Responsibility along the value chain
Supply chain management

Our objective is to secure competitive advantages for BASF through professional procurement structures. Our suppliers are an important element of our value chain. Together with them, we aim to create value and minimize risks.

Strategy

With our sustainability-oriented supply chain management, we contribute to risk management by boosting our suppliers’ awareness of our expectations and standards, and by supporting them in carrying out our specifications. We count on reliable supply relationships and want to make our suppliers’ contribution to sustainable development transparent. Furthermore, we support BASF’s business units in developing solutions to stand out from the competition in addressing market-specific requirements. Our suppliers are evaluated based on risk due to the size and scale of our supplier portfolio.

Worldwide procurement

From our suppliers, we obtain raw materials and technical goods as well as all kinds of services, from technical to logistics and building facility services. BASF acquired raw materials, goods and services for our own production totaling around €40 billion in value from more than 75,000 suppliers around the world in 2014. Around 90% of this was locally sourced. In terms of our suppliers, there were no substantial changes in our value chain in 2014.

What we expect from our suppliers

- Global Supplier Code of Conduct
- Country-specific risk analysis forms basis of new supplier selection

Both new and existing suppliers are selected and evaluated not only on the basis of economic criteria, but also with respect to environmental, social and corporate governance standards. Our Supplier Code of Conduct is founded on internationally recognized guidelines, such as the principles of the United Nations’ Global Compact, the International Labor Organization (ILO) conventions and the topic areas of the Responsible Care Initiative. Available in 26 languages, the Code of Conduct covers environmental protection as well as compliance with human rights, labor and social standards, and antidiscrimination and anticorruption policies.

A country-based risk analysis forms the basis of our selection process for new suppliers. Due to the country-related risks identified in South America and Asia, we queried around 700 new suppliers there in 2014 on their commitment to the values of our Supplier Code of Conduct. Moreover, we provided training to a total of 495 suppliers with an elevated sustainability risk, especially in Asia and South America.

In addition, we instructed 519 procurement employees on sustainability-oriented supplier management. These are ways in which potential supply chain risks can be identified and minimized together with our suppliers.
Evaluating our suppliers

- Together for Sustainability initiative aims to harmonize and standardize supplier assessment and audits
- 120 raw material supplier sites audited
- Cooperations begun in China and Brazil for supplier training

BASF is a founding member of the Together for Sustainability (TfS) initiative of leading chemical companies for the global standardization of supplier evaluations and auditing. This initiative aims to develop and implement a global program for the responsible supply of goods and services and improve suppliers’ environmental and social standards. The evaluation process is simplified for both suppliers and TfS member companies through a globally uniform questionnaire. The initiative’s members conducted a total of 2,605 sustainability assessments and 93 audits in 2014. The number of initiative members rose from six to twelve. As part of the TfS initiative, we conducted a Supplier Day in Shanghai, China, in 2014. The activities in Brazil and India were also expanded.

Based on TfS evaluations, we pursue a risk-oriented approach with clearly defined, BASF-specific follow-up processes rolled out in 2014 worldwide using an IT tool. We have developed risk matrices that help us identify suppliers with a high sustainability risk given their respective country risks. Our purchasers indicate the suppliers for whom they see a potentially elevated sustainability risk. Furthermore, we check various information sources to see if any suppliers have been observed in connection with negative sustainability incidents. Based on these analyses, we audited a total of 120 raw material supplier sites on sustainability standards and initiated 538 sustainability assessments through an external service provider in 2014. Our goal is supplier enhancement. If we identify potential for improvement, we support this supplier in developing measures to fulfill our standards. We conduct another review according to a defined timeframe based on the sustainability risk measured. If the weak points discovered were particularly severe and we cannot find any improvement, we reserve the right to terminate the business relationship. This occurred in seven cases in 2014. We use this approach to evaluate suppliers with an elevated sustainability risk at least every five years. The approach itself is reviewed every two years to identify possibilities for improvement.

In addition, we initiated cooperations in China and Brazil in 2014 to instruct suppliers on sustainability standards. We have developed a training program together with the East China University of Science and Technology in Shanghai, and plan to educate around 2,000 suppliers over the next five years. We are pursuing the same approach in Brazil together with the Espaço ECO® Foundation. Through these cooperations, 65 suppliers already received training in 2014.

Audit results

Our audits have revealed some reservations with respect to working hours, payment of the minimum wage, and payment of overtime, especially in China. Here, we have called for improvements on the part of our suppliers. Our 2014 audits did not identify any cases of child labor. For the suppliers we reviewed, persons under 18 were excluded from overtime, night shifts and dangerous work. We did not find any incidences of forced labor in 2014. We were also able to rule out human rights violations.

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

Responsible resource management is an integral part of our strategy. It is applied within the company through our Verbund concept, our innovative products and the use of renewable raw materials. In the search for alternative raw materials, we employ solutions that contribute to sustainability. We as a company are dependent on ecosystem services and also have an impact on them. Examples include the availability of clean water and renewable resources, or even the effects of ecosystem services on the preservation of air, water and soil quality.

Strategy

The Verbund system is an important component of our resource efficiency strategy: The by-products of one plant often serve as feedstock elsewhere, thus helping us to use raw materials more efficiently. In 2014, BASF purchased a total of around 30,000 different raw materials from more than 6,000 suppliers. Some of our most important raw materials are naphtha, natural gas, methanol, ammonia and benzene. We examine the use of renewable resources in our Verbund system and are involved in the responsible cultivation and utilization of renewables in numerous projects along the value chain.

Renewable resources

- “Mass balance” method established
- Facility begins operations for commercial production of bio-based succinic acid

In 2014, around 4.5% of the raw materials we purchased worldwide were from renewable resources. We are advancing our research and development activities for products and production processes based on renewable raw materials. We also further established our “mass balance” method on the market in 2014. This method uses renewable raw materials from certified sustainable production in place of fossil resources from the very beginning of the value chain in the existing Production Verbund. Savings of fossil resources are calculated for each product. The formulation and quality of the end products remain unchanged. The method is currently applied for BASF products, such as superabsorbents, engineering plastics and dispersions, that are accordingly independently certified. We have been selling mass-balanced BASF polyamide since 2014.

