

1.4 Sustainable Conduct

1.4.1 Commitment to Employees and Society



- > Attracting, developing and retaining the best managers and employees
- > Corporate culture: dialogue, diversity, innovation
- > Creating attractive working conditions
- > Wide-ranging societal engagement

Our business success is based to a large extent on the knowledge, skills, commitment and satisfaction of our employees. As a modern international employer, we offer our employees attractive conditions and wide-ranging individual development opportunities. The key to this is our highly effective system of vocational and ongoing training, which we are continuously extending. Alongside professional training, we focus on conveying our corporate values (LIFE) and establishing a dialogue-oriented corporate culture based on trust, respect for diversity and equality of opportunity. That plays a part in employee satisfaction – along with our responsible approach to structuring working conditions, which includes fair and respectful treatment at work, a transparent, competitive and equitable compensation system, company pension plans, the ability to combine working with family commitments, flexible worktime arrangements and a working environment that fosters health.

GRI G4-26



Group target:
continuous improvement
in employee satisfaction;
see also A 1.2.1

Our global human resources strategy is designed to help us meet business needs in the future as well. It is adopted by the primary decision-making body of Bayer's HR function, the HR Leadership Team, which also sets binding policies and defines priorities for all regions and organizational units. The HR Leadership Team is led by the Head of Human Resources & Organization. Our Group-wide Employee Survey, which is normally conducted about every two years, and our institutionalized feedback discussions and analyses aim to achieve a steady rise in satisfaction with Bayer as an employer. They enable us to monitor the effectiveness of our activities and make any necessary improvements. Focal areas include strengthening our innovation culture, which provides a trustful basis that encourages creativity, experimentation, collaboration and customer focus in all areas. In the most recent Employee Survey we received an employee satisfaction rating of 87%, thereby achieving our Group target.

As well as promoting our competitiveness, our forward-looking human resources strategy reflects our social responsibility to provide secure employment and stable incomes, and to foster social integration. We are also committed to supporting the general well-being of our employees with a wide range of projects and initiatives in the central areas of health, education and meeting basic social needs.

Employee data

Slight reduction in Group headcount

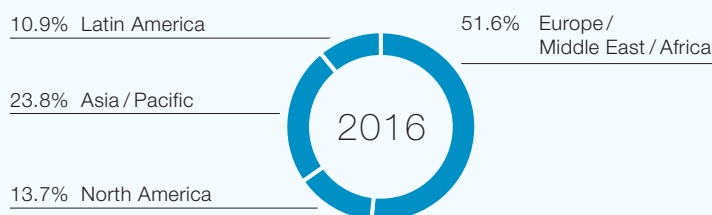
On December 31, 2016, Bayer employed approximately 115,200 people worldwide (2015: 116,600), a slight decrease from the prior year. In Germany we had some 37,000 employees (2015: approximately 36,600), which was 32.1% of the total Group workforce (2015: 31.4%).

There was a reduction in the number of employees in the Asia / Pacific, Latin America and North America regions, but a slight increase in the Europe / MiddleEast / Africa region. While the headcount in the Consumer Health, Crop Science, Covestro and Pharmaceuticals segments decreased, there was an increase in the number of employees included in the Reconciliation and Animal Health. The breakdown by function shows fewer employees working in sales and more in R&D. The proportion of women in the workforce was unchanged from the previous year at 37%. Similarly, in 2016 there was no significant change in the age structure compared with the previous year.

Employee Data

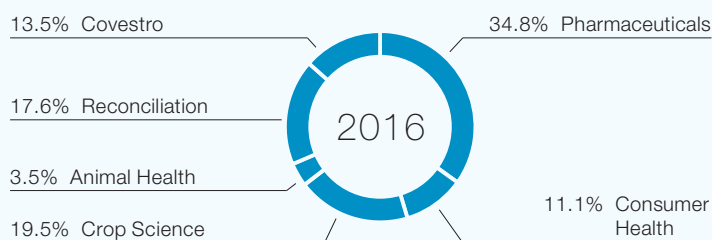
	2015	2016	Change in %
Total	116,600	115,200	-1.2

