

Management and Corporate Governance

Bayer is a global enterprise with **core competencies** in the fields of **health care, nutrition and high-tech materials**. At the same time, we want to create value through **innovation, growth and high earning power**. That is closely linked to responsible corporate governance.



Safeguarding the future through investment in emerging markets: with two-digit growth rates, Greater China has become one of Bayer's most important markets (see page 29). Since the beginning of 2011, a large new Bayer Cross has adorned the skyline of Shanghai.

50 ONLINE REPORT
LIFE

Our corporate culture finds expression in our mission "Bayer: Science For A Better Life" and in our values. In 2010, we brought together our values in the term **LIFE**, which stands for Leadership, Integrity, Flexibility and Efficiency (see also the Employees section on page 34). Our values guide our business conduct.

One of the four elements of **LIFE** is Integrity, which we understand to mean complete compliance with all laws, directives and regulations and being an honest and reliable partner for our stakeholders. Clear corporate governance structures and transparent principles for worldwide compliance are the foundations that underpin the long-term success of the Bayer Group. Wide-ranging risk management helps us identify and counter possible risks as early as possible. Bayer also contributes to the positive development of the economy and society in the regions in which it operates.

Value-oriented corporate governance is put into practice through Group-wide regulations and policies, for example on sustainable

development and the integration of sustainability into supplier management and our global policy on human rights and working conditions. Responsible corporate governance is the basis for sustainable growth and business success.

2010: Group targets achieved

In 2010, we grew sales 12.6 percent (8.0 percent on a currency- and portfolio-adjusted basis) to a new record of €35.1 billion. Earnings before interest, taxes, depreciation and amortization (EBITDA) and before special items improved 9.7 percent to €7.1 billion. The operating result (EBIT) declined 9.2 percent to €2,730 million despite the positive business trend at MaterialScience. Earnings were held back by special items totaling €1,722 million. In fiscal 2010, these comprised impairment losses of €957 million, €703 million for litigation and €62 million for restructuring (see also key data inside the front cover).

Bayer stock is a sustainable investment

Investors are showing an increasing interest in how companies integrate ecological and social aspects into their strategies and business activities. That is particularly true of long-term institutional investors such as pension funds. According to surveys by the European Sustainable Investment Forum (Eurosif), the Social Investment Forum (US) and the Responsible Investment Association Australasia, institutional investors are a significant force in the global market for sustainable investment, which grew to €7.6 trillion in 2009.

Bayer stock is included in many sustainability indices and funds. We have been included in the Dow Jones Sustainability Index (DJSI) World without interruption since the 5

Targets 2015

Supplier management

- Inform all suppliers with purchase-order-relevant volumes about the Bayer Supplier Code of Conduct
- Assess the sustainability performance of suppliers that represent $\geq 75\%$ of the total procurement volume and $\geq 75\%$ of the procurement volume from risk areas
- Annually audit the sustainability performance of at least 10% of the suppliers from risk areas or at least 15 suppliers

Compliance

- Extend compliance training to 100% of all Bayer managers

establishment of this index in 1999 and regained a place in the DJSI Europe Index in 2010 after a break of two years. Bayer has also been listed in the FTSE4Good sustainability index since its establishment in 2001. Storebrand, a Norwegian financial services provider focusing on sustainable investment, classifies Bayer as a best-in-class company in the pharmaceutical sector. The **Carbon Disclosure Project (CDP)** has once again included Bayer in the Carbon Disclosure Leadership Index (CDLI) as the best company in the health care sector. In the newly created Carbon Performance Leadership Index (CPLI), Bayer is listed with a top rating of "A," confirming our leading position in climate protection.

The table provides an overview of the **sustainability indices and funds** in which Bayer is included. **Table 1**

Corporate governance

Bayer has always placed great importance on responsible **corporate governance**. In 2010, the company issued a declaration that it complied with the recommendations of the **German Corporate Governance Code**, with one temporary exception. In December 2010, the shareholder service provider IVOX ranked Bayer's corporate governance top among all DAX companies. Further information can be found in the Corporate Governance Report on page 88ff. of the Annual Report 2010, which provides extensive information on how the Board of Management works and on its control mechanisms.

Compensation of corporate officers is based on corporate governance principles

The role of the 20-member Supervisory Board is to oversee and advise the Board of Management. Under the German Codetermination Act, half the members of the Supervisory Board are elected by the stockholders, and half by the company's employees.

Even in the past, compensation of Bayer's Board of Management was aligned to sustainability, and complied with the recommendations of the German Corporate Governance Code and German legislation on the appropriateness of the compensation of members of management boards (VorstAG). To ensure that the Bayer Group continues to comply with these criteria, the Supervisory Board made a number of adjustments to the compensation of the Board of Management in December 2009. These were implemented in 2010.

Transparent compensation systems are a key element in good corporate governance. In 2010, the compensation of the Board of Management basically comprised five components: a fixed annual salary, a short-term incentive award on a yearly basis in relation to a target amount, a long-term incentive award for a four-year period in relation to a target amount, a further long-term compensation component introduced in 2010 involving a grant of virtual Bayer shares subject to a three-year retention period, and a company pension plan conferring pension entitlements that increase with years of service. Compensation in kind and other benefits are also provided, such as the use of a company car for private purposes or reimbursement of the cost of health screening examinations.

51 [WWW](#)
[CDP](#)

52 [WWW](#)
[CDP Bayer results](#)

53 [BAYER WEB](#)
[Sustainability indices and funds](#)

54 [BAYER WEB](#)
[Corporate governance](#)
55 [WWW](#)
[German Corporate Governance Code](#)

1_Our performance in relevant sustainability indices and sustainability funds

Index/Fund	Bayer's listing		
	2008	2009	2010
 DJSI World	✓	✓	✓
DJSI Europe	-	-	✓
 FTSE4Good Global Index and FTSE4Good Europe Index	✓	✓	✓
FTSE4Good Environmental Leaders Europe 40 Index	✓	✓	-
 ASPI Eurozone	✓	✓	✓
 Storebrand SRI Funds	✓	✓	✓
Carbon Disclosure Leadership Index*	✓	✓	✓
 Carbon Performance Leadership Index* (published in 2010)			✓
 NYSE Euronext Low Carbon 100 Europe Index	✓	✓	✓
 Access To Medicine Index*	✓	✓**	✓

* The Carbon Disclosure Leadership Index, the Carbon Performance Leadership Index and the Access To Medicine Index are not trading indices.

** Not re-assessed in 2009

Targets 2015

Compliance, p. 26

The remuneration of the Supervisory Board is based on the relevant provisions of the Articles of Incorporation, which were last amended by a resolution of the Annual Stockholders' Meeting on April 29, 2005. Further information can be found in the compensation report on page 95ff. of the Annual Report 2010.

Compliance at Bayer

Bayer expects the conduct of every employee to be determined by integrity at all times. The company does not tolerate any violation of applicable laws, codes of conduct or internal regulations.

In the [Corporate Compliance Policy](#), the Group Management Board outlines the company's clear commitment to corporate compliance and specifically states that it will forego any business that involves violating these principles.

This policy contains commitments to fair competition, integrity in business dealings, the principle of sustainability and product stewardship, the upholding of foreign trade laws and insider trading laws, proper record-keeping and transparent financial accounting, fair and respectful working conditions, and avoidance of all forms of discrimination. Other requirements are protecting the company's intellectual property and the legally recognized rights of others, keeping corporate and personal interests separate and cooperating with the authorities. These principles include responsible marketing. Information on our policy guidelines on the marketing of medicines can be found on page 42 in the Innovation and Products section.

Every operating company in the Bayer Group has a Compliance Officer who reports to the Chief Subgroup Compliance Officer. The Chief Subgroup Compliance Officers in turn report to the Group Compliance Officer, who is appointed by the Group Management Board. At least once a year, the Group Compliance Officer and the Head of Corporate Auditing report to the Audit Committee of the Supervisory Board on any compliance violations that have been identified. In 2010, we introduced a global database where all compliance violations are entered. 67 compliance officers received training at three central Compliance Officer Workshops in 2010. These workshops also serve as a platform for sharing experience and creating a "compliance community."

We provide continuous compliance information and training for our employees, and the brochure on our Corporate Compliance Policy is available in 42 languages. To ensure that employees are constantly aware of the importance of this issue, we have developed a

web-based [training \(Target, p. 26\)](#) module entitled "Corporate Compliance Basics," which was introduced in 2010. Around 19,800 managers worldwide successfully completed this module in 2010 (this corresponds to around 61 percent of all managerial employees and around 18 percent of the total workforce).

By virtue of their positions, our managers have a special obligation to set an example for their employees, spread the compliance message within their companies and take organizational measures to implement it. Senior managers can be required to repay variable compensation components for up to five years if systematic violation of the applicable legislation with financial damage to Bayer has occurred in their sphere of responsibility and could have been prevented if they had taken appropriate action. A fixed compliance target has been included in the performance evaluation of members of the Group Leadership Circle for 2010.

Every employee is required to report any infringement of the Corporate Compliance Policy without delay. Hotlines allowing anonymous reporting have been set up worldwide. The only exception is in France, where this reporting obligation does not apply due to the nature of national law there. In 2010, our global compliance hotline and e-mail address registered 29 reports, five from Germany and 24 from other countries. 27 reports were received by e-mail (14 of them anonymously) and two by phone (one anonymously).

Corporate Auditing reviews the effectiveness of the Corporate Compliance Policy regularly on behalf of the Group Compliance Committee.

Risk management

Business operations necessarily involve opportunities and risks. Effective management of opportunities and risks is therefore a key factor in sustainably safeguarding a company's value.

Managing opportunities and risks is an integral part of the corporate governance system in place throughout the Bayer Group, not the task of one particular organizational unit. Sustainability aspects are included in risk management at Bayer because they play a part in safeguarding the company's value. Along with excellent product quality and corporate compliance, they form the basis for the long-term sustainability of our business operations and business success. We expect the same from our suppliers (see page 31ff.).

Key elements of the opportunity and risk management system are the planning and controlling process, internal Group regulations

News

Investing in the growth market of China

Bayer intends to significantly expand its capacities for the production of high-performance materials in China by 2016. Investment totaling some €1 billion is planned at our Shanghai site. This means Bayer will focus even more intensively on the Asia/Pacific region, where it expects consistent growth in its customer industries. Capacities for the polyurethane raw material MDI are to be more than doubled to one million metric tons per year and for high-performance polycarbonate to 500,000 metric tons per year. The company also plans to considerably expand its research and development activities there. The aim is to ensure even greater proximity to Asia's booming market for polycarbonate plastics.



Bayer employee Gary Xi at the production plant in Shanghai for high-performance polycarbonate

and the reporting system. At regular conferences held to discuss business performance, the opportunities and risks that are evaluated both qualitatively and quantitatively in determining the strategies of the strategic business entities and the regions are updated, and targets and necessary actions are agreed upon.

The principles of the Bayer Group's risk management system are set forth in a directive published on the Group-wide intranet. This directive contains fundamental principles in accordance with the requirements of the German law on control and transparency in business (KonTraG) and includes the principles for the early identification, communication and addressing of risks.

In the Bayer Group, risks are systematically and continuously identified, analyzed and documented in a database. Risks are defined as events and possible developments within or outside of the company that could jeopardize a sustained increase in corporate value. Risk-relevant information is compiled regularly and on an ad hoc basis. The documentation contains a description of the risk, an assessment of the extent of possible damage and the probability of occurrence, along with measures to monitor and counteract the risk. The criteria are set out in a special procedure (BayRisk Instruction). Risk management at Group level is assigned to the Chief Financial Officer. Clear responsibilities within the organizational units ensure the efficiency of the risk management system. More information on [risk management in the subgroups](#) can be found in our online report.

Corporate Auditing is responsible for coordinating Group-wide identification and documentation of risk factors and for ongoing development of the risk management system. The effectiveness of the risk management system is reviewed by internal auditors at regular intervals. In addition, the external auditor assesses the early warning system as part of the annual financial statements audit and informs

the Group Management Board and the Supervisory Board of its findings.

Bayer has production facilities in more than 100 countries. Some of them can be affected by natural disasters such as floods and cyclones. An emergency response system (Bayer Emergency Response System, BayERS) to protect employees, the local community, the environment and production facilities is therefore an obligatory element in the integrated HSEQ (health, safety, environmental protection and quality) management systems at our production sites. The basis for this is set forth in a procedure on crisis management in the Bayer Group. An extensive opportunity and risk report can be found on page 122ff. of the Annual Report 2010.

Legal risks

We are exposed to numerous legal risks from legal disputes or proceedings to which we are currently a party or which could arise in the future, particularly in the areas of product liability, competition and antitrust law, patent disputes, tax assessments and environmental matters. The outcome of any current or future proceedings cannot be predicted. It is therefore possible that legal or regulatory judgments could give rise to expenses that are not covered, or not fully covered, by insurers' compensation payments and could significantly affect our revenues and earnings.

Legal proceedings currently considered to involve material risks are described on page 241ff. of the Annual Report 2010.

Open and transparent lobbying

Politics and legislation play a key role in shaping the conditions in which we operate. As a global company, we want to actively contribute our expertise and participate in the political decision-making process. We see lobbying as an important and legitimate way of doing this. We have set clear rules for these activities through our [Code of Conduct for Responsible](#)

57 ONLINE REPORT
Risk management in
the subgroups

59 BAYER WEB
Code of Conduct for
Responsible Lobbying

News

CO pipeline exceeds safety standards

Bayer has constructed a 67 kilometer pipeline to transport carbon monoxide between the sites of Dormagen and Krefeld-Uerdingen in Germany. Carbon monoxide is one of the most important chemical building blocks and is required for the manufacture of high-tech plastics. The start-up of the pipeline has been delayed so far because of sub judice claims brought against the project and statutory requirements. The Landtag (State Parliament) of North Rhine-Westphalia (NRW) has determined on several occasions that the project benefits the people and economy of the state. In Bayer's view too, the pipeline comprises an important infrastructure project that will strengthen NRW as an economic location and benefit the labor market. With its safety concept for the pipeline, which runs as far as possible along existing infrastructure routes on the right bank of the Rhine, Bayer exceeds the standards that apply to date and goes beyond the legal requirements. Pipelines are the safest and most environmentally friendly way to transport most liquid and gaseous substances. All over the world, carbon monoxide is transported safely through pipelines. You can find more on the [CO pipeline](#) on the Bayer website.

58 BAYER WEB
CO pipeline

60 BAYER WEB
Policy Letter

61 WWW
Federal Election
Commission

62 ONLINE REPORT
Focus of political
lobbying

63 WWW
European
Commission's lobby
register

Lobbying, which reflects the principles set in the Green Paper on the E.U.'s European Transparency Initiative. The principles include making sure that it is clear whose interests are being represented. Within Bayer, the Community Council for Politics is responsible for the focus and prioritization of the Group's political work. This includes both Group-wide tasks such as the publication of the [Bayer Policy Letter](#) or the entry in the lobby register and dealing with subgroup-specific political matters. In 2011, Bayer's [political lobbying is focusing](#) on the acceptance of products and technologies, fostering and recognizing innovation, sustainable health care systems, chemicals management, and energy policy and climate protection. Key interfaces are our liaison offices in Berlin, Germany; Brussels, Belgium; Washington, United States; and Beijing, China.

To enhance transparency, Bayer was one of the first companies in the chemical and pharmaceutical sector to be entered in the [European Commission's lobby register](#) and discloses the relevant costs of its lobby work at E.U. level (€1.85 million in 2010). We are expecting a similar initiative in Germany and would enter the company in a German register if one were to be introduced. In 2010, we spent €1.2 million on our liaison office in Berlin. That figure comprises personnel, operating and project costs. In the United States, Bayer discloses its lobbying costs in several official databases that calculate costs on various bases.

In keeping with the above directives, Bayer does not make any direct donations to political parties, related institutions, politicians or candidates for political office. However, associations to which we belong make donations on their own initiative, in compliance with the relevant statutory regulations, especially laws on party political activity. In the United States, individual employees utilize the opportunity to support candidates for parliamentary office by making private donations

via the Bayer Corporation Political Action Committee (BayPac). Political action committees in the United States are state-regulated, legally independent associations of employees established to collect and distribute private donations to political organizations and candidates for political office. Consequently, such donations are not donations made by the company. The BayPac contributions are regularly reported to the U.S. [Federal Election Commission](#). Full details can be viewed on the Commission's website.

In October 2010, the Climate Action Network made allegations that in the campaign for election to the Senate Bayer had systematically supported U.S. politicians who question climate change and block action to protect the climate. That allegation is incorrect since Bayer as a company cannot influence the distribution of private funds. Bayer is committed to climate protection and initiated its own ambitious Climate Program in 2007.

Regional commitment

As an international company, Bayer supports economic and social development in many parts of the world. We regard ourselves as a regional employer and aim to create jobs locally. At our sites we make a contribution to securing social structures and also strengthen regional purchasing power. In 2010, our personnel expenses and expenses for pension plans and pension obligations amounted to €25,798 million. In addition, regional tax payments benefit the communities in which we have a presence. [Table 2](#)

We also invest in local research, a fact evidenced by a large number of alliances with regional scientific institutes. For example, VHC is strengthening its research efforts with a new U.S. innovation center in San Francisco, VCS supports research in the Department of Plant and Soil Science at the Texas Tech University,

and BMS opened a research center for functional films in Singapore in 2010.

Bayer invests in its sites around the world. This includes environmental investment that goes beyond statutory requirements. We perform a voluntary ecological assessment for all investment projects exceeding €10 million.

In China, Bayer will continue to expand its capacities. More information is found in the news item on page 29. The further development of the German sites through the arrival of new companies is an essential task of Currenta, the manager and operator of Chempark. A cooperation has been entered with the Nanjing Chemical Industry Park in China to share experience and for joint training initiatives and an exchange of employees for a limited period.

Bayer CropScience wants to help raise living standards in rural areas of India by increasing value-added and ensuring this is reinvested in the community. In 2010, it therefore launched the [Model Village Project](#). We intend as our first step to introduce systematic droplet irrigation in seed production. We shall implement further suitable measures as the project progresses, such as facilitating direct market access to farmers or offering education and training options to children. Pforzheim University from Germany is our partner in the development of further concepts.

