Environmental, safety and security management

We act responsibly as an integral part of society. Our top priorities are the safety of our employees and neighbors and the security of our plants. Our Responsible Care Management System sets out the framework for our voluntary commitments.

Strategy and management systems
BASF's Responsible Care Management System comprises the global rules, standards and procedures for environmental protection, safety and security. Concrete specifications for implementing these measures are laid out in binding directives. These describe the pertinent responsibilities, requirements and assessment methods. We periodically conduct audits to monitor our performance and progress in Responsible Care, and use the findings to continually improve our performance.

We set ourselves ambitious goals for environmental protection, safety and security and regularly report on our progress. Our guidelines and requirements are constantly updated. In 2011, we adopted a new global Group directive on environmental protection with a focus on air, noise, water and waste, and defined several worldwide requirements for occupational safety and site security. These set, for example, mandatory limits on noise in the workplace and regulate the handling of nanomaterials.

We assess risks in areas ranging from research and production to logistics, and how these could affect the safety and security of our employees, the environment or the surrounding community. Collecting and evaluating incident data on a global basis helps us to systematically learn from mistakes and accumulate knowledge gained through experience. In our databases, we document accidents, near-misses and safety-related incidents at our sites as well as on transportation routes. We also gather data on incidents involving external contractors working for BASF.

With our global safety initiative, we foster and encourage awareness of safety and security in the workplace and safe practices for every individual. To further improve our environmental protection and safety and security systems, we also take into account the information derived from our ongoing dialog with stakeholders. BASF received several awards in 2011 for our activities in environmental protection, safety, security and health. At the Geo Responsibility Awards in Sri Lanka, we were distinguished for our safe and environmentally friendly handling of industrial waste.

Audits
Regular audits help ensure uniformly high standards within the BASF Group for environmental protection, safety, security and health protection. We carry out audits at BASF sites and at companies in which BASF is a majority shareholder. In our Group directive for Responsible Care audits, we define, for example, a regular procedure to be followed if standards are not being adhered to. During our audits, we create an environmental, safety and security profile which shows if our performance with regard to environment, safety and security is sufficient to address the existing risk potential. If this is not the case, we stipulate measures and conduct follow-up audits on their implementation soon afterward.

Our internal audit system complies with the standards for external auditing procedures ISO 19011 and OHSAS 18001. Worldwide, 179 BASF production sites are certified in accordance with ISO 14001 (2010: 153); this increase results mainly from the integration of the former Cognis sites.

In 2011, 97 environmental, safety and security audits were carried out in the BASF Group at 66 sites. We carried out 35 audits relating to occupational medicine and health protection at 35 sites. 

Directives and requirements
- New Group directive on environmental protection with a focus on air, noise, water and waste
- New global requirements for occupational safety and site security

Audits
- Regular audits help ensure uniformly high standards for environmental protection, safety, security and health
- BASF’s internal audit system complies with the standards for external auditing procedures ISO 19011 and OHSAS 18001
- 97 audits on safety, security and environment, 35 audits on occupational medicine and health protection
Global safety and security concepts

Our global safety and security concepts serve to protect our employees and neighbors as well as to prevent property damage and protect information. They also aim to prevent production stoppages and damage to the environment. When designing a new facility, we apply a five-step system from conception to start-up that takes into account the most important aspects of environmental protection, safety, security and health protection, and incorporates them early on. We use a risk matrix to assess risks according to estimated probability as well as potential impact, and determine appropriate protective measures. In 2011, around 12,000 employees received training in occupational and process safety.

We closely investigate incidents at all sites which led to fires, explosions or the release of substances. In order to further improve process safety at our plants, we analyze and compare the causes on a global level and continually optimize processes. A new process safety requirement has been in effect since 2011 to increase employees’ risk awareness, for example, in situations involving changes made at production plants. Furthermore, we also define the regular intervals at which safety concepts for BASF production plants are reviewed. We can thus address potential risks with appropriate measures.

With our emergency response concepts, we are prepared for potential incidents. This includes specific emergency response plans for our production facilities. Depending on the situation, we involve joint venture companies, partners and suppliers as well as cities, communities and neighboring companies in this process. BASF’s central emergency response supports local emergency response units around the clock. Our emergency systems are checked regularly, for example, in drills with our employees and local authorities.

In 2011, we began linking our emergency dispatch centers across Europe. This allows us to work more closely across different sites, and to assess and deal with alarm information within the network more quickly and reliably. After the earthquake in Japan, our experts in research, health and safety spent several weeks supporting local measures at our Japanese sites. We also trained the experts for the Japanese sites in radioactivity measurement and provided them with the appropriate measuring equipment.

In 2011, we continued to implement the requirements set down in 2010 for preventive measures to protect our sites around the world from third-party interference. These measures aim to ensure extensive protection for employees and the company against, for example, criminal behavior, the loss of knowledge or international terrorism. We have incorporated human rights aspects relevant for site security into the training of our security personnel. We made these qualification requirements globally mandatory in 2011 and began implementing and monitoring them in all regions. The respect of human rights is now an obligatory element of new contracts with contractors for whom these aspects apply.