by Region



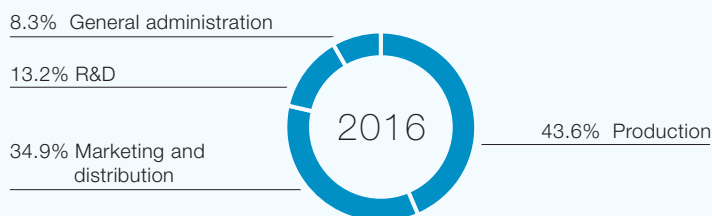
	2015	2016	Change in %
Europe / Middle East / Africa	58,800	59,500	+ 1.2
North America	16,000	15,800	- 1.3
Asia / Pacific	28,800	27,400	- 4.9
Latin America	13,000	12,500	- 3.8

by Segment



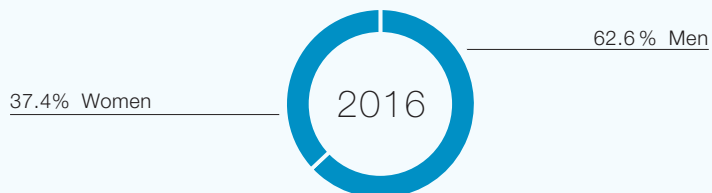
	2015	2016	Change in %
Pharmaceuticals	40,500	40,100	- 1.0
Consumer Health	13,500	12,800	- 5.2
Crop Science	23,300	22,400	- 3.9
Animal Health	3,800	4,000	+ 5.3
Reconciliation	19,700	20,300	+ 3.0
Life Sciences	100,800	99,600	- 1.2
Covestro	15,800	15,600	- 1.3

by Function



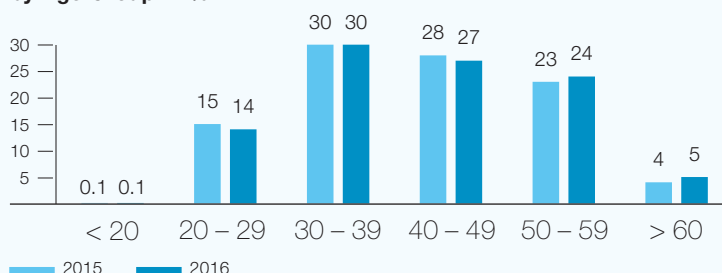
	2015	2016	Change in %
Production	50,600	50,200	- 0.8
Marketing and distribution	41,700	40,200	- 3.6
R&D	14,700	15,200	+ 3.4
General administration	9,600	9,600	0.0

by Gender



	Women		Men	
	2015	2016	2015	2016
Europe / Middle East / Africa	22,100	22,300	36,700	37,200
North America	6,200	6,200	9,700	9,600
Asia / Pacific	10,400	10,000	18,500	17,400
Latin America	4,900	4,600	8,100	7,900
Total	43,600	43,100	73,000	72,100

by Age Group in %



Fluctuation in %

	Voluntary		Total	
In %	2015	2016	2015	2016
Women	5.8	5.2	13.9	12.9
Men	4.5	4.3	13.9	12.0
Total	5.0	4.6	13.9	12.3

On the reporting date, our employees had worked for the Bayer Group for an average of eleven years. The level of voluntary fluctuation (employee-driven terminations) was 4.6% in 2016 (2015: 5.0%), slightly below the previous year's figure. The overall fluctuation rate was 12.3%, a decrease of 1.6 percentage points compared with the previous year. This figure includes all employer- and employee-driven terminations, retirements and deaths. This shows that we were again successful in retaining staff in the company for long periods. Our workforce only includes a small number of employees on temporary contracts and hardly any temporary employees from staffing agencies.

✓ Online Annex: A 1.4.1-1

A 1.4.1-1/1

Employees¹ by Employment Status, Region and Gender 2016

	Permanent employees			Temporary employees		
	Women	Men	Total	Women	Men	Total
Europe/Middle East/Africa	21,200	35,800	57,000	1,100	1,400	2,500
North America	6,100	9,500	15,600	100	100	200
Asia/Pacific	9,700	16,900	26,600	300	500	800
Latin America	4,400	7,000	11,400	200	900	1,100
Total	41,400	69,200	110,600	1,700	2,900	4,600

¹ The number of employees on either permanent or temporary contracts is stated in full-time equivalents (FTE) and rounded to the nearest hundred. Part-time employees are included on a prorated basis in line with their contractual working hours.

