule
Install bird protection measures on lines and poles	ongoing	ÉMÁSZ, LEW, MEAG	
<b>Reduction in resource consumption</b>			
Increase use of previously burned off blast furnace gas by 20 percent through the modification of existing plants	2002	RWE Power	approval applied for in 2001
Substitute hard coal with alternative fuels (up to 10 percent)	2002	RWE Power	petitions for approval filed
Use more highly enriched reactor fuel, improvement of loading strategies and operating methods	beginning 2002	RWE Power	achieved in Gundremmingen, approval requested for Biblis
<b>Development of environmental management</b>			
Create an intranet-supported training program	2003	RWE Power	
Create an environmental management system according to ISO 14001	6/2002	RWE Plus	
Introduce an emergency alarm system	7/2002	RWE Plus	
Regulate environment-related processes by guidelines and introduce an internal audit system	12/2000	RWE Solutions	complete
Implement environmental protection guidelines in all business units	12/2002	RWE Solutions	
Install comprehensive data processing system for "materials requiring monitoring"	6/2002	RWE Net	
Introduce an integrated operational safety manual	6/2002	RWE Net	

## Energy with a future

**Natural gas is a cornerstone of German energy supply – covering some 21 percent of primary energy requirements and rising. By 2015 the share of natural gas is expected to rise to 34 percent.**

Private households make up the highest share of natural gas consumption with 47 percent. Industry burns 25 percent, 13 percent goes to power plants, and the remaining 15 percent covers the demand for district energy and the internal requirements of natural gas companies. Because natural gas is almost completely combustible, contains very little sulfur and heavy metals, and releases the least CO<sub>2</sub> of all fossil fuels, it is considered comparatively environmentally friendly. Methane, the main component of natural gas, does however have 21 times the greenhouse effect of CO<sub>2</sub>, which is why losses during transport and storage must be prevented. Natural gas has the highest hydrogen content of all fossil fuels, and as a hydrogen supplier is an obvious choice for use in fuel cell technology.

As an operating management company, since October 2000, RWE Gas has handled all the gas activities of the RWE Group and with 1,000 employees covers the entire output chain, from import to sales. The primary assignment of the Group operating management company RWE Dea in the future will be the development of gas storage sites – in the northern German lowlands, the Norwegian Sea, Russia and Egypt.

### Environmental management

As a young company, RWE Gas must first develop an environmental management system in keeping with the framework standards of the Group. The headquarters in Dortmund, the natural gas reservoir in Kalle and the cavern storage facility in Stassfurt are presently working

on their environmental program with detailed goals whose achievement will be confirmed through annual internal audits. According to the Federal Pollution Control Act (BImSchG), the operating permit approval process is already being coordinated with the parties responsible for environmental issues at RWE Gas. Special business plans pertaining to storage facilities and control systems specific to gas are safeguarded through adherence to statutory environmental regulations. The final responsibility, authority and competence for all environment-related tasks, however, will not be determined until the end of 2002.

RWE Gas is taking part in the German gas industry's voluntary "Climate Protection Action Campaign." The campaign aims to promote the use of natural gas in private households, commercial operations and vehicles. Further targets include improving the German supply infrastructure by modernizing natural gas pipelines, promoting natural gas-based heat in the renovation of existing buildings and the construction of new ones, expanding the district heating supply system, substituting fuels in motor vehicles and via research into fuel cell technology.

### Occupational safety and risk management

RWE Gas performs systematic occupational safety management that is coordinated by the responsible parties at regular meetings. The relevant job instructions put forward by the management system are documented in manuals. Moreover, internal continuing education measures and an ongoing exchange of experience ensure that employees always have the latest information on labor protection. At a rate of six reportable work accidents per 1,000 employees, RWE Gas ranks well below the industry average of 27 per 1,000. For the first time, accident figures were also compiled for craftsmen providing services to RWE Gas. In 2001, three such accidents were reported. To improve accident prevention, RWE Gas is working closely with the service providers' organizations.

In early 2000, the management board of RWE Gas adopted a risk management manual that lays down corporate guidelines for the development and operation of an early risk detection system. The heads of the business areas responsible are in charge of identifying, analyzing and monitoring the risks.

### Thyssengas

When it was founded in 1921, Thyssengas GmbH was one of the first long-distance gas companies in Germany. Since early 2001, RWE Gas AG has held a controlling, 75 percent, stake in the company. Thyssengas specializes in the transport, storage and processing of natural gas through a 2,300 kilometer network of high-pressure long-distance pipelines and a number of natural gas storage and mixing plants. Thyssengas was the first German long-distance gas supplier to contribute to the deregulation of the gas market, opening its network to third parties at the end of 2001. A management system that meets ISO 14001 requirements is in place at all eight locations.

The reduction of methane and CO<sub>2</sub> emissions can be seen as a major accomplishment of the company's environmental protection scheme – both were reduced by over one-third from 1995 to 2000. Labor protection measures were also effective: The number of accidents resulting in time away from work of one or more days per million working hours is now at 2.5 compared with the industry average of 20.

A comprehensive alarm and hazard response plan is in place to limit damage to the environment from equipment failure and accidents. Pursuant to the ordinance regulating the handling of incidents, RWE Gas has appointed an incident officer whose area of responsibility includes the two storage facilities managed by the company. A fault-clearing service manual informs employees of measures to be taken in case of an incident. Drills with fire departments ensure that employees respond appropriately in the event of an emergency.

**Environmental protection in practice**

Both the installation and the reconditioning of natural gas lines are considered to be processes that are environmentally sensitive. With regard to these activities, German legislature explicitly requires compliance with the Fauna-Flora-Habitat Directive to protect natural habitats and rare species. In addition, within the framework of an urban and regional planning process, an environmental compatibility assessment must be conducted for various line alternatives. Beyond these legal requirements, RWE Gas also considers the interests of the affected residents and the desires of environmental protection groups during the planning process. RWE Gas offers counteractive services such as new plantings and reforestation or the creation of biotopes wherever interference cannot be avoided. Once landscape conservation measures have been implemented, the gas lines will be hardly recognizable, and the impact on nature and the landscape negligible.

The byproducts of gas processing in storage facilities are emissions of methane (a gas that affects our climate) and strong, unpleasant odors. It is a problem that RWE Gas solved successfully through the burning and thermal treatment of exhaust fumes; neither methane emissions nor odor were produced during the period under review. At the same time, CO<sub>2</sub> emissions were reduced by 500 metric tons. Traffic-related emissions attributed to the high volumes of water that are trucked away by tanker were also reduced successfully. At issue was highly mineralized water that is extracted with the gas from a depth of 2,000 meters, and separated from the chemical vapor. By retooling a well in 2001, RWE Gas succeeded in pressing the water back into the original formation. Transport was reduced by 7,000 trucking kilometers.

To be able to feed the natural gas into the networks, gaseous residual moisture must be widely reduced. Traditionally, this takes place through absorption by glycol, which in turn produces hydrocarbons. Since 2001, these no longer end up in the environment but are incinerated on site. The resulting heat is returned to the process, replacing primary energy and improving the efficiency of the plant.

**Research and development**

Research and development work at RWE Gas focuses mainly on new possibilities for using natural gas, such as in fuel cell technology or as motor fuel. A further approach to making energy production environmentally friendly is to use natural gas as fuel in combined gas- and steam-fired power plants. First the gas is burned in a high-temperature turbine. The resulting hot exhaust then serves to generate steam, which drives a conventional steam turbine. Both the gas and the steam turbines are linked to a generator for power generation. Cogeneration with high-temperature turbines enables efficiency rates to exceed 50 percent. If, in addition, the low-temperature heat is extracted as process heat, this is known as heat and electricity cogeneration, which permits a primary energy utilization rate of over 87 percent. Compared with the separate generation of electricity and heat, this process reduces CO<sub>2</sub> emissions by up to 60 percent.

**Customer product offerings**

Beyond its own research activities, RWE Gas supports many promotional programs that, for example, encourage the wider use of condensing boilers or the combined use of condensing technology and solar power systems. Furthermore, the firm confers awards for the conversion of motor vehicles to natural gas power. Advice and information on the efficient use of energy and reduction of power consumption are a subject of every customer consultation. As a result, particularly within the scope of industrial customer care, examples of promising approaches can be found in the plastics industry or in new heating technologies for farming and gardening.