For more on emergency response, see basf.com/emergency_response
For more on process safety, see basf.com/process_safety

Safety and security concepts

Around 12,000 employees trained in occupational and process safety
New requirements defined for process safety
We have incorporated human rights aspects relevant for site security into the training of our security personnel and stipulated globally binding qualification requirements
Supply chain management
Both new and existing suppliers are selected and evaluated not only on the basis of economic criteria, but also on standards for environmental protection, occupational safety and social responsibility. Our Code of Conduct for suppliers is based on internationally recognized guidelines: It includes environmental protection and compliance with human rights and labor laws, as well as antidiscrimination and anticorruption policies. In 2012, we aim to include compliance with the Code of Conduct in our supplier contracts.

We conduct risk-based assessments of our suppliers through on-site visits. Risk matrices help us to identify high-risk suppliers based on country and product risks. In response to this country and product risk analysis, we paid on-site visits to a total of 206 raw materials suppliers in 2011 to assess environmental, health and safety aspects. If our audits find need for improvement, we take corrective measures. We perform a follow-up audit a few months later. If we do not see any improvement, we terminate the business relationship. This occurred in eight cases in 2011.

To check their compliance with international labor and social standards, new suppliers from countries outside the OECD are required to fill out a questionnaire. A total of 665 suppliers received our questionnaire on labor and social standards in 2011. In order to do business with us, a company must have completed and signed the survey, with no key issues – such as the elimination of child labor – remaining unresolved. Should we suspect that our labor and social standards are not being met, we retain the right to conduct an external audit and, if necessary, decline a business relationship with that supplier. We did not terminate any business relationships on these grounds in 2011.

BASF is currently participating in an international initiative of the chemical industry to standardize suppliers’ self-assessment and self-auditing processes worldwide. This initiative aims to use a globally uniform list of questions modeled after international guidelines like Responsible Care, the International Labor Organization (ILO) standards and the principles of the United Nations’ Global Compact, and to develop uniform criteria for auditing suppliers.

In 2011, we provided compliance training to our employees in procurement on topics including sustainability. In order to further minimize supply chain risks and offer information on the opportunities available through sustainable business practices, we held a Supplier Day in 2011 with around 70 suppliers in China. There, we recruited more participants for the “1+3” project begun in 2006, in which suppliers pledge to pass on our sustainability standards to at least three of their cooperation partners in the supply chain.

BASF purchased approximately 500,000 different raw materials and technical goods as well as services for plant construction, maintenance and logistics in 2011. We procured raw materials from over 6,000 suppliers.

For more on supply chain management, see basf.com/supplychain

2020 Goal
Reduce transportation accidents

We aim to reduce the rate of transportation accidents worldwide per 10,000 shipments by 70% compared with 2003.

Transportation and warehouse safety
Our regulations and measures for transportation and warehouse safety comprise the delivery, storage and distribution of chemicals among BASF sites, suppliers and customers. Our global directives also set out consistent standards for the transportation and storage of chemical products in rented warehouse facilities.

We expanded our network for transportation, distribution and warehouse safety in 2011. For example, in North Africa, we conducted employee training, reviewed processes, and defined consistent requirements for our logistics companies. In 2011, we introduced a new global directive for the uniform assessment of transportation safety in deep sea tankers. At sites which have joined the BASF Group as a result of acquisitions, we reevaluated...
the transportation risks for selected critical products and improved their transport processes, making these safer.

If an incident occurs despite all of our preventive measures worldwide, we provide swift and specially coordinated assistance. Our transportation safety advisors are involved in these processes and procedures, and they subsequently evaluate all of the information. More than 150 employees are active around the world as trained transportation safety advisors. They collaborate within a global network, helping us to establish proper measures and to avoid incidents in the future.

Compared with baseline 2003, we have reduced the number of transportation accidents from 0.56 per 10,000 shipments to 0.18. This number is significantly reduced compared with the previous year (2010: 0.28). We have recorded and evaluated product spillages during transportation on a global level since 2011, continually optimizing our transport processes. In 2011, the number of product spillages amounted to 0.30 per 10,000 shipments.

We also assess our logistics suppliers with regard to safety and quality, and evaluated more than 500 companies worldwide in 2011. For these inspections, our experts use both our own methods as well as internationally approved analysis instruments, such as the European Safety Quality Assessment System. Based on the questionnaire revised by the European Chemical Industry Association (CEFIC) in 2011, we raised our requirements for safety and quality in our logistics partners even higher. If we determine that our standards are not being met, we discuss this with logistics companies in quality and safety briefings and ensure that the necessary measures for improvement are immediately introduced.

We are actively involved in external networks that quickly provide information and assistance in emergencies. These include the International Chemical Environmental (ICE) initiative and the German Transport Accident Information and Emergency Response System (TUIS), in which BASF plays a coordinating role. BASF provided assistance with TUIS in around 250 cases in 2011, including assistance to third parties. As a part of TUIS, BASF has started the implementation of a regional risk matrix in Asia, with which we define requirements for emergency response measures and accident information. In 2011, in order to further increase the quality of transportation accident assistance throughout Germany, we provided public fire departments with a training concept on handling dangerous goods. We plan to expand this training concept and introduce it in other countries.

For more, see basf.com/distribution_safety and basf.com/emergency_response

2020 Goal
Reduce emissions of air pollutants

We aim to reduce air pollutants from our chemical plants by 70% compared with 2002.