The next table contains further information on the breakdown of employee fluctuation by region, gender and age.

A 1.4.1-1/2

Employee Fluctuation¹ by Region, Gender and Age Group

	Europe/Middle East/Africa		North America		Asia/Pacific		Latin America		Total	
	2015	2016	2015	2016	2015	2016	2015	2016	2015	2016
%										
Women	8.3	9.4	15.7	15.5	22.2	17.6	19.2	15.9	13.9	12.9
< 30 ²	20.4	17.8	36.1	22.8	24.9	21.0	29.1	22.7	24.5	20.0
30–49	7.0	9.2	14.1	13.7	20.4	16.1	17.4	14.5	12.6	12.2
>= 50 ³	5.5	6.2	13.2	16.5	29.1	18.9	12.9	14.3	9.1	9.8
Men	8.0	7.3	13.2	14.3	23.6	18.6	19.2	17.4	13.9	12.0
< 30 ²	28.7	17.9	35.8	25.6	31.3	27.6	31.4	28.3	30.7	23.8
30–49	6.1	6.2	10.0	11.1	21.7	16.5	16.0	13.8	12.3	10.7
>= 50 ³	5.2	5.8	12.8	15.8	17.2	13.8	19.4	20.5	8.7	9.3
Total	8.1	8.1	14.2	14.8	23.1	18.3	19.2	16.8	13.9	12.3

¹ The data include all employer- and employee-driven terminations, retirements and deaths.

² The comparatively high proportion of employees in the < 30 age group is due to the inclusion of employees on temporary contracts (working for 2–6 months of the year) and other short-term employees. It does not include apprentices.

³ The fluctuation rates for the >= 50 age group are mainly due to retirements.



Significant locations of operation: see Glossary

At our significant locations of operation, we use temporary personnel from staffing agencies on a small scale, primarily in response to short-term personnel requirements, fluctuations in order levels, temporary projects or long-term illness. In Germany, temporary staff make up 2.4% of the total workforce. At our significant locations of operation, the average is 3.5 %.

Attracting, developing and retaining the best managers and employees

Employer branding targets both current and prospective employees

Innovations, changing customer requirements and a strong competitive environment are just some of the reasons why we welcome open-minded employees who question the status quo. A professional approach to attracting suitable talents is key to this. In 2016, we established our uniform employer brand “Passion to Innovate | Power to Change” around the world. This expresses what we expect of our employees and, at the same time, what we as a company offer them. We use our employer branding internally to enhance employee identification and externally to position the company on the employment market. In total, the Bayer Group hired 12,012 new employees in 2016.

Online Annex: A 1.4.1-2

A 1.4.1-2/1

New Hires¹ by Region and Gender

	Europe / Middle East / Africa		North America		Asia / Pacific		Latin America		Total	
	2015	2016	2015	2016	2015	2016	2015	2016	2015	2016
Women	2,513	2,318	1,024	754	1,569	1,265	666	599	5,772	4,936
< 30	1,179	1,147	308	220	937	697	375	318	2,798	2,383
30–49	1,221	1,058	515	366	611	543	286	278	2,634	2,245
>= 50	114	113	201	168	21	24	5	3	341	308
Men	3,480	3,057	1,406	1,008	2,762	2,026	1,082	986	8,729	7,076
< 30	1,815	1,634	503	316	1,709	1,114	611	523	4,638	3,587
30–49	1,452	1,246	597	478	1,009	888	452	437	3,509	3,049
>= 50	212	177	307	214	45	23	19	26	583	440
Total	5,994	5,375	2,430	1,762	4,330	3,291	1,748	1,584	14,502	12,012

2015 figures restated

The figures also include the discontinued operations.

¹ Converted into full-time equivalents (FTE)

Our excellent reputation as an employer is shown by numerous external surveys, awards and accolades.