**Natural gas as motor fuel**

Although industrial CO<sub>2</sub> emissions dropped by 32 percent from 1990 to 1999, CO<sub>2</sub> emissions from land, air and sea passenger and freight traffic rose across Germany by 15 percent. In response, alternative fuels that permit ecologically viable mobility are in demand. Natural gas can do just that. Used as an environmentally safe fuel, it potentially creates around 80 percent less ozone and smog and is 20 percent less detrimental in terms of its greenhouse effect. As far as the power it contains is concerned, natural gas fuel costs about half as much as gasoline and about a third less than diesel fuel.

Since 1993, RWE Gas has been involved in introducing natural gas vehicles and supportive of programs promoting vehicle conversion. The long-term success of natural gas, however, can only be guaranteed if an extensive filling station network is available. Because in Germany there are currently only around 230 natural gas filling stations accessible by the public, RWE Gas and leading petroleum companies have launched the "1,000 filling stations" project. Its object is to ensure exhaustive natural gas provision at brand name filling stations by 2005.

At the same time, RWE Gas has also assumed leadership of the DING (Direct Induction Natural Gas) research project. Initiated by the German Association of Gas and Water, it aims to develop highly efficient natural gas engines based on diesel motors. The future is already here in our own fleet: RWE Gas currently operates some 70 natural gas vehicles that have accumulated four million kilometers to date.

▶▶ [www.erdgasfahrzeuge.de](http://www.erdgasfahrzeuge.de)



## Developing sources of energy

**In the past, RWE Dea\* was known as an integrated petroleum company with international chemical activities. But there has been a radical change. RWE Dea now concentrates on the exploration and production of crude oil and natural gas (upstream). The chemical business has been sold, and downstream activities (petroleum processing and sales) went into a joint venture with Shell, the new Shell and DEA Oil GmbH.**

RWE Dea developed very well during the reporting period. At the same time, thorough environmental management ensured that business activities ran without incident. Crude oil production continued to grow and reached 4 million metric tons per year. Natural gas extraction was at around 2 billion cubic meters per year. With a share of more than 11 percent of German production, RWE Dea ranks among the biggest natural gas production companies in Germany.

At the end of 2001, the company employed around 4,800 people and operated refineries in Heide and Wesseling, a petroleum works in the free port of Hamburg, tank farms at a number of central locations, some 1,700 filling stations, two production operations, one drilling operation and three natural gas storage facilities. Subsidiaries and associated companies for the exploration and production of gas and oil exist in Norway and Egypt. Moreover, the company takes part in upstream activities in Dubai, Kazakhstan, Poland and Denmark.

The entire life cycle of oil and gas – from production to processing and consumption – is of extreme importance for environmental protection. Operation-related impact on the air, water, soil and landscape are prevented through the use of technically sophisticated, reliable and environmentally sound production processes. In the case of petroleum processing in refineries, the environment is particularly sensitive to emissions of sulfur dioxide, nitro-

\* The company's name was changed to RWE Dea AG subsequent to the restructuring of RWE-DEA Aktiengesellschaft für Mineralöl und Chemie

gen oxide, and hydrocarbons, as well as to waste production and the use of groundwater. The impact on the environment is kept as low as possible through the use of innovative technology. In the sale of products, technical and organizational protective measures rule out interference with the environment to a large extent.

### Responsibility for environmental protection

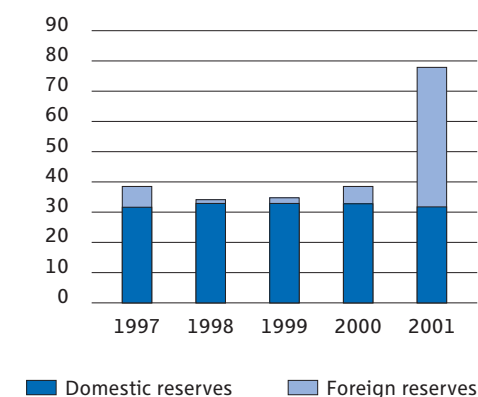
RWE Dea signed the first, and has now also signed the German petroleum industry's second climate protection declaration for the heat market, which strives for further improvement in the efficiency rate of oil heating plants. To establish good management practices, RWE Dea issued quality commitments, environmental protection guidelines, and industry safety principles. DEA Mineralöl & Service GmbH has assumed a pioneering role in the petroleum industry. Until the establishment of the joint venture with Shell, it was responsible for all sales activities outside of the filling station business, and in December 2001 was the first company of its size to be certified according to ISO 14001. In the area of petroleum processing, two sites have received an ISO 14001 certificate.

### Operational activities

Compliance with RWE Dea environmental guidelines is compulsory for all sites; they can be accessed on the Internet (> [www.rwede.com](http://www.rwede.com) > Environmental protection > Guidelines). Among other issues, the guidelines pertain to the creation of comprehensive environmental programs, and the fulfillment of program objectives is monitored regularly. Continued accompanying studies on the environmental compatibility of Mittelplate crude oil production in the Silesia-Holstein mudflats, for example, demonstrate that – with the exception of the installation of the drilling platform – there has been no permanent deviation from the natural changes in the flats. One measure of how seriously the subject of safety on the job is taken can be found in the recognition of the RWE Dea City – North Office Complex by the Hamburg Office of Industrial Safety as an "operation with an exemplary industrial safety system."

▶▶ [www.rwede.com](http://www.rwede.com) > Environmental protection > Guidelines

Gas incl. petroleum gas<sup>1)</sup> (in billion m<sup>3</sup>)



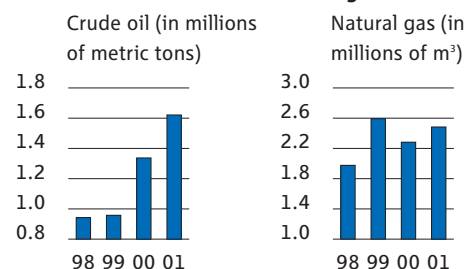
<sup>1)</sup> Definite and probable reserves, at year-end.

### Product-related environmental protection

As required by European legislature, the subsidiary DEA offers fuels containing significantly less sulfur and benzene. Since January 1, 2001, Super Plus gasoline has had a sulfur content of less than 10 parts per million and is ahead of the law by a number of years. This is already contributing to more environmentally friendly mobility in Germany: Extremely low sulfur levels are essential for encouraging even lower consumption (and as a result, fewer pollutants) with new engine designs. Additional measures for reducing the impact on the environment caused by road traffic include longer-lived motor oils that are made from biodegradable hydraulic oils. Moreover, to cut waste, DEA offers multi-use oil barrels.

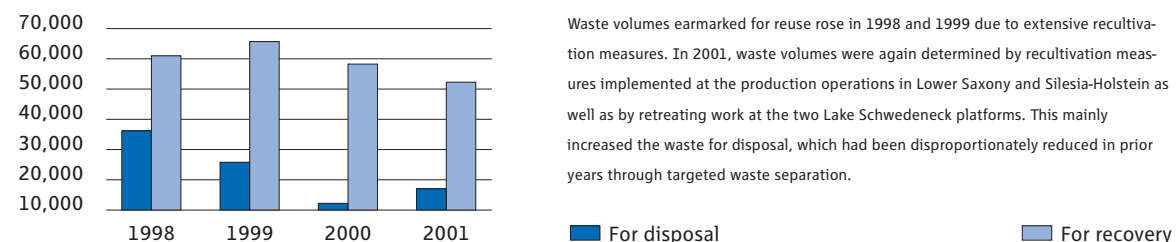
Input-output data from RWE Gas and RWE Dea can be found on the Internet > [www.rwe.com](http://www.rwe.com) > Environmental Policy

**Production of crude oil and natural gas**



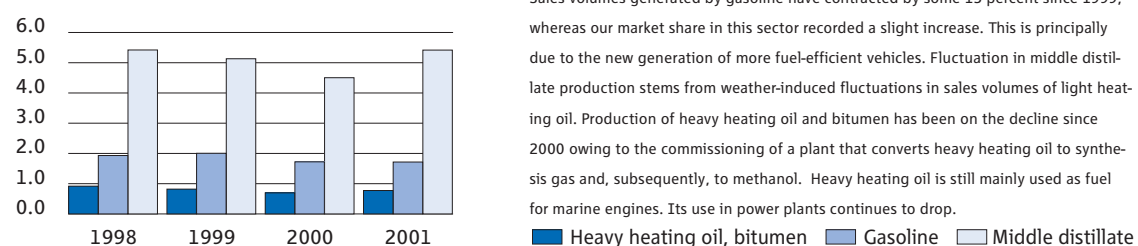
Since 2000, RWE Dea has succeeded in increasing crude oil production in Germany dramatically, primarily due to the land-based development of the Mittelplate oil field. Production from the Lake Schwedeneck deposit in the Baltic Sea was suspended because recoverable oil reserves have been depleted. Domestic natural gas production levels have remained constant since 1999. No new gas production was begun during the period in review.