Our procurement volumes are also a significant factor in the development of many regions. In 2010, Bayer sourced goods and services totaling some €14 billion from around 94,000 suppliers in more than 110 countries. In the OECD countries, the most important countries for procurement, apart from Germany, were the United States and, some way behind, Japan. These countries account for around 70 percent of our procurement spending. In non-OECD countries, Asian

countries head the league. China, India, Thailand and Singapore occupy four of the top five places. Brazil, which ranks second, is the only non-Asian country among the top five. [Table 3](#)

In addition to business relations with employees and suppliers, Bayer plays a role in the communities around its sites worldwide. Further information is given on page 65ff. in the Social Commitment section.

Our supplier management – setting standards for good relations

Procurement of products and services in widely differing markets and locations presents special challenges to our procurement organization.

To ensure that quality, environmental protection and social standards are observed at all stages in the supply chain, we take our responsibility seriously in our day-to-day dealings with currently around 94,000 suppliers. The Group-wide [policy guidelines](#) issued by the [Procurement Community](#) set out the principles of our procurement policy, which clearly reflect our values and leadership principles. Procurement has established a wide range of initiatives to support our sustainability objectives, for example, as part of our Climate Program (see page 22f.).

Clear requirements for suppliers

At the end of 2009, we introduced a [Supplier Code of Conduct](#) based on the principles of the [UN Global Compact](#). This code of conduct covers ethics, employee relations, management systems and health, safety, environmental protection and quality (HSEQ). The issues addressed include a ban on corruption and child labor, the observation of human rights, the assurance of product safety and health and safety in the workplace, and the responsible use of

64 BAYER WEB
[Model Village Project](#)

65 BAYER WEB
[Procurement Community policy guidelines](#)

67 BAYER WEB
[Supplier Code of Conduct](#)

68 WWW
[UN Global Compact](#)

2 Personnel expenses and pension obligations* (worldwide, € million)

	2006**	2007	2008	2009	2010
Personnel expenses	6,630	7,571	7,491	7,776	8,099
- of which pension and social security contributions	1,414	1,611	1,513	1,490	1,623
Pension obligations***	16,708	15,022	14,910	15,931	17,699

* Figures for 2006 to 2009 as last reported

** The 2006 figures only contain Schering from June 23, 2006.

*** Present value of defined-benefit obligations for pensions and other post-employment benefits

3 Suppliers and procurement expenses according to economic region

	Suppliers (percent)	Spending (percent)
Non-OECD countries (approx. 70 % of all countries)	28	16
OECD countries (approx. 30 % of all countries)	72	84
Total	100	100

Dialogue

Global Supplier Days focus on sustainability

In 2010, we provided information on our understanding of sustainability to more than 400 of our most important suppliers. Through this global dialogue we aim to show suppliers the demands we make on sustainable procurement and how they can meet requirements in their own companies. Bayer MaterialScience organized a first Supplier Day in China in March 2010. This was very successful and 90 representatives from 54 companies in Asia took up the invitation to this event. Further Supplier Days were held in 2010, for example in Germany, Spain, the United Kingdom and India. To give our partners an incentive for sustainable conduct, Bayer CropScience, the largest local Bayer procurement organization in India, awards a sustainability prize for its suppliers.

Supplier Days are designed to help suppliers implement sustainability in their own companies. The first Supplier Day took place in China in 2010.

66 [www](#)
Corruption Perception
Index

natural resources. Bayer expects its suppliers to accept the sustainability principles set out in this code of conduct, which forms an integral part of our supplier selection and evaluation process. In 2010, it was integrated into our Group-wide electronic ordering system and contracts.

Training our procurement staff

We use a web-based training program to familiarize our procurement staff with present and future challenges relating to our code of conduct. The three training modules are mandatory and cover the principles of sustainability, the content of the code of conduct and instructions on selecting and evaluating suppliers that specify a four-step procedure to implement the code of conduct. The content of these modules is continuously updated and adapted to the needs of the target group. In addition to strategic procurement staff, a further 200 employees with procurement functions were included in the training program in 2010.

Reviewing suppliers' observance of our sustainability principles

Supplier self-assessments and audits are used to check whether the demands made by the Bayer Supplier Code of Conduct are being implemented and complied with along the supply chain.

The suppliers to be checked are selected using a country-based risk approach based on our country index for sustainability risks derived from the risk assessments of various international indices such as the [Corruption Perception Index](#) published by Transparency International.

On the basis of this risk approach, we used standard questionnaires in 2010 to evaluate 147 suppliers, mainly from China but also from India, Thailand, the Philippines and Guatemala. Together with the evaluations performed in 2009, based on procurement spending we have already covered 50 percent of suppliers in the risk category and will continue to increase this percentage. In addition, 124 suppliers from non-risk countries were evaluated in 2010. They were selected by the subgroups using business-related criteria. These checks were supplemented by country-specific projects, for example an evaluation of more than 200 suppliers in India.

Together with an independent external auditor we had pilot sustainability studies carried out on suppliers in China in 2010. In the future, we intend to carry out random audits on the data provided by suppliers in self-assessment questionnaires and check up on the agreed development activities.

The data compiled from the supplier questionnaires and audits are used to determine whether specific suppliers meet Bayer's requirements or whether we need to define further development measures and goals in collaboration with them. Action plans were drawn up with several suppliers in 2010. These are documented centrally and their implementation is tracked. So far, we have not identified any infringements that were so serious that they resulted in exclusion or termination of contracts with suppliers.

Continuous improvement

Almost one year after introduction of the Bayer Supplier Code of Conduct, we reviewed our processes together with an external consultancy. The recommendations made on the basis of this review have already been integrated into our targets for 2011:

- Expand the present country-based risk approach: additional reviews of strategic and key suppliers from non-risk countries
- Step up the number of sustainability-specific supplier audits by independent, external auditors
- Improve central reporting and monitoring through stepwise integration of sustainability assessments into a Group-wide supplier management system.

Our process is also subject to continual evaluation and we have set ourselves ambitious [targets](#) ([Target, p.26](#)) up to 2015. We also

Targets 2015

Supplier management,
p.26

regularly review and, if necessary, revise all modules, for example our sustainability standards, supplier questionnaire and the supplier development process.

Human rights as a benchmark

Bayer pays special attention to respect for human rights. Our Supplier Code of Conduct is based on the principles of the UN Global Compact and also takes up the sustainability principles and our Human Rights Position. The purpose of this code of conduct is to strengthen the common understanding by Bayer and its suppliers of how sustainability is implemented in our day-to-day business. Special attention is paid to the protection of employees and to ensuring that they are treated fairly and respectfully. Another key focus is on checking that the ban on child labor is enforced.

Unfortunately, child labor is still widespread in many countries. In a number of countries in which we are present and maintain business operations, children are still used for activities such as field work to contribute to the subsistence of families. In keeping with our Human Rights Position, we require suppliers along our entire supply chain to refrain from using child labor.

For many years, Bayer CropScience has taken resolute and systematic action against child labor in our cotton seed supply chain in India and helps assert children’s rights through the [Bayer CropScience Child Care Program](#). The prime aim of this program is to alter attitudes to child labor. Farming can be pursued profitably even if children are not part of the workforce. Education plays a key role in securing a lasting improvement in children’s living situation.

Our “[Learning for Life](#)” initiative, which comprises projects established in conjunction with local non-governmental organizations and educational institutions as part of our Child Care Program, helps provide better education opportunities. Schools and training centers offer children a wide range of opportunities, from reintegration into the regular school system to vocational training. More than 2,400 children and young people benefited from these offers between 2005 and 2010. The focus of the program is currently on vocational training. Further information

and more detailed figures can be found on the Internet.

These educational activities are supplemented by contractual agreements with seed producers. In addition, the fields used for cotton seed production are checked at least six times each season. Moreover, we pay a bonus to suppliers who strictly enforce the ban on child labor, and run training sessions to enhance agricultural efficiency. Graduated sanctions are applied for non-compliance. These range from oral warnings to termination of the contract in the case of repeated non-compliance. Once a year, corporate auditors Ernst & Young, India, conducts an unannounced on-site inspection of farms selected on a random basis.

Two indicators are used to measure the success of this extensive range of activities. The table shows the development since the “[Kharif](#)” season of 2005/2006. [Table 4](#)

In 2010, we started to present our [Child Care Program](#) in the cotton seed sector to interested stakeholders and step up dialogue with them. Systematic field monitoring in the vegetable farming sector was continued in 2010. As announced, we also started to roll out the program to the production of seeds for hybrid rice.

70 ONLINE REPORT
[Child Care Program](#)

71 BAYER WEB
[Bayer CropScience Child Care Program](#)

69 ONLINE REPORT
[Learning for Life](#)

4_Results of field monitoring: production of cotton seed in the “Kharif” season in India

	2005/2006	2006/2007	2007/2008	2008/2009	2009/2010	2010/2011
Child labor incidence rate per acre* monitored	0.57	0.15	0.014	0.01	0.002	0.001
Child labor cases as per total workforce in %	13.9	2.8	0.31	0.24	0.06	0.03

* 1 acre = 4,046.86 m²

Employees

The objective of our **innovative and responsible human resources policy** is to foster and strengthen our employees' **performance** and their enormous **commitment**, because these essentially form the basis for our **corporate success**.



Leadership, Integrity, Flexibility and Efficiency are Bayer's newly formulated values. The initial letters of these four words can be simply expressed in one word: LIFE. These values are now to be presented to all Bayer employees in a global communications cascade.

72 ONLINE REPORT
LIFE

73 WWW
UN Global Compact

74 BAYER WEB
Human Rights
Position

A responsible, long-term human resources policy plays a central role in the management of the Bayer Group. This is highlighted by **LIFE**, our new system of values. **LIFE** stands for Leadership – at all levels in the company – Integrity, Flexibility and Efficiency. Our goal for the future is to implement these values systematically in our day-to-day work to enhance employee satisfaction and benefit everyone who works for Bayer.

The Bayer Group had 111,400 employees worldwide on December 31, 2010, which is 400 more than in 2009. [Table 5](#)

Most of the Group-wide job cuts announced in November 2010 will be implemented so as to minimize social hardship. A large proportion of our 36,200 employees in Germany are protected against dismissals for operational reasons under an agreement with the Works Council that runs until the end of 2012.

Group-wide, the staff fluctuation rate increased from 7 to around 9 percent. As in previous years, the fluctuation

rate varied by region. While it was between 10 and 13 percent in North America, Asia/Pacific, Latin America, Africa and the Middle East, it remained constant at 7 percent in Europe, which accounts for over half of our employees. The fluctuation rate includes employer- and employee-driven terminations, retirement and deaths. In Germany, contract terminations by employees accounted for just 0.4 percent. Personnel expenses increased from around €7.8 billion in 2009 to around €8.1 billion in 2010, principally due to currency effects and regular pay raises.

Respecting employee rights worldwide

We respect the United Nations' Declaration of Human Rights. Moreover, as a founding member of the [UN Global Compact](#) we respect its 10 principles. The most important principles for respecting employee rights at Bayer are set out in our [Human Rights Position](#). Key elements in our commitment are compliance with strict standards to provide a safe and healthy working environment, a strict ban on child labor and forced or compulsory labor and all forms of discrimination, as well as a clear commitment to freedom of association and our corporate responsibility to maintain fair and competitive working conditions. In addition, our Group-wide **LIFE** values, the [Bayer Sustainable Development Policy](#) and our [Corporate Compliance Policy](#) require all employees worldwide to treat colleagues, business partners and customers with respect.

In 2008, we launched an information campaign on human rights in German-speaking countries. By the start of 2011, this had been rolled out to all countries in which the Group operates. A brochure and a training presentation are used to familiarize employees throughout the Group with the objectives and content of our Human Rights Position and train them to respect these principles in their daily work. There is also an obligatory module on human rights in "Discovering Bayer," the mandatory e-learning tool for new employees, and we run training courses and seminars on this issue throughout the world. Our companies in China have decided to introduce a special online training program for their employees on respecting human rights.

Targets 2015

Diversity

- > Increase the proportion of female managerial staff to approaching 30%

Occupational safety

- > Reduce the number of occupational injuries with lost days by 25% to 0.3 LTRIR \pm 1.5 MAQ

75 BAYER WEB
Sustainable Development
Policy

76 BAYER WEB
Corporate Compliance
Policy

Responsible conduct and collaboration

Employee representation is part of Bayer's commitment to responsible conduct and collaboration. The working conditions of more than half of our employees are governed by collective or company agreements. For example, staff working for Bayer Group companies in China already have elected union representation at six sites, with three more to follow shortly. [Table 6](#)

In the United States, there is a Bayer ombudsman instead of collective agreements. The ombudsman is independent and handles information objectively and confidentially. He is personally responsible for assuring open communication and a culture of trust, and helps implement our high standards of integrity and ethical corporate governance.

A modern corporate culture

Central elements of our human resources policy are systematically motivating employees and steadily developing their abilities. Last year, we gained an important insight into this

through our first ever global employee survey. Around 70 percent of employees took part in this anonymous survey, so we received feedback from more than 68,000 employees worldwide.

Our employees were asked 60 questions on aspects ranging from current morale and corporate culture to development perspectives and decision-making processes. They were also requested to give their opinion on their workload, compensation and general satisfaction. The findings were discussed on several occasions by the Group Management Board.

The outcome shows, for example, that 87 percent of employees identify strongly with Bayer and regard it as an attractive employer. 81 percent of employees are highly motivated: their commitment to the company and its performance is above-average. We also received a number of [awards](#) worldwide in 2010 that confirm these views and our attractiveness as an employer.

Our employees' understanding of our corporate strategy and the ratings received for strategic leadership were below the top scores at other companies. In fact,

77 ONLINE REPORT
Awards

5_Employees* by region and function

	2006**	2007**	2008**	2009	2010
Europe	57,800	56,200	55,500	54,600	54,300
North America	17,200	16,800	17,000	16,600	16,400
Latin America/Africa/Middle East	13,700	14,300	15,300	16,800	16,100
Asia/Pacific	17,300	18,900	20,800	23,000	24,600
Production	47,800	48,800	49,100	48,400	47,200
Sales	37,400	36,900	38,000	40,200	41,100
Research and development	12,300	11,600	12,300	12,800	13,200
Administration	8,500	8,900	9,200	9,600	9,900
Total	106,000	106,200	108,600	111,000	111,400

* The number of employees on either permanent or fixed-term contracts is stated in full-time equivalents, with part-time employees included on a pro-rata basis in line with their contractual working hours.

** The figures for 2006 – 2008 included employees on temporary contracts rather than trainees.

6_Percentage of collective agreements in 2010 by region

Region/Area	Europe	North America	Latin America/Africa/Middle East	Asia/Pacific	Bayer Group (total)
Percentage of employees covered by collective agreements, especially on compensation and working conditions*	88	8	46	20	55.4
Percentage of full-time employees with contractually agreed working weeks of max. 48 hours**	100	100	100	100	100

* Collective or company agreement

** Standard employment contracts, excluding exempt employees

leadership is one of our new LIFE values, with the “L” naturally standing for leadership (see page 34).

The second area where we need to take action is the communication of our strategies and objectives. The holding company and subgroups have set up a joint task force to examine how understanding among the workforce in this area can be improved. It is expected to present its initial results shortly.

Transparent and efficient employee communication

Providing regular and timely information for employees is very important to us. Printed

during the event. These are then answered directly.

Bayer provides employees with regular internal information on current developments, both within the Group and outside, together with background information. Full and timely information is issued on significant operational changes in compliance with the relevant national and international requirements. Far-reaching changes are communicated to employees through a wide range of carefully coordinated media. Special information meetings held by the management are another important communication channel.

Our social responsibility for our employees

Social responsibility is an important element in our corporate policy. Nearly all of our employees either have statutory health insurance or can obtain health insurance through the company. Around three-quarters of Group employees also have access to some form of company pension plan. The directive on occupational pension provision in the Bayer Group in place since July 2010 confirms the enormous significance of company-financed pension plans, both in positioning Bayer as a preferred employer and as part of our responsibility to our employees. In 2010, we therefore introduced nationwide pension plans for our Group companies in Russia and Turkey for the first time. [Table 7](#)

Employee compensation and benefits

Through a uniform compensation system for employees around the world, Bayer creates transparency and ensures performance-based remuneration and incentivization of employees. We are able to offer our employees basic compensation that takes account of their tasks and level of responsibility, at the same time analyzing the compensation offered by our competitors. This is supplemented by attractive performance and profit-related components and extensive additional benefits. For 2010, Bayer allocated more than €500 million to provisions for payments to eligible employees under its short-term incentive (STI) program alone. In addition, employees can purchase shares in the company on special conditions under a variety of [employee stock programs](#). In many countries, these are part of the regular fringe benefits and offer employees a further opportunity to participate in the company's business performance.

Members of the senior and middle management also benefit from the “Aspire” program, a uniform, Group-wide stock-based compensation program introduced in 2005. It is based on ambitious earnings targets and – in the case of Group Leadership Circle

Dialogue

Employees ask the CEO

Since December 2010, employee communication at Bayer has included a new “Ask the CEO” option. Group employees can submit questions personally to Dr. Marijn Dekkers, Chairman of the Board of Management of Bayer AG: any employee can post a question in the intranet via the Bayer News Channel. All employees worldwide then vote on what they consider to be the most interesting questions. Out of these, the most frequently asked questions are submitted to Dr. Dekkers. This new communication format underscores Bayer's pledge to engage in open and direct dialogue with all employees. The topics are chosen by members of the workforce. Within a very short time, more than 300 proposals were submitted, ranging from questions on the Group's strategic focus to the advancement of talented employees in the subgroups. Examples from the “Ask the CEO” initiative can be viewed on the intranet.



78 ONLINE REPORT
[Ask the CEO](#)

publications still play a significant role in this throughout the Group. Alongside Group-wide publications, our subgroups and service companies regularly publish their own employee magazines.

Some changes were made to our online corporate media last year. The global employee portal HR//direct online was redesigned in December 2010 and offers employees a new and improved range of services. Bayer CropScience is to continue the live online broadcasts launched in 2010 of its Management Information Forum, a regular information event for managerial staff. With the aid of an electronic live-talk system employees can ask questions online

79 BAYER WEB
[Employee stock programs](#)

members – requires an appropriate personal investment in Bayer stock (see also page 224ff. of the Annual Report 2010).

Accepting and fostering diversity

As a global enterprise, Bayer aims to have a diverse and international workforce. For example, a total of 21 nations are represented in the Group Leadership Circle, the company’s most senior management level. More than two-thirds of these executives are native to the countries in which they work. We intend to further increase the proportion of local managers in the coming years, especially in fast-growing emerging markets. [Table 8](#)

Our employees have a wide variety of talents, lifestyles and social and ethnic backgrounds. Accepting and fostering this diversity is a keystone of Bayer’s future business success.