High level of vocational and ongoing training

Vocational training plays a key role at Bayer in order to meet the need for skilled employees. We provide sound training in more than 20 different occupations and offer more vocational training places than required to meet our needs. In Germany alone, around 1,145 young people embarked on a vocational training course at Bayer in 2016. In addition, Bayer offers trainee programs in Germany in areas such as financial management, human resources and engineering. Furthermore we give young people an opportunity to gain an early insight into a practical work environment. Overall, we provided some 2,800 professional internships for students around the world in 2016.

A key aim of our personnel development strategy is to create an environment where all employees have the opportunity to develop their full potential. In the spirit of “lifelong learning”, we help employees in all fields broaden their knowledge and skills and keep up with the latest changes throughout their working lives. Support ranges from knowledge sharing and peer learning to programs that take up new trends and perspectives. On average, employees at our significant locations of operation received 22.1 hours of vocational and ongoing training in 2016.



www.bayer.com/career



www.bayer.com/training



Significant locations of operation: see Glossary

Online Annex: A 1.4.1-3

At the heart of our ongoing training concept is the Group-wide Bayer Academy, which bundles our extensive continuing education offerings for employees and which was once again honored with the renowned Brandon Hall Group Excellence Award in bronze in 2016. Alongside systematic development of managerial employees, it offers continuous professional training through

various functional academies. In 2016, the average cost of training per employee was approximately €409. The next table contains a further breakdown of vocational and ongoing training.

A 1.4.1-3/1

Training Activities in Hours in 2016 by Employee Group and Gender¹

	Women	Men	Total
Employee group			
Senior management	24.3	16.7	18.6
Junior management	30.9	28.5	29.5
Specialists	20.2	15.8	17.5
Overall average	23.7	19.6	21.2

The figures also include the discontinued operations.

¹ Selected training activities in the countries covered by the global training system, in which we generated approximately 72% of our sales in 2016; the gender-specific averages assume 50% women and 50% men for the United States and Japan as statutory regulations preclude differentiation by gender in these countries.

31,000

Development Dialogues were held in 2016.

Development Dialogue and feedback on performance

The aim of the Development Dialogue is to define possible perspectives for further career development as a basis for a development plan that fosters employees' personal strengths and addresses areas in which they would like to develop further. Some 31,000 Development Dialogues were held and documented in 2016.

63%

of all Bayer employees take part in performance feedback.

Specific and differentiated feedback forms the basis for positive personal development. Bayer encourages a culture of candid feedback to help employees achieve their individual goals within the framework of corporate targets. This is supported by our Group-wide performance management system, which includes obligatory feedback discussions where employees receive meaningful feedback from their supervisors on fulfillment of their professional and behavioral objectives. This assessment also determines the level of their variable compensation. In 2016, this system covered about 63% of our total workforce. Of the participants 45% were female and 55% male.

1,000

Bayer employees on international assignments

Wide-ranging career opportunities

Thanks to our wide-ranging business activities, we offer employees throughout the Group good opportunities for development. Vacancies throughout the Bayer Group, from nonmanagerial right up to senior management level, are advertised via a globally accessible platform. In 2016, around 11,700 vacancies in 63 countries were posted here. International assignments are also an important element in employee development. Around 1,000 employees around the world participated in international assignments in 2016.

Corporate culture: dialogue, diversity, innovation

Ethical standards established

Fairness and respect are central elements of our corporate culture. That includes observing Group-wide standards of conduct and protecting employees from discrimination, harassment and retaliation. These standards are set forth in the corporate policy on Fairness and Respect at Work.

Communication at all levels

We involve our employees in business processes through active dialogue and further develop employee communication formats. The previously separate intranet sites for different countries and companies have been combined in a single platform covering all employee needs. Informing staff promptly and extensively about upcoming changes, in compliance with the applicable national and international regulations, is very important to us. We engage in open and trustful dialogue with employee representatives.