**Waste volumes from crude oil and natural gas exploration and production (in metric tons)**



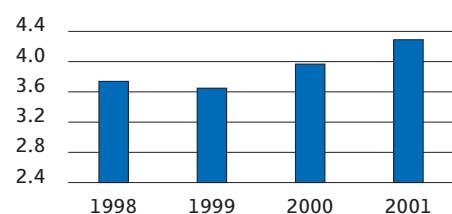
Waste volumes earmarked for reuse rose in 1998 and 1999 due to extensive recultivation measures. In 2001, waste volumes were again determined by recultivation measures implemented at the production operations in Lower Saxony and Silesia-Holstein as well as by retreating work at the two Lake Schwedeneck platforms. This mainly increased the waste for disposal, which had been disproportionately reduced in prior years through targeted waste separation.

**Output from petroleum processing (in millions of metric tons)**



Sales volumes generated by gasoline have contracted by some 15 percent since 1999, whereas our market share in this sector recorded a slight increase. This is principally due to the new generation of more fuel-efficient vehicles. Fluctuation in middle distillate production stems from weather-induced fluctuations in sales volumes of light heating oil. Production of heavy heating oil and bitumen has been on the decline since 2000 owing to the commissioning of a plant that converts heavy heating oil to synthesis gas and, subsequently, to methanol. Heavy heating oil is still mainly used as fuel for marine engines. Its use in power plants continues to drop.

**CO<sub>2</sub> emissions from petroleum processing (in millions of metric tons)**



The rise in CO<sub>2</sub> emissions in the past two years is primarily attributable to increased energy consumption that is associated with the production of low-sulfur fuels.

Program	Time frame	Responsible	Implementation
<b>Reduction in emissions</b>			
Prevent pollution and noise emissions through conversion from diesel-electric drive to grid electricity	12/2002	RWE Dea	
Enlarge noise protection wall at the Dieksand location	12/2002	RWE Dea	
Establish 15 additional natural gas filling stations	12/2002	RWE Gas	
<b>Landscape and nature conservation</b>			
Monitor molting populations of northwest European shelducks (Tadorna tadorna)	ongoing	RWE Dea	
Thermally treat drillings and reuse the base oil	12/2003	RWE Dea	
<b>Development of environmental management</b>			
Implement and complete Company Integrated Management System (CIMS) for the reorganization of RWE Dea	12/2003	RWE Dea	
Continue to place CIMS in the RWE Dea intranet	12/2003	RWE Dea	
Integrate Thyssengas' environmental management	12/2003	RWE Gas	
Incorporate newly acquired companies into the RWE Gas environmental management system	12/2004	RWE Gas	

\*) RWE Gas has been part of the RWE Group only since 2000 and is still very much in transition. Thyssengas' key holdings will be consolidated starting in 2002. There is, therefore, only a limited amount of meaningful data for the two years. For this reason, only the most important key figures for RWE Dea are listed.

## Managing scarce resources

**On average, the citizens of Europe use around 140 liters of drinking water per day, often after a complex and sophisticated treatment process. In the newly industrialized and developing countries, on the other hand, more than one billion people do not have access to clean drinking water. In addition, in many of these countries, the groundwater supplies are scarce or have already been exhausted.**

Whilst in Germany water resources will continue to remain available in sufficient quantities, resources in some areas of England will be challenged as population grows. In the USA, water supply in some areas of the country is already at risk. In the newly industrialized and developing countries there is an absolute shortage of clean drinking water, a situation which contributes to epidemics and malnutrition. Investment in the water infrastructure stands at the very top of the list of priorities all around the world, a major reason for local authorities to increasingly hand over water resource management to the private sector.

With the acquisition of Thames Water, the world's third-largest supplier of water services, based near London, the RWE Group has positioned itself in a market which will grow to at least four times its present size by 2010. As an operating management company, Thames Water controls all water-related activities in the RWE Group, and with a workforce totaling around 14,000 employees supplies clean water to approximately 43 million customers in 44 countries. To deliver this, Thames Water and its subsidiaries operate 140 drinking water treatment works, 419 sewage treatment works and a pipeline network 132,000 kilometers long (not including RWE Aqua) worldwide.

### Environmental aspects

Essential environmental aspects are, on the one hand, the assurance of an adequate quality of drinking water, whilst on the other hand wastewater must be cleansed sufficiently so that it does not adversely affect river systems and groundwater. The management of existing water stocks can also present a considerable environmental problem. Furthermore, the very operation of plants for supplying and disposing of water is also associated with the emission of greenhouse gases, as well as odor and noise pollution. As a landowner and operator of pipeline networks, Thames Water also has a large influence on flora and fauna. Potential risks to this natural world are posed, for example, by the raising and lowering of the water table or by construction work.

### Product-related environmental protection

Thames Water's products are clean drinking water and wastewater. In England, 99.89 percent of the drinking water supplied by Thames Water, during the calendar year

2000, complies with limits stipulated by the relevant standards. This is monitored by testing the chemical composition of water samples. During 2000 more than 1.5 million mandatory tests on drinking water were undertaken, and a further one million tests were performed on operational samples. The wastewater met the applicable wastewater standards in 99.99 percent of cases during the 2000/01 financial year. With its efforts to lower the sewage pollution load, Thames Water has made a decisive contribution towards ensuring that the Thames is today one of the cleanest metropolitan rivers in the world, supporting 120 species of fish. A management scheme for assuring the quality of drinking water and wastewater is in the process of being established at the company's overseas plants. For example in Indonesia, analyses showed that the local water treatment plants met the legally stipulated clean water standards in 100 percent of all cases.

Together with the industrial and commercial sectors, Thames Water is working on controlling and minimizing the level of toxic water impurities even more effectively. A joint campaign being conducted with environmental authorities is aimed at curbing the pollution of the soil and groundwater by pesticides. In order to promote more economical use of such a valuable resource, Thames Water gives its customers practical tips within the framework of a water efficiency campaign and provided around 220,000 water efficient devices to private homes during 2000/01. Customers can also find further information in a separate section of the company's Web site (> [www.thames-water.com](http://www.thames-water.com)).

### Environmental management

Overall responsibility for environmental management at Thames Water is firmly entrenched in the hands of general management. The Board of the Water division, which is supported by the Environment and Quality Department, is responsible for the development and implementation of concrete measures. This team of environmental experts advises the Managers and Environmental Champions of the individual business units on fundamental questions relating to environmental protection, as well as on the technical and legal aspects. The mutual interchange of knowledge is supported by the company's own e-mail based environmental information system.

### Responsible internationalization

Diverse local conditions regarding environmental protection and different cultures mean that internationally operating companies must display particular responsibility in how they proceed when opening up new markets. As the world's third-largest water services company, Thames Water considers itself to be doubly responsible in making a contribution to sustainable development by means of fair trading and the sharing of know-how and technologies. The company supplies clean water to around 43 million people in Europe, Asia, Australia, North and South America. As far as Thames Water is concerned, responsible internationalization involves improving ecological conditions, assuring a high standard of environmental management, and contributing as a "good citizen" to social development wherever it operates. This is guaranteed by codes of conduct and environmental management stipulations which apply worldwide. Three foreign plants already comply with the environmental management standard ISO 14001, including one plant in China. Prior to certification, plant employees received training in environmental protection.