The [Declaration on Diversity at Bayer](#) adopted in 2007 underscores this conviction. It has two main objectives: our workforce should reflect the diversity of society, and employees throughout the Group should be able to contribute their abilities without discrimination or prejudice based on gender, race, religion or sexual orientation. Selection of personnel to fill vacancies throughout the Group is based exclusively on specialist expertise, development potential and individual performance.

As in 2009, this principle is supported by a range of networks, especially in the United States. These give like-minded employees a platform for discussion and to represent their interests within the Group. The latest of these is the ProMoms Employee Networking Group at Bayer HealthCare in the United States, which provides a discussion and support forum for working mothers. It has also set itself the objective of fostering the professional development of mothers within the company. In the past, “Angle-B,” a network of gay and lesbian employees, played a key role in improving Bayer’s directives on anti-discrimination and equal opportunities in the United States. An overview of [employee networks](#) is available online.

More women in management

Increasing the proportion of women working for the company and especially the percentage of female managers is another key aspect of our medium-term endeavors to increase diversity. Group-wide, the proportion of women in our workforce was around 35 percent in 2010. Women accounted for around 37 percent of skilled employees and nearly 31 percent of trainees.

Bayer aims to raise the [proportion of women](#) ([Target, p. 34](#)) in the top five contract levels across the Group to approaching 30 percent by 2015. At present, women only account for around 21 percent of the Group’s worldwide management team. At the most junior management level, in other words the entry level

81 ONLINE REPORT
[Employee networks](#)

80 BAYER WEB
[Declaration on Diversity at Bayer](#)

Targets 2015
Diversity, p. 34

7_Health insurance and pension plans for employees in 2010 by region (percent)

Region/Area	Europe	North America	Latin America/ Africa/ Middle East	Asia/ Pacific	Bayer Group (total)
Percentage of employees with health insurance*	97	90	93	90	94
Percentage of employees eligible to take part in a company or company-financed pension plan**	85	92	25	70	74

* State or employer/employee-funded

** Including programs to supplement statutory pension plans

8_Bayer Group workforce structure

	Women	Men	Total 2010
Senior management (incl. Group Leadership Circle)	200	1,200	1,400
Management	10,000	20,900	30,900
Skilled employees	29,100	50,000	79,100
Trainees	800	1,800	2,600

News

Discrimination of women: Bayer rejects claims in the United States

In March 2010, a lawsuit was filed against Bayer in the United States. The allegation was that Bayer HealthCare Pharmaceuticals had discriminated against certain female employees because of their gender. The company denies the allegation of gender discrimination and will defend itself vigorously against it. The Bayer Group is committed to the non-discrimination and equal treatment of all employees and has issued clear directives which have to be complied with by all companies and their workforces. Employees have various options open to them for obtaining support for their concerns. There are also various initiatives for promoting diversity and the equal treatment of employees in the company. Bayer has been honored on numerous occasions for these activities.

for young academics, around 35 percent of employees are female. That is a pleasing proportion and makes us optimistic that we will see far more talented women at higher management levels in a few years. At the most senior management level, the Group Leadership Circle, the proportion of women Group-wide was 6.5 percent, 1 percent more than in 2009. We also aim to raise the proportion of women on the Supervisory Board to at least 20 percent in the medium term.

Bayer HealthCare, the subgroup with the highest proportion of female employees, namely around 45 percent, also has the largest number of employees overall. This subgroup has particularly wide-ranging programs to foster the development of female employees.

The remuneration of men and women is a central aspect of equality of opportunity. At Bayer, equality naturally applies to the remuneration of employees. Individual salaries are based on each employee's personal and professional abilities and the level of responsibility assigned to them. At all managerial levels, this is based on uniform evaluation of all positions throughout the Group using the internationally recognized Hay method.

In areas of the Group and jobs that fall within the scope of binding collective bargaining agreements, there are no

differences in pay based on gender. This also applies to the remuneration of trainees in the Bayer Group.

Flexible working hours

Flexible worktime arrangements often play a key role in helping employees balance work with personal or family life. In many countries, Bayer offers its employees a wide range of opportunities to vary their working hours. These range from flexible worktime models and part-time employment through teleworking to additional leave and the provision of child care for employees with children. For example, at our main companies in Germany almost 73 percent of non-managerial employees are able to shape their working hours flexibly to meet their personal needs. In Germany, we also offer around 410 places for employees' children in child care facilities.

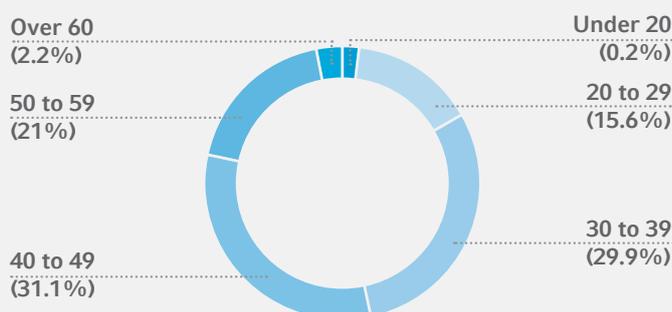
Addressing the effects of demographic change

We use a wide range of measures to address the challenges posed by demographic change, especially in many industrialized countries. [Table 9](#)

Since 2007, the Bayer Group has conducted extensive analyses of the age structure of the workforce as the basis for predicting its development up to 2020. This systematic procedure shows that we have recognized the

82 ONLINE REPORT
Programs to foster the development of women at BHC

9 Age structure of workforce in 2010



trend, take its repercussions seriously and are planning appropriate measures. Although we do not face an acute shortage of skilled staff at present as we still have a large number of trainees and are regarded as a very attractive employer by external specialists, retaining the often valuable experience of older employees in the company and ensuring that it is passed on to the up-and-coming generation are very important to us. Moreover, it will become even more fundamental in the future in the face of demographic change. Passing on knowledge from the older to the younger generation is one of the aims of the Bayer Senior Experts Network, known as [BaySEN](#) for short.

These measures to address the challenges of demographic change are supplemented by the ongoing expansion of occupational health management. You can read more about this in “Contemporary health management” on page 41.

Integration and support for disabled employees

Integrating and supporting disabled employees is another significant issue for Bayer worldwide. We employ people with disabilities in many countries. Most of them work for our companies in Germany, where they make up 4.4 percent of the workforce. This high proportion is due to the particularly widespread integration of people with disabilities in Germany. At most of our German companies, there is a special advisor to support disabled employees and represent their interests.

Traditionally, advocacy of people with disabilities has been particularly strong in the United States. Since 1999, our U.S. headquarters in Pittsburgh has run a program to foster the training and employment of people with disabilities. In 2010, Greg Babe, President of Bayer Corporation, who initiated the program, received the Justice for All Award from the American Association of People with Disabilities for his long-standing efforts on behalf of the disabled.

Vocational and ongoing training

Bayer hired around 4,000 university graduates for specialist and managerial positions in 2010. More than 750 university graduates were recruited in India, around 700 in Germany and over 350 in the United States. These figures show that university graduates around the world rate Bayer as an attractive employer. That was confirmed by various surveys and a range of awards, for example for the [Bayer careers portal](#). Diversity, a modern working environment, international career prospects and social commitment are just some of the factors that make Bayer an attractive employer.

[Vocational training](#) of young men and women is one of the most important ways of countering a possible shortage of skilled workers as a result of demographic change. Worldwide, we had more than 2,600 trainees in 2010. In Germany alone, we again took on more than 900 young people on courses leading to more than 20 vocational qualifications. Group-wide, we had about 100 fewer trainees than in 2009. Reasons included the reorganization of vocational training at our subsidiary Bayer Bitterfeld. Since May 2010, trainees on certain courses at Bayer have been given an opportunity to broaden their horizons through exchange programs that give them an insight into work at other sites. More information on the [perspectives](#) of trainee pharmaceutical technicians, animal caretakers and safety & security specialists can be found online. [Table 10](#)

To alert high school graduates and students to career opportunities at Bayer at an early stage, we expanded our already extensive university recruiting activities in 2010 by placing corporate presentations on social networking sites. In addition, we once again offered more than 2,700 interesting internships to students from a variety of disciplines in 2010.

Ongoing training and personnel development

The ongoing training of our employees plays a key role in our human resources strategy. Our goal is to foster the development of employees' potential as effectively as possible and to align their vocational skills and knowledge to the changing demands of our business. The central focus is on acquiring, extending and maintaining professional knowledge. In 2010, we invested more than €130 million in the initial and ongoing training of Bayer Group employees. That was 4.1 percent more than in 2009. However, training costs as a percentage of personnel expenses decreased slightly to 1.8 percent because personnel expenses were higher than in 2009. [Table 11](#)

Our [training programs](#) are broadly based, reflecting the widely varying training and development needs of our employees.

Occupational health and safety

Avoiding accidents and protecting the health of our employees in the workplace are two of our prime objectives. That includes identifying and assessing potential hazards, extensive risk management and ensuring a healthy working environment. Our health, safety, environmental protection and quality (HSEQ)

84 BAYER WEB
[Vocational training](#)

85 BAYER WEB
[BaySEN](#)

86 ONLINE REPORT
[New perspectives in training](#)

87 ONLINE REPORT
[Training programs](#)

83 BAYER WEB
[Bayer careers portal](#)

88 WWW
Responsible Care
Global Charter

89 ONLINE REPORT
Special programs,
measures and training
for occupational safety

90 ONLINE REPORT
Health promotion
activities and programs

Targets 2015
Occupational safety, p. 34

activities support the [Responsible Care Global Charter](#), a voluntary global initiative of the chemical industry. Our objectives are to minimize the risks to people, the environment and the company and to integrate HSEQ management into our business strategies and processes.

Worldwide, our endeavors center on making working at Bayer even safer. In line with this, we have issued Group-wide directives on occupational health and safety. In addition, the subgroups and service companies have their own systems, committees and working groups to manage HSEQ.

Further reduction in occupational injuries

One pleasing improvement in 2010 was a further reduction in Bayer’s lost time injury frequency rate. The steady downward trend seen in recent years continued. The table shows the lost time injury frequency rate in past years in terms of the MAQ, which indicates the number of occupational injuries per million hours worked. The ratio of 1.7 is well within our target, which was to achieve a level of less than 2.0. Action taken by the subgroups and service companies made a considerable contribution to this good performance. [Table 12](#)

We also track injuries to Bayer employees requiring medical treatment. This indicator shows both injuries resulting in lost worktime and those that do not lead to this. In 2010, this overall measure of all reportable injuries, which is also based on injuries per million hours worked (MAQ), was unchanged from the previous year at 3.1. Our objective is to reduce our [occupational injury rate \(Target, p. 34\)](#) to 1.5 MAQ (± 0.3 LTRIR) by 2015. More information on the reporting of occupational injuries can be found on page 68.

An analysis showed that most accidents happened while employees were walking, running, climbing stairs or engaged in

manual work. As in previous years, incidents involving chemical exposure were the exception. Our goal is to reduce injuries further through a wide range of [special programs, measures and training](#) so we can offer our employees a safe and healthy workplace.

Sadly, there were four fatal accidents involving Bayer employees in 2010. Two employees died in traffic accidents in India and Poland. One employee fell off a stationary trailer in China and sustained fatal head injuries, and one person died in a fire at our production facilities in Ankleshwar, India. It is our policy to investigate every accident thoroughly so we can define measures to prevent a similar accident occurring in the future.

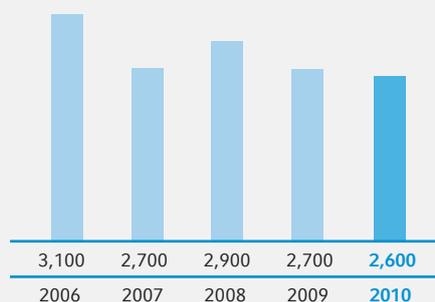
Contemporary health management

One significant and steadily growing aspect of human resources policy at Bayer is preventive health care and health-related advice for employees. We offer a wide range of programs to foster and enhance the health and working ability of our employees, especially as in the future employees in many parts of the world will have to work until they are older.

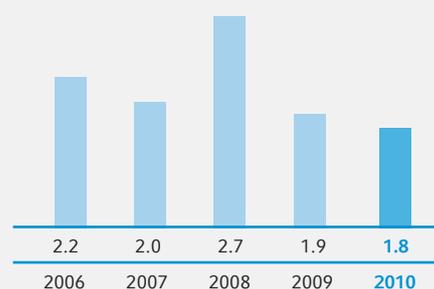
Bayer’s offering includes a broad array of [health promotion activities and programs](#) for employees in more than 30 countries. The focus and scope of these programs depends on the specific needs of the local workforce. The spectrum ranges from free vaccinations and regular check-ups, through in-house and external sports programs and health-related advice to the provision of in-house physicians and medically supported reintegration of employees after a prolonged period of illness.

In 2010, Bayer signed a collective agreement on life worktime and demographic change in Germany. Under this program, the company offers non-managerial employees an extensive medical check-up. The

10_Trainees



11_Vocational and ongoing training expenses
as a percentage of personnel expenses



News

Bayer launches new health promotion program

In January 2011, Bayer sent out the first personal letters inviting just under 2,000 employees in Germany to take part in the company's new health promotion initiative. Employees who take up this offer will receive an extensive medical check-up to give them a sound insight into their health situation and personal risk factors, together with advice on preventive care. The health care offering is part of the collective agreement on life worktime and demographic change that was entered into at the end of 2010 for 21,000ayscale employees and managerial staff.

agreement also significantly reduces the individual workload on specific employee groups in the years prior to retirement.

Employees at the Pittsburgh site in the United States were offered the "Wellness Works" program during its test phase. This program, which aims to identify health risks and promote a healthier lifestyle, was rolled out nationwide at the end of 2010. Moreover, special WorkLife programs are offered in the United States to help employees achieve a balance between family and private life and the demands of their work.

Alongside these initiatives to maintain and enhance the health of our employees, we offer supplementary private health insurance to our employees, especially in countries where

there are shortfalls in the public health care offering. The scope of such programs is regularly reviewed and extended. For example, the supplementary insurance programs offered to employees and their families in Central America, Thailand and Vietnam have been upgraded as a result of a review.

The health of members of the workforce is extremely important for a global company like Bayer. We therefore keep our employees informed about current health risks in other parts of the world and provide advice on how they can protect their health. The Group has a dedicated directive which defines the action to be taken in the event of pandemics since these tend to bring new and unforeseen health risks.

12_Occupational injuries affecting Bayer employees

	2006	2007	2008	2009	2010	Target 2010
Occupational injuries to Bayer employees resulting in days lost (MAQ**)	2.8	2.4	2.2	2.0	1.7	< 2.0 ✓
Reportable occupational injuries to Bayer employees (MAQ**)	4.3	3.7	3.6	3.1	3.1	
Fatal accidents (total)	9	4	2	4	4	
– of which Bayer employees	5	4	2	4	4	
– of which contractor employees***	4	0	0	0	0	

* LTRIR = lost time reportable incident rate, 0.3 LTRIR \leq 1.5 MAQ, see page 68

** MAQ = million working hour quota (injuries per million hours worked)

*** Employees working for third parties

Target 2015

0.3 (LTRIR)*

Innovation and Products

Research and innovation play a key part in **overcoming global challenges** in the areas of climate, nutrition and health care. They are also driving forward the **sustainable development** and **future growth** of Bayer. At the same time, our **top priorities** are **environmental protection and the health and safety** of everyone who handles our products.



Innovations in health care: Dr. Georg Grötzbach and Dr. Andreas Sachse (from left) conduct research on VEGF Trap-Eye. The preparation blocks the natural growth factor VEGF and is currently being tested in various indications for eye diseases, e.g. wet age-related macular degeneration.

For Bayer, innovative capability means demonstrating to the global market that we have a competitive edge through our research and technology excellence and through innovative products. Being closely aligned to market needs, our research and development activities are subject to a continuous process of adaptation. We work to steadily expand our product portfolio and optimize our production processes. Of the utmost importance to us in this connection are the safety and compatibility of our products for people and animals and the protection of the environment. Product innovations are aligned closely to the businesses in the subgroups – supported by Bayer Technology Services as a technological center of expertise for processes and plants.

More ideas through networked thinking

Excellence and internationalization are of outstanding importance as a basis for all innovations. The company's research activities are therefore supplemented by an international network of collaborations with leading universities, public-sector research institutes and partner companies. An increasingly important role is being played at Bayer by research projects realized through this "open innovation" approach. Projects are undertaken in collaboration with a range of partners from all stages in the value chain. Such research collaborations are partly supported through public funding. This makes it easier for the company to decide in favor of future-oriented, high-risk trends. Overall, Bayer was involved in around 100 projects in Europe in 2010, for which it received total public funding of around €16 million. This corresponds to about 0.5 percent of the company's research and development expenses. An overview of Bayer's global research activities can be found on page 101ff. of our Annual Report 2010.

Research and development

Research and development (R&D) expenses at Bayer reached an all-time high in 2010, namely more than €3 billion. This is equivalent to 8.7 percent of the Bayer Group's sales. Some 13,200 people were employed in R&D in 2010. The pharmaceutical developmental pipeline of Bayer HealthCare is well stocked, with 46 innovative projects currently in Phases I to III of clinical testing. Bayer CropScience too is focusing on growth through innovation. Six new products are scheduled to be launched by 2012. And Bayer MaterialScience in 2010 generated more than 20 percent of its sales with products introduced to the market within the past five years. [Table 13](#)

Targets 2015

Research & development

- > Maintain or increase R&D spending in relation to sales

Product stewardship

- > Roll out Global Product Strategy in another 10 countries with different languages

91 ONLINE REPORT
Expert Career

92 ONLINE REPORT
Triple-i

Patents: protecting intellectual property worldwide

As an inventor company, Bayer is dependent on reliable global protection of its intellectual property. Without patent protection, it would not be possible to cover the considerable costs incurred in the search for new solutions and to come up with funding for further innovations in the long term. Patented products and technologies account for around 40 percent of the sales generated by each of our three subgroups. We are therefore actively committed to promoting patent protection around the world in general and to protecting our own intellectual property specifically.