Succinity GmbH, our joint venture with Corbion Purac, started up a facility for the commercial production of bio-based succinic acid in 2014. The plant, located in Montmeló, Spain, has an annual capacity of 10,000 metric tons. This process employs a bacterium that creates succinic acid naturally from various renewable raw materials. The succinic acid generated through these means has a better carbon footprint than that produced from fossil resources, which allows us to provide our customers with an economically and environmentally viable alternative to petrochemical raw materials. Succinic acid is a versatile chemical intermediate, used for example in the production of bioplastics, solvents, polyurethanes and plasticizers.

Since 2013, we have also provided our customers with 1,4-butanediol on a commercial scale using sugars as a renewable feedstock based on a licensing agreement with the company Genomatica Inc. Butanediol and its derivatives are used, for example, to manufacture plastics for the automotive and textile industries. In 2014, the polymer and fiber manufacturer INVISTA announced the commercial availability of bio-based LYCRA® brand spandex fibers; based on BASF’s butanediol, these are made from renewable raw materials.

BASF is invested in the technology company Renmatix Inc., which owns a method for obtaining industrial sugar from biomass. This technology can expand the base of renewable resources for future processes. The partners announced a collaboration for the further development of the method at the end of 2013.

Together with Cargill and the German governmental agency for international cooperation, we also continued our project for the economical, environmentally friendly and socially responsible production of coconut oil in the Philippines. Our goal is to develop and implement sustainability standards for the certification and production of this oil. As a member of the Roundtable on Sustainable Palm Oil, BASF is involved in projects which include the conservation of biodiversity in the cultivation of palm oil. By 2015, we aim to use palm and palm kernel oil only from agriculture certified according to sustainability criteria.
Mineral raw materials

We investigate the origins of the minerals we use to see if they come from conflict mines, and reserve the right to conduct an external audit; we also reserve the right to, if necessary, terminate our business relationship with that supplier. Through a standardized questionnaire, new suppliers must disclose to us in advance if their products contain conflict minerals. Our suppliers have confirmed to us that they do not source their minerals from the Democratic Republic of Congo or its neighboring countries.

Preserving ecosystems

- Our production sites reviewed for proximity to internationally protected areas
- MAQS® Beehive Strip launched in key European markets

Biodiversity forms the foundation of ecosystem services. Internationally protected areas play a critical role in maintaining biodiversity around the world. This is why, in 2014, we once again investigated our production sites to discover which are located near internationally protected areas: 2% of our production sites (excluding Oil & Gas) are adjacent to a Ramsar Site and 1% to a Category I, II or III protected area of the International Union for the Conservation of Nature (IUCN). None of our production sites are adjacent to a UNESCO protected area. We did not discover any impact of our activities on biodiversity in these areas in 2014.

Moreover, we develop products that contribute to the preservation of biodiversity. For example, together with our Canadian partner NOD Apiary Products, we launched the MAQS® Beehive Strip in numerous key markets in Europe in 2014. These strips offer honeybees protection from the varroa mite, which is considered the greatest threat to bee health.
We act responsibly as an integral part of society and have set out the framework for our voluntary commitments in our Responsible Care Management System. We never compromise on the safety and security of our employees, contractors and neighbors as well as our facilities, transportation and products.

Strategies

- Updated process safety strategy
- Review of management system for process safety intensified in all regions
- Further standardization of safety review documentation

BASF’s Responsible Care Management System comprises the global rules, standards and procedures for environmental and health protection, safety and security for the various stations along our value chain. Our regulations cover the transportation of raw materials, activities at our sites and warehouses, and distribution of our products as well as our customers’ application of the products. At our sites, we address energy and climate protection as one of the topics covered by our energy management. Specifications for implementing these measures are laid out in binding directives that are introduced in consultation with employee representatives. These describe the relevant responsibilities, requirements and assessment methods. We regularly conduct audits to monitor our performance and progress, and apply the findings for our continual improvement.

We set ourselves ambitious goals for environmental and health protection, safety and security. Our guidelines and requirements are constantly updated. In 2014, for example, we updated our safety strategies for the continual improvement of process safety and intensified management system reviews in all regions. We also standardized the reporting of safety reviews through the use of a software program.

We assess risks in all areas ranging from research and production to logistics, and how these could affect the environment, the surrounding community or the safety and security of our employees. In our databases, we document accidents, near misses and safety-related incidents at our sites as well as along our transportation routes. We foster awareness of workplace safety and safe behavior in every individual with our worldwide safety initiatives.

Audits

- Short-notice audits conducted at 28 sites

Regular audits help ensure that standards are met for environmental and health protection, safety and security. We carry out audits at BASF sites and at companies in which BASF is a majority shareholder. We have defined our regulations for Responsible Care audits in a global Group directive. During our audits, we create an environmental, safety and security profile that shows if our performance is sufficient to properly address the existing hazard potential. If this is not the case, we agree on measures and conduct follow-up audits on their implementation soon afterward. One result of the audits showed the necessity of swiftly implementing new guidelines and processes, for example.

Our internal audit system complies with the standards for external auditing procedures ISO 19011 and OHSAS 18001. Worldwide, 191 BASF production sites are certified in accordance with ISO 14001 (2013: 200). We conducted short-notice audits on various topics worldwide in 2014, which included facility inspections and document reviews. In 2014, 121 environmental, safety and security audits were carried out at 88 sites, along with 73 short-notice audits. We audited 48 sites with respect to occupational medicine and health protection.

Costs and provisions for environmental protection in the BASF Group (in million €)

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1 Investments comprise end-of-pipe measures as well as integrated environmental protection measures.

2 Values shown refer to December 31 of the respective year.

For more on Responsible Care, see basf.com/responsible-care_e
Management's Report

Responsibility along the value chain — Safety, security and health — Transportation and storage

Safety, security and health

Transportation and storage

Our regulations and measures for transportation and warehouse safety cover the delivery of raw materials, the storage and distribution of chemical products among BASF sites and customers, and the transportation of waste from our sites to the disposal facilities.