Emissions to air
Regular monitoring of our emissions to air is a part of environmental management at BASF. In addition to greenhouse gases, we also measure emissions of other air pollutants. These include inorganic compounds such as carbon monoxide (CO), sulfur dioxide (SO₂), nitrogen oxide, ammonia and other inorganic compounds, dust, heavy metals and non-methane volatile organic compounds (NMVOCs).

Our reporting does not take into consideration air pollutant emissions from oil and gas operations due to their substantial fluctuation during exploration phases. Emissions of ozone-depleting substances as defined by the Montreal Protocol totaled 62 metric tons in 2011 (2010: 93 metric tons), while emissions of heavy metals totaled 3 metric tons (2010: 4 metric tons).

### Transportation and warehouse safety

- Regulations and measures for transportation and warehouse safety comprise delivery, storage and distribution of chemicals
- New global directive for transportation safety in deep sea tankers
- More than 150 transportation safety advisors worldwide

### Emissions to air

<table>
<thead>
<tr>
<th>Air pollutants¹ (reduction compared with baseline 2002)</th>
<th>2002 Baseline</th>
<th>2005</th>
<th>2006</th>
<th>2007</th>
<th>2008</th>
<th>2009</th>
<th>2010</th>
<th>2011</th>
</tr>
</thead>
<tbody>
<tr>
<td>–40.5</td>
<td>–40.5</td>
<td>–40.9</td>
<td>–57.5</td>
<td>–60.4</td>
<td>–65.5</td>
<td>–66.5</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

² See table on page 94 for the composition of the air pollutants
Environment and safety

As our portfolio expands and production volumes increase, we remain committed to our goal of reducing the emission of air pollutants from our chemical plants. By 2020, we want to reduce absolute emissions by 70% in comparison with baseline 2002. In 2011, the decline was 60.5%; we reduced emissions to 33,807 metric tons (2010: 60.4%; 33,940 metric tons).

Waste management
BASF prevents and reduces waste wherever possible. If no recovery options are available, we dispose of waste in a correct and environmentally responsible manner. We regularly carry out audits to inspect external waste management plants. When making acquisitions, we apply the same standards for the responsible handling of landfills and contaminated sites. After extensive planning, the remediation of two former multi-disposal landfills was largely completed in 2011. These were contaminated areas of former Ciba sites.

Worldwide, around 1.97 million metric tons of waste resulted from production in 2011 (2010: 1.86 million metric tons). Of this, oil and gas exploration accounted for 0.08 million metric tons (2010: 0.06 million metric tons). We were able to recycle or thermally recover 48.9% of our waste (2010: 48.5%). The rest was disposed of by underground storage (9.1%), through incineration (56.8%) or by landfilling (34.1%). According to internationally established categories, around 0.58 million metric tons of the waste we disposed of was classified as hazardous and approximately 0.43 million metric tons as non-hazardous. Our sites sent 0.30 million metric tons of hazardous waste away for professional disposal.

Costs and provisions for environmental protection
The overall costs of operating environmental protection facilities amounted to €850 million in 2011 (2010: €729 million). BASF invested an additional €190 million in new and improved environmental protection plants and facilities (2010: €122 million). These capital expenditures involved both end-of-pipe measures as well as integrated environmental protection measures.


Emissions to air
Air pollutants (metric tons per year) from BASF operations (excluding Oil & Gas)

<table>
<thead>
<tr>
<th></th>
<th>Baseline 2002</th>
<th>2008</th>
<th>2009</th>
<th>2010</th>
<th>2011</th>
</tr>
</thead>
<tbody>
<tr>
<td>CO*</td>
<td>46,208</td>
<td>5,171</td>
<td>3,549</td>
<td>3,964</td>
<td>4,419</td>
</tr>
<tr>
<td>NOx**</td>
<td>15,045</td>
<td>14,207</td>
<td>11,767</td>
<td>12,764</td>
<td>13,003</td>
</tr>
<tr>
<td>NMVOC***</td>
<td>15,005</td>
<td>5,136</td>
<td>5,050</td>
<td>5,550</td>
<td>5,570</td>
</tr>
<tr>
<td>SOx****</td>
<td>6,633</td>
<td>5,918</td>
<td>4,884</td>
<td>4,934</td>
<td>4,483</td>
</tr>
<tr>
<td>Dust</td>
<td>1,734</td>
<td>3,273</td>
<td>3,126</td>
<td>3,537</td>
<td>3,069</td>
</tr>
<tr>
<td>NH3/other*****</td>
<td>994</td>
<td>2,812</td>
<td>2,914</td>
<td>3,191</td>
<td>3,263</td>
</tr>
<tr>
<td>Total</td>
<td>85,619</td>
<td>36,518</td>
<td>31,290</td>
<td>33,940</td>
<td>33,807</td>
</tr>
</tbody>
</table>

* Carbon monoxide
** Total NO (nitrogen dioxide) + NO (nitrogen monoxide), calculated as NO2
*** Non-methane volatile organic compounds
**** Total various sulfur oxides
***** NH3 (ammonia) and other inorganic substances

Waste management
- Audits at external waste management plants
- Remediation of contaminated areas at two former Ciba sites largely complete
- 1.97 million metric tons of waste from production in 2011

Costs and provisions for environmental protection
- €850 million in overall costs for operating environmental protection facilities
- €190 million invested in new and improved environmental protection plants and facilities
- €659 million in provisions for environmental protection plants and remediation costs
Climate protection

We are committed to global climate protection. We make an important contribution with our climate protection products and our efforts to further reduce emissions along our value-adding chain. In 2011, we set ourselves a new goal for climate protection. One focus of our research and development is on continually improving the cost effectiveness of climate protection solutions. We measure our performance with a transparent corporate carbon footprint.