Meanwhile, the greatest potential for improvement lies in the development of technical solutions. Through investment projects totaling 25 million dollars, Thames Water was able to reduce fresh water losses caused by leaks in distribution pipes in Thailand by 20 percent in the very first year. In Rancagua, Chile, the company is currently participating in the construction of a major sewage works, and will be investing a total of 60 million dollars in wastewater treatment over the next ten years. This is urgently required. Up to now, wastewater has simply been disinfected before being pumped back into the rivers. In order to increase the awareness of the importance of an intact natural environment among children and teenagers, Thames Water, together with the Worldwide Fund for Nature (WWF), is supporting the development of a visitors' center at a bird sanctuary in Malaysia, which is frequently visited by local schools.

General and globally applicable environmental guidelines were laid down, and basic principles drawn up on specific environmental problems such as waste minimization and recycling, as long ago as 1991. The framework for environmental protection measures is the Environmental Commitment Program, which also applies worldwide, and under the terms of which all business units are obliged to set up an environmental management system. The program stipulates, for example, that the business units must set up an environmental legislation register, establish the relevant environmental aspects relating to their operations, and formulate the corresponding environmental objectives. The local Environmental Champion has the task of monitoring whether set objectives have been achieved, and of submitting a quarterly report to the Head Office. Thames Water's environmental management system is based upon the international standard ISO 14001. The two sludge-powered generators in London were the first sites in the UK utility to be certified for compliance with this standard, followed in 2001 by another 3 works in the UK and the Australian Engenica. Further Thames Water plants are certified to ISO 14001 in Australia, China and Turkey. Further business units in the UK and internationally are planning to introduce an ISO 14001-compliant management system.

**Occupational health and safety management**

A comprehensive management system governs occupational health and safety at Thames Water in accordance with British legal requirements. A safety policy supported by a manual lays down details of the organizational structure and a set of measures. Health and safety standards. Are then derived from a subsequent risk assessment survey. The employees and managers themselves are given comprehensive safety training. In addition, a separate department has been established, which answers any questions on health and industrial safety as well as conducting audits and evaluating industrial safety-related information.

**Corporate environmental protection**

Thames Water operates 350 sewage treatment works, 97 drinking water treatment works and around 2,500 pumping stations in England. In order to cut back the associated energy consumption, Thames Water conducted an efficiency program, which involved replacing or

refurbishing outdated pumping units with energy conservation systems and optimizing the pumping processes themselves. The program contributed to increasing the energy efficiency of the pumps by eight percent. Thames Water also relies on renewable energy resources, enabling it to cover 10 percent of its total electricity consumption from such sources. Furthermore, the company operates 17 combined heat-and-power plants and uses about 41 percent of its principal waste product, sewage sludge, as a fuel substitute in two large power generators. A further 47 percent is used in agriculture as fertilizer, while 11 percent is recycled as compost, on industrial crops and for land restoration.

A key issue from both an ecological and commercial point of view concerns pipeline leakage. This is especially an issue in the capital city of London where there is a combination of very old pipework infrastructure and particularly difficult geological conditions. Thames Water has made great strides in halving company losses from the clean water network in the last few years, but extremely wet weather events last year appear to have caused excessive soil movements exacerbating the situation.

Since 1999 Thames Water has been implementing its Biodiversity Action Plan. This sets out the strategy by which Thames Water will identify all important biotopes and species on the land that it owns and manages and put in place measures to protect and where possible enhance these valuable assets.

**Cooperating with suppliers**

The Central Purchasing Division at Thames Water bears overall responsibility for procurement within the UK Utility. Environmental criteria are a main component of the framework agreements signed with suppliers. Thames Water ensures that these criteria are met at regular meetings with its suppliers. Additionally, Thames Water has evaluated the environmental effects of the suppliers' products from the manufacturing stage right through to their disposal. At the beginning of 2001, an environmental risk matrix was generated from this information, the aim of which is to draw up environmental standards for suppliers.

**Global research and development**

The central theme of the research and development work being carried out by Thames Water is innovation, to enable the company to meet new water quality and environmental standards with cost-effective designs, efficient operating practices and smart value-adding customer services and product offers. In cooperation with the Universities of Cranfield and Surrey (England), Jakarta (Indonesia) and Adelaide (Australia), Thames Water is developing methods of reliably evaluating the effects of climate change on water supply and distribution. Studies on the quality of drinking and wastewater are devoted to searching for ways of reducing the phosphate and ammonia content in wastewater. A further focus of research work is the development of systems designed to help manage complex pipeline networks. Thames Water regularly holds workshops, dealing with international technology transfer within the Group.

**Corporate dialogue**

Every year Thames Water hosts a stakeholder forum, at which the company's own environmental efforts are discussed. Official independent experts, non-governmental organisations (NGOs), investors and public bodies are invited to this forum. The company also contributes to local environmental forums such as the Berkshire Nature Conservation Forum or the forum of the London Biodiversity Partnership. Thames Water produces an annual environmental report which is also published on the Internet (>[www.thames-water.com](http://www.thames-water.com)).

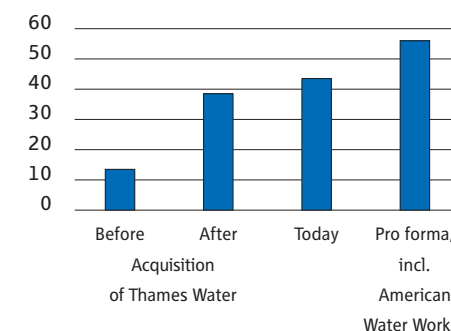
**Social responsibility**

Thames Water has a major program directed at meeting its social responsibilities. The company is a member of the national business initiative "Winning with Integrity - Impact on Society". The purpose of this initiative is to develop output criteria and processes that any company could use to report on social involvement.

Thames Water invested over two million pounds of cash, staff time and in-kind support, in community projects in fiscal 2000/01 alone. The company's flagship, however, is the charity "WaterAid". WaterAid provides safe water,

[www.thames-water.com](http://www.thames-water.com)

Customer volumes (in millions of customers)



\*) Including planned acquisitions of Citizens and Azurix North America

sanitation and education to some of the world's poorest people in Africa and Asia.

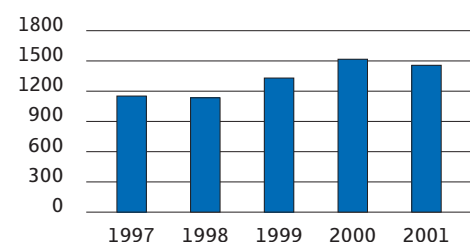
Thames Water is also one of the companies working with multilateral organizations, like the World Bank and the United Nations in helping to deliver sustainable solutions to getting water to the worlds poor.

The fact that the general public positively rates the company's ecological and social commitment is demonstrated by the awards presented to Thames Water during the period under review alone: Green Apple Award 2000, MARS Awards for the Environment in Berkshire 2000, BTO/Tarmac Bird Challenge 2001. The [www.givewater.org](http://www.givewater.org) cause related marketing campaign and web site won two awards: the 'Best use of e-PR' from the PRCAC and the 'Best Marketing Initiative' from Utility Week Magazine in 2001.

[www.givewater.org](http://www.givewater.org)

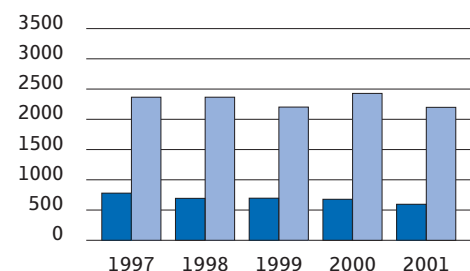
Input-output data on Thames Water can be found on the Internet > [www.rwe.com](http://www.rwe.com) > Environmental Policy

**Total imported energy consumption** (in GWh, for Thames Water Utilities)



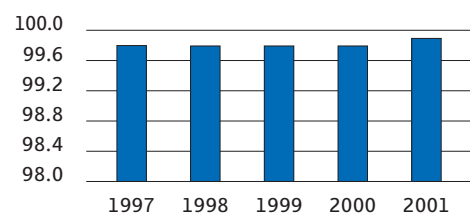
The water industry is England's third-largest energy consumer. This is due mainly to the power requirements of pumps and treatment plants for water and wastewater. Improvements in the quality of drinking water, wastewater and sewage sludge – key factors of the water business – have resulted in an increase in energy consumption. To counteract and reduce energy consumption, Thames Water utilizes biogas released during the treatment of sewage sludge and sewage sludge itself to produce renewable energy. In the 2000/01 financial year 117 GWh of renewable energy were generated.