Strategy

- Revised Group directive for transportation safety
- Updated process descriptions for classification of hazardous materials

We applied the experiences of past years to update our Group directive for transportation safety in 2014. This included specifying responsibilities within our worldwide network and ensuring consistent standards. We also revised process descriptions for classification and product clearance in accordance with dangerous goods regulations. In doing so, we ensure that chemical products are classified according to globally uniform standards in line with transportation law, and are cleared for their various modes of transport.

In 2014, we nearly achieved our goal of reducing the number of transportation accidents worldwide by 70%, or to 0.17 per 10,000 shipments, between 2003 and 2020 (0.20 accidents, which represents a reduction of 64.3%). At 35, the absolute number of transportation accidents was at a very low level. The number of product spillages during shipment in 2014 amounted to 0.23 per 10,000 shipments (2013: 0.23).

In 2014, third-party negligence in the delivery of raw materials to a BASF site in India led to a serious transportation accident.

2020 Goal

Fewer transportation accidents per 10,000 shipments
Baseline 2003

Accident prevention and assistance

- Audits conducted for safety in container shipping
- Risk assessment guideline implemented

We stipulate worldwide requirements for our logistics service providers and assess them in terms of safety and quality. In 2014, we evaluated around 600 companies in all regions. Our experts use our own evaluation and monitoring tools as well as internationally approved schemes.

We audited large-scale warehouses at our two European Verbund sites in 2014 to increase safety in container shipping, focusing on container loading and the accompanying documents.

We evaluate the risks in transporting raw materials with high hazard potential: To further push uniform transportation safety standards in the chemical industry, we worked with the European Chemical Industry Council, CEFIC, to develop a guideline for conducting risk assessments in 2013. We implemented this guideline worldwide in 2014. Based on it, risk assessments were conducted for naphtha in China, acrylic acid in Thailand and butyl acrylate in Brazil. More than 1,000 employees at our three European sites in Antwerp, Belgium, and Schwarzheide and Ludwigshafen, Germany, took part in our practical dangerous goods training using walk-in tank wagons and tank containers.

Furthermore, we raised our supply chain safety standards even higher in 2014. We specified measures for the dangerous goods inspections performed in our logistics processes. The new process description based on this is initially valid throughout Europe, and will be subsequently carried over to the other regions.

Activities in external networks

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. In 2014, we provided assistance to other companies in around 200 cases worldwide. We apply the experience we have gathered to set up similar systems in other countries: In 2014, we provided support in the form of tutorials and seminars, for example.

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

We never compromise on safety. For occupational safety and health protection, we rely on comprehensive preventive measures in addition to the involvement of all employees and contractors. Our global safety and security concepts serve to protect our employees, contractors and neighbors as well as to prevent property damage and protect information and company assets. In this way, we help prevent production outages and damage to the environment.

Global goals

We have set ourselves ambitious goals for occupational safety and health protection. By 2020, we want to reduce the number of work-related accidents per million working hours by 80% to 0.65 work-related accidents compared with baseline 2002. We measure our performance in health protection using the Health Performance Index (HPI). The HPI comprises five components: confirmed occupational diseases, medical emergency drills, first aid training, preventive medicine and health promotion.

For more on the management approach, see page 97

<table>
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<th>2020 Goal</th>
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Occupational safety

- Employees receive training worldwide on improving skills in safe behavior

In order to achieve our ambitious goal for occupational safety, we particularly rely on the commitment of our employees and on clearly defined safety rules. In 2014, approximately 75,000 employees and contractors at around 300 sites actively participated in our worldwide safety initiatives.

We especially promote safe conduct through our systematic risk assessments, seminars and worldwide safety standards, and we regularly audit their implementation. Beyond legally prescribed safety instructions, we provided more than 49,000 employees around the world with intensive training on the topic of occupational safety in 2014. This included further training for around 14,000 employees at our “Safety Champions Training Center” at the Ludwigshafen site in order to boost safety-conscious behavior and prevent work-related accidents.

In 2014, 1.5 work-related accidents per million working hours occurred at BASF sites worldwide (2013: 1.4), of which 5% were related to chemicals. Compared with baseline 2002, the lost-time injury rate declined by 54.5%. We want to achieve further reductions by constantly strengthening our safety culture. There were 1.8 work-related accidents per million working hours for contractors in 2014 (2013: 2.1). We recorded no fatal work-related accidents in 2014.

For more on occupational safety, see basf.com/occupational_safety

Health protection

- 2014 focuses on back health
- Regular health promotion programs offered to employees

Our global health management serves to promote and maintain the health and productivity of our employees. This was supported by numerous emergency drills and health promotion measures in 2014. Worldwide standards for occupational medicine and health protection within BASF are specified in a directive that is implemented by a global network of experts. We regularly conduct occupational medical audits to monitor our performance.

With a Health Performance Index of 0.91, we were able to fulfill the ambitious goal of exceeding 0.9 each year (2013: 0.89). Our 2014 global employee health campaign centered on maintaining a healthy back. In 2015, the focus will be on good nutrition. We raise employee awareness of these topics through offers tailored toward specific target groups.

The BASF health checks introduced in 2013 form the foundation of our global health promotion program and are offered to employees at regular intervals.

For more on occupational medicine, health promotion campaigns and the HPI, see basf.com/health_protection

1 Each component contributes a maximum of 0.2 to the total score. The highest possible score is 1.0. Our goal is to reach a value of more than 0.9 every year.
Process safety

- Safety concepts updated and improved
- Global requirements introduced for explosion protection

When designing a new facility, we focus on prevention and apply a five-step review system from conception to startup. It involves early consideration of the most important aspects of safety and protection of health and the environment, and monitors these in every stage of planning. We use a risk matrix to assess the estimated probability and potential impact of risks, and stipulate appropriate protective measures.