From the end of 2008 to the end of 2010, Bayer was in conflict with the Indian drug registration agency Drug Controller General of India. Despite existing patent protection, this agency processed an application by an Indian company for the registration of a generic copy of our cancer drug Nexavar™ and ultimately granted marketing authorization for this in March 2010. At the end of 2010, Bayer’s final appeal to the Supreme Court of India was rejected on the grounds that the legal issue raised by Bayer was invalid owing to marketing authorization having already been granted. The question of the legitimacy of the Indian agency’s action thus remains unresolved for the time being. To prevent the marketing of the generic copy of Nexavar™, Bayer filed a patent infringement case in March 2010. Notwithstanding this, the generic copy has been marketed since April 2010. The reason for this is that in contrast to Europe and the United States, there is no protection for the documentation required for approval procedures in India so that generic manufacturers can use this directly. Bayer must therefore take out a court injunction against every single distributor to prevent the marketing of imitation products approved before the expiration of a patent. This is enormously time-consuming and costly, and shows that there is still room for improvement between existing patent protection and its enforceability in India.

Bayer supports the development of industrial property rights and trademark rights in China by funding a professorship for industrial property rights (IPR Chair) at Tongji University in Shanghai and an annual IPR forum on current issues surrounding the protection of intellectual property.

Biotechnology and nanotechnology as innovation engines

Biotechnology and nanotechnology are regarded as key technologies of the 21st century, harboring tremendous innovation potential for a variety of economic sectors and user industries.

Future-oriented research and production in the area of pharmaceuticals and plant technology would be unthinkable today without the use of biotechnology. Plant biotechnology can help to improve the yield and stress resistance of plants – and thus to increase harvest yields – through both genetic engineering and non-genetic engineering methods of precision breeding. Biotechnology has become increasingly important in recent years in pharmaceutical research and production as well.

Two of our best-selling products – the multiple sclerosis drug Betaferon™/Betaseron™ and the hemophilia treatment Kogenate™ – are manufactured in biotechnological processes. The applied process technologies are bacterial fermentation, yeast fermentation and mammal cell cultures. A further biotechnological process can generate potential drugs derived from the use of plants – known as “plant-made pharmaceuticals.” Our development candidate VEGF Trap-Eye for the treatment of wet age-related macular degeneration is also produced in a biotechnological process. The expansion of our biologicals research underscores the company’s willingness to invest in this area: in December 2010, ground was broken in Wuppertal on a new pilot plant. The total capital expenditure volume for this project is €35 million.

13_Research and development expenses* (€ million)

	2006	2007	2008	2009	2010
Total	2,297	2,578	2,653	2,746	3,053
of which Bayer HealthCare	1,426	1,700	1,742	1,847	2,066
of which Bayer CropScience	614	637	649	653	722
of which Bayer MaterialScience**	227	209	221	207	231
of which reconciliation***	30	32	41	39	34

* Figures for 2006–2009 as last reported
 ** Excluding R&D in collaboration with customers
 *** Not directly allocated to the subgroups; mainly expenditures of the service companies

93 BAYER WEB
Position on the
Responsible Use
of Gene Technology

94 BAYER WEB
Bayer's Position on
Nanotechnology

Safety is our top priority in the use of biotechnology. Bayer addresses consumers' concerns about genetically modified organisms and respects their right to information and freedom of choice when purchasing products. Beyond the observance of all relevant legal provisions, we have developed our own [Position on the Responsible Use of Gene Technology](#) and specific regulations in the subgroups and service companies. Before any product reaches market maturity, it is subjected to a stringent approval process to determine whether it is safe for people, animals and the environment. In 2010,

product solutions in many areas of Bayer. It enables us to develop materials and components for many applications that offer improved properties, functions and levels of performance. As nanotechnology is a relatively new technology, a sound, scientific risk analysis of the manufactured nanomaterials is particularly important to protect health and the environment. We have summarized our principles for the handling of nanotechnology in [Bayer's Position on Nanotechnology](#). This position applies throughout the Bayer Group, including for the handling of nanoparticles at Bayer HealthCare. Areas of application for nanotechnology at Bayer MaterialScience are presented from page 52 onwards.

Dialogue

"Fewer animal studies through new testing methods"

Active ingredients and chemicals are often tested in animal studies. At Bayer AG's invitation, toxicologist Professor Thomas Hartung traveled to Leverkusen for a discussion with experts from Bayer. Hartung heads up the Center for Alternatives to Animal Testing at John Hopkins University in Baltimore, Maryland, which is one of the leading research institutes in the United States. "In recent years, it has been possible to completely replace some animal studies," says Professor Hartung, explaining the aim of his center. "We work intensively to develop alternative methods. Here we focus above all on systematically combining processes." The scientist believes that new technologies will further reduce the number of animal studies in the future. For example, activities using human cell cultures and computer simulations could replace certain components of animal studies.



Professor Thomas Hartung, John Hopkins University, Baltimore, United States

96 BAYER WEB
Animal welfare and
animal studies

95 WWW
Biotechnology industry
association

97 WWW
EPAA

98 WWW
SET

Bayer CropScience continued its activities in the context of the "Excellence Through Stewardship" program, a voluntary initiative by industry to implement product stewardship and quality management processes in connection with plant biotechnology. As a member of the [German biotechnology industry association BIO Deutschland](#), Bayer CropScience works – in accordance with that organization's product launch policy – to minimize the risk of trade disruptions that could result from the commercial cultivation of biotechnological plant products. The Bayer HealthCare subgroup has established strict production safety measures in its Directive on Biological Safety and its "Requirements for the safe handling of biological agents" procedure.

Nanotechnology has relevance throughout the company and can contribute to sustainable

Bayer takes animal welfare seriously

As a research-based company, we investigate the effects of our products on people, nature and the environment. In this connection, animal studies are scientifically essential and statutorily prescribed. In the research of new active pharmaceutical ingredients as well, animal studies are only replaceable to a certain extent. All studies carried out by Bayer adhere to three basic principles: first, animal studies should be replaced by alternative methods wherever possible. Second, only as many animals are used as are needed to achieve scientifically meaningful results based on statutory requirements. And third, animal studies must be carried out as humanely as possible. Thus we adhere to the so-called 3R (replace, reduce, refine) principles. Here, we also include in this commitment both the research institutes contracted to us and our suppliers, whose compliance with our animal welfare requirements we regularly monitor. The most recent figures and further information on [animal welfare and animal studies](#) can be found on our dedicated Internet site.

In 2010, we established a Global Animal Welfare Committee to monitor the observance of our "Bayer principles on animal welfare and animal studies" within the Bayer Group and in external studies. Among the members of the committee are the animal welfare officers at our research sites and further Bayer experts. We are also active in initiatives such as the [European Partnership for Alternative Approaches to Animal Testing \(EPAA\)](#). Furthermore, we support the [Foundation for the Promotion of Alternate and Complementary Methods to Reduce Animal Testing \(SET\)](#).

Product stewardship at Bayer

Bayer believes that product stewardship involves the comprehensive assessment of health and environmental risks along the

entire value chain – from product research and development through production, product marketing and application to disposal. Here, we also take into account the [precautionary principle](#) as defined by the United Nations and the European Commission.

Since 1994, we have participated in the voluntary [Responsible Care](#)[®] initiative of the chemical industry and its revised Responsible Care Global Charter. Bayer's new Management Board Chairman, Dr. Marijn Dekkers, reiterated this commitment in 2010. The [Global Product Strategy \(GPS\)](#) is an important part of this charter. An initiative of the International Council of Chemical Associations (ICCA), this is designed to improve knowledge about chemical products, particularly in emerging and developing countries. Bayer plans to roll out the [Global Product Strategy \(Target, p. 42\)](#) in another 10 countries.

All major elements of the Responsible Care Global Charter are addressed by our HSEQ management systems and activities. In this context, our products are continuously assessed with regard to new findings, their hazard potential and possible risks, and a suitable risk management policy is implemented that includes communication of risks. We evaluate individual products with the help of the Bayer Sustainability Check.

Our activities as regards process, plant, occupational and transport safety are described in the Employees (page 34ff.) and Ecology (page 54ff.) sections.

We are also involved internationally in associations and political initiatives for the further development of scientific risk assessment. We have compiled an online overview of our [international commitment to product safety](#).

Data compilation and labeling

The safe handling and use of our products lie at the focus of our activities, which include in particular transparent communication and distribution of our product safety information. All subgroups compile product information enabling them to meet the respective product safety and information obligations for raw materials, intermediates or end products. This data compilation is updated accordingly whenever new legal requirements are established.

Bayer HealthCare further expanded its substance databases worldwide in 2010 to further improve the accessibility of data for the assessment of possible environmental and health hazards.

Bayer CropScience uses the "E-Label Server" to record data for all products marketed in Europe and parts of Asia, South America and Africa. In 2010, the global roll-out focused on Vietnam, Thailand, Indonesia,

Malaysia and the Philippines. Furthermore, the External Adverse Incident Guideline governs the internal reporting channels worldwide for incidents involving products of Bayer CropScience.

Bayer MaterialScience also maintains a global product safety database. Bayer MaterialScience is prepared to deal with potential incidents involving its products thanks to regulations covering product surveillance and recall management.

Since 2007, we have operated in accordance with the European chemicals regulation [REACH \(Registration, Evaluation, Authorization and Restriction of Chemicals\)](#). This regulation revises chemicals legislation within the E.U. REACH affects all activities by Bayer as a manufacturer, importer and user. In 2010, we met the statutory deadline by registering 125 substances that we produce or import in volumes of more than 1,000 metric tons annually or that are particularly hazardous. Currenta's Analytics Business Unit and the Toxicology and Process and Plant Safety departments play a key role in helping us to register and test these substances. Group-wide and subgroup-specific directives provide assistance in all areas in coping with the volume and complexity of the REACH policy requirements. As we also use products from other manufacturers, we require our suppliers to confirm compliance with REACH for these products. REACH also involves an authorization procedure with a substitution obligation that will lead to the replacement or prohibition of hazardous substances. The first official list of substances requiring authorization and the substances earmarked for the second list were published on February 17, 2011. The authorization process will thus be applied this year for the first time. According to the current state of knowledge, Bayer does not need to apply for any authorizations.

The [Globally Harmonized System of Classification and Labeling of Chemicals \(GHS\)](#) came into effect in Europe in 2009 and in China and several other countries in 2010. Implementation of the GHS is coordinated at Bayer by a Group-wide working group. By the deadline of November 30, 2010, we had registered with the European Chemicals Agency (ECHA) all substances marketed by us in the European Union that require classification according to the GHS. Having notified the agency of more than 1,000 substances, we will inform the agency of all GHS-relevant mixtures by May 31, 2015.

Protection against counterfeit products

Bayer is active in the fight against illegally marketed or counterfeit pharmaceuticals and crop protection products. Such products can present considerable dangers to people and

99 ONLINE REPORT
[Precautionary principle](#)

100 BAYER WEB
[Responsible Care](#)

101 WWW
GPS

102 BAYER WEB
GPS

103 WWW
REACH

Targets 2015

Product stewardship,
p. 42

104 ONLINE REPORT
[International commitment to product safety](#)

105 WWW
GHS

the environment due to properties such as their uncontrolled composition. Bayer actively proceeds against product counterfeiting so as to minimize negative effects on the health and lives of unsuspecting patients, customers or users.

In the campaign against counterfeiting, Bayer HealthCare cooperates closely with the responsible authorities and is actively committed to the development of a system to combat product piracy. Through the Internet campaign “Beware of Counterfeits” we systematically inform patients about the risks of pharmaceutical counterfeiting to protect them against the acquisition and use of pirated products. Among the information users will find here are important details on how to distinguish original products from counterfeits. The rate of counterfeit products in the crop protection market lies between 5 and 7 percent. Bayer CropScience (BCS) therefore supports the fight against illegal crop protection products both with its Product Defense Network and through the support of regional and global association committees such as the [Anti Counterfeiting Expert Group of the European Crop Protection Association \(ECPA\)](#) and the [Anti Counterfeiting Steering Committee of CropLife International \(CLI\)](#). Our Product Defense Team cooperates intensively with national and international authorities, which led to numerous confiscations of counterfeit products and the prosecution of the counterfeiters in a number of countries in 2010. In connection with CLI’s “Know Your Customer” campaign, BCS launched an initiative aimed at preventing the transport of counterfeit products by more closely inspecting freight and customers in collaboration

with shipping companies, among other measures.

Bayer CropScience also works not only to strengthen existing legislation, but also to expand laws and provisions dealing with the identification and confiscation of illegal crop protection products.

Here, the company supports initiatives of the ECPA and CLI aimed at providing information and training for dealers, farmers and governmental agencies through anti-counterfeiting training materials (manuals, workshops).

In 2010, BCS’s Packaging Technology Department presented a new packaging design intended to transform generic industrial packaging into Bayer-specific, counterfeit-proof packaging. Furthermore, communication of the potential risks and dangers of illegal crop protection products in the media was significantly intensified in the reporting period.

Innovation for health – Bayer HealthCare

Bayer HealthCare is a health care company with global research activities that develops products in the areas of Pharmaceuticals, Consumer Care, Diabetes Care and Animal Health. These four areas account for two thirds of Bayer’s R&D expenses. Three current examples can be found in the table below.

Our research follows a long-term strategy of developing therapeutic options for currently unmet medical needs. To achieve this, we undertake to use innovative technologies responsibly. This also applies to the development of drug products to treat diseases that are both

106 BAYER WEB
Beware of Counterfeits

107 WWW
ECPA

108 WWW
CropLife

Sustainable innovations at Bayer HealthCare

The anticoagulant Xarelto™

The orally administered anticoagulant Xarelto™ (containing rivaroxaban) targets the blood clotting process and inhibits the activity of the Factor Xa enzyme, which plays a key role in the formation of a thrombosis. The product is already the most thoroughly investigated Factor Xa inhibitor in clinical development, and the study program is planned to include more than 65,000 patients overall.

Fighting tumors with Alpharadin

Scientists at Bayer HealthCare are now testing a new active ingredient that is designed to more accurately target bone metastasis in advanced prostate cancer: alpharadin, an alpha radiation substance, can be easily administered intravenously and finds its way into the skeleton within 10 minutes owing to its similarity to calcium.

Riociguat for pulmonary hypertension

Riociguat is an innovative, orally administered substance currently being investigated in Phase III trials as a potential new treatment approach for pulmonary arterial hypertension (PAH) and chronic thromboembolic pulmonary hypertension (CTEPH), two life-threatening forms of pulmonary hypertension. Riociguat is the first member of a novel class of medicines that stimulate the enzyme soluble guanylate cyclase (sGC).

News

Orphan Drug Designation for Bayer medicines

The U.S. Food and Drug Administration (FDA) classified Bayer Health Care's development candidate regorafenib as an "orphan drug" (drug for rare diseases) in February 2011. The drug for treating patients with gastrointestinal stromal tumors (GIST) is currently undergoing Phase III clinical testing. The FDA classification "orphan drug" is designed to promote the development of drugs for diagnosing, preventing and treating rare diseases that affect less than 200,000 people in the United States. The classification as an orphan drug guarantees the drug exclusive access to the U.S. market for a period of seven years. In March 2010, the FDA also classified the ciprofloxacin dry powder inhaler for the treatment of chronic lung infections with *Pseudomonas aeruginosa* in cystic fibrosis patients as an orphan drug. This is currently in Phase II of development. More information on our [clinical trials](#) can be found on the Internet.

110 BAYER WEB
Clinical trials

severe and very rare – also known as "orphan diseases." Among these are the hereditary disease cystic fibrosis, which we treat with an innovative development from Bayer called the ciprofloxacin inhaler. This preparation was classified by the [Food and Drug Administration \(FDA\)](#) as an orphan drug.

Advances in the field of biomedical research are opening up completely new possibilities for us, but at the same time they raise questions about the responsible use of new technologies and the findings they enable. This applies, for example, to pharmacogenetics, stem cell research and regenerative medicine. We address concerns and suggestions, and undertake to act ethically. Stem cells provide a beacon of hope in medicine, as they can be transformed into various cell and tissue types. Bayer HealthCare is not currently conducting research projects with embryonic stem cells and has not done so in the past. However, we are convinced that research – particularly with adult stem cells – in the field of regenerative medicine should be promoted. Scientific discoveries in this area could lead to new therapeutic solutions for serious and life-threatening diseases.

We strengthen our own research infrastructure with a global network of external partners from science and industry, thus safeguarding the long-term success of our product pipeline.

Stringent drug safety requirements

Clear and binding requirements apply not just to the research of new pharmaceuticals, but also to their manufacture and commercialization.

We continuously evaluate the benefit-risk profile of our pharmaceutical and medical products from their development until their registration and throughout their life cycles. Within the framework of the safety risk management process at Bayer HealthCare, experts from various disciplines form so-called Safety Management Teams (SMTs). These teams jointly evaluate the available data and

other information on a product so as to identify possible safety risks at an early stage, build up a base of data and undertake measures to reduce these risks.

Examples of such measures include the revision of pack inserts, targeted information programs and training measures for physicians and patients. The comprehensive risk management plans are among the core tasks of the SMTs. Should further risks become known following the regulatory approval of a product, we immediately take steps to minimize them. In this connection, we employ the same process and update each respective risk management plan.

The Global Pharmacovigilance unit of Bayer HealthCare pools all safety-relevant information on our prescription medicines. This information is continuously updated and evaluated by experts. Bayer works closely with the responsible regulatory and oversight authorities at an international, national and regional level. These include the U.S. Food and Drug Administration (FDA), the [European Medicines Agency \(EMA\)](#) and the [German Federal Institute for Drugs and Medical Devices \(BfArM\)](#).

The Bayer HealthCare Compliance Management System also plays a key role in added safety. It describes measures aimed at permanently and continuously satisfying regulatory requirements for quality assurance in human and veterinary medicine. The observation of technical compliance standards is verified through systematic internal inspection both for all functions summarized as "global clinical development" and for production. These audits also cover contracted institutes and suppliers. Risks are systematically identified and assessed with the help of a risk management system. If process deviations, violations of the rules or quality deficiencies are established, these are analyzed on a case-by-case basis, and preventive or corrective measures undertaken. Countries and regions continuously receive support in observing pharmaceutical compliance.

109 WWW
FDA

111 WWW
EMA

112 WWW
BfArM

The results of our risk management process and the activities derived from it help to ensure the safety of our patients and the correct use of our products, thus ensuring an optimal medical benefit-risk ratio.

Particular challenges posed by possible product risks

As a global company with a diverse business portfolio, the Bayer Group is exposed to numerous legal risks, especially in the area of product liability.