✓ Online Annex: A 1.4.1-4

- The main dialogue formats are regular employee assemblies, information events for managers and the European Forum, where employee representatives from all European sites engage in discussion with the Board of Management on issues of central relevance to the company.
- Our employees actively use opportunities to discuss company-specific issues and scope for optimization via various communication channels. For example, Bayer fosters a culture of innovation at the workplace through two platforms for employee suggestions: the Bayer Ideas Pool and the Ideas Forum. The suggestions made by employees on improving processes, occupational safety and health protection are rewarded and utilized. In total, 3,408 ideas were submitted in 2016. Around 45% of the suggestions for improvement evaluated in 2016 were implemented. In the first year of implementation alone, those improvements that led to quantifiable benefits generated savings of more than €13 million. In 2016, Bayer distributed bonuses of around €1.7 million for the implemented proposals. Another example of employee participation is the Board of Management's appeal to all employees to submit suggestions on improving the Group-wide performance management system via the "WeSolve" platform.

GRI G4-26

Diversity and internationality are hallmarks of Bayer

A diverse employee structure is vital for our company's competitiveness. By embracing diversity we improve our understanding of changing markets and consumer groups, gain access to a broader pool of talented people and benefit from the enhanced innovative and problem-solving abilities that are demonstrably associated with high cultural diversity. Mutual understanding and a gender and cultural balance, especially at management level, are important success factors. We have an inclusive approach: diversity is integrated into all relevant human resources processes and driven forward by the management.



Diversity: see Glossary

✓ Online Annex: A 1.4.1-5

- Bayer has officially adopted the United Nations' Women's Empowerment Principles, a set of seven principles that sum up how women can be strengthened in the workplace, on the employment market and in the community. The company is also a founding member of the German "Chefsache" network sponsored by the German Chancellor Angela Merkel. Its members are committed to working together to develop practically oriented strategies to drive diversity and gender balance in their organizations.

Overall, the Bayer Group employs people from around 150 different nations. Around 21% of our senior managers come from outside Western Europe, the United States and Canada. We aim to increase this to 25% by 2020 in accordance with our Group target. At our significant locations of operation we hired 390 employees for senior management, 70% of whom are employed in their country of origin.

Group-wide, Bayer had raised the proportion of women at senior management level to around 29% by the end of 2016 (2015: 28%). Without Covestro the proportion was 31%. Our aim is to raise this to 35% by 2020.



Group target 2020: increase in the proportion of senior managers from outside the European Union, the United States or Canada to 25%; see also A 1.2.1



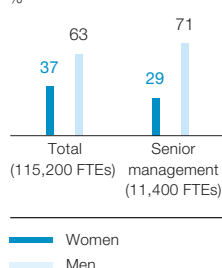
Group target 2020: increase the proportion of women in senior management to 35%; see also A 1.2.1

✓ Online Annex: A 1.4.1-6

- Of the members of our Group Leadership Circle – the senior management level below the Board of Management – in which 31 nationalities are currently represented, around 67% come from the country in which they are employed. The proportion of women also increased in the Group Leadership Circle. By year-end 2016, it was made up of 84% men (2010: 93%) and 16% women (2010: 7%).

A 1.4.1-6/2

Proportion of Women in the Workforce 2016



The next table shows the proportion of men and women in various employee categories.

A 1.4.1-6/1

Bayer Group Workforce Structure¹

	Women		Men		Total	
	2015	2016	2015	2016	2015	2016
Senior management	3,100	3,300	8,000	8,100	11,100	11,400
Junior management	11,300	11,400	16,600	16,600	27,900	28,000
Skilled employees	29,200	28,400	48,400	47,400	77,600	75,800
Total	43,600	43,100	73,000	72,100	116,600	115,200
Apprentices	800	800	1,800	1,800	2,600	2,600

2015 figures restated

¹ Number of employees converted into full-time equivalents (FTE) and rounded to the nearest hundred

Creating attractive working conditions

Competitive compensation and variable pay

Our compensation system combines a basic salary reflecting performance and responsibility with elements based on the company's success, plus extensive additional benefits. Adjustments based on continuous benchmarking make our compensation internationally competitive.

We attach great importance to equal pay for men and women, providing fair and competitive compensation and informing our employees transparently about the overall structure of their compensation.