Strategy
We want to further reduce greenhouse gas emissions in our own production and along the entire value-adding chain. To this end, we implemented numerous measures in our production in 2011. Furthermore, we signed the Manifesto for Energy Efficiency in Buildings laid out by the World Business Council for Sustainable Development (WBCSD), and developed a sustainability guideline for the management of our own office buildings. We offer our customers solutions that help reduce greenhouse gas emissions and improve resource efficiency. About a third of our annual research spending is invested in the development of these products.

Our climate protection activities are based on comprehensive emissions controlling. In 2011, we received an award from the Environmental Investment Organization for our transparent reporting and comprehensive data collection. For the second time in a row, BASF has been selected for inclusion in the Carbon Disclosure Leadership Index (CDLI) and the Carbon Performance Leadership Index (CPLI) – the only chemical company to receive this honor.

Information on emission certificates can be found on page 108; for more on innovation, see page 28 onward
For more on climate protection, see basf.com/climate_protection

Global climate protection goals
In 2011, BASF emitted 25.8 million metric tons of greenhouse gases worldwide, measured as CO₂ equivalents (2010: 25.7 million metric tons); of this amount, 23.2 million metric tons were from BASF operations (excluding Oil & Gas) (2010: 23.8 million metric tons). As in the previous year, in 2011 we once again reached our goal of reducing greenhouse gas emissions per metric ton of sales product by 25% compared with 2002. The integration of the Cognis portfolio, the further reduction of nitrous oxide (N₂O) emissions and the further improvement of energy efficiency all contributed to this development. Overall, we have been able to lower our greenhouse gas emissions from BASF operations (excluding Oil & Gas) by 42% and reduce specific emissions by 74% since 1990. In 2011, we set ourselves a new goal: by 2020, we want to lower emissions per metric ton of sales product by 40% compared with 2002.

2020 Goals
Reduce greenhouse gas emissions

<table>
<thead>
<tr>
<th></th>
<th>Chemical production¹ (baseline 2002)</th>
<th>Natural gas transport² (baseline 2010)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2020 Goal</td>
<td>-40%</td>
<td>-10%</td>
</tr>
</tbody>
</table>

¹ per metric ton of sales product
² per amount and distance of transported gas

In the oil and gas business, BASF’s subsidiary Wintershall will likely achieve its goal of stopping the continuous flaring of gases associated with crude oil production in routine operations at all its oil production sites by the end of 2012. Wintershall has also set itself the goal of increasing energy efficiency in natural gas transport: By 2020, it aims to reduce carbon emissions related to the amount and distance of transported natural gas by 10% compared with 2010. This will be accomplished through, for example, a more energy-efficient gas pipe layout and the more intensive reuse of waste heat in the WINGAS Group’s transportation network.

Reduction of greenhouse gas emissions in BASF operations (excluding Oil & Gas)¹ per metric ton of sales product (in %)

<table>
<thead>
<tr>
<th></th>
<th>2002 Baseline</th>
<th>2005</th>
<th>2006</th>
<th>2007</th>
<th>2008</th>
<th>2009</th>
<th>2010</th>
<th>2011</th>
</tr>
</thead>
<tbody>
<tr>
<td>-10.9</td>
<td>-12.4</td>
<td>-16.6</td>
<td>-14.2</td>
<td>-28.9</td>
<td>-34.6</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

2020 Goal
-40%

¹ compared with baseline 2002

Strategy and goals
– We invest around one-third of our annual research spending in the development of products for climate protection and resource efficiency
– Goal of reducing greenhouse gas emissions in BASF operations (excluding Oil & Gas) per metric ton of sales product (~25%) exceeded, as in the previous year; new goal (~40%) defined for 2020
Greenhouse gas emissions
We report on greenhouse gases along our entire value-adding chain in accordance with the Greenhouse Gas Protocol Standard. We contribute our expertise to a WBCSD project, in which we work together with other companies to establish a uniform interpretation of this standard for the chemical industry. Our own reporting on emissions from production has been improved accordingly. We report separately on direct emissions and on indirect emissions from the purchase of energy. Scope 1 emissions encompass both direct emissions from production and energy generation, as well as direct emissions from the generation of energy for sale. Scope 2 emissions comprise indirect emissions from the purchase of energy for BASF use.

BASF Group’s greenhouse gas emissions according to the Greenhouse Gas Protocol (1,000 metric tons of CO₂ equivalent per year)