In order to constantly improve the safety of our production facilities worldwide, we are continuing to update the safety concepts in all of our plants. We review their implementation in ten-year intervals in plants with a medium to high hazard potential. In 2014, we used software to standardize the documentation of safety reviews. Moreover, we further intensified the supervision of the process safety management system in all regions. In order to further improve explosion protection in our production plants, we introduced a global requirement in 2014. We enhanced our training measures for process safety in 2014 and instructed more than 11,000 employees worldwide.

Since 2008, we have used the number of process safety incidents as a key indicator, using the definition set by the European Chemical Industry Council (CEFIC). This KPI comprises fire, explosions and the release of substances. In 2014, this KPI was at 2.1 incidents per million working hours. We perform a detailed investigation into every incident, analyze the root causes and use the findings to further optimize our process safety.

We continue to take part in a working group of the International Council of Chemical Associations (ICCA) for the development of a globally standardized KPI system for process safety.

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

Hazard prevention and corporate security

- Requirements defined for emergency response and fire prevention
- SPIDER Emergency Response and Information Center Verbund implemented in Europe

In order to ensure uniformly high standards around the world for safety and security, health and environmental protection, we stipulated requirements for emergency response planning and fire prevention in the BASF Group in 2014. We are prepared for potential incidents in our production plants with specific emergency response plans that involve, depending on the situation, partners and suppliers as well as cities, communities and neighboring companies.

We regularly check our emergency systems and drill procedures with employees, contractors and local authorities. In 2014, we implemented our SPIDER Emergency Response and Information Center Verbund in Europe, which enables experts from the site fire department, emergency medical team, site security and environmental protection around Europe to work together even more quickly and reliably across different sites. Our central emergency response supports local emergency response units around the world and around the clock.

We audit and review how measures are implemented for the comprehensive protection of our employees and the company – for example, from loss of knowledge – as well as for the worldwide protection of our sites against third-party interference. All of our security personnel have been instructed on aspects of human rights related to site security, such as the right to liberty and security of person. We also require all contractors involved in this area to comply with human rights and we conduct regular inspections. Investment projects are analyzed for potential risks in planned production facilities and for the safety, security and health of our employees. Business travelers, transferees, and local employees in countries with elevated security risks are informed about appropriate protection measures and individually counseled where necessary.

In 2014, we built up our worldwide network of information protection officers to more than 600. They carry out our globally mandatory requirements and conduct seminars on safety-conscious behavior. In addition, more than 2,800 employees took part in information protection training measures in 2014.

For more on corporate security, visit basf.com/corporate-security
For more on emergency response, see basf.com/emergency_response
Products

We review the safety of our products from research to 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

- Global directives with uniformly high standards for product stewardship

We ensure uniformly high standards for product stewardship worldwide and our voluntary initiatives go beyond legal requirements. We monitor the implementation of our guidelines with regular audits.

We provide extensive information on our chemical sales products to our customers and the public with safety data sheets in more than 30 languages. This is achieved with the help of a global database in which we maintain and evaluate continuously updated environmental, health and safety data for our substances and products. Our global emergency hotline network provides information around the clock.

We offer our customers training in the safe use of our products and keep them informed early on of any changes in regulations. For example, a new E.U. directive requires customers to mark their products with additional warnings for allergy sufferers starting in 2015. We assist them by providing comprehensive information so that our customers can fulfill these additional obligations. With an eye on consumer protection criteria, we also work continuously with our customers on the optimization of our products. Furthermore, we use our Eco-Efficiency Analysis to advise our customers on the evaluation of product risks and support them in improving the carbon footprint of their 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 worldwide standards and best practices to improve the safe management of chemical substances. In addition, we are also involved in workshops and training seminars in developing countries and emerging markets. In 2014, for example, we conducted training sessions for chemical industry representatives on GPS in China, Ghana, India, Russia and Thailand. In order to facilitate public access to information, we are participating in the setup of an ICCA online portal that provides more than 4,100 GPS safety summaries.

Global goals

By 2020, we will conduct risk assessments for all substances and mixtures BASF sells worldwide in quantities of more than one metric ton per year. We already reached 61.4% of this goal in 2014 (2013: 56%). The risk associated with using a substance is determined by the combination of its hazardous properties and its potential exposure to people and the environment.

2020 Goals

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

>99%

REACH and other legal requirements

- Third registration phase of REACH begun

After completing the second registration phase in 2013, we are now working continually on registering substances produced in volumes between one and one hundred metric tons per year for the third registration deadline of the E.U. chemicals regulation, REACH. We expect to be done by 2018. At the same time, we also constantly update the existing registration dossiers and support the relevant E.U. member state authorities in evaluating an increasing number of substances. When it comes to REACH, we maintain close contact with our customers and suppliers.

Another contribution BASF makes to international chemical safety is through our support of the United Nations’ initiative to implement a Globally Harmonized System of Classification and Labeling of Chemicals.

For more on auditing of suppliers, see page 93 onward

For more on GPS, see basf.com/gps_e
Ecological and toxicological testing

- Use of alternative and complementary methods for animal studies

Before launching products on the market, we subject them to a variety of ecological and toxicological testing. We apply state-of-the-art knowledge in the research and development of our products. We only conduct animal studies when they are required by law. 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.

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 continually developing and optimizing alternative and complementary methods, and put these into practice whenever possible and accepted by the authorities. BASF spent €2.8 million for this purpose in 2014. We use alternative and complementary methods in more than a third of our tests. Currently, 27 alternative methods are being used in our labs and another 16 are in the development stage. One focus area of our research in 2014 and subsequent years is the development of alternative methods for testing the potential of substances that negatively affect organisms’ growth and development.

Furthermore, our “Experimental Toxicology and Ecotoxicology” department became a member of the European Union Network of Laboratories for the Validation of Alternative Methods (EU-NETVAL) in 2014.

For more on alternative methods, see basf.com/alternative_methods

Management of new technologies

- Continual safety research on nano- and biotechnology

New technologies such as nanotechnology or biotechnology offer solutions for key societal challenges – for example, in the areas of climate protection or health and nutrition.