As of April 16, 2011, there were about 8,000 lawsuits pending in the United States involving Bayer's oral contraceptives Yasmin™ and YAZ™. The lawsuits claim that Yasmin™ and/or YAZ™ – or Ocella™ and/or Gianvi™, generic versions of Yasmin™ and YAZ™ marketed in the United States by Barr Laboratories, Inc. – had caused harm to the health of users, and in isolated cases even death. Pursuant to agreements in 2008 and 2010, Bayer manages product liability litigation for Ocella™ and Gianvi™, Bayer retains product liability for Ocella™ product supplied by Bayer with certain exceptions, and the parties have allocated potential future product liability relating to Gianvi™ product supplied by Bayer. Plaintiffs seek compensatory and punitive damages, claiming, in particular, that Bayer knew, or should have known, of these risks and should be held liable for having failed to disclose them or adequately warn users of Yasmin™ and/or YAZ™. Bayer has also been served with three putative class actions claiming economic loss, one of them also claiming personal injuries. One of these class actions, brought in federal court on behalf of all private health insurers in the United States, was dismissed with prejudice. All cases pending in U.S. federal courts have been consolidated in a multidistrict litigation (MDL) proceeding for common pre-trial management. In addition, 13 Canadian class actions have been served upon Bayer as of February 1, 2011. Additional lawsuits are anticipated. Bayer believes that it has meritorious defenses and intends to defend itself vigorously. Based on the information currently available, Bayer has taken accounting measures for anticipated defense costs.

Further examples of particular challenges in this context, such as Trasylol™, are given on page 241ff. of our Annual Report 2010.

Analysis of pharmaceuticals in the environment

Within the scope of its product stewardship, Bayer HealthCare aims to pursue an adequate, risk-based and responsible approach to the issue of "pharmaceuticals in

the environment." Following the use of pharmaceuticals by patients, trace amounts of these pharmaceuticals or degradation products are excreted and in many cases can thus enter wastewater. Wastewater treatment facilities reduce or degrade these substances. However, some substances are not completely removed and can thus enter natural bodies of water. A special working group conducts tests on ecotoxicity and on the dispersal and degradation behavior of our pharmaceuticals so as to keep trace elements in the soil and groundwater as low as possible and enable risks to be closely monitored.

Bayer also participates in important research projects. One activity being undertaken with various cooperation partners, including from the water resources industry, is the European PILLS (Pharmaceutical Input and Elimination from Local Sources) project, which is scheduled to run from 2007 to 2011. The PILLS partnership focuses on wastewater treatment. As it seems efficient to undertake measures at point sources where there is a high concentration of residues in wastewater, the collaboration focuses on the development of local treatment facilities for hospitals and nursing homes. Bayer HealthCare is represented on the scientific advisory committee of PILLS. The company contributes its expertise in the assessment of the ecological risks of pharmaceutical trace amounts and in the treatment of wastewater resulting from the company's own production activities.

Bayer sets standards in quality for veterinary pharmaceuticals

Bayer HealthCare has marketed products for livestock and companion animals for more than 100 years. The company today offers over 100 different products for animal health and parasite control. These products minimize the risk of transmission of possible pathogens to humans.

At Animal Health, safety and quality standards apply that are comparable to those in human medicine. Here, we focus particularly on the environmental compatibility of our products.

Through training measures and information materials, we provide veterinarians and private consumers with targeted details on the responsible use of our products. In this context, we support the initiative of EPRUMA, the European Platform for the Responsible Use of Medicines in Animals, and provide assistance in minimizing the risk of infectious disease among animals and thus reducing the consumption of antibiotics.

Assuming responsibility in the marketing of medicines

We also observe stringent guidelines in the marketing of our pharmaceutical products. As a member of the [International Federation of Pharmaceutical Manufacturers & Associations \(IFPMA\)](#) and the [European Federation of Pharmaceutical Industries and Associations \(EFPIA\)](#), Bayer HealthCare undertakes to observe the relevant codes. Also valid are the company's own Corporate Compliance Policy and national ethical standards that are usually established in local industry codes such as that of the "Voluntary Self-Monitoring by the Pharmaceutical Industry" (FSA) in Germany. In the event of discrepancies, we apply the more stringent code in each case.

Innovation in many fields – Bayer CropScience

With its global research activities, Bayer CropScience plays an important role in the development of innovative solutions for crop protection, seed treatment and non-agricultural pest control. One example in this context is the development of innovative products to tackle fungal infection in cereals. Such products, for example, prevent fungal toxins from entering the food chain.

Between 2000 and 2010, 23 new active ingredients reached market maturity. The company will continue to rely on its innovation potential in the future: by 2012, CropScience aims to introduce six new crop protection active ingredients to the market. The BioScience Business Unit is researching improved plant traits and innovative seed in a total of 60 projects. In this connection, Bayer CropScience also maintains research partnerships and collaborations that served as the basis of the new developments last year. Three examples of such developments are listed below.

The safety of our products is very important to us. This applies to both crop protection and to pest, weed and disease control in non-agricultural applications or plant biotechnology. A special task force ensures already at the research stage that activities at Bayer CropScience comply with our sustainability strategy. As the products are further developed, they are subjected to stringent and extensive testing that in turn is regulated by governmental agencies. Our toxicologists evaluate the toxicological properties of the active ingredient and its formulation, while our residue analysts determine how much product remains on the plants following proper application and how these amounts are reduced through washing or handling. Numerous further safety inspections must be completed by experts before a product is ultimately introduced to the market.

Emphasis on product safety

Bayer CropScience observes the International Code of Conduct on the Distribution and Use of Pesticides of the [United Nations Food and Agriculture Organization \(FAO\)](#). The principles of this code cover the entire life cycle of a product, from its discovery through its development to its application and beyond. Our business activities worldwide include programs and training courses to ensure that the greatest possible care is taken in the handling of crop protection agents. These programs are designed to ensure that the products of Bayer CropScience (BCS) are applied in a way that is safe for users, the environment and consumers. Bayer CropScience implements all major aspects of responsible product handling in its [Product Stewardship Program](#), which is based on the principles of the company's own Product Stewardship Policy, which is contained in a dedicated [brochure](#).

Even beyond its core business, Bayer CropScience participates in projects targeted at added product stewardship. One current

115 WWW
IFPMA

116 WWW
EFPIA

117 WWW
FSA

118 WWW
FAO

120 BAYER WEB
BCS stewardship
brochure

Sustainable innovations at Bayer CropScience

Routine™: effective against fungal infestation

Bayer has jointly introduced to the market the new fungicide Routine™ with Japanese company Sumitomo Chemicals to combat rice blast, the most damaging fungal disease in rice plants worldwide.

Votivo™ for higher yields

The biological product *Votivo*™ (*Bacillus firmus*) is used for seed treatment. In combination with established seed dressings, it limits damage from nematodes and helps to significantly increase harvest yields.

New varieties of InVigor™ in Canada

Two new varieties of the canola seed brand InVigor™ were developed for the Canadian market. The varieties have achieved yield increases of up to 146 percent in trials and possess excellent resistances to plant diseases.

News

Termination of the marketing of aldicarb

Bayer CropScience is to terminate global marketing of the insecticide aldicarb (Temik™) by 2012 at the latest. Production of this product, which is used in particular in the United States but also in some South American countries and in South Africa, was suspended in 2010. This decision by the company was in response to a new assessment of the active ingredient by the U.S. Environmental Protection Agency (EPA) and legal uncertainty in connection with the reconstruction of the production unit at our site in Institute, West Virginia, and corresponds with Bayer CropScience's global strategy of successively substituting WHO Class I products with new products. Although the company does not agree with all aspects of the new EPA risk assessment, Bayer CropScience respects the organization's authority and acted accordingly.

121 ONLINE REPORT
Sustainable sugarcane
cultivation

122 ONLINE REPORT
E.U.-wide
requirements

123 BAYER WEB
Health of bees

119 BAYER WEB
Integrated weed
management brochure

124 ONLINE REPORT
Product to combat
varroa mites

125 BAYER WEB
Varroa mites

example is being implemented in Brazil, where the company has joined an initiative for sustainable sugarcane cultivation.

Responsible use of crop protection agents

A central aspect of product safety at Bayer CropScience is the assistance we provide to our customers and partners – such as farmers, dealers and medical personnel – in the proper, safe and targeted use of our products.

The participants receive training worldwide primarily in the area of user safety. They learn about the proper use of Bayer products, the correct way to wear protective clothing and how to practice sustainable waste disposal. In 2010, for example, such training courses were held in more than 22,000 villages in India. In Colombia, around 16,000 farmers once again received training through the AgroVida program in South America. Initiatives for enhanced safety awareness have been implemented there since the 1990s.

We are also active in the development and application of technical solutions: in Europe, we have optimized application equipment (including sowing machines) to provide better protection for users and the environment. The company's range of educational programs for product stewardship is rounded out by internal employee training measures.

Bayer CropScience also provides information about dealing with herbicide resistances through [integrated weed management](#). This approach includes important tools and strategies for farmers such as crop rotation, crop practices and field hygiene and the use of herbicides with varying principles of action.

Gradual replacement of WHO Class I pesticides

In streamlining its portfolio, Bayer CropScience continuously launches onto the market product solutions with better environmental properties – for example by introducing new active

ingredients, products, application technologies and types of packaging. We discontinued the sale of products containing endosulfan worldwide at the end of 2010. Marketing activities for aldicarb will be ceased worldwide by 2012 at the latest. Bayer CropScience will rigorously continue to successively reduce WHO Class I products. Further information on [E.U.-wide requirements](#) for crop protection agents can be found online.

Bee safety and crop protection

Bees are a vital part of the ecosystem. That is why maintaining and promoting the [health of bees](#) is an important task for beekeepers, farmers, politicians, industry and society. Operating in the agricultural sector, both we and our customers – the farmers – are reliant on honey bees for the pollination of many crop plants. Therefore, even though the bee population worldwide is growing in the long term, we are very concerned about the decline of bee populations in some parts of the world, such as in Europe and the United States.

Bayer takes the huge danger that pathogens pose for bees very seriously, which is why Bayer Animal Health has been researching bee health for over 25 years. We intend to intensify our R&D activities in the years ahead to provide beekeepers with safe and effective methods for protecting their bees. With this in mind, the company recently acquired a new [product to combat Varroa mites](#), underscoring our commitment in this area. We also work internationally with research institutes on matters of bee health.

To ensure outstanding dressing quality for our seed products, a multi-stage quality program for seed dressing has been developed at the Seed Treatment Application Center in Monheim, Germany. Furthermore, in close cooperation with sowing machine manufacturers and in coordination with the responsible regulatory and inspection agencies, a technical retrofitting concept for sowing machines has been developed that is designed to

considerably limit the spread of abrasive dust during the sowing of treated seed through a ground-level waste air duct.

These drift minimization processes developed by Bayer CropScience in collaboration with the agricultural machinery industry are setting the standard across Europe. Other regulatory authorities, such as those in Austria, Switzerland, the Netherlands and also France, are already using the corresponding concepts as a guide in approval procedures. Implemented across the board, the developed measures can sustainably minimize the unwanted spread of dust during sowing and thus reduce the burden on the environment. They are being taught to employees around the world in multi-day training courses.

Genetically modified rice

In the United States, Bayer is party to multiple lawsuits in connection with genetically modified rice. The plaintiffs allege that they have suffered economic losses after traces of genetically modified rice were identified in samples of conventional long-grain rice grown in the United States. As of April 18, 2011, Bayer was aware of a total of approximately 425 lawsuits, involving about 11,800 plaintiffs, pending in U.S. courts in this connection. In the development of this rice, field testing was conducted in the United States in cooperation with third parties from 1998 to 2001. The rice was never commercialized. The U.S. authorities have stated that the genetically modified rice does not present a health risk and is safe for use in food and feed and for the environment. Since December 2009, Bayer has tried several cases in front of U.S. juries. In some cases the company was required to pay compensatory damages; in others the litigation was settled. Bayer disagrees with the verdicts against the company and will appeal the

adverse findings to the extent it has not already done so. More detailed information can be found in the Annual Report 2010.

Innovation layer by layer – Bayer MaterialScience

Bayer MaterialScience (BMS) works closely with customers and external partners to develop new products and applications, as well as energy-efficient technologies and production processes for polymer materials.

For example, the waste product and climate gas carbon dioxide (CO₂) could be used as an alternative raw material for high-tech materials in the future, thus replacing a proportion of the conventional fossil-based raw materials used to date. In the “Dream Production” project, BMS and Bayer Technology Services are working with RWTH Aachen University and other partners to realize the catalytic conversion of CO₂ on a pilot plant scale for the first time.

We are also working intensively to further develop the production of energy from renewable sources through our materials. The current product spectrum ranges from polyurethane sheathing for solar modules with integrated assembly systems to a sandwich composite of polycarbonate sheets with solar cells. Furthermore, Bayer materials also help to substantially reduce energy consumption and thus the emission of carbon dioxide in applications such as automotive engineering or thermal insulation in buildings and refrigerated appliances.

Bayer MaterialScience is also a technological leader in the field of electroactive polymers for the consumer electronics industry. These high-tech materials are used in the development, design and manufacture

126 ONLINE REPORT
Dream Production

Sustainable innovations at Bayer MaterialScience

Polyurethanes: “green shoe” concept study

The “green shoe” consists up to 90 percent of components manufactured by particularly environmentally friendly processes or using renewable raw materials. Parts of the shoe sole, for example, are made of polyurethane produced mainly with soybean oil.

Polycarbonates: for efficient lighting technology

Polycarbonates are being increasingly used for efficient and energy-saving lighting technology. Among the developments are films for OLED lamps that are approximately 60 percent brighter and LED lenses for car headlamps that are considerably more lightweight.

Polyurethanes: raw materials for cosmetics

The new Baycusan™ product line comprises a range of high-purity polyurethanes that do not contain any co-solvents and are free of preservatives. The new production unit reliably prevents any entry of germs.

128 BAYER WEB
Position on
Nanotechnology

129 WWW
BMBF ON
nanotechnology

of actuators and sensing components, offering unique opportunities: they provide touchscreen panels with “awareness through touch” by creating tactile feedback when the display is touched.

Through its research and applications development, Bayer MaterialScience converts scientific findings into customer-oriented business. The Innovation Community Council (ICC) was established to steer the global innovation activities of Bayer MaterialScience.

Bayer MaterialScience invested €231 million in innovation in the reporting year. The areas of application range from lighting technology through traffic engineering to the plastics production of tomorrow.

Responsibility for the entire product life cycle

Within the scope of its product stewardship and with the aim of implementing the international Global Product Strategy, Bayer MaterialScience assesses and takes steps to reduce risks for the environment and human health. This applies to the entire life cycle of chemicals used at Bayer – from production through logistics to their use, recycling and disposal.

The Product Safety Assessment compiled is based on parameters with which product safety can be determined. The assessment takes place in four steps: product prioritization, risk characterization, risk management and risk communication. The product prioritization steps are aimed at ensuring that the relevant chemicals for the characterization of the risks are identified. Depending on the scope of the identified risk potential, suitable steps are implemented to manage the risk. Such steps can include proposals for technical measures, the use of personal protective clothing or marketing restrictions. The final step involves the statutorily prescribed safety data sheets, technical information sheets and labeling.

A central role is also played by the BayCare platform. A detailed and transparent description of the product safety assessment steps can be found on the “BayCare Worldwide” Internet site. Here, Bayer informs customers and other stakeholders about its measures. BayCare is being expanded step by step to include new countries and languages, with regional sites for China and Brazil going online in 2010.

Nanotechnology – an investment in the future

Bayer MaterialScience also handles nanomaterials with a high sense of responsibility.

Regarding the safe handling of innovative carbon nanotubes, we have initiated a comprehensive Product Stewardship Program. This program supports the safe handling of these materials – from production through processing and use to disposal – in all areas in which this technology is used.

We have summarized our principles for the handling of nanotechnology in the [Bayer Position on Nanotechnology](#). We support the carbon nanotube safety projects promoted by the [German Ministry of Education and Research \(BMBF\)](#). We also work intensively on the international harmonization of terminology and characterization at the ISO level and on the drafting of toxicological test guidelines at OECD level. Furthermore, we foster a close stakeholder dialogue with committees, associations, industry partners, customers, authorities, universities and the public.

Bayer MaterialScience now also markets its multi-wall carbon nanotubes Baytubes™ in the United States, as the U.S. Environmental Protection Agency (EPA) has granted marketing authorization for this purpose. The EPA approval represents an important milestone for the company in its endeavors to open up new areas of application together with customers. This significantly reinforces Bayer MaterialScience’s role as the world’s leading manufacturer of carbon nanotubes.

Baytubes™ can be added to polymer matrices or metal systems to improve their mechanical strength and antistatic properties. The product’s applications include rotor blades for wind turbines, battery systems, and sports equipment such as skis, hockey sticks, baseball bats and surfboards. Nanotubes are also used to modify light metals such as aluminum or magnesium and thus considerably improve their properties.

At the Chempark Leverkusen site, BMS operates a pilot plant and laboratory facility for the product and process development of carbon nanotubes. Around €22 million was invested in its planning, construction and development. The global market for carbon nanotubes is currently predicted to grow by 25 percent per year. Experts estimate that annual sales of these products will reach US\$2 billion within about 10 years.

Bayer regularly seeks dialogue with its stakeholders in order to ensure the greatest possible transparency with regard to nanotechnology.

Substances in direct contact with food

Bayer is very attentively following the scientific discussion about the chemical bisphenol A (BPA), a feedstock for various plastics. As documented by numerous extensive, scientifically

127 BAYER WEB
BayCare

validated studies that attest to the safety of BPA, we remain convinced that the safety of BPA is ensured in its existing areas of application. This assessment is consistent with evaluations by the responsible regulatory authorities in Europe, the United States, Australia, Japan and other countries. The European Food Safety Authority reiterated in September 2010 that BPA-based products can be safely used by consumers. And an independent group of experts convened by the World Health Organization also currently sees no cause to undertake specific measures to protect health in connection with BPA.

The moratoriums on the production and sale of BPA-based polycarbonate baby bottles that took effect in March and June 2011, respectively, take into account neither the scientific data nor the prevailing views of competent authorities worldwide. In addition, in response to market developments the BPA-based polycarbonate is now hardly used as a material for baby bottles in Europe anyway.