**Total water abstraction** (in millions of liters per day for Thames Water Utilities)



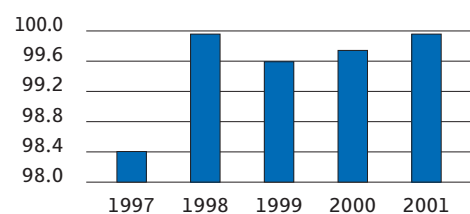
Thames Water Utilities holds 138 licenses to abstract water to meet public demand. In the 2000 calendar year, a total of 1,144,363 million liters per day were abstracted without exceeding the statutory limits. Of that volume, 78 percent came from surface waters; the rest was from groundwater. In the Thames area in England, 55% of effective rainfall (that which flows into rivers or filters into the ground) is utilized for public water supply, making it one of the most heavily used river basins in the world.

**Drinking water quality** (percentage for Thames Water Utilities)



The quality of the drinking water that Thames Water Utilities supplies to its customers has improved constantly since 1990 due to investments in water treatment. New activated carbon and ozone processes, for example, serve to filter out remaining traces of pesticides and improve taste. Cases of pesticide contamination in drinking water were reduced from 17,956 in 1991 to zero in 2000.

**Compliance with wastewater regulations** (percentage for Thames Water Utilities)



Wastewater from sewage treatment meets the strict standards that were set by the Environment Agency to minimize pollution of the waters into which the wastewater is discharged. Permits for wastewater discharge set limits on ammonia levels, the biological oxygen requirement and the amount of dissolved solids. Due to the extreme population density in the region and the high amenity value of the surface waters, Thames Water Utilities is subject to the strictest permit limits for wastewater discharge in the UK.

Program	Time frame	Responsible	Implementation
<b>Climate protection and energy efficiency</b>			
Promote possibilities for the use of renewable energies	by 2004	Thames Water Utilities	Strategy initiated for extension and improved performance of combined heat and power production
Reduce power consumption by at least 0.5 percent annually independent of investment measures	beginning 2001	Thames Water Utilities	First reporting date end 2001/02 financial year
<b>Reduction in emissions</b>			
Quantify air emissions resulting from all aspects of business activities	by 2005	Thames Water Utilities	new measuring methods to evaluate investment programs are being developed
<b>Protection of soil, groundwater and surface waters</b>			
Introduce new environmental standards in 168 sewage treatment plants to contribute to improved water quality in 15 rivers	by 2005	Thames Water Utilities	42 treatment plants have achieved new standards
Improve wastewater quality at 65 sewage treatment plants to meet requirements of EC fish directive	by 2005	Thames Water Utilities	achieved in 5 treatment plants
<b>Landscape and nature conservation</b>			
Implement Part 1 of the Biodiversity Action Plan	by 2005	Thames Water Utilities	826 sites surveyed for biodiversity
<b>Reduction in resource consumption</b>			
Reduce water leakage from pipes – to 35 percent by 2003 – to 25 percent by 2008	by 2008	PT Thames Water Pam Jaya, Indonesia	water loss through leaks in February 2001: 45 percent
Reduce water leakage from pipes – by 10 percent by 2001 – by 30 percent by 2005	2000 – 2005	Pathum Thani Water Company Pathumthani, Thailand	water losses through leaks at the end of 2000: reduced by 20 percent
<b>Reduction in waste volumes</b>			
Reduce use of landfill by 15 percent	by 2005	Thames Water Utilities	evaluating recycling opportunities for key operational wastes
<b>Development of environmental management</b>			
Reduce risk of flooding due to hydraulic inadequacies in the sewerage system on 1,500 properties	by 2005	Thames Water Utilities	achieved for 536 properties
Introduce ISO 14001 environmental management system for wastewater treatment plants	ongoing	Thames Water Utilities	Deephams STW and Farmoor WTW sites are certified
Identify sustainability indicators for Thames Water	2002	Thames Water Utilities	Environmental indicators developed. Social and economic indicators under development
Develop a procedure for environmental evaluation of suppliers	2003	Thames Water Utilities	under development

## Completing the cycle

**In Germany alone, more than 300 million metric tons of garbage are produced every year. To return as much as possible to the production cycle is not just an environmental concern but an economic one for the Environmental Services Business Area.**

As the operating management company of the waste and recycling divisions, RWE Umwelt AG manages the domestic and international waste and recycling activities of the RWE Group. Domestic business is handled by branch offices and in North Rhine-Westphalia by the subsidiary Trienekens. In total, RWE Umwelt in Germany has over 400 locations and operates nearly 300 facilities for sorting, processing, reutilizing and disposal over 12 million metric tons of waste annually. More than 200,000 customers from industrial and commercial operations as well as 150 municipalities take advantage of RWE Umwelt's services. Abroad, RWE Umwelt's main areas of operation are in Spain, Great Britain and Eastern Europe. Integration of the Edelhoff group of companies turned RWE Umwelt into Germany's biggest waste disposal company, achieving sales revenues of over 2 billion euros in the 2000/01 financial year and employing around 14,453 people.

### Environmental management and occupational safety

RWE Umwelt's company-specific principles have made the Group-wide guidelines on environmental safety more concrete. All German sites must follow these instructions; transitional provisions still apply to foreign locations. The Environment-Quality-Safety (EQS) technical committee coordinates the adherence to the set goals, and arranges for regular internal and external audits to be performed. RWE Umwelt has an overriding manual on occupational safety, environmental protection and quality management that stipulates minimum standards for procedures and processes, such as the monitoring of outside

contractors, the selection of suitable disposal methods or the handling of permits. Most operations are certified according to ISO 9000 and the ordinance regulating specialized waste disposal companies (> Chart, p. 39). This means that independent monitoring organizations confirm at regular intervals that the principles are being upheld.

Many RWE Umwelt employees often work in poor weather and must operate mechanical tools daily. As a result, occupational safety and health protection are especially important. Procedures and reporting channels in case of a malfunction are laid down in internal guidelines. During the reporting period, the rate of 89.9 reportable accidents per 1,000 employees was reduced to 62.5.

### Special environmental concern: transportation

RWE Umwelt has set up a dense service network in Germany. Some 3,500 vehicles ensure seamless operations within a comprehensive logistics system. In spite of all efforts to use other vehicles, trucks are an indispensable means of transportation. In addition to the power consumption of plants, traffic-related emissions are responsible for a large share of environmental impact, which naturally means that measures to improve transportation and logistics are an important starting point for company environmental protection systems. Taking top priority are specially developed route optimization programs that effectively reduce the number of empty transport kilometers. With the aid of these programs, RWE Umwelt succeeded in removing 264 trucks from the road despite growing transport volumes. The basis for this is material flow management used by RWE Umwelt to record all of the material flows of the group companies. Through close coordination with all associated companies, waste is dispatched to the most appropriate sorting, processing, reutilization or disposal plant nationwide.

### Innovative utilization concepts

The German Recycling and Waste Disposal Act gives waste reutilization priority over disposal and is further supported by the packaging materials ordinance. The packaging ordinance requires that product packaging be minimized or, if this is not possible, collected and recycled. RWE Umwelt is constantly developing new

### The PET challenge

Three letters stand for a new challenge for recycling management: PET, or polyethylene terephthalate. PET, the starting products of which are based entirely on petroleum, is much lighter and tougher than glass and can be shaped at will under heat. These advantages make the plastic particularly interesting for the beverage and packaging industry – little wonder, then, that two-thirds of all soft-drink bottles worldwide are already made from PET. Its use in Germany is expected to rise even further: from 1.3 million metric tons in 1999 to an estimated 2 million metric tons in 2004. It's a good thing PET can be recycled easily! Even after repeated processing the material maintains its structural properties without qualification.