We developed a “Nanotechnology Code of Conduct” that stipulates the safe handling of nanomaterials. We are constantly expanding our knowledge of nanomaterial safety. Over the past years, we have conducted more than 180 toxicological and ecotoxicological studies and participated in around 30 different projects related to the safety of nanomaterials. We published the results in 66 scientific articles. One important finding is that toxicity is determined not by the size of the particles but by the intrinsic properties of the substance.

Since 2014, we have been developing a strategy for the targeted study and classification of nanomaterials within the framework of the European Centre for Ecotoxicology and Toxicology of Chemicals (ECETOC). Based on the results of our investigations into nanomaterial safety, we have proposed a tiered approach for testing and evaluating nanomaterials for REACH. We are working with the European Chemicals Agency (ECHA), the OECD and national authorities on its further development.

In the use of biotechnology, we follow the code of conduct of EuropaBio, the European association for biotechnology industries. We constantly improve our product safety activities in the field of biotechnology in order to effectively minimize potential risks and ensure that all standards and national laws are met. Our internal risk management is based on the protection of people, animals and the environment. We implemented a scorecard system to monitor the risks of working with biotechnology. It ensures compliance with standards and transparent processes at BASF.

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

For more on biotechnology, see basf.com/biotechnology
Environment
Energy and climate protection

As a company in an energy-intensive industry, we are committed to energy efficiency and global climate protection. An important contribution to this is made by our efforts to continue reducing emissions along the value chain, and by our climate protection products. We utilize energy-efficient production processes and efficient technologies to generate steam and electricity. We have implemented a comprehensive energy management program.

Strategy

- We are committed to energy efficiency and global climate protection along the value chain
- We aim to certify our energy management system worldwide

We want to reduce greenhouse gas emissions in our production and along the entire value chain. We have thoroughly analyzed the greenhouse gas emissions from our production in the past few years and implemented comprehensive reduction measures. This is how, for example, we have been able to reduce nitrous oxide emissions by 95% since 1997.

To supply our production sites with energy, we rely on highly efficient combined heat and power plants with gas and steam turbines and the use of heat released by production processes. Comparisons with European emissions trading benchmarks show that our greenhouse gas-intensive chemical plants also operate at above-average efficiency. Around 50% of BASF Group emissions in 2014 resulted from steam and electricity generation in our power plants as well as in our energy suppliers’ power plants.

Our success also depends on the long-term security and competitiveness of our energy supplies. Furthermore, we are committed to energy management that helps us analyze and continue to improve the energy efficiency of our plants. In 2014, we were able to finalize the DIN EN ISO 50001 certification of our energy management systems at BASF SE as well as the great majority of German production sites. Moreover, our site in Tarragona, Spain, and our four sites in South Korea also received this certification.

We offer our customers solutions that help prevent greenhouse gas emissions and improve energy efficiency. About a third of our total annual research spending goes toward the development of these products and the optimization of our processes.

Our climate protection activities are based on comprehensive emissions controlling. We report on greenhouse gas emissions in accordance with the Greenhouse Gas Protocol Standard, as well as the sector-specific standard for the chemical industry. According to CDP, an international organization that analyzes companies’ climate protection data, BASF is among the top companies in the world in terms of transparency and completeness in climate protection reporting. In reporting to CDP, our experts perform an annual analysis of the opportunities and risks that climate change poses for BASF.

For more on climate protection, see basf.com/climate_protection
For more on the Responsible Care Management System, see page 97

Reduction of greenhouse gas emissions per metric ton of sales product in BASF operations excluding Oil & Gas¹² (in %)