<table>
<thead>
<tr>
<th>BASF operations including Oil &amp; Gas</th>
<th>GWP factor *</th>
<th>2002</th>
<th>2009</th>
<th>2010</th>
<th>2011</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Scope 1</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CO₂ (carbon dioxide)</td>
<td>1</td>
<td>14,634</td>
<td>17,181</td>
<td>18,787</td>
<td>18,488</td>
</tr>
<tr>
<td>N₂O (nitrous oxide)</td>
<td>310</td>
<td>6,407</td>
<td>9,553</td>
<td>1,862</td>
<td>1,124</td>
</tr>
<tr>
<td>CH₄ (methane)</td>
<td>21</td>
<td>244</td>
<td>137</td>
<td>94</td>
<td>105</td>
</tr>
<tr>
<td>HFC (hydrofluorocarbons)**</td>
<td>140–11,700</td>
<td>61</td>
<td>74</td>
<td>82</td>
<td>85</td>
</tr>
<tr>
<td>SF₆ (sulfur hexafluoride)</td>
<td>23,900</td>
<td>0</td>
<td>1</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td><strong>Scope 2</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CO₂</td>
<td>1</td>
<td>5,243</td>
<td>4,119</td>
<td>4,402</td>
<td>4,879</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td>26,589</td>
<td>31,065</td>
<td>25,230</td>
<td>24,683</td>
</tr>
<tr>
<td><strong>Sale of energy to third parties (Scope 1)</strong>***</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CO₂</td>
<td>1</td>
<td>347</td>
<td>577</td>
<td>484</td>
<td>1,116</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td>26,936</td>
<td>31,642</td>
<td>25,714</td>
<td>25,799</td>
</tr>
<tr>
<td>Certificates sold****</td>
<td></td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>175</td>
</tr>
<tr>
<td><strong>Total including offsets</strong></td>
<td></td>
<td>26,936</td>
<td>31,642</td>
<td>25,714</td>
<td>25,974</td>
</tr>
</tbody>
</table>

* GWP-Factor: global warming potential of the individual gases expressed as a factor of CO₂
** Calculated using the GWP factors of the individual components (Intergovernmental Panel on Climate Change 1995)
*** Also includes sales to BASF Group companies and joint ventures; as a result, emissions reported under Scope 2 can be reported again in some cases
**** Voluntary Carbon Units (VCU) certificates from measures to reduce emissions, which were sold to third parties

Emissions reporting

- Reporting on emissions from production improved
- Emissions divided into separate groups: direct emissions from production and from energy generation for BASF use (Scope 1 emissions); direct emissions from the generation of energy for sale (Scope 1 emissions); indirect emissions from the purchase of energy for BASF use (Scope 2 emissions)
Our corporate carbon footprint

BASF is the only industrial company worldwide to have published a comprehensive corporate carbon footprint since 2008, based on continuously updated calculation methods. We report on all emissions along the value-adding chain and show the volume of emissions avoided through the use of our climate protection products. In order to reduce emissions along the value-adding chain, we analyzed the 65 million metric tons of emissions from our raw material procurement in more detail in 2011. Our goal is to work together with selected raw material suppliers on solutions that help reduce greenhouse gas emissions.

Significant greenhouse gas emissions along the BASF value-adding chain in 20111 (in million metric tons of CO2 equivalents)

<table>
<thead>
<tr>
<th>Sector</th>
<th>Emissions (in million metric tons of CO2)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Suppliers</td>
<td>26</td>
</tr>
<tr>
<td>BASF - production (including energy generation)</td>
<td>30</td>
</tr>
<tr>
<td>Disposal - incineration with energy recovery, landfilling (C 12)</td>
<td>30</td>
</tr>
<tr>
<td>65 Suppliers</td>
<td>50</td>
</tr>
<tr>
<td>Purchased products, services and capital goods (C 1, 2, 3a)</td>
<td>50</td>
</tr>
<tr>
<td>50 Customers</td>
<td>4 Transport</td>
</tr>
<tr>
<td>Emissions from the use of end products (C 11)</td>
<td>Transport of products employees’ commuting and business travel (C 4, 6, 7, 9)</td>
</tr>
</tbody>
</table>

1 According to Greenhouse Gas Protocol, Scope 1, 2 and 3 (categories within Scope 3 shown in parentheses)

Since 2011, we have defined climate protection products as those product groups which compared to the alternatives avoid greenhouse gas emissions over their entire life cycle – from production and use to disposal – and whose eco-efficiency is at least as good as that of comparable products. The use of climate protection products we sold in 2011 reduces our customers’ emissions by 330 million metric tons of CO2 (2010: 322 million metric tons). Our goal is to continuously increase our contribution to climate protection with these products.

For more on our emissions reporting, see basf.com/corporate_carbon_footprint

Opportunities with climate protection products

In 2011, we generated sales of around €6.7 billion (9% of BASF Group sales, excluding the styrenics business) with our climate protection products (2010: €7.7 billion), which include building insulation materials and plastic components for the automotive industry. This year-on-year decrease in sales of climate protection products is primarily attributable to the inclusion of the styrenics business in the Styrolution joint venture. The products from this business were not taken into account in calculating our corporate carbon footprint for 2011. In 2010, comparable sales of climate protection products amounted to €6.4 billion. Our current research activities in areas such as renewable energy and battery materials are expected to further increase our sales of climate protection products.

In addition, we offer a number of products which enable users to address the effects of climate change. Elastocoast®, for example, is a composite of BASF specialty plastics and stone ballast which protects dikes against the force of waves.

Corporate carbon footprint

– Comprehensive reporting on greenhouse gas emissions along the value-adding chain
– Use of climate protection products sold in 2011 reduces our customers’ emissions by 330 million metric tons of CO2

Climate protection products

– Around €6.7 billion in sales from climate protection products in 2011
– Product portfolio enables users to address the effects of climate change
Energy and raw materials

The conservation of resources is one of our fundamental principles. We use efficient energy-generation technologies, energy-efficient production processes and comprehensive energy management. We also make products that help conserve resources. In order to continue to increase our energy efficiency, we have set ourselves a new goal.