Innovation service providers – the Bayer service companies

The three service companies Bayer Technology Services, Bayer Business Services and Currenta – which together employ more than 13,000 people – also contribute to new, innovative solutions with specialized services.

Bayer Business Services concentrates on IT-based services, particularly in the areas of human resources, finance and accounting. Bayer Technology Services specializes in processes and in the planning, construction and further development of facilities. The service company Currenta – a joint venture between Bayer and Lanxess – provides services in the areas of utilities, waste management, infrastructure, safety & security, analytics and vocational training. All three companies aim to design processes and technologies in a more efficient and environmentally friendly manner in keeping with our sustainability strategy. This is documented by the innovation examples listed below.

Sustainable innovations at the Bayer service companies

Sustainable learning (Bayer Business Services)

Thanks to new methods, continuous training rather than classroom instruction sustainably improves learning success and increases the motivation to shore up acquired knowledge. New methods for better learning effects include submitting questions by e-mail following a training course, access to training platforms for Web 2.0 applications and to the Continuous Learning Improvement Program (CLIP), and supplementary, multimedia-enhanced training courses.

LifeNet™ (Bayer Technology Services in cooperation with Bayer CropScience)

Technology for incorporating the Bayer insecticide deltamethrin into mosquito nets made of polypropylene fibers (LifeNet™) to protect against malaria-transmitting mosquitoes. The technology is scheduled to be introduced to the market in 2011. The improved mosquito nets are made of very thin polypropylene fibers into which the WHO-recommended active ingredient has already been incorporated. This makes the nets stable, tear-resistant, user-friendly and longer-lasting.

Nitrification protection for wastewater treatment plants (Currenta)

The Environment and Analytics business units have jointly developed an automated test procedure to protect the functional capability of the Bayer wastewater treatment facility in Dormagen, Germany. This enables the early identification of any damaging effect that the wastewater has on the bacteria for nitrification (oxidation of ammonia). This in turn increases the operational reliability of the wastewater treatment plant and thus ensures the reliability of waste management at Bayer. The patent for this technology is being submitted.

Ecology

Bayer places great importance on **protecting the environment and using natural resources responsibly**. We use our **expertise and experience** both to develop innovative products that help protect the environment, nature and the climate and to optimize technologies and processes.



Modern technology to generate clean water: Simone Schnell (left) and Jürgen Schiefers from Currenta examine a water sample at the wastewater treatment plant, which was prepared with the help of innovative cascade biology.

130 **WWW**
Responsible Care
initiative

131 **BAYER WEB**
Bayer Sustainable
Development Policy

132 **ONLINE REPORT**
Renewable raw
materials

133 **BAYER WEB**
Renewable raw
materials

134 **BAYER WEB**
Sustainability Program

The fact that we committed to the **Responsible Care® initiative** of the chemical industry at an early stage underlines our intention to continually improve product lines and production processes. In doing this, we rely on our efficient HSE management systems, which control the implementation of our environmental protection measures. We have reported in detail on the impact that our company's activities have on the environment for over 30 years. The **Bayer Sustainable Development Policy** also sets out the framework for our environmental action.

Use of materials and energy

In view of rising raw material and energy prices, material and energy efficiency, together with innovation in processes and products, are crucial factors in competition. Bayer applies new strategies throughout the Group to optimize the efficient use of resources, reduce emissions and avoid waste.

Production-specific procurement and production are organized on a decentralized basis in the subgroups in light of the diverse nature of Bayer's business activities. Detailed information on the use of raw materials, auxiliaries and supplies for the respective subgroup can be found on page 53f. of the Annual Report 2010. If it makes sense from a technical, economic and ecological viewpoint, we favor the use of **renewable raw materials**, although this still does not play a major part in terms of our total raw material consumption.

In order to analyze the use of resources such as energy, water and raw materials in its entirety and identify measures to minimize consumption, Bayer has launched another lighthouse project under its **Sustainability Program** in the form of the Resource Efficiency Check. This tool enables us to identify possibilities for process-oriented optimization to increase yields and in recycling, the utilization of by-products and wastewater or waste air treatment. The Resource Efficiency Check was performed in pilot projects at Bayer MaterialScience and Bayer CropScience in 2010.

The use of materials and energy and the level of emissions are determined to a great extent by the manufactured sales volume. This is a reference figure which we use to measure the efficiency of energy and resources.

In 2010, Bayer increased the manufactured sales volume by around 20 percent compared with the previous year, partly thanks to the global economic recovery. **Table 14**

The Group's energy consumption rose by only 10.8 percent year-on-year to 85.7 petajoules. This can be explained to a great extent by better utilization of capacity at the plants. To calculate energy use for the Group as a whole, we record consumption figures at our production sites. Sites used purely for administrative purposes account for only about 1 percent of the Group's energy use.

Targets

Climate protection (target 2020)

- Reduce specific greenhouse gas emissions in the Group by 35% (direct and indirect emissions in relation to manufactured sales volume in metric tons) between 2005 and 2020

Process and plant safety (target 2015)

- Implement the Bayer-wide initiative to increase process and plant safety; dedicated process and plant safety training for 40,000 employees worldwide by the end of 2012

Emissions (target 2015)

- Reduce other relevant emissions (ozone-depleting substances -70%, volatile organic compounds -50%)

Waste (target 2015)

- Reduce specific hazardous waste from production to 2.5% in relation to manufactured sales volume

The chart indicating energy use at the Bayer Group shows the use of primary energy such as natural gas, coal and other energy sources as the starting point for our own energy generation. Primary energy conversion amounts to 51,632 terajoules. Additional steam from waste heat and procured electricity and steam add up to a total energy volume of 86,305 terajoules. After deduction of refrigeration energy sold to third parties, this results in total energy consumption of 85,710 terajoules (85.7 petajoules) for Bayer in 2010. [Table 15](#)

Air emissions

We report greenhouse gas emissions in accordance with the Greenhouse Gas Protocol (GHG Protocol). This involves presenting emissions over prior years in a portfolio-adjusted format in accordance with the financial control approach of the GHG Protocol. Direct emissions increased by about 5 percent year-on-year, compared with an approximately 20 percent increase in production. This disconnection from the production volume was achieved through improvements to technical processes and higher utilization of capacity at the plants.

Our own power plants are responsible for a large proportion of the direct greenhouse gas emissions. As we also supply energy to third parties, a reduction in energy use at Bayer’s production plants does not necessarily lead to a proportional drop in our direct greenhouse gas emissions. [Table 16](#)

The total of direct and indirect greenhouse gases rose by only 4.9 percent year-on-year

in 2010, while the manufactured sales volume grew by around 20 percent. [Table 17](#)

Bayer MaterialScience was able to cut CO₂ equivalents at a nitric acid plant in Caojing, China, by more than 50 percent through the catalytic reduction of the nitrous oxide emissions generated there.

Another example is an innovative, climate-friendly chlorine production process developed by Bayer together with its partners. This process – oxygen depolarized cathode technology based on sodium chloride, a lighthouse project under the Bayer Sustainability Program – will in the future allow energy consumption in chlorine production to be reduced by 30 percent. In 2011, Bayer plans to bring a plant on stream in Germany that will use this process and have an initial capacity of 20,000 metric tons per year. Emissions of CO₂ equivalents are expected to decrease by 250,000 metric tons by 2020 as a result of this process.

Currenta is cutting its CO₂ emissions as part of its climate program “Energy Efficiency Class A++” – for example achieving reductions of 30,000 metric tons each year through the modernization of the Chempark Dormagen site’s central thermal waste air incineration plant, which was completed in March.

135 WWW
GHG Protocol

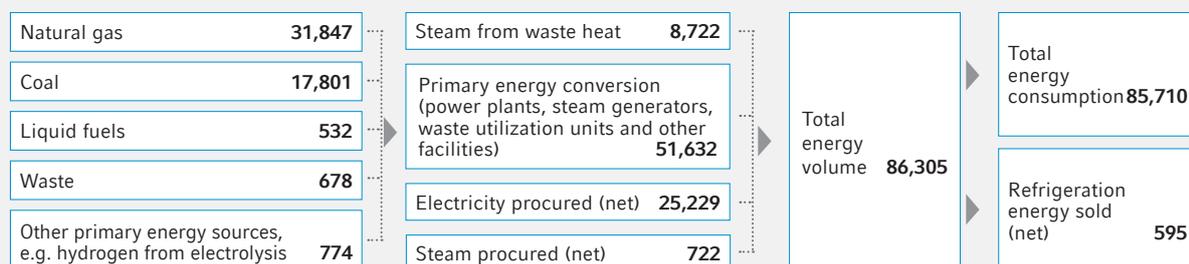
Emissions trading

Bayer is currently involved in emissions trading throughout the E.U. with 11 plants and approximately 2.5 million metric tons of CO₂. In the first trading period (2005–2007), Bayer was able to operate its own power plants under the emission rights allocated, without having to purchase large numbers of additional allowances.

14_Energy consumption and manufactured sales volume

	2006	2007	2008	2009	2010
Absolute energy consumption (petajoules)	80.5	85.3	82.8	77.3	85.7
Manufactured sales volume (million metric tons)	10.1	10.6	10.0	8.7	10.4

15_Energy use at the Bayer Group (terajoules p.a.)



News

Nitrous oxide emissions significantly reduced

Nitrous oxide is particularly harmful to the climate: its impact in terms of global warming is over 300 times that of carbon dioxide. In the Bayer Group, this greenhouse gas is generated in the manufacture of nitric acid, an important chemical raw material. Modernization of facilities at the three production sites is significantly reducing emissions of nitrous oxide. Thanks to a new process, Bayer can reduce nitrous oxide emissions at the Dormagen site by up to 99 percent, thus preventing a further 220,000 metric tons of CO₂ equivalents per year – approximately the same amount as emitted by 100,000 cars covering a distance of 15,000 kilometers per year. Through the installation of a secondary catalyst at the Caojing site in China, nitrous oxide emissions could be reduced there by around 50 percent. Nitrous oxide emissions should also be significantly lowered in the nitric acid plant in Baytown, United States, through a secondary catalyst installed in the second half of 2010.

Emissions trading has remained an important issue for Bayer during the second trading period from 2008 to 2012: the allocation rules that are currently in force take into account the environmentally friendly energy generation at our combined heat and power plants. However, the new E.U. emissions trading directive stipulates that from 2013 the industry

will also have to purchase allowances for electricity generation. For chemical plants, the allocation of allowances will be based on stringent benchmarks. Although the burden is set to be reduced significantly through the regulations planned by the European Commission for so-called at-risk sectors, we must expect further cost increases from 2013.

16_Greenhouse gas emissions* (million metric tons of CO₂ equivalents)

	2006	2007	2008	2009	2010	Target 2020
Direct greenhouse gas emissions**	5.71	5.59	5.09	4.57	4.80	
Indirect greenhouse gas emissions***	3.67	3.71	3.57	3.53	3.70	
Total greenhouse gas emissions	9.38	9.30	8.66	8.10	8.50	
Specific greenhouse gas emissions (metric tons of CO ₂ equivalents per metric ton of product)						0.79**** -35%

* Portfolio-adjusted in accordance with the GHG Protocol

** In 2010, 82.0 percent of greenhouse gas emissions were CO₂ emissions, 17.6 percent were N₂O emissions, approx. 0.3 percent were partially fluorinated hydrocarbons and 0.1 percent was methane.

*** Typically, CO₂ in incineration processes accounts for over 99 percent of all greenhouse gas emissions. Therefore, when determining indirect emissions, our calculations are limited to CO₂.

**** Based on 2005 figures. The presentation of greenhouse gas emissions is portfolio-adjusted, with no portfolio adjustment of production volumes; emissions reported for Currenta attributable to the provision of energy to other companies, and at BMS the by-products sodium hydroxide solution and hydrochloric acid generated during production are not included in the production volume as they will occur in much smaller amounts in the future, thanks to measures aimed at enhancing energy efficiency. Trade products are also not included.

17_Greenhouse gas emissions for subgroups and service companies

(total direct and indirect emissions in million metric tons of CO₂ equivalents)

	2006	2007	2008	2009	2010	Target 2020*
Bayer MaterialScience	5.94	5.55	5.06	4.83	5.24	
Bayer HealthCare	0.58	0.57	0.56	0.55	0.54	0.53 -10%
Bayer CropScience	1.15	1.18	1.20	1.09	1.09	1.03 -15%
Others**	0.02	0.02	0.02	0.02	0.02	
Currenta***	1.69	1.98	1.82	1.62	1.62	
Specific greenhouse gas emissions for Bayer MaterialScience (metric tons of CO ₂ equivalents per metric ton of product)****	1.14	1.01	0.99	1.09	0.96	0.70 -40%

* Portfolio-adjusted, based on 2005 figures

** Total greenhouse gas emissions for Bayer Technology Services and Bayer Business Services

*** The emissions reported for Currenta are attributable to the provision of energy to other companies at the Chempark sites.

**** The by-products sodium hydroxide solution and hydrochloric acid generated during production are not included in the production volume as they will occur in much smaller amounts in the future, thanks to measures aimed at enhancing energy efficiency. Trade products are also not included. Internal studies at BMS have revealed that in previous years selected polycarbonate materials (so-called compounds) were not included in the calculation, because this would seemingly have led to double counting. On closer inspection this proved to be incorrect. For this reason these materials have been included retrospectively in the annual BMS product volumes calculated.

Further emissions

Emissions of ozone-depleting substances (ODS emissions) increased by around 19 percent to 20.8 metric tons in 2010. For the first time in many years we were unable in 2010 to achieve our target of keeping volumes of ozone-depleting substances to below 20.0 metric tons. Two individual incidents at two major production sites were mainly responsible for this. A temporary leak in the cooling circulation system at the Bayer MaterialScience site in Baytown, United States, led to the liberation of cooling gases with ODS potential. And at the Bayer CropScience site in Dormagen, Germany, ozone-damaging substances were emitted into the atmosphere also owing to a temporary leak. However, 73 percent of our total ODS emissions occur at the Bayer CropScience site in Vapi, India. Through the optimization of processes and additional technical measures in waste air treatment, we aim to reduce our ODS emissions there in particular in the future. In our new program of targets we have declared it our goal to reduce ODS emissions by 70 percent through 2015. [Table 18](#)

The volume of volatile organic compounds (VOC) fell by about 2 percent compared with the previous year. Over 70 percent of the Group's VOC emissions are generated at the Bayer CropScience site in Vapi, India. A project for the construction of waste air treatment plants is in the planning phase. By 2015, we hope to significantly reduce VOC emissions with this measure. The VCS production plant in Roussillon, France, recorded a significant reduction thanks to the installation of a new

waste air incineration plant. Production processes were changed at the Bayer HealthCare site in Orizaba, Mexico, which led to a 38 percent reduction in VOC emissions at the site. The specific VOC emissions for the Group as a whole were reduced to 0.2436 kg per metric ton of sales product. We have thus met the objective set in the 2006+ program. [Table 19](#)

Compared to the previous year, other important emissions such as carbon monoxide and sulfur oxides fell slightly in 2010, namely by 77 and 855 metric tons respectively, despite an increase in production volumes. We saw a rise in the volume of nitrogen oxides, caused by increased production activities at our major production sites. The volume of particulate matter in 2010 was around 203 metric tons worldwide, 17 metric tons less than in the previous year (220 metric tons). [Table 20](#)

136 BAYER WEB Program of objectives 2006+

Use of water and emissions into water

Water is essential for sustaining life. By developing and supporting solutions for the efficient and economical use of water, Bayer is helping to conserve this important resource. This applies both to the company's own production activities and to the development of products, for example for agriculture (see page 18 of the Focus Issue Nutrition).

Responsible water usage

Since the end of 2008, Bayer has supported the [CEO Water Mandate](#), an initiative of the

137 ONLINE REPORT CEO Water Mandate

18_Emissions of ozone-depleting substances*

	2006	2007	2008	2009	2010	Target 2010
ODS in metric tons p.a.	13.1	14.7	17.1	17.5	20.8	20.0

Target 2015**
6.2 -70%

* In CFC-11 equivalents

** Target to be achieved by 2015 based on 2010 figures

19_VOC emissions

	2006	2007	2008	2009	2010	Target 2010
VOC in 1,000 metric tons p.a.	2.86	2.87	3.16	2.59	2.54	
VOC in kg per metric ton of sales product	0.2832	0.2708	0.3160	0.2979	0.2436	0.25 ✓

Target 2015*
0.1218 -50%

* Target to be achieved by 2015 based on 2010 figures

20_Other important air emissions (1,000 metric tons p.a.)

	2006	2007	2008	2009	2010
CO	2.2	2.0	1.7	1.4	1.4
NOx	4.0	4.0	3.9	3.5	3.7
SOx	3.8	3.6	3.2	2.8	2.7
Particulates	0.2	0.2	0.2	0.2	0.2

138 BAYER WEB
CDP Water Disclosure

UN Global Compact. A list of examples of efficient use of water attests to our systematic commitment to sustainable water usage in the 2010 reporting year. In addition, we took part in the [Water Disclosure Project](#) carried out for the first time in 2010 by the Carbon Disclosure Project. 137 institutional investors asked 302 of the world's biggest companies to disclose details of their water management along with opportunities and risks identified in connection with the use of water.

All three Bayer subgroups have implemented systems and standards that meet their specific challenges with regard to water usage. In its Water Protection Directive, Bayer HealthCare commits itself to using water responsibly. Bayer CropScience has also committed itself to conserving water and to sustainable use, while Bayer MaterialScience regulates, among other aspects, the efficient use of water in its HSEQ policy.