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</tr>
</tbody>
</table>
```

¹ The figures for the 2011 business year and earlier were not adjusted to the new accounting and reporting standards IFRS 10 and 11. For more information on our data collection methods, see page 4.

² The figures for the 2012 business year and earlier were not adjusted to the newly applied factors for global warming potential. For more information on our data collection methods, see page 104.
### BASF Group’s greenhouse gas emissions according to the Greenhouse Gas Protocol

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></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>1</td>
<td>14,634</td>
<td>16,976</td>
<td>16,774</td>
</tr>
<tr>
<td>N₂O (nitrous oxide)</td>
<td>310</td>
<td>298</td>
<td>6,407</td>
<td>759</td>
<td>669</td>
</tr>
<tr>
<td>CH₄ (methane)</td>
<td>21</td>
<td>25</td>
<td>244</td>
<td>87</td>
<td>70</td>
</tr>
<tr>
<td>HFC (hydrofluorocarbons)</td>
<td>140–1,170</td>
<td>12–14,800</td>
<td>61</td>
<td>81</td>
<td>99</td>
</tr>
<tr>
<td>SF₆ (sulfur hexafluoride)</td>
<td>23,900</td>
<td>22,800</td>
<td>0</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td></td>
<td>26,589</td>
<td>21,890</td>
<td>21,523</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>1</td>
<td>347</td>
<td>927</td>
<td>838</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td></td>
<td>26,936</td>
<td>22,817</td>
<td>22,361</td>
</tr>
<tr>
<td><strong>Offsets (certificates sold)</strong></td>
<td></td>
<td></td>
<td>0</td>
<td>142</td>
<td>0</td>
</tr>
<tr>
<td><strong>Total including offsets</strong></td>
<td></td>
<td></td>
<td>26,936</td>
<td>22,959</td>
<td>22,361</td>
</tr>
</tbody>
</table>

1. BASF reports separately on direct and indirect emissions from the purchase of energy. Scope 1 emissions encompass both direct emissions from production and generation of steam and electricity, as well as direct emissions from the generation of steam and electricity for sale. Scope 2 emissions comprise indirect emissions from the purchase of energy for BASF-use.
2. GWP factor: global warming potential of the individual gases expressed as a factor of CO₂ emissions. The GWP factor is based on the Intergovernmental Panel on Climate Change (IPCC) 1995 (2002 emissions) and IPCC 2007, errata table 2012 (2013 and 2014 emissions). HFC (hydrofluorocarbons) are calculated using the GWP factors of the individual components.
3. Also includes sale to BASF Group companies, as a result, emissions reported under Scope 2 can be reported again in some cases.
4. Voluntary Carbon Units (VCU) certificates from measures to reduce emissions, which were sold to third parties.

### Global goals

- Reduction of 33.9% in specific greenhouse gas emissions in 2014 compared with baseline 2002
- Energy efficiency increases by 19.0% in 2014 compared with baseline 2002

By 2020, we aim to reduce our greenhouse gas emissions per metric ton of sales product by 40% compared with baseline 2002. We achieved a reduction of 33.9% in 2014 (2013: reduction of 34.1%). Since 1990, we have been able to lower our overall greenhouse gas emissions from BASF operations (excluding Oil & Gas) by 48.8% and even reduce specific emissions by 74.1%.

By 2020, we want to improve the energy efficiency of our production processes by 35% compared with 2002. We were able to achieve an increase of 19.0% in 2014 (2013: 19.8%). This slight reduction compared with the previous year was attributable in part to the lower capacity utilization of our combined heat and power plants.

In 2014, we already nearly achieved our 2020 goal of reducing carbon emissions per amount and distance of transported natural gas by 10% compared with 2010 in the natural gas transportation business. GASCADE is no longer fully consolidated in the Group financial statements; since January 1, 2014, it has been considered an associated company and accounted for using the equity method. For this reason, we are no longer reporting on our goal to reduce greenhouse gas emissions in the natural gas transport business.
Energy supply and efficiency

- Verbund system as important component of our energy efficiency strategy
- Research projects initiated on use of renewable energy sources

Gas and steam turbines in our combined heat and power plants enable us to fulfill around 70% of the electricity demand of the BASF Group. Compared with separate methods of generating steam and electricity, we saved 11.8 million MWh of fossil fuels and prevented 2.4 million metric tons of carbon emissions in 2014. The Verbund system is an important component of our energy efficiency strategy; Waste heat from one plant's production process is used as energy in other plants. In this way, we saved around 17.9 million MWh in 2014, which corresponds to a savings of 3.6 million metric tons' worth of carbon emissions. With combined power and steam generation as well as our continuously enhanced Energy Verbund, we were thus able to prevent 6 million metric tons of carbon emissions in 2014.

We were able to further optimize the resource and energy consumption of our production in numerous projects around the world in 2014. Various process improvements led to steam and electricity savings. We further intensified heat integration so that usable heat from production processes is not released into the environment, but instead provides energy to the plants. For example, we increased energy efficiency for our butadiene and ethylene oxide facilities in Ludwigshafen by optimizing the plant control systems.

We also rely on locally available energy sources for the supply of energy at our sites. Especially in the growing Asian market, we and our energy suppliers must make use of coal as an energy source to a certain extent, since the more climate-friendly natural gas is not available in sufficient quantities at competitive prices.

We are exploring the use of renewable energies. These can only become a permanent part of our energy mix if they are competitive in terms of supply security and cost. With numerous research projects, we contribute to increasing the efficiency of technologies for the use of renewable energy sources. For example, Deutsche Nanoschicht GmbH – a 100% subsidiary of BASF – has developed an innovative method for producing high-temperature superconductors in a more efficient and environmentally friendly manner. In cooperation with the Karlsruhe Institute of Technology, high-temperature superconductors are to be optimized for various applications in energy technology.

Increase in energy efficiency of production processes in BASF operations excluding Oil & Gas1 (in %)

<table>
<thead>
<tr>
<th>Year</th>
<th>2002 Baseline</th>
<th>2008</th>
<th>2009</th>
<th>2010</th>
<th>2011</th>
<th>2012</th>
<th>2013</th>
<th>2014</th>
</tr>
</thead>
<tbody>
<tr>
<td>2007</td>
<td>19.0</td>
<td>21.8</td>
<td>15.8</td>
<td>23.2</td>
<td>25.7</td>
<td>21.8</td>
<td>19.8</td>
<td>15.0</td>
</tr>
</tbody>
</table>

1 The figures for the 2011 business year and earlier were not adjusted to the new accounting and reporting standards IFRS 10 and 11. For more information on our data collection methods, see page 4.
Responsibility along the value chain — Environment — Energy and climate protection

Corporate carbon footprint and climate protection products