To achieve true recycling throughout this material flow, however, PET must be sorted by type into colored and clear. One of the first plants that have made this possible in Germany is new sorting module from RWE Umwelt Aichach. By sorting with the aid of near-infrared sensors, the equipment achieves a purity level of 95 percent. The portion of high-quality clear PET can be reprocessed by the plastic industry into new bottles; colored PET is reutilized by the textile industry as padding, for example, or as fill and insulating material in sleeping bags.

concepts and technologies for this purpose. In Lauingen, for example, a plastics processing plant was built to handle over 11,000 metric tons of plastic bottles annually. With the aid of near-infrared technology, the plastics are sorted into polyethylene (PE), polypropylene (PP) and polyethylene terephthalate (PET) fully automatically (> p. 87). The German Dual System has had a positive effect on the sorting of light packaging plastics. Trienekens' new plant in Krefeld, for example, separates around 30,000 metric tons per year almost fully automatically and achieves a much higher yield of the recyclable fractions of metal and plastic.

The cycle has been fully closed for the first time in the case of glass recycling. In conventional glass recycling plants, a residual 10 percent of glass slivers and foreign matter such as ceramic, stone and porcelain is left behind – the nightmare of every glass producer, because every little pebble can become embedded and make an entire bottle unusable. Across Germany, over 200,000 metric tons of material are produced that can now be returned to the production cycle thanks to the RWE Umwelt's as yet unparalleled pulverizing/drying equipment. The plant in Neuburg an der Donau pulverizes glass remnants, ceramic, stone and porcelain into granules of less than 0.8 millimeters so that they will melt without residue during glass production.

One global innovation is the fully automated sorting technology for waste paper in use at the Trienekens plant in Cologne. It increases the yield of highly-valued deinking products from 80 to 95 percent compared with conventional plants, and creates a previously unattainable share of unrecyclable components under 2.5 percent. At a cost of 13 million euros, the facility has a capacity of some 65,000 metric tons. As a member of the nationwide "Pro Recycling Paper" campaign, RWE Umwelt and Trienekens are helping to improve the public's acceptance of recycled paper (> [www.initiative-papier.de](http://www.initiative-papier.de)).

Other improvements include the recovery of chlorofluorocarbons (CFCs) at Bresch Entsorgung in Neumünster, a subsidiary of RWE Umwelt and market leader in the field

of refrigerator disposal. Thanks to the new plant, CFC emissions were reduced to 10 milligrams per cubic meter of air, well below the standards of the German technical guideline on air quality, which still allows 150 milligrams of CFCs per cubic meter of air. A highly sophisticated next-generation model also replaced the Trienekens plant for refrigerator processing in Grevenbroich during the period under review.

#### Thermal treatment

Thermal utilization is the best solution for waste that cannot be recycled or for which recycling is uneconomical. Used as alternative or secondary fuels, this waste can help conserve primary energy sources and reduce the emission of gasses that are detrimental to the environment. Compared with dumping, this represents one metric ton less in CO<sub>2</sub> equivalents per metric ton of remaining waste. The Federal Quality Association for Secondary Raw Materials, initiated to a large degree through the efforts of RWE Umwelt, has now received the RAL seal of approval for fuels with guaranteed quality.

A promising future is in store for the concept of small modular incinerators for municipalities. Beginning in 2005, the German technical guideline on residential waste will require pretreatment in incinerators or mechanical/biological treatment plants of waste containing more than 5 percent combustible substances. RWE Umwelt and a leading plant engineering firm are offering small incinerators that will become cost-effective starting at an annual average of just 50,000 metric tons of waste. The facilities are particularly well suited for decentralized waste disposal in sparsely populated areas and help prevent long hauling distances. The first plants are to be set up in the Nordfriesland (Silesia-Holstein) and Ludwigslust (Mecklenburg-Western Pomerania) countries.

RWE Umwelt Bramsche GmbH in Osnabrück has developed a process for the thermal utilization of hazardous waste, which is dried with surplus heat from the high-temperature incinerator at the site. This allows alternative fuel to be recovered from hazardous waste on a greater scale than was previously possible.

#### Hazardous waste

RWE Umwelt moves 1.5 million metric tons of hazardous waste annually. To improve the logistics of hazardous waste disposal, Trienekens in Cologne-Niehl has installed a disposal and utilization center solely for hazardous waste. The goal is to collect 30,000 metric tons of paste-like and solid organic waste per year from the region and condition it for subsequent thermal treatment. In Rheingebirg on the Lower Rhine, Trienekens is participating in the development of an underground disposal site for hazardous waste. The underground site will be created in the salt dome of the Borth rock salt mine and according to the permit will be able to accept up to 350,000 metric tons of chemically inactive hazardous waste material per year. In terms of safety specifications, the underground disposal site is far superior to conventional forms of final hazardous waste storage.

#### Service and consulting

RWE Umwelt offers its customers extensive services in all aspects of professional waste handling, such as IT-supported solutions for container scheduling or the creation of volume and utilization certificates – the foundation for the control and management of material flows as a part of waste assessments. RWE Umwelt has not only assumed complete waste disposal activities for the Mövenpick Group, Shell Deutschland and other large companies active nationwide, it has also developed a waste management system that guarantees high reuse and recycling rates while simultaneously minimizing transport. RWE Umwelt has also developed a strategy for the United Nations for the environmentally sound disposal of waste from KFOR troops in Macedonia and Kosovo. Parts of the concept have already been implemented.

#### Know-how transfer

The environmental guidelines of RWE Umwelt apply to all subsidiaries and associated companies in which the company has a shareholding of over 50 percent. Foreign subsidiaries and associated companies "may not use lower environmental standards in non-EU countries to evade the environmental standards of the Federal Republic of Germany or comparable countries."

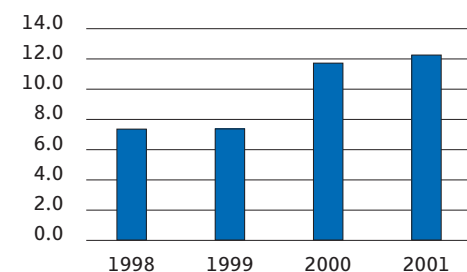
In Wrocław for example, RWE Umwelt has a 63 percent holding in city cleaning operations and collects, transports, utilizes and disposes waste produced by 630,000 people according to German environmental standards. In the Czech Republic, Chemopetrol, one of the country's foremost chemical companies, has commissioned RWE Umwelt to handle the disposal of abandoned inherited waste, one of the biggest contracts in the field of environmental services that was placed in the Czech Republic in 2000. In Spain, in cooperation with a dump operator, RWE Umwelt runs a disposal center with facilities for sorting, composting, animal carcass disposal and leakage water treatment. The enterprise disposes of some 750,000 metric tons of residential waste from greater Madrid – nearly 60 percent of the total volume. German expertise was also in demand in Great Britain: on behalf of the Cleanaway Ltd. disposal company, Trienekens subsidiary Sutco set up a plant that separates valuable dry substances from household garbage fully automatically. This plant will separate 50,000 of waste per year from the "clear sacks" in which cardboard, cartons, paper, metal, plastics and textiles are collected.

To supplement technology transfer for the purpose of raising environmental consciousness on location, RWE Umwelt in Tatabánya, Hungary has joined forces with other companies from the disposal industry to run the "Together for You" project over the past three years. The objective is to spark and increase both interest and awareness of environmental protection among kindergarten and elementary school children. To achieve this, the organizers stage exhibits and open houses at participating companies or hold competitions.