Water consumption

Consumption of water rose year-on-year by 16.5 percent. In relation to the growth in production volume of around 20 percent, specific water consumption has fallen slightly, however. The absolute rise is largely due to an increase in the volume of once-through cooling water owing to increased production at the BMS sites in Brunsbüttel and Leverkusen (both

Germany) and Antwerp, Belgium. In addition, a temporary leak in the cooling water system at the BCS site in Institute, United States, had an impact on the rise in the volume of water used. [Table 21](#)

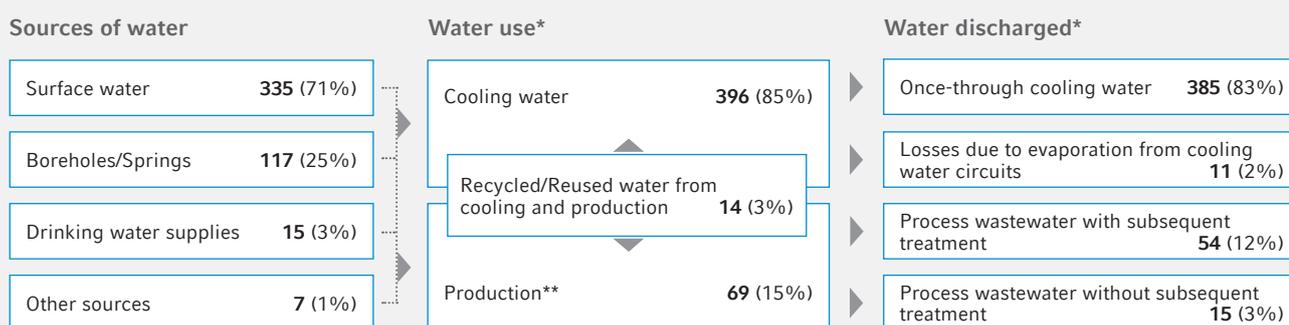
Usage of water

85 percent of the water used by Bayer is cooling water (this figure includes losses due to evaporation). This water is only heated and does not come into contact with products. It is therefore possible to return this water to the water cycle without any further treatment in accordance with the official permit specifications. In our production activities, we aim to use water several times and to recycle it. Water is already recycled and reused at 35 sites, e.g. in closed cooling cycles, through the reuse of treated wastewater or the recirculation of steam condensates as process water. A total of 14 million cubic meters of water were reused in the year under review. [Table 22](#)

Discharge of water

Following an increase in the volume of wastewater in the previous year, this was reduced by approximately 9 percent in the period under review. Of the 69 million cubic meters generated, 54 million were treated as wastewater in wastewater treatment plants. We were thus able

21_Water consumption in the Bayer Group (million m³)



* The differences between volumes of water consumed and water discharged can be explained, for example, by unquantified losses due to evaporation, leaks, quantities of water used as raw materials in products and volumes of condensate generated through the use of steam as a source of energy.

** Sum from production processes, sanitary wastewater and rinsing and cleaning processes in production

22_Net water intake by source

	2006	2007	2008	2009	2010
Water consumption (million m ³ per year)	442	447	439	407	474
– Proportion from surface water (percent)	53	57	58	58	71
– Proportion from boreholes/springs (percent)	35	32	32	32	25
– Proportion from public drinking water supplies (percent)	2	2	1	1	3
– Proportion from other sources, generally rainwater (percent)	9	9	9	9	1*

* Through optimized accounting of water use, water consumption from other sources for 2010 was assigned to the actual sources in most cases.

for the Group as a whole to increase the proportion of wastewater purified in a wastewater treatment plant from 67 percent in the previous year to over 78 percent. Wastewater that is not treated is also subject to strict monitoring and assessment before it is discharged into disposal channels. [Tables 23 and 24](#)

Emissions into water

Bayer aims to keep its emissions into water as low as possible. Through process optimization in the production of Makrolon™ in Baytown, United States, we were able to completely avoid phosphorus emissions in the form of phosphate in 2010. This equates to a reduction of 88 percent across the Group. At the site in Berkeley, United States, the closure of one area of production significantly reduced the volume of phosphoric acid required there for the neutralization of wastewater.

Nitrogen emissions fell by around 23 percent year-on-year. Given the increase in the volume of sales product produced, the specific nitrogen volume improved to 0.0474 kg per metric ton of the volume of sales product produced, which was well below the target for 2010 of 0.0536 kg per metric ton. A considerable volume of nitrogen is released in the production of an insecticide at the site in Institute, United States. As these production activities were suspended for six months, there was a corresponding drop in volumes in 2010. The figure for the Leverkusen site was reduced as the method for determining the nitrogen pre-load of the volume of water used was improved.

Dialogue

Bayer supports Pittsburgh at the UN Environment Day



On the basis of its longstanding global partnership with the United Nations Environment Programme (UNEP), Bayer supported the city of Pittsburgh in its successful organization of the World Environment Day in North America in June 2010. The Group was involved in the planning and coordination of the individual events to which politicians, environmental experts, top managers, organizations and citizens from all over the world were invited.

“Pittsburgh really does demonstrate what cities around the world can do and how important it is in our own backyard to take steps to make the environment and where

you live into a place that’s healthy,” said Amy Fraenkel from UNEP. UNEP also praised Bayer’s support and willingness to assume corporate social responsibility, citing it as proof that the collaboration between the two organizations can move the environmental agenda forward.

Joining Greg Babe, CEO of Bayer Corporation, at the UN’s World Environment Day were Elisabeth Guilbaud-Cox, Deputy Director of UNEP North America, Dan Onorato, Chief Executive of Allegheny County, and Luke Ravenstahl, Mayor of Pittsburgh (from left).

The figures for emissions of total organic carbon (TOC) rose year-on-year by around 5.2 percent in the period under review. Owing to the increase in the volume of sales product produced, the specific volume of TOC dropped to 0.136 kg per metric ton of sales product.

23_Volume of wastewater

	2006	2007	2008	2009	2010
Volume of wastewater in million m ³	78	80	68	76	69

24_Emissions into water (absolute)

	2006	2007	2008	2009	2010	Target 2010
Phosphorus (1,000 metric tons p.a.)	0.81	0.99	0.78	0.74	0.09	
Nitrogen (1,000 metric tons p.a.)	0.73	0.68	0.67	0.64	0.49	
Nitrogen (kg per metric ton of sales product)	0.0723	0.0642	0.0669	0.0737	0.0474	0.0536 ✓
TOC* (1,000 metric tons p.a. of organically bound carbon)	1.49	1.77	1.59	1.35	1.42	
TOC (kg per metric ton of sales product)	0.147	0.167	0.159	0.155	0.136	0.138 ✓
Heavy metals (metric tons p.a.)	8.0	8.9	10.4	9.0	11.4	
Inorganic salts (1,000 metric tons p.a.)	843	825	812	726	866	
COD** – chemical oxygen demand (1,000 metric tons p.a.)	4.47	5.31	4.77	4.05	4.26	

* Total organic carbon

** Calculated value based on TOC figures (TOC x 3 = COD)

The objective for 2010 has thus been met in full. The reason for the increase in TOC is the growth in production at the BMS sites in Dormagen, Germany; Caojing, China; and New Martinsville, United States. However, factors that were not linked to the economy, such as structural demolition work at individual sites, also had an impact on the increased figure for TOC.

Heavy metal emissions rose to 11.4 metric tons compared with the previous year. This increase is mainly due to the growth in production at the BMS sites in Brunsbüttel and Leverkusen, Germany. We also developed our monitoring and reporting, so that it is now also possible to record heavy metal levels in the central wastewater treatment plant at the Krefeld-Uerdingen site and heavy metal levels in wastewater that does not have to be treated. Work on components containing zinc led to additional zinc emissions in the wastewater discharged at the Brunsbüttel site.

The increase of 19.3 percent in emissions of inorganic salts was primarily due to increasing production activities, particularly at the BMS site in Caojing, China.

One specific example of our wastewater management is the modernization of the treatment plant in Leverkusen-Bürrig by our service company Currenta. Following a six-year period of modernization, the €18 million project was completed on schedule in mid-November 2010. The communal wastewater treatment

plant is now one of the most modern industrial treatment plants in Germany. The breakdown of nitrogen in the wastewater is improved by more than 40 percent and more efficient wastewater treatment is possible.

Waste and recycling

In order to minimize the consumption of materials and the volume of waste, Bayer attempts to reuse materials or to transfer them to other processes where this is technically feasible and makes good economic sense, in addition to reducing waste.

Waste generation and disposal

The total volume of waste generated fell by around 12 percent in 2010. Less demolition work and the completion of renovation projects meant that the volume of hazardous construction waste was substantially reduced in 2010, which is reflected in the reduction in the generation of hazardous waste. In contrast, the volume of hazardous waste from production, which represents a portion of the hazardous waste generated, increased as a result of growth in production activities. [Table 25](#)

However, the specific volume of hazardous waste from production fell significantly. Nevertheless, we were unable to meet our Group target of a specific value of 2.5 percent of waste per metric ton of sales product. Since 2007 it

25_Waste generated*

	2006	2007	2008	2009	2010	Target 2010	Target 2015
Total waste generated (1,000 metric tons p.a.)	649	928	1,077	914	807		
– Hazardous waste generated** (1,000 metric tons p.a.)	336	342	365	375	354		
– of which hazardous waste from production (1,000 metric tons p.a.)	234	275	305	302	325		
Specific volume of hazardous production waste (percent)	2.32	2.59	3.05	3.47	3.12	2.5	2.5

* Only waste generated by Bayer

** Definition of hazardous waste in accordance with the local laws in each instance

26_Waste disposed of according to means of disposal

	2006	2007	2008	2009	2010
Total volume of waste disposed of* (1,000 metric tons p.a.)	654	931	1,061	918	809
– Proportion removed to landfill (percent)	44	48	45	40	32
– Proportion incinerated (percent)	32	26	24	28	36
– Proportion recycled (percent)	22	23	28	31	31
Waste that cannot definitively be categorized according to one of the above disposal methods (percent)	3	3	3	1	1

* Bayer serves as a certified waste disposal plant operator at various sites. At these locations, Bayer disposes not only of its own waste but also of waste from third parties (companies not belonging to the Bayer Group). There is therefore a somewhat larger amount of waste disposed of than Bayer has generated itself.

has not been possible to achieve this specific value. With the acquisition of Schering at that time, active ingredient production expanded considerably. This generates volumes of waste that are relatively high in relation to the production volume. We have included this reduction target in our new Targets 2015 program. [Table 25](#)

The total volume of waste disposed of fell further in 2010. This also applies to the volume of waste removed to landfill. Within the various means of disposal, there was a further shift towards the incineration and recycling of waste, in line with the previous year's trend. [Table 26](#).

The proportion of hazardous and non-hazardous waste removed to landfill dropped to 32 percent in 2010. [Table 27](#)

Recycling at Bayer

Throughout the Group, we encourage extensive recycling. However, this is not possible for a large proportion of our end products, owing to legal requirements, particularly for pharmaceuticals and crop protection agents. In the year under review, we continued to look for new opportunities for recycling, within the framework of legal regulations.

Bayer MaterialScience (BMS) also collaborates with other industry representatives to develop recycling solutions, taking on the role of mediator between customers and specialist recycling companies. The system for taking back transportation bags from customers in Thailand has been improved: after use, the bags are cleaned of the chemicals that have been transported in them in a special process and are then reused. In this way, 77,123 new transportation bags have been saved since 2007. The Global Sideline Business Department at BMS is working to recycle a range of facilities and tools that are no longer needed but that are still in working order, instead of disposing of them. BMS has sold a total of 66 tangible assets, such as polyurethane dosing systems, to third parties worldwide. In addition, 7,156 metric tons of scrap metal have been returned to the system. A further example of eco-efficiency is a new technology for coloring synthetic resin granules, which BMS uses as a raw material in the manufacture of

plastic products. This makes it possible to reduce the amount of waste granules generated by up to a quarter.

Currenta has applied for a patent for a new pretreatment process for electronic scrap. The special thermal pretreatment system allows up to 99 percent of precious metals such as gold, silver and copper to be recovered from old computer circuit boards or mobile phones.

Protection of biodiversity

The United Nations declared 2010 to be the Year of Biodiversity. Bayer is explicitly committed to the goals of the [Convention on Biological Diversity \(CBD\)](#), which was adopted as an international standard at the UN Earth Summit in Rio de Janeiro in 1992.

For Bayer CropScience, protecting biodiversity and conserving natural ecosystems form the basis for sustainable agriculture. Bayer CropScience's strategy encompasses research and development activities, solutions for improving plant health, assistance in tackling invasive species and measures to promote integrated crop management. Our own [position on biodiversity](#) governs our obligation to maintain and increase the diversity of species [obligation to maintain and increase the diversity of species](#). We have published details of the biodiversity projects of Bayer CropScience and other specific examples of our [commitment to the protection of species](#) on the Internet.

As a member of the [German Association of Research-Based Pharmaceutical Companies \(VFA\)](#), Bayer HealthCare also supports the Association's position on the UN Convention on Biological Diversity. In its search for potential active ingredients, Bayer HealthCare concentrates on the chemical synthesis of substances using state-of-the-art technologies in medicinal, combinatorial and computational chemistry. All work that could enable global access to natural substance sources is scrupulously reviewed in advance by Bayer in accordance with the Rio Convention. Bayer HealthCare is not specifically working on research into drug products derived from natural substances at present. While the drug we

139 WWW
CBD

140 BAYER WEB
[Position on biodiversity](#)
141 ONLINE REPORT
[Commitment to the protection of species](#)

142 WWW
VFA

27_Hazardous waste* disposed of according to means of disposal

	2006	2007	2008	2009	2010
Total volume of hazardous waste disposed of (1,000 metric tons p.a.)	336	342	365	375	354
- Volume landfilled (1,000 metric tons p.a.)	134	101	81	89	56
- Volume incinerated/recycled (1,000 metric tons p.a.)	202	241	284	286	298

* Only waste generated by Bayer



market as Glucobay is obtained from the soil bacterium Actinoplanes by a biotechnological process, it is not considered a scarce natural substance, as it is present universally in the soil.

By comparing our global Site Register with nature reserves of international relevance (Asean Heritage, Barcelona Convention, UNESCO-MAB Biosphere Reserve, Wetlands of International Importance – Ramsar List and World Heritage Convention), we have ascertained that none of our production sites are adjacent to a nature reserve. Through an internal approval procedure, we also exclude the possibility that new production sites are set up in areas that are protected by statutory requirements of the countries concerned with respect to natural characteristics, biodiversity or similar factors. In every case, the stipulated minimum distances to protected areas are complied with. In order to limit the total area of land use at our production sites, we are committed to land recycling, for example by renaturizing unused sites in the Chempark locations.

Management systems for the implementation of our HSEQ targets

Bayer’s objective is to achieve an appropriate and uniform standard of HSEQ (health, safety, environmental protection and quality) throughout the Bayer Group and to steadily improve it. To meet this goal, the company has established HSEQ management systems in all subgroups and service companies that are based on recognized international standards and are regularly reviewed and updated. In 2010, more than 90 percent of all Bayer production sites had an internal HSE management system, i.e. one that is audited by Bayer.

The boards of management/executive boards of the respective subgroups and service companies and the corresponding line organizations bear operational responsibility for HSEQ. Through continuous updating and

development of HSEQ directives and through internal audits, each organizational unit ensures that its HSEQ management systems meet the specific requirements. The Bayer Group also regularly conducts internal observer audits at the subgroups.

International standards and certifications

In the year under review, we amended the audit of the extent to which our business activities are covered by HSE management systems and adjusted the presentation of results to the customary convention in the industry. We will no longer present the coverage purely in relation to the number of externally certified sites, but will instead use the scope of our activities as a reference figure, which is essentially reflected in the production volume and energy consumption.

According to this, over 60 percent of our activities (in terms of production volumes and/or energy consumption) takes place at sites that are certified or validated externally in accordance with internationally recognized regulations, such as the environmental management standard ISO 14001, the European environmental management regulation EMAS or the occupational safety standard OHSAS 18001. As part of our adopted certification concept, we are planning to increase our coverage with internationally certified HSE management systems to over 80 percent in the next few years. [Table 28](#)

All subgroups and service companies have industry-specific international quality management systems such as to ISO 9001 or GMP (Good Manufacturing Practice). The subgroups have additional systems and standards that address product-specific requirements. More information on [certifications](#) can be found on the Internet.

Initiative for plant and process safety

In 2010, Bayer launched a Group-wide [process and plant safety](#) ([Target, p.54](#)) initiative to sharpen the focus of our commitment to safety. The aim of the measures is to

143 BAYER WEB
Certifications

Targets 2015
Process and plant safety,
p.54

28_Certifications

Certifications to internationally recognized regulations and internal Bayer audits 2010	Certified to ISO 14001 / Validated to EMAS standards	HSE management systems based on other external standards*	Certified to OHSAS 18001	Bayer-audited HSE management systems
Percentage of our operations (with respect to production volume and/or energy consumption) at certified or validated Bayer sites	62	38	9	92

* RCMS (Responsible Care Management System) in the United States or Industria Limpia (clean industry) in Mexico

News

New Bayer Safety Council boosts safety

The Bayer Safety Council set up by the Bayer Board of Management has met for the first time. “The purpose of the new council is to further boost the high safety standard at our company,” said Bayer CEO Dr. Marijn Dekkers, who was a guest at the first meeting. The council is made up of representatives from the subgroups and service companies on the Community Board for Technology, Innovation and Environment under the chairmanship of Dr. Wolfgang Plischke, the member of the Bayer Board of Management responsible for Innovation, Technology and Environment. Key topics addressed by the Safety Council include occupational safety, process and plant safety, and transport safety. “Safety is the top priority at Bayer,” said Plischke. He explained that the Group has achieved significant improvements in occupational safety over the past five years and has exceeded the targets it set itself. Plischke also revealed that Bayer had set even more ambitious targets for the entire Group for the period to 2015 and was launching a new project to further improve the already excellent level of transport safety.

The initiatives and programs introduced have proved justified and will be continued with renewed vigor. The focal points for 2011 are process and plant safety and the first Group-wide Bayer Global Safety Day, which will take place on September 13.

develop the culture of safety and safety standards at the plants and in the laboratories and to drive forward the status of safety technology.

The most important principles and related organizational structures were set forth in the Group Directive on Process and Plant Safety. Adjustments to the organization were made in 2010 and the first measures, including special training programs, were implemented. By 2012, around 40,000 employees worldwide are to receive targeted training in process and plant safety. The first Process and Plant Safety Symposium was held in October 2010 and was attended by 100 Bayer experts from 14 countries. The idea was to promote collaboration across all subgroups and countries in process and plant safety.

Environmental incidents and transport accidents

Unfortunately, even our extensive safety precautions and training procedures cannot entirely prevent environmental or transport

incidents from occurring. In accordance with our internal voluntary commitment, we report any leakage of substances with a high hazard potential from a quantity of 100 kilograms. For reasons of clarity, we have consolidated the classification system of “Level 1” and “Level 2” incidents that we used in previous years into a joint category. The minimum trigger level for reporting obligations has been maintained.

Bayer uses the term “environmental incidents” to cover incidents at plants operated by Bayer resulting in the release of substances into the environment. Factors that influence reporting obligations include, in particular, the quantity and nature of the substance, the amount of damage caused and any consequences for residents. Under “transport accidents,” we record incidents involving our own chemical transport services and those commissioned and paid for by us, in accordance with stipulated criteria. These include leakage of the load, graded according to the volume and dangerous goods class, personal injury and blocked transport routes.