Strategy
We offer our customers products and technologies that help them conserve resources, save energy and make renewable energies more economical in the long run. Our own production processes focus on energy efficiency and the responsible use of raw materials. As a company in an energy-intensive industry, our success also depends on the long-term security of our energy and raw material supplies. We have therefore created a program to increase our energy efficiency – measured as the volume of sales products produced in relation to the primary energy required for their production – with a global goal for our production processes. We pursue this goal through efficiency in energy generation, savings through our Energy Verbund, and our energy management, which analyzes and further improves energy efficiency at our plants.

For more on energy-efficient products, see page 50 onward

Global goals
In 2011, we increased the energy efficiency of our production processes by 26.2% in comparison with the baseline 2002 (2010: 23.7%). Thus, ahead of schedule, we have already achieved our goal of improving the energy efficiency of our production processes by 25% compared with 2002. This was accomplished through the use of cogeneration technology and individual projects. At the Ludwigshafen site, for example, we expanded our network for condensate return in 2011. The increased use of condensate saves water and heat.

In order to further increase energy efficiency in BASF operations (excluding Oil & Gas), we have set a new goal for 2020: We want to improve the energy efficiency of our production processes by 35% compared with 2002. We plan to accomplish this by continuing to optimize our facilities and by investing in new plants. To support this goal, we have integrated energy management issues into our global Responsible Care auditing system.

2020 Goal
Increase energy efficiency

35%
We want to improve the energy efficiency of our production processes by 35% compared with 2002.

Energy and resource efficiency
We use highly efficient combined heat and power (CHP) plants to generate our own energy. With this CHP technology, we can meet more than 70% of our electricity needs. In 2011, it allowed us to save more than 12 million MWh of fossil fuels compared to conventional methods of generating steam and electricity.

The Verbund system is an important component of our energy efficiency concept. Waste heat from one plant’s production processes is used as energy in other plants. In this way, BASF saves more than 18 million MWh each year, which corresponds to savings of 3.7 million metric tons worth of carbon emissions annually. Furthermore, the by-products of one plant can be used as feedstock elsewhere, thus helping us to use raw materials more efficiently. Our most important raw materials are naphtha, natural gas, methanol, ammonia and benzene.

We are examining the use of renewable energy sources. These can only become a permanent part of our energy mix if they are competitive in terms of supply security and cost. We support the use and generation of renewable energies, and research and develop technologies that can be used in fields such as wind and solar thermal energy. To advance electric
Energy and resource efficiency

- 12 million MWh savings with combined heat and power (CHP) technology
- Savings of more than 18 million MWh per year with the Energy Verbund
- Most important raw materials: naphtha, natural gas, methanol, ammonia, benzene
- Construction begun on the first facility for large-scale production of battery materials for electric vehicles

Renewable raw materials

- For more on products that support the use of renewable energies, see page 45
- For more on our Verbund concept, see basf.com/verbund_e
- For more on energy efficiency, see basf.com/resource_conservation

Renewable raw materials

In 2011, more than 3% of the raw materials we purchased worldwide were from renewable sources. BASF is intensifying research and development activities for products and production processes based on renewable raw materials.

In one research project, for example, we have isolated a bacterium with which succinic acid can be produced from renewable resources. Our Eco-Efficiency Analysis shows that this bio-based process is more ecologically efficient than the production of succinic acid using petrochemicals.

BASF is involved in various projects along the value-adding chain to promote the sustainable cultivation of renewable raw materials. Together with Cargill and GIZ, the German governmental agency for international cooperation, we started a project in 2011 for the economical, environmentally friendly and socially responsible production of coconut oil in the Philippines. Furthermore, BASF will continue to be a member of the Roundtable on Sustainable Palm Oil, which Cognis joined in 2004. Our goal is to use palm and palm kernel oil from certified, sustainable sources by 2015.

- For more on the raw material change growth field, see basf.com/raw_material_change

Mineral raw materials

We performed an analysis in 2011 to discover if we use “conflict minerals.” To our current knowledge, this is not the case. To be certain, we plan in 2012 to trace the source of minerals we purchase all the way back to the original mine. Should some cases in which the possibility cannot be excluded that materials are taken from critical regions, we reserve the right to conduct an external audit and, if necessary, end our business relationship with that supplier.

- For more on our dealings with suppliers, see page 92 onward

Energy supply of the BASF Group 2011

Electricity supply
1 Internally generated 70%
2 Purchased 30%

Steam supply
1 Internally generated 49%
2 Waste heat 42%
3 Purchased 9%

Fossil and residual fuels used for power generation in BASF’s own power plants

85% Natural gas
34.5 million MWh
1% Heating oil
0.3 million MWh
2% Coal
0.9 million MWh
12% Residual fuels
4.9 million MWh
Total: 40.6 million MWh
Water

We use water as a coolant, solvent and cleaning agent, and to produce our products. We aim to use water sparingly and set ourselves global goals to this end. We offer our customers solutions that help them to purify water, use it more efficiently and reduce pollution.

Strategy

We want to use water as sparingly as possible at our sites, thus contributing to responsible usage. Water quality and availability vary substantially from region to region; therefore, we have developed a custom-designed water usage plan for each site.