▶▶ [www.initiative-papier.de](http://www.initiative-papier.de)

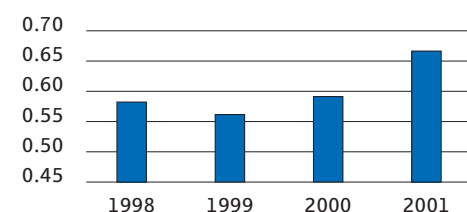
Input-output data from RWE Umwelt can be found on the Internet > [www.rwe.com](http://www.rwe.com) > Environmental Policy

**Volume of waste collected** (in millions of metric tons)



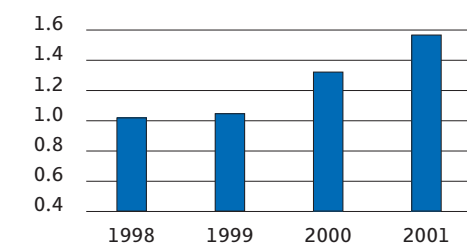
RWE Umwelt companies collected nearly 12 million metric tons of waste in 2001 of which 27 percent comes from households or are considered similar to household waste, a further 23 percent belongs in the categories paper, packaging and glass, 13 percent is construction waste and another eleven percent is hazardous waste requiring special monitoring. The increase in the volume of waste collected since 1999 can mainly be attributed to the consolidation of the Edelhoff and Buchen Groups, which took place within the framework of the merger with the former VEW AG.

**Glass recycled** (in millions of metric tons)



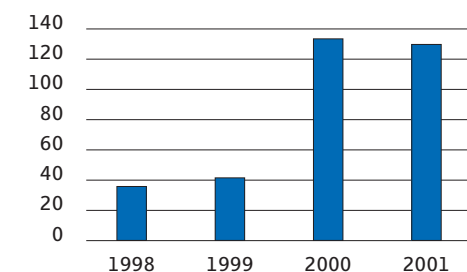
RWE Umwelt processes recycled glass at a total of four sites. The recyclable glass in part comes from the company's own collection operations, in part from other disposal companies. The constant increase in processed recycled glass reflects efforts to increase the operating performance, efficiency and recycling rates in the plants.

**Paper, card stock and cardboard recycling** (in millions of metric tons)



The rise in the output of processed paper, card stock and cardboard in recent years has been dramatic. One contributing factor was the integration of the Edelhoff Group in 2000. Improvements in sorting technology are also gradually taking effect. For example, in the case of newspaper, also known as a deinking material, RWE Umwelt increased its yield by up to 16 percent through the use of state-of-the-art equipment.

**Company-generated electricity** (in thousands of MWh)



Wherever economically feasible, RWE Umwelt companies try to generate power in addition to their other processes. The Brunsbüttel hazardous waste incinerator and the wood heating and power station in Zapfendorf are each equipped with a 4.5 MW turbine. Moreover, in recent years, block-type thermal power stations were erected at a number of disposal sites that convert the discharged gas, mainly methane, into electric power and in some cases, heat.

Program	Time frame	Responsible	Implementation
<b>Climate protection and energy efficiency</b>			
Switch to uniform company software (TRAS, POC) to further improve logistics, etc.	12/2003	RWE Umwelt	50 percent
Measure gasoline consumption in all branches	12/2000	RWE Umwelt	12/2003 within the scope of the introduction of POC
Use of alternative means of transport	ongoing	RWE Umwelt	realized in individual cases
Assess disposal sites to determine if they can still be outfitted with gas measurement systems or if gas amounts measured can be used efficiently in power/heat generation	12/2000	RWE Umwelt	largely concluded
Optimize truck fleet and use low-emission vehicles	ongoing	RWE Umwelt	reduction in the truck fleet by 7.5 percent
<b>Protection of soil and ground water</b>			
Final assessment of whether action is still needed re: disposal site water leakage measurement/treatment	12/2000	RWE Umwelt	largely completed
<b>Reduction in the consumption of resources</b>			
Increase production and use of secondary fuels	ongoing	RWE Umwelt	100,000 t per year
Improve sorting and recycling technology for glass, paper and light packaging where environmentally and economically feasible	ongoing	RWE Umwelt	prototype plants
<b>Development of environmental management</b>			
Regularly inform, teach and continue to train employees in the areas of environmental protection, quality management, occupational safety, health protection	ongoing	RWE Umwelt	internal quality, environment, job safety audits
Set minimum standards for procedures, processes, equipment as recommended action for all companies	continuous updating	RWE Umwelt	EQS manual compiled
Break down global environment/quality/safety guidelines into regional goals, programs, measures	12/2002	RWE Umwelt	in preparation



## A role model for environmental protection

**They no longer belong to our core business, but they are still subject to the framework standards of the RWE Group: RWE held a majority in HOCHTIEF and Heidelberg Druckmaschinen during the reporting period. Both are leaders in their industries – even in environmental protection and sustainability.**



### Heidelberg Druckmaschinen

Heidelberg Druckmaschinen produces equipment and devices for every aspect of printing at eight German and 10 international locations with 24,489 employees, including offset and digital printers, devices and software for pre-press stages and machines to cut, fold and bind printed materials.

The environmental management system at Heidelberg Druckmaschinen is international, its environmental policies applicable worldwide. And that's nothing new. The management has the same structure at all locations, and data are compiled according to the same criteria. From a total of 18, 13 sites are ISO 14001-certified or validated according to the EU Eco-Audit Act. For some years, environmental performance data at the sites, whether they are in Germany, France, the USA or Mexico, are published in an annual environmental report. Heidelberg Druckmaschinen's report routinely places near the top in regular evaluations by the Chamber of Auditors, and in rankings conducted by the environment-oriented association of entrepreneurs "future e.V." in cooperation with the Institute for Ecological Economic Research.

The company has firmly established the global transfer of knowledge about environmental protection through regular workshops bringing together environmental experts from all sites. Current issues and topics of strategy head the agenda. At Heidelberg Druckmaschinen, that strategy includes a fundamental business focus on sustainable development principles. In 2001, for instance, the company published for the first time a report that covered ecological, economic and social aspects equally,

supported by key figures. The Chamber of Auditors awarded it first prize for "Best Sustainability Reporting" in March 2002. It can be ordered from Heidelberg Druckmaschinen (environment@de.heidelberg.com) or downloaded from the Internet (> www.heidelberg.com > About us > Environmental protection).

Special environmental successes of recent years include an increase in the utilization rate to over 90 percent and the reduction of volatile organic compounds (VOC) in the sites' varnishing houses. Since new findings were revealed by a project for environmentally sound product development, all Heidelberg Druckmaschinen products now go through environmental protection and product safety "quality gates" for which standards have been formulated. A product will only be released if it is clear that these standards are upheld. The standards pertain not only to aspects of reutilization, but more importantly to the reduction of environmental impact during use, an issue that has even more bearing with greater product durability. And printing presses from Heidelberg are especially durable goods. A significant reduction in emissions of cleaners and alcohol during press operation was particularly important to employees of the printing works for health reasons. Heidelberg's biggest Speedmaster machine was given the "emission-tested" certificate from a body of experts at the Paris TPG trade fair in May 2001.

### HOCHTIEF

As a management holding company, HOCHTIEF Aktiengesellschaft manages a network of companies that plan, finance, execute and run construction-related projects. Although by default every construction project is responsible for upsetting the balance of nature, as a building owner, HOCHTIEF has an opportunity to reduce that negative impact, for example, through the choice of construction method or by stipulating which materials are to be used. As a construction company, HOCHTIEF can positively influence environmental aspects through special proposals during the bidding phase. In operating properties, HOCHTIEF Facility Management's special role is to advise the customer on energy management. HOCHTIEF employs 41,000 people worldwide.

▶▶ [www.heidelberg.com](http://www.heidelberg.com) > About us > Environmental protection

Foreign subsidiaries and associated companies perform over 80 percent of the company's services. As part of its corporate guidelines, HOCHTIEF requires all companies and all majority holdings to focus environmental and job safety on ensuring the health and well being of employees and third parties. The company's international commitment to sustainability is of particular note: In March 2000, HOCHTIEF was the first construction company in the world to agree to uphold the social standards of the International Labor Organization (ILO) worldwide. One particular example shows how dedicated the company is to this obligation. In October 2000, the Labor Office in Frankfurt informed the company that a HOCHTIEF partner company at a construction site in the city was paying less than the statutory minimum wage. Although the matter had not yet been clarified, HOCHTIEF immediately gave the 18 affected employees temporary financial assistance upon learning of the accusation. The Prisma office building in Frankfurt/Main designed by HOCHTIEF Projektentwicklung GmbH represents a bold step toward sustainable construction methods. It makes use of the fact that the earth is warmer in winter and cooler in summer relative to the air temperature – a climate concept that conserves primary energy resources.