■ Reporting on greenhouse gas emissions along the entire value chain
■ Customers’ use of climate protection products sold in 2014 avoids 520 million metric tons of carbon equivalents

BASF has been publishing a comprehensive corporate carbon footprint since as early as 2008. This reports on all emissions along the value chain and shows the volume of emissions prevented through the use of our climate protection products. We plan our climate protection activities along the value chain based on our corporate carbon footprint. In 2014, for example, we implemented a technical improvement in our steel drums together with one of our packaging material suppliers. This reduced the amount of raw materials needed for production and decreased the emission of greenhouse gases.

Through various measures to reduce our raw material requirements, the emission of greenhouse gases associated with producing these raw materials was decreased by a total of around 100,000 metric tons in 2014.

We reevaluated our product portfolio in terms of sustainability considerations in 2014. This included identifying solutions whose application makes a positive contribution in terms of climate protection and energy. Dubbed “Accelerator” products, these are what we focus on when referring to climate protection products. One example is synthetic sodium nitrate, used as a heat transfer medium in solar thermal power plants. This product is used instead of thermal oils. It increases the operating temperature, and with that, electricity yield.

An analysis of 24 climate protection product groups revealed that customers’ use of products sold in 2014 avoids 520 million metric tons of CO₂ equivalents. The calculation of avoided greenhouse gas emissions was based on the new chemical industry standard of the ICCA and the World Business Council for Sustainable Development (WBCSD). Every product makes an individual contribution in the value chain. Value chains are assessed in terms of BASF’s economic share of the respective climate protection product. On average, 11% of the emissions avoided were attributable to BASF in 2014.

Prevention of greenhouse gas emissions through the use of BASF products (in million metric tons of CO₂ equivalents)

<table>
<thead>
<tr>
<th>Emissions along the entire value chain</th>
</tr>
</thead>
<tbody>
<tr>
<td>Without using BASF’s climate protection products</td>
</tr>
<tr>
<td>Using BASF’s climate protection products</td>
</tr>
<tr>
<td>Emissions avoided</td>
</tr>
</tbody>
</table>

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

Water is a fundamental component in our production. We use water as a coolant, solvent and cleaning agent, as well as to make our products. We are committed to responsible water use in our production sites’ water catchment areas as well as along the entire value chain. To this end, we have set ourselves global goals.

Strategy

- BASF products contribute to sustainable water management

We aim to use water as sparingly as possible and further reduce emissions to water. To do so, we have set out a Group directive with globally applicable standards. We are exploring measures for implementing sustainable water management, especially at production sites in water stress areas. One of our aims here is to identify savings potential in order to use as little water as possible, particularly in water stress areas.

We offer our customers solutions that help purify water, use it more efficiently and reduce pollution. Our water solution products such as inge® ultrafiltration technology and the Sokalan® product line make a major contribution to sustainability. In Accra, Ghana, these products were used in the construction of a desalination plant that can generate up to 60,000 cubic meters of drinking water per day – enough to supply half a million people. A future desalination plant in Jamnagar, India, will feature inge®’s T-Rack® 3.0 ultrafiltration modules. This will supply one of the largest refinery complexes in the country with up to 170,000 cubic meters of purified process water per day.

In order to ensure transparency in our reporting on water, we once again took part in CDP reporting in 2014. We consider all aspects of the topic of water, including societal implications. For example, we signed the WBCSD’s Pledge for Access to Safe Water, Sanitation and Hygiene at the Workplace at the end of 2013.

For more on the CDP water survey, visit basf.com/cdp_e

Global goals

- Reduction of emissions to water
- High standards, especially for water stress areas

We have set ourselves the goal of reducing emissions to water of organic substances and nitrogen by 80% by 2020 compared with baseline 2002; we want to reduce emissions of heavy metals by 60%.

By 2020, we aim to reduce the withdrawal of drinking water from supply sources for production by half compared with baseline 2010. In 2014, we were able to reduce this amount by 26.3% (2013: 25.3%).

In 2014, we achieved 29.7% of our goal to establish sustainable water management at all sites in water stress areas by 2020. We pursue this by applying the European Water Stewardship (EWS) standard. After introducing the standard at our European sites in 2013, we began its implementation in North America and China in 2014. We have also introduced the EWS standard at the Ludwigshafen site, even though it is not located in a water stress area. An external audit awarded us gold-level certification in 2014 for our water management and extensive application of the EWS standard in Ludwigshafen and at the production site in Tarragona, Spain. In total, around 22% of our production sites were located in water stress areas in 2014. Around 6.5% of total water used by BASF was abstracted from these areas, of which 85.2% was seawater.

Reduction of emissions to water in BASF operations excluding Oil & Gas¹ (in %)

![Graph showing reduction of emissions to water in BASF operations excluding Oil & Gas](image-url)

¹ The figures for the 2011 business year and earlier were not adjusted to the new accounting and reporting standards IFRS 10 and 11. For more information on our data collection methods, see page 4.
Responsibility along the value chain — Environment — Water

2020 Goal
Reduce the use of drinking water in production processes
Baseline 2010
BASF operations excluding Oil & Gas

-50%

Fewer emissions
We want to reduce emissions to water of organic substances and nitrogen by 50% and of heavy metals by 60% compared with baseline 2002.
BASF operations excluding Oil & Gas

100%

Further reduction of emissions
Goal achieved to reduce emissions to water

Our wastewater is treated through different methods depending on the type and degree of contamination – including biological processes, oxidation, membrane technologies, precipitation or adsorption.

To avoid unanticipated emissions, we will review our water protection concepts at all production sites by the end of 2015. At our sites in Ludwigshafen, Germany, and Geismar, Louisiana, we expanded online wastewater monitoring in order to detect unanticipated emissions at an even earlier stage. These new monitoring systems allow us to track and analyze relevant pollutants even more quickly and reliably, and to take measures if necessary. We were also able to further optimize the performance of the wastewater treatment facilities at our Kuantan site in Malaysia.