We also show our commitment to sustainable water use in international partnerships and initiatives. As a member of the European Water Partnership (EWP), we played a decisive role in the development of the European Water Stewardship (EWS) standard, a voluntary industry standard. We investigated the applicability of this standard in practice and offered important advice on its improvement. We will apply the EWS standard in water stress areas worldwide starting in 2012. In 2011, we once again participated in the Carbon Disclosure Project survey on the risks and opportunities of water management for companies.

New global goals

In 2011, we set ourselves two new goals for 2020: We want to reduce the use of drinking water in production processes by half compared with 2010 and establish sustainable water management at all sites in areas of water stress. In 2011, around 21% of our production sites were located in water stress areas, and around 6.5% of water used by BASF was abstracted from these areas.

In 2011, we already made progress toward our 2020 goal of reducing the use of drinking water in production by half compared with 2010; we achieved a reduction of 20.9%. At our site in Antwerp, Belgium, we have switched to using river water instead of drinking water for cooling purposes.

Reducing emissions further

Around 192 million cubic meters of wastewater were discharged from BASF production sites (2010: 197 million cubic meters). At 2,900 metric tons, emissions to water of nitrogen (N total) in 2011 were less than in the previous year (2010: 3,950 metric tons), representing a reduction of 87.2% since 2002. BASF’s wastewater contained 24 metric tons of heavy metals (2010: 25 metric tons). Using an optimized procedure for separating heavy metals from wastewater at the Ludwigshafen site, we were able to reduce heavy metal emissions worldwide by 5.6% compared with the previous year and by 60.8% compared with 2002. As a result, we already reached our 2020 goals for reducing emissions of nitrogen and heavy metals to water in 2011. Around 24,300 metric tons of organic substances were emitted in 2011 (2010: 26,100 metric tons). This represents a decline of 73.5% compared with 2002. Phosphorus emissions amounted to 391 metric tons (2010: 458 metric tons).

To avoid errors which lead to unanticipated emissions, we will review our water protection concepts at all production sites by 2015. For example, we will invest more than €2 million in improving the analytical instrumentation of the wastewater treat-
### Use of water

- Commitment to sustainable water usage
- 2020 Goals achieved for reducing emissions of nitrogen and heavy metals to water
- Two new 2020 Goals for water
- BASF abstracted 2,130 million cubic meters of water worldwide in 2011

### Water use

In 2011, BASF abstracted 2,130 million cubic meters of water worldwide (2010: 2,125 million cubic meters). Of this amount, 94.5% was drawn from rivers and lakes. Groundwater accounted for 4.4% and drinking water for 1.1%.

BASF uses most of this water as cooling water. Only around 13% of the water comes into contact with products, for example, when used for washing or as a solvent or reaction medium. We recirculate water as much as possible in order to reduce our water usage. We report separately on recirculated water used in flow and closed-circuit cooling. However, we do not want water recirculation to result in increased energy use, for instance, for recooling the water. We have recooling plants at our larger sites to reduce the temperature of the cooling water before it is discharged back into a body of water.

### Business opportunities

We supply our customers with products that help them use water efficiently and reduce emissions to water. We are building a new water treatment chemicals plant at our site in Nanjing, China, which will begin production in 2012. With the acquisition of inge watertechnologies AG in 2011, we aim to expand our market position in the water treatment industry and offer our customers solutions based on both chemicals and membrane technologies. [For more, see basf.com/water](http://basf.com/water)

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**Water footprint of the BASF Group in 2011**

(Million cubic meters per year)

<table>
<thead>
<tr>
<th>Supply</th>
<th>Use</th>
<th>Discharge</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Surface water</td>
<td>2,012</td>
<td>2,012 (94.5%)</td>
</tr>
<tr>
<td>Groundwater</td>
<td>94 (4.4%)</td>
<td></td>
</tr>
<tr>
<td>Drinking water</td>
<td>24 (1.1%)</td>
<td></td>
</tr>
<tr>
<td><strong>Total:</strong> 2,130</td>
<td><strong>Total:</strong> 5,695</td>
<td><strong>Total:</strong> 2,042</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Cooling</th>
<th>Production</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Cooling water (uncontaminated)</td>
</tr>
<tr>
<td>2</td>
<td>Wastewater from production</td>
</tr>
<tr>
<td>3</td>
<td>Graywater</td>
</tr>
<tr>
<td><strong>Total:</strong></td>
<td><strong>Total:</strong></td>
</tr>
</tbody>
</table>

1. Total from production processes, graywater, rinsing and purification in production
2. The difference between the volume of water supplied and discharged is mainly attributable to evaporation losses during closed-circuit cooling.

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**Use Discharge**

1 Surface water 2,012 (94.5%)
2 Groundwater 94 (4.4%)
3 Drinking water 24 (1.1%)

1 Cooling water (uncontaminated) 1,849 (90.6%)
2 Wastewater from production 174 (8.5%)
3 Graywater 19 (0.9%)
Product stewardship

For us, product stewardship does not end at the factory gates. We review the safety of our products along the entire value-adding chain – from raw material suppliers to our own production and finally to our customers’ use of the products. We work continually to ensure that our products pose no risk to people or the environment when they are used responsibly and in the manner intended.

Strategy
We ensure uniform high standards for product stewardship worldwide and our voluntary initiatives go beyond legal requirements. We fulfill the requirements of the European Union’s chemicals legislation, including the REACH regulation. Our directives and global goals apply to all of BASF’s operative decision makers, who are responsible for implementing them. This implementation is monitored with regular audits.