29_Environmental incidents (number p.a.)

2006	2007	2008	2009	2010
8	3	9	13	7

30_Transport accidents according to means of transport (number p.a.)

	2006	2007	2008	2009	2010
Road	6	9	8	8	6
Rail	3	1	1	2	1
Inland waterways	0	0	0	0	1
Sea	0	0	1	0	0
Air	0	0	0	0	0
Pipeline	0	0	0	0	0
Total	9	10	10	10	8

144 ONLINE REPORT
Transport safety issues

145 ONLINE REPORT
Incidents that
were observed by
stakeholders

In 2010, we recorded seven environmental incidents that were reportable in accordance with Group specifications and eight transport accidents. One incident was assigned to both categories in accordance with our criteria. All incidents were analyzed and appropriate measures initiated. [Tables 29 and 30](#)

We have also listed and commented on other [incidents that were observed and reported by stakeholders](#) on the Internet.

Table 30 shows the development of figures for transport accidents, broken down according to means of transport. In total, around

one million transport movements took place in 2010.

Safety is the utmost priority for us. That also applies to the transport of goods, particularly in the case of hazardous materials. This includes [safety issues](#) along the entire value chain, from the selection of transport systems and logistics service providers to loading, the actual [transport](#) and unloading. Details are set out in a directive on transport safety. Individual examples of how subgroups use their initiatives to tackle specific safety issues in a targeted way have been compiled on the Internet.

Environmental incidents and transport accidents in 2010

	Personal injuries
Environmental incidents in 2010	
Currenta , Leverkusen, Germany, January 7, 2010: In the storage area, a large number of containers caught fire over an area of approx. 300 m ² . Very large volume of smoke produced.	no
Bayer MaterialScience , Dormagen, Germany, August 30, 2010: Brief release of vapors containing phosgene triggered an ammonia vapor wall for safety reasons. Approximately 700 kg of ammonia was released.	no
Bayer CropScience , Institute, United States, October 12, 2010: Hydrochloric acid vapors escaped during cleaning work on a tank. Approximately 1.3 metric tons of the gas was released into the atmosphere.	no
Bayer CropScience , Institute, United States, October 20, 2010: Wastewater from treatment (5.5 metric tons of a process wastewater solution containing 20 percent sodium hydroxide solution) with a high pH from the manufacture of crop protection agents was accidentally discharged into the cooling water system during cleaning work on a tank and from there entered the Kanawha River.	no
Bayer MaterialScience , Baytown, United States, November 8, 2010 : TDA leak from a discharge port on a goods wagon. A large quantity of toluene diamine leaked out, which was disposed of correctly. 5 kg of the substance entered the soil.	no
Bayer HealthCare , La Trinidad, Venezuela, November 22, 2010: An electrical short circuit caused materials stored in a basement to ignite. Fire with smoke.	no
Environmental incidents in 2010 that were also transport accidents	
Bayer CropScience , Kansas City, United States, June 7, 2010: Traffic accident during transportation of dangerous goods by a carrier commissioned by Bayer. The freight (2,000 kg of flubendiamide) was destroyed by the fire that followed.	no
Transport accidents in 2010	
Bayer MaterialScience , Pickering, Canada, March 30, 2010: Derailment of a rail tank truck loaded with a BMS product (MDI). No personal injuries or environmental damage resulted.	no
Bayer MaterialScience , Brunsbüttel, Germany, June 23, 2010: Traffic accident during transportation of dangerous goods by a carrier commissioned by Bayer. No damage or leakage of product.	no
Bayer CropScience , Rome, Italy, July 20, 2010: A passenger car caused a traffic accident involving a heavy goods vehicle commissioned by Bayer, which resulted in the death of the driver of the car. No leakage of product.	yes
Bayer MaterialScience , Leverkusen, Germany, August 20, 2010: The driver of a dangerous goods vehicle suffered a heart attack and survived. The collision caused one injury and a small amount of resin solution leaked out.	yes
Bayer MaterialScience , Kaohsiung, Taiwan, August 27, 2010: Leak during transportation of a container with discharge of 420 kg of a polyalcohol.	no
Bayer MaterialScience , Brunsbüttel, Germany, September 29, 2010: Gradual discharge of a total of around 600 kg of sulfuric acid at a ship loading/unloading station over a long period. Cause: a leak in the pipework.	no
Bayer MaterialScience , Durban, South Africa, November 17, 2010: A passenger car collided with a dangerous goods vehicle. No leakage of product.	no

Social Commitment

Social commitment forms an integral part of Bayer's **sustainability strategy**. We regard the **promotion of educational and social issues** as a contribution to **safeguarding the future viability of our society** – and thus as a **long-term investment** in positive framework conditions for our business.



The "Humboldt Bayermobile" is a project from the Bayer Science & Education Foundation designed to arouse interest in research. It is a truck 14 meters long that contains a fully fitted-out school laboratory that travels to schools in Berlin. This way, science comes to children.

Bayer has a very long tradition of social commitment. In 1923, chemist Dr. Carl Duisberg – one of the founding fathers of our company – established the first programs to promote science, education and social issues. In so doing he made an important contribution to society, while at the same time supporting educational opportunities for talented young people. And the company still assumes responsibility for social concerns today. Bayer wants to make a systematic and lasting commitment to the future viability of society – in the interests of both the common welfare and our company.

The selection criteria for our support activities are innovation capability, sustainable effectiveness and efficient project implementation. The focus is on issues of particular social relevance in countries in which Bayer is represented. We also concentrate on areas that are of relevance to our company, because it is there that we can offer not just the involvement of our employees, but also our technical and economic expertise. In the future, relevance to Bayer's business will become an increasingly important criterion, particularly when selecting activities in the communities near our sites.

All charitable donations are subject to the provisions of a Group-wide directive that establishes a framework for the alignment in terms of content and strategy and for the proper handling of our funds. The Foundation & Donations Management Department within the Corporate Office of Bayer AG coordinates the strategic alignment of the activities and thus the related monitoring and reporting.

In 2010, Bayer made available three percent of net income – or €56.8 million – for its **social commitment** worldwide. This total also includes the funding allocated to the company's three **foundations**: the Bayer Science &

Education Foundation, the Bayer Cares Foundation and the Bayer USA Foundation. About half of all expenditures worldwide come from budgets that are directly managed in the company's headquarters. The other half of spending is financed from the budgets of the Bayer subgroups and country companies around the world. Depending on the project requirement, the support vehicles range from projects initiated by Bayer (often in cooperation with local partners) through volunteering programs and donations to initiatives run by the Bayer foundations and Bayer clubs. [Table 31](#)

Education and research

Innovation is a central condition for our company's success. That's why we traditionally place great emphasis on support for science and education. Here we not only focus on our own activities, but also promote scientific education in general: we support educational opportunities, talented young scientists and leading researchers through specific programs organized by the Bayer Science & Education Foundation and through targeted initiatives.

In December 2009, the German President presented researchers from Bayer with the German Future Award for technology and innovation. They donated the prize money of €250,000 to a fund for the Bayer foundation's newly established Thrombosis Award. The company matched this amount, enabling the foundation to set up a special endowment of €500,000 for the new scientific prize. The €30,000 Thrombosis Award

147 ONLINE REPORT
Social commitment –
2010 expenditures

146 BAYER WEB
Bayer foundations

Targets 2015

Social Commitment

- > Focus our global commitment further on scientific education, fostering talent, cutting-edge research, health care and, in Germany, additionally on recreational, youth and disabled sports

150 WWW
USAID

151 BAYER WEB
Hansen Family Award

152 BAYER WEB
Early Excellence in
Science Award

153 ONLINE REPORT
Bayer Hemophilia
Awards Program,
Go West, Bayer Fights
Chagas

154 BAYER WEB
Baylabs

155 BAYER WEB
Aspirin Social Award

156 WWW
Humboldt Bayermobile

157 ONLINE REPORT
AMAJA

158 BAYER WEB
Making Science Make
Sense

148 WWW
WHO

149 WWW
DSW

funded through this endowment will be presented in the future every two years to young scientists who conduct research into vascular diseases.

The Bayer foundation also presents the €75,000 [Hansen Family Award](#) for medical research and the [Early Excellence in Science Award](#) for particularly talented young researchers in the fields of biology, chemistry and materials research.

Our activities also focus on good scientific school education. In this connection we concentrate on three pillars: the school programs funded by the Science & Education Foundation, the “[Baylabs](#)” laboratories for schoolchildren and competitions for schoolchildren (*Uugend forscht*, International Chemistry Olympiad, International Biology Olympiad). In Germany, the Bayer Science & Education Foundation supports schools in the communities near Bayer’s sites. In Berlin and Brandenburg, for example, the foundation joined with Humboldt University to sponsor the “[Humboldt Bayermobile](#).” The mobile laboratory offers school classes the opportunity to experiment and conduct research just like genuine scientists. The aim is to awaken young people’s enthusiasm for science and technology at an early stage. Bayer helps children worldwide. In Belford Roxo, Brazil, for example, the company joined with the organization [AMAJA](#) to arrange tutoring in various disciplines for 76 children from socially disadvantaged families.

Information on our successful educational initiative “[Making Science Make Sense](#)” is also available on the Internet.

Health and social needs

Bayer demonstrates an active commitment to improving health services and social conditions in many regions of the world. In this way we contribute to a stable environment at our sites and help to solve global challenges.

We assume global responsibility in the area of health care through international partnerships with institutions such as the [World Health Organization \(WHO\)](#), the [German Foundation for World Population \(DSW\)](#) and the

[United States Agency for International Development \(USAID\)](#) (see also page 14f. in the Focus Issue Health). In China we cooperate with the Chinese Health Ministry in the “[Go West](#)” project to provide continuing education to physicians. We also initiate our own projects such as the [Bayer Hemophilia Awards Program](#) in the United States or the employee project “[Bayer Fights Chagas](#)” in South America. You can find more on these examples online.

With its Volunteering Program, the Bayer Cares Foundation supports current and former Bayer employees, as well as residents of the communities near the company’s sites, who are actively involved in social projects on a voluntary basis. In 2010, for example, the foundation provided total funding of more than €140,000 to 54 volunteer projects

Since 2010, the foundation has also presented the annual [Aspirin Social Award](#) – worth a total of €35,000 – for innovative aid and consultancy programs in the area of health care.

Another important area is aid for victims of natural disasters. Bayer donates medicines, materials and money to help people in desperate need. The Bayer Cares Foundation supports long-term reconstruction projects. For example, the foundation joined with Caritas International in funding a health center that can provide medical care to 30,000 victims of the earthquake in Haiti. This was made possible by Bayer employees in 35 countries, who donated a total of €250,000 in response to the company’s global appeal. Bayer contributed a further €100,000 to this amount, bringing the total to €350,000. In the immediate aftermath of the earthquake, the company donated emergency relief in the form of medicines worth over €650,000, bringing the total value of Bayer’s aid to Haiti to more than €1 million. We assisted victims of the flood in Pakistan with monetary and medical donations totaling €60,000. In addition to these major efforts, the company also provided support following smaller natural disasters. Bayer’s total expenditures for natural disaster aid in the reporting period totaled €1.751 million.

The company will provide emergency aid worth over €1 million for the victims of the

31_Social commitment in 2010

	in €1,000	Share of total in percent
Total	56,775	100
Education and research	6,639	12
Health and social needs	26,090	46
Environment and nature	2,909	5
Sports and culture	21,137	37

News**Bayer renews partnership with UNEP**

The global youth and environment partnership between the United Nations Environment Programme (UNEP) and Bayer has been extended through the end of 2013. Millions of young people have benefited from the partnership's numerous projects since it was launched in 2004. The aim of this collaboration is to further strengthen awareness among children and young people around the world for ecological relationships, promote the exchange of experiences and help to build networks. Bayer was the first company in the world to enter into a long-term, global partnership with UNEP in the field of youth and the environment. Bayer supports the joint activities to the tune of €1.2 million annually. The partnership projects range from tree-planting campaigns through the provision of instructional materials and creative competitions to the organization of major youth and children's conferences and the integration of young people into global events. This collaboration is now regarded by both partners as an exemplary public-private partnership.

earthquake and tsunami in Japan. In addition to the planned donation to the Japanese Red Cross of more than €880,000, the company will supply urgently needed medicines with a total value of around €120,000. Moreover, the Bayer Cares Foundation issued a worldwide call to its employees for donations. The funds collected, which the company will double up to an amount of €250,000, will be used to finance a long-term reconstruction project in the affected region. Bayer is making available more than €85,000 in 2011 for immediate aid for the victims of the flooding in Queensland, Australia.

Environment and nature

As an industrial enterprise, we believe that the careful use of natural resources and sensitization to environmental issues should be key elements of our social commitment. We want to strengthen environmental awareness, particularly among young people.

Together with our global partner, the [United Nations Environment Programme \(UNEP\)](#), we once again implemented a dozen projects for young people and children in 2010. The focal point of these activities was the International Children's Conference on Biodiversity in Nagoya, Japan, which was attended by more than 220 participants from 40 countries. And thanks to particularly strong interest from China, the annual children's painting competition run jointly by Bayer and UNEP received 3.2 million entries from 95 countries, another all-time high. As part of the Bayer Young Environmental Envoy Program, we invited young people from Africa, Asia and Latin America on a week-long study trip to Germany in 2010.

At the site in Belford Roxo, Brazil, Bayer initiated the "Escola Verde Project." With the help of this environmental education program, teachers and students from a total of 120 schools learned more about recycling, waste disposal and urban greening in 2010.

The Bayer Science & Education Foundation also supports climate protection projects. Every two years since 2008, the foundation has presented the [Bayer Climate Award](#), which carries with it a purse of €50,000. For more information on climate protection at Bayer, see page 22 in the Focus Issue Climate. In addition, we present a further educational program for young people, the Bayer foundation's "Bayer Climate Fellowship/[International Sustainability Camp](#)" program, on the Internet.

159 BAYER WEB
[Bayer Climate Award](#)

160 ONLINE REPORT
[International Sustainability Camp](#)

Sports and culture

Support for clubs and ensembles at Bayer is closely linked with the company's history, and we have been active in the areas of sports and cultural affairs for more than 100 years. Our goal here is to promote health and creativity while creating meaningful leisure time options.

Our support for sports is based on three pillars: recreational, youth and disabled sports. This expressly does not include our promotion of competitive sports – with professional soccer at the center of these activities – which is part of the company's image advertising.

A new Bayer initiative within the scope of our social commitment goes by the name of "[Simply Soccer](#)" and is aimed at supporting schoolchildren with mental and learning disabilities. Together with the German Soccer Federation (DFB), Bayer organizes and supports partnerships between special schools and soccer clubs. In this way, we enable young people with disabilities to participate in club soccer. At the same time, the participants' contact with children who do not have disabilities promotes mutual learning and understanding.

The promotion of cultural activities also has a long tradition. Bayer Arts & Culture and its clubs and ensembles offer a diverse program of music, theater and art at our German sites.

161 BAYER WEB
[UNEP](#)

162 ONLINE REPORT
[Simply Soccer](#)

Reporting principles

Our Sustainable Development Report provides clear and concise information on all issues that we and our stakeholders consider to be of relevance for sustainability. Our reporting meets the requirements established in the internationally recognized G3 guidelines of the Global Reporting Initiative (GRI) and covers all financial and non-financial indicators corresponding to GRI level A+. Our reporting is also based on the content of the 10 principles of the UN Global Compact (UNGC) and on OECD Guidelines. You can find a summarized GRI index and the corresponding UNGC principles inside the back cover. A comprehensive overview of the GRI indicators and our progress in implementing the 10 UNGC principles can be found in the online report.

163 BAYER WEB
UNGC progress report

164 BAYER WEB
Long version of
GRI Index

When selecting and measuring indicators, we took recommendations by the following into consideration:

- World Business Council for Sustainable Development (WBCSD)
- Greenhouse Gas Protocol (GHG Protocol)
- European Chemical Industry Council (Conseil Européen de l'Industrie Chimique, CEFIC)
- Society of Investment Professionals in Germany (Deutsche Vereinigung für Finanzanalyse und Asset Management, DVFA) in conjunction with the European Federation of Financial Analysts Societies (EFFAS), for the reporting of non-financial indicators.

Recording our sustainability indicators

Transparent reporting is based on the acquisition of valid and plausible data. All HSE (health, safety and environmental protection) performance indicators for the Group are recorded in BaySIS™, our Group-wide, site-based information system. The data undergo plausibility checks and cross-checks to ensure a high level of data integrity. The HSE data cover all companies in which we have a holding of at least 50 percent. The performance indicators of these companies are fully consolidated regardless of Bayer's share in them. We use various other information systems to gather HR performance indicators and social data worldwide, such as ProKon, the Global HR Productive system and the reporting database Human Resources Controlling Tool. We register the data of all relevant organizational units and companies worldwide that fall within the scope of the Bayer Group's consolidated financial statements. The following information on the reporting group applies to all indicators with the exception of greenhouse gas emissions:

- The years 2006 to 2010 are shown as continuing operations following the spin-off of Lanxess. The Wolff Walsrode and H.C. Starck sites and the Diagnostics Division are no longer included in the reporting group. Schering sites are included from mid-2006. Because Schering sites were reported for the first full year in 2007, some indicators may show year-on-year balance sheet growth in 2007.
- Data on occupational injuries and transport accidents and environmental incidents are captured worldwide at all sites of subgroups and service companies.
- Environmentally relevant indicators are recorded at all (production) sites.

To meet the customary international standard, we shall modify our reporting on occupational injuries for the next report by replacing the indicator used to date, the "million working hour quota" (MAQ), with the LTRIR. The LTRIR (Lost Time Reportable Incident Rate) is based on 200,000 employee working hours and includes work-related illnesses. At the same time, we will extend our reporting to include incidents that do not lead to lost working time but require more than simple first aid measures. The corresponding indicator is the RIR (Recordable Incident Rate). (See also page 41 in the Employees section.)

The auditing company Ernst & Young reviewed the data capture process and statements made in the entire Sustainable Development Report, including the printed version and the additional online content, to verify that they are consistent, appropriate and plausible (see page 69f.). Furthermore, on-site visits were made to 10 reporting objects in Germany, France, the United States and Thailand. During these visits, random checks were performed on the gathering and reporting of HSE data.