At the end of 2001 HOCHTIEF published its first report on environmental protection, occupational safety and health protection to go into aspects of sustainability. It can be ordered from the company or downloaded from the Internet (> www.hochtief.de > Figures > PDF Downloads).

▶▶ [www.hochtief.de](http://www.hochtief.de) > Figures > PDF Downloads

# Your contacts in environmental protection



## **RWE AG**

Dr. Henning Rentz / Dr. Hans-Peter Meurer  
RWE Aktiengesellschaft  
Opernplatz 1, 45128 Essen  
Tel.: +49 201 12-15593 / +49 201 12-15251  
Fax: +49 201 12-15492  
E-mail: [henning.rentz@rwe.com](mailto:henning.rentz@rwe.com)  
[h-p.meurer@rwe.com](mailto:h-p.meurer@rwe.com)

## **Electricity Business Area**

### **RWE Net AG**

Bernhard Tenckhoff  
E-mail: [bernhard.tenckhoff@rwenet.com](mailto:bernhard.tenckhoff@rwenet.com)

### **RWE Plus AG**

Ulrich Bach  
E-mail: [ulrich.bach@rweplus.com](mailto:ulrich.bach@rweplus.com)

### **RWE Power AG**

Walter Hoffmann  
E-mail: [walter.hoffmann@rwepower.com](mailto:walter.hoffmann@rwepower.com)

### **RWE Rheinbraun AG/Kraftwerke**

Klaus Henrich  
E-mail: [klaus.henrich@rwerheinbraun.com](mailto:klaus.henrich@rwerheinbraun.com)

### **RWE Rheinbraun AG/Tagebaue**

Michael Eyll-Vetter  
E-mail: [michael.eyll-vetter@rwerheinbraun.com](mailto:michael.eyll-vetter@rwerheinbraun.com)

### **RWE Solutions AG**

Dr. Herbert Brunner  
E-mail: [herbert.brunner@rwesolutions.com](mailto:herbert.brunner@rwesolutions.com)

### **RWE Trading AG**

Ludwig Kons  
E-mail: [ludwig.kons@rwe trading.com](mailto:ludwig.kons@rwe trading.com)

### **Harpen AG**

Udo Reher  
E-mail: [udo.reher@harpen.de](mailto:udo.reher@harpen.de)

## **Gas Business Area**

### **RWE Gas AG**

Dr. Burkhard Katzenbach  
E-mail: [burkhard.katzenbach@wegas.com](mailto:burkhard.katzenbach@wegas.com)

### **RWE Dea AG**

Bodo Schultz  
E-mail: [info.umweltbericht@rwe dea.com](mailto:info.umweltbericht@rwe dea.com)

## **Water Business Area**

### **Thames Water PLC**

Dr. Peter Spillett  
E-mail: [peter.spillett@thameswater.co.uk](mailto:peter.spillett@thameswater.co.uk)

## **Environmental Services Business Area**

### **RWE Umwelt AG**

Hans Ulrich Schaffrath  
E-mail: [hans.schaffrath@rwe umwelt.com](mailto:hans.schaffrath@rwe umwelt.com)

## **Corporate Services**

### **RWE Systems AG**

Wolfgang Graak  
E-mail: [wolfgang.graak@rwe systems.com](mailto:wolfgang.graak@rwe systems.com)

## **Financial Investments**

### **Heidelberger Druckmaschinen AG**

Dr. Jürgen Kern  
E-mail: [juergen.kern@de.heidelberg.com](mailto:juergen.kern@de.heidelberg.com)

### **HOCHTIEF AG**

Daniela Paffrath  
E-mail: [daniela.paffrath@hochtief.de](mailto:daniela.paffrath@hochtief.de)

## Companies included in the report (as of December 31, 2001)

### Electricity Business Area

#### RWE Power AG, Essen

#### RWE Net AG, Dortmund

#### RWE Plus AG, Essen

Emscher Lippe Energie GmbH, Gelsenkirchen  
 envia Energie Sachsen Brandenburg AG; Chemnitz  
 Koblenzer Elektrizitätswerk und Verkehrs-  
 Aktiengesellschaft, Koblenz  
 Lech-Elektrizitätswerke Aktien-Gesellschaft,  
 Augsburg  
 Mitteldeutsche Energieversorgungs-  
 Aktiengesellschaft, Halle  
 Süwag Energie AG, Frankfurt  
 ELMÜ, Budapest/Hungary  
 ÉMÁSZ, Miskolc/Hungary

#### RWE Rheinbraun AG, Cologne

MÁTRA, Visonta/Hungary

#### RWE Trading GmbH, Essen

#### RWE Solutions AG, Frankfurt/Main

Starkstrom-Gerätebau GmbH, Regensburg  
 Sächsisch-Bayerische Starkstrom Gerätebau GmbH,  
 Neumark  
 Transformatorenwerk Reichenbach GmbH, Neumark  
 RWE Piller GmbH, Osterode am Harz  
 RWE Mechatronics GmbH, Mechnich  
 RWE Solar GmbH, Alzenau  
 SAG Netz- und Energietechnik GmbH, Langen  
 SAG Montagegesellschaft mbH, Berlin  
 BLS Berliner Licht- und Signaltechnik GmbH, Berlin  
 RBG Strüder Gesellschaft mbH, Iserlohn  
 Strüder GmbH, Schneeberg  
 Fahrleitungsbau GmbH, Essen  
 Dandl & Wilhelm GmbH, Boos  
 SAG Energieversorgungslösungen GmbH, Frankfurt  
 IDS GmbH, Ettlingen  
 SAG Abel Kommunikationstechnik  
 GmbH und Co. KG, Hanover  
 RWE Industrielösungen GmbH, Duisburg

Harald Meyer VDI Ingenieurgesellschaft mbH,  
 Kelkheim  
 SGB Maschinen Service GmbH, Regensburg  
 ELTO-PLAN, Kaiserslautern  
 TESSAG Edeleanu GmbH, Alzenau  
 RWE NUKEM GmbH, Alzenau  
 NIS Ingenieurgesellschaft mbH, Hanau  
 SAG Liegenschaftsverwaltung GmbH & Co. KG,  
 Frankfurt  
 Controlec Construction B.V., Spijkenisse/Netherlands  
 Controlec Engineering B.V., Schiedam/Netherlands  
 Controlec Networks B. V., Schiedam/Netherlands  
 Klöckner INA NL D.L., The Hague/Netherlands  
 RWE Solutions Netherland B.V.,  
 Schiedam/Netherlands  
 Smit Transformatoren N.V., Nijmegen/Netherlands  
 Abel Kommunikationstechnik AG,  
 Oftringen/Switzerland  
 Anton Piller (UK) Ltd., Cirencester/Great Britain  
 RWE NUKEM Ltd, Risley/Great Britain  
 RWE Solutions UK Ltd., London/Great Britain  
 ANSA Assistance Nucleaire S.A.,  
 Bouzonville/France  
 Entreprise d' Elec. Thépault S.A.,  
 Jouy-aux-Arches/France  
 RWE Solutions France, Paris/France  
 RWE Piller S.A., Nanterre/France  
 VIGILEC S.A., Saint-Pourcain-sur-Sioule/France  
 Abel Kommunikationstechnik GmbH, Zirl/Austria  
 RWE Solutions Austria GmbH, Vienna/Austria  
 RWE Solutions Iberica S.A., Madrid/Spain  
 TESSAG Hungaria Kft., Budapest/Hungary  
 Elbud Gdansk Holding S.A., Gdansk/Poland  
 ASE Americas Inc., Billerica/USA  
 Piller Inc., Middletown/USA  
 RWE NUKEM Corporation, Columbia/USA  
 RWE NUKEM Incorporated, Danbury/USA  
 TESSAG INA USA, New York/USA  
 TESSAG KSH, Montreal/Canada  
 AMSGB, Nilai/Malaysia  
 TESSAG EDELEANU ASIA, Singapore/Thailand  
 TESSAG Iran, Teheran/Iran  
 Klöckner Nippon, Tokyo/Japan