We provide extensive information to our customers and the public on our chemical products with safety data sheets in more than 30 languages. This is achieved with the help of a global database containing continuously updated environmental, health and safety data on our substances and products. Our global emergency hotline network provides information around the clock. We offer our customers needs-based training in the safe use of our products, such as chemical intermediates or crop protection products.

With our global goals for risk assessment, we are supporting the implementation of initiatives such as the Global Product Strategy (GPS) of the International Council of Chemical Associations (ICCA). GPS is establishing global standards and best practices to improve the safe management of chemical substances. Internationally, we are also involved in workshops and training seminars in developing countries and emerging markets. In 2011, we contributed to GPS training workshops in Africa, Asia and Eastern Europe mainly for smaller and medium-sized enterprises as well as for government and university representatives. We conducted 14 learning events around the world in 2011, bringing the total to 42 since 2008.

For more on auditing of suppliers, see page 92 onward; for more on GPS, see basf.com/gps_e

2020 Goal
Risk assessment of all products

>99%

Risk assessment of all products that we sell in quantities of more than one metric ton per year

Global goals
By 2020, we will review our risk assessments for all substances BASF produces or sells worldwide in quantities of more than one metric ton per year. We already reached 29.5% of this goal in 2011. The risk associated with using a substance is the combination of its hazardous properties and the degree of exposure to people and the environment. We review our sales products, including mixtures, in the same way.

REACH and other legal requirements
We began implementing the second registration phase of REACH in 2011. We have notified the European Chemicals Agency (ECHA) of 4,000 substances for inclusion in the Classification and Labeling Inventory. By 2013, BASF will have registered nearly 700 substances with ECHA which are produced or imported in quantities between 100 and 1,000 metric tons per year. Nearly a quarter of these substances were added to our portfolio as a result of the integration of the former Cognis businesses. We expect that the cost of implementing REACH will continue to average around €50 million per year.
We consider it an important competitive advantage that we have expertise in evaluating substances as well as cost-effective processes, which we can use to implement these regulations. When it comes to REACH, we are in close contact with our customers and suppliers to ensure we have secure supplies of the raw materials we need and to strengthen customer relationships. Another way in which BASF contributes to international chemical safety is through our support of the United Nations’ initiative to implement a Globally Harmonized System (GHS) of Classification and Labeling of Chemicals.

Biodiversity
In order to preserve and foster biodiversity in agriculture, we participate in initiatives for the protection and conservation of ecosystems. For example, we test various possibilities on a farm in the United Kingdom in order to even better harmonize economic success with the protection of biodiversity. In France, we work with partners in a network promoting bee health and biodiversity. Using our AgBalance® method, we evaluate biodiversity as one of the 16 assessment categories in agricultural production.

Ecological and toxicological testing
Before launching products on the market, we subject them to a variety of ecological and toxicological testing. We apply the most current scientific knowledge in the research and development of our products. As a rule, we only conduct animal studies when we are legally required to do so. In some cases, animal studies are stipulated by REACH and other national legislation outside the European Union in order to obtain more information on the properties and effects of chemical products. Our treatment of animals meets the highest standards. We adhere to the specifications laid down by the German Animal Welfare Act as well as the requirements of the Association for Assessment and Accreditation of Laboratory Animal Care – the highest standard for laboratory animals in the world.

We are continuously developing alternative and complementary methods that we put into practice whenever it is possible and accepted by the authorities. BASF invested approximately €3 million for this in 2011. For tests where it is not permissible or possible to use alternative methods, we are working to further optimize our procedures.

We use alternative and complementary methods in more than a third of our tests. Since 2009, BASF has had a laboratory in which routine toxicological tests are carried out exclusively using alternative methods. Currently, 25 alternative methods are being used in our labs and another 10 are in the development stage.

Use of animal studies
– Products undergo ecological and toxicological testing before they are launched on the market
– BASF uses alternative and complementary methods whenever possible and accepted by the authorities
– Approximately €3 million invested in 2011 in the development of alternative methods

Management of new technologies
Innovative technologies such as plant biotechnology or nanotechnology offer solutions for the key challenges our society faces – for instance, in the areas of climate protection or health and nutrition. Products made using new technologies are often subject to higher standards than all other products.

Our Code of Conduct Nanotechnology sets out principles for using nanomaterials. In the past five years, we have taken part in approximately 25 projects, collaborations and partnerships related to safety research. The NanoGEM project, for example, investigates the lifecycle of functionalized nanoparticles and nanocomposite material. In Europe, we participate in endeavors like the MARINA joint project to establish reference methods and a test strategy for nanomaterials safety.

Since 2010, we have been involved in a project coordinated by the Öko-Institut e.V. (Institute for Applied Ecology) to develop an instrument for assessing the sustainability of nanoproducts. We analyzed the concrete admixture X-SEED® in a pilot trial. This test, completed in 2011, demonstrated that X-SEED helps to significantly reduce carbon emissions as well as energy and resource consumption in construction.

For more on nanotechnology and the Nanotechnology Code of Conduct, see basf.com/dialog-nanotechnology

New technologies
– Innovative technologies offer solutions for society’s challenges, such as climate protection, health and nutrition
– Instrument for assessing sustainability in nanoproducts developed in a joint project with the Öko-Institut e.V.