2020 Goal
Sustainable water management in water stress areas
Baseline 2010
BASF operations excluding Oil & Gas

100%

Water in the BASF Group in 2014 (million cubic meters per year)

<table>
<thead>
<tr>
<th>Water supply</th>
<th>Water use</th>
<th>Water discharge</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Surface water</td>
<td>1,772 (94.4%)</td>
<td>1 Cooling water (uncontaminated) 1,644 (99.4%)</td>
</tr>
<tr>
<td>2 Groundwater</td>
<td>82 (4.4%)</td>
<td>2 Wastewater from production 182 (9.9%)</td>
</tr>
<tr>
<td>3 Drinking water</td>
<td>23 (1.2%)</td>
<td>3 Graywater 12 (0.7%)</td>
</tr>
</tbody>
</table>

Total: 1,877

86%

Cooling
- Closed-circuit cooling 4,138
- Flow cooling 1,631

Total: 6,033

14%

Production
264

Total: 1,838

1 The difference between the volume of water supplied and discharged is mainly attributable to evaporation losses during closed-circuit cooling.

Water use

- Using water responsibly

We recirculate water as much as it is feasible in order to withdraw less from supply sources. Our larger sites have recooling plants that allow water to be reused several times and that reduce the temperature of used cooling water before it is discharged back into a body of water. To protect the Rhine River, we have committed to the step-by-step reduction of heat input from the Ludwigshafen site when set temperature limits are exceeded, for example as a result of long heat waves or low river levels.

The supply, transportation and recooling of water is associated with a high energy demand. We employ various means in our efforts to keep this as low as possible.

For more, see basf.com/water
We want to further reduce emissions to air from our production, protect the soil and prevent waste. We have set ourselves standards for doing so in a global directive. If no recovery options are available, we dispose of waste in a correct and environmentally responsible manner.

**Strategy**

- Raw Material Verbund helps prevent and reduce waste
- Professional disposal of hazardous waste

Regular monitoring of our emissions to air is a part of environmental management at BASF. Aside from greenhouse gases, we also measure emissions of other pollutants into the atmosphere. Our reporting does not take into account air pollutant emissions from oil and gas operations due to their substantial fluctuation during exploration phases.

Our Raw Material Verbund helps us prevent and reduce waste. We regularly carry out audits to inspect external waste management companies, ensuring that our hazardous waste is properly disposed of.

**2020 Goal**

Reduce emissions of air pollutants
Baseline 2002

-70%

**Emissions to air**

- Further reduction of emissions

By 2020, we aim to decrease absolute emissions of air pollutants from our chemical plants worldwide by 70% in comparison with baseline 2002. In 2014, this reduction was at 63.2%, to 31,505 metric tons (2013: 32,385 metric tons). Emissions of ozone-depleting substances as defined by the Montreal Protocol totaled 36 metric tons in 2014 (2013: 28 metric tons). Emissions of heavy metals totaled 4 metric tons (2013: 4 metric tons).

We were able to considerably reduce our emissions of nonmethane volatile organic compounds (NMVOC) in 2014. This was largely thanks to the increased use of a solvent recovery plant at our site in Australia, through which around 550 metric tons of emissions can be avoided every year.

In addition, we have, for example, replaced 30 older-model locomotives with a new fleet of diesel locomotives at our sites in Ludwigshafen and Schwarzeheide in Germany, and in Antwerp, Belgium, since 2014. The modern locomotives increase productivity and reduce emissions to air, further avoiding 300 metric tons of carbon dioxide each year.

**Emissions to air**¹ (in metric tons)

<table>
<thead>
<tr>
<th></th>
<th>2002²</th>
<th>2011</th>
<th>2012</th>
<th>2013</th>
<th>2014</th>
</tr>
</thead>
<tbody>
<tr>
<td>CO (carbon monoxide)</td>
<td>46,208</td>
<td>4,419</td>
<td>4,264</td>
<td>4,547</td>
<td>4,635</td>
</tr>
<tr>
<td>NOx (total NOx, nitrogen dioxide) + NO (nitrogen monoxide), calculated as NO2</td>
<td>15,045</td>
<td>13,003</td>
<td>11,507</td>
<td>11,551</td>
<td>11,697</td>
</tr>
<tr>
<td>NMVOCs (nonmethane volatile organic compounds)</td>
<td>15,005</td>
<td>6,127</td>
<td>6,148</td>
<td>5,760</td>
<td>4,881</td>
</tr>
<tr>
<td>SOx (total various sulfur oxides)</td>
<td>6,633</td>
<td>4,483</td>
<td>3,423</td>
<td>4,489</td>
<td>4,506</td>
</tr>
<tr>
<td>Dust</td>
<td>1,734</td>
<td>3,069</td>
<td>2,858</td>
<td>3,542</td>
<td>3,465</td>
</tr>
<tr>
<td>NH3/other (NH3, ammonia) and other inorganic substances</td>
<td>994</td>
<td>3,263</td>
<td>2,382</td>
<td>2,496</td>
<td>2,321</td>
</tr>
<tr>
<td>Total</td>
<td>85,619</td>
<td>34,364</td>
<td>30,581</td>
<td>32,385</td>
<td>31,505</td>
</tr>
</tbody>
</table>

¹ The figures for the 2011 business year and earlier were not adjusted to the new accounting and reporting standards IFRS 10 and 11. For more information on our data collection methods, see page 4.

² Baseline
Management of waste and contaminated sites

- Reduction of total waste volume
- New database being set up for contaminated sites

We regularly explore possibilities for preventing waste. If waste is unavoidable, we perform an analysis for recycling or energy recovery. Total waste volume decreased by 16% in 2014. This was largely attributable to more detailed assessment of waste streams as well as to the reduction in mineral waste from construction activities.

We develop remediation solutions in order to balance costs, nature conservation, climate protection concerns, legal requirements and transportation volumes. After stipulating global standards for contaminated site management in 2013, we began working on a database in 2014 containing the most significant sites. Current remediation measures around the world continued to run on schedule in 2014 and planning was concluded on future landfill remediation projects.

Waste management, BASF Group (in million metric tons)

<table>
<thead>
<tr>
<th></th>
<th>2014</th>
<th>2013</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total waste generation</td>
<td>2.07</td>
<td>2.47</td>
</tr>
<tr>
<td>Thereof from oil and gas exploration</td>
<td>0.05</td>
<td>0.14</td>
</tr>
<tr>
<td>Waste recovered</td>
<td>0.71</td>
<td>0.73</td>
</tr>
<tr>
<td>Recycled</td>
<td>0.30</td>
<td>0.31</td>
</tr>
<tr>
<td>Thermally recovered</td>
<td>0.41</td>
<td>0.42</td>
</tr>
<tr>
<td>Waste disposed of</td>
<td>1.36</td>
<td>1.75</td>
</tr>
<tr>
<td>In underground landfills</td>
<td>0.12</td>
<td>0.12</td>
</tr>
<tr>
<td>In above-ground landfills</td>
<td>0.52</td>
<td>0.80</td>
</tr>
<tr>
<td>Through incineration</td>
<td>0.72</td>
<td>0.82</td>
</tr>
<tr>
<td>Classification of waste for disposal</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nonhazardous waste</td>
<td>0.42</td>
<td>0.44</td>
</tr>
<tr>
<td>Hazardous waste</td>
<td>0.94</td>
<td>1.31</td>
</tr>
<tr>
<td>Transported hazardous waste</td>
<td>0.23</td>
<td>0.33</td>
</tr>
</tbody>
</table>

1 Comprises all production waste and hazardous waste from construction activities
2 The classification of waste into hazardous and nonhazardous waste is performed according to local regulations.