Online Annex: A 1.4.1-7

Binding and transparent compensation structures

At Bayer, individual salaries are based on each employee's personal and professional abilities and the level of responsibility assigned to them. At managerial level, this is based on uniform evaluation of all positions throughout the Group using the internationally recognized Hay method. In areas of the Group and jobs that fall within the scope of a binding collective bargaining agreement, there are no differences in pay based on gender either. This also applies for the compensation of apprentices. In the Emerging Markets and developing countries, too, compensation levels are aligned to local market conditions. In the majority of cases, full- and part-time employees at our significant locations of operation receive the same rates of pay. The situation differs with regard to employees on temporary contracts as they are not entitled to long-term compensation components such as pension plans in some countries.



Significant locations of operation: see Glossary



Short-term incentive program: see Glossary



See also Note 12 to B Consolidated Financial Statements

Our compensation concept also includes variable one-time payments. More than €1,400 million is earmarked for bonus awards to employees for 2016 under the Group-wide short-term incentive (STI) program. In many countries, employee stock programs enable our staff to purchase Bayer shares at a discount. We also offer senior managers throughout the Group "Aspire," a uniform long-term compensation program based on the development of the share price.

Our personnel expenses for continuing operations amounted to €11,357 million in 2016 (2015: €11,176 million). The change was mainly due to salary adjustments and higher employee bonuses, which together outweighed currency effects.

Alongside attractive compensation for their work, Bayer contributes to the financial security of its present and former employees after their retirement. The present value of total pension obligations at the end of 2016 was €28,995 million. Personnel expenses in 2016 included pension expenses of €1,064 million. Payments of €1,131 million were made in 2016 to current retirees.



See also Note 25 to
B Consolidated Financial
Statements

A 1.4.1/2

Personnel Expenses and Pension Obligations

€ million	2012	2013	2014	2015	2016
Personnel expenses	9,194	9,430	9,693	11,176	11,357
of which pension expenses	681	897	834	1,060	1,064
Pension obligations ¹	22,588	20,682	27,771	26,809	28,995
Pension benefits paid	887	925	942	997	1,131

2015 figures restated; figures for 2012–2014 as last reported

¹ Present value of defined benefit obligations for pensions and other post-employment benefits

Work-life balance

Present and future employees attach great importance to achieving a balance between employment and their personal and family lives. In many countries our commitment in this area goes well beyond the statutory requirements. We offer our employees flexible working hours and support in child care and caring for close relatives.

In 2015, Bayer introduced uniform conditions for short-term mobile working in Germany through a new General Works Agreement with the Works Council. In addition, employees in Germany can convert part of their salary into free time through the “BayZeit” long-term account. There are similar programs in other countries as well.

In 2016, the Bayer Group had some 10,700 part-time employees, in particular in Europe. This figure represents 9% of the total headcount.

Online Annex: A 1.4.1-8

A 1.4.1-8/1

Percentage of Part-Time Employees by Region and Gender

	Women		Men		Total	
%	2015	2016	2015	2016	2015	2016
Europe/Middle East/Africa	23.0	23.8	11.6	12.2	16.0	16.7
North America	1.2	1.3	0.2	0.1	0.6	0.6
Asia/Pacific	2.1	2.6	0.1	0.2	0.8	1.1
Latin America	0.1	0.1	0.0	0.0	0.0	0.1
Total	12.7	13.5	6.0	6.5	8.5	9.1

2015 figures restated

Bayer enables both men and women to take parental leave. Since national parental leave regulations vary widely from country to country, we only compile data for our significant locations of operation. These represent a selection of countries in which we generate around 81% of our sales. 1,621 women and 687 men at these locations took parental leave in 2016. By the end of the year, around 1,583 employees on parental leave had returned to work.

✓ **Online Annex: A 1.4.1-9**

The next table shows the number of employees who have returned after the standard statutory parental leave program of up to three years per child and Bayer's more far-reaching "Family & Career" model (up to six years), using Germany as an example. By the end of 2016, 70.4% had returned to work. 50.6% of women and 94.2% of men who took parental leave in 2014 re-turned to work.

A 1.4.1-9/1

Employees Returning from Parental Leave using Germany as an Example

	Women		Men		Total	
	%	Absolute	%	Absolute	%	Absolute
Employees who have taken parental leave since 2014	54.5	1,101	45.5	918	100.0	2,019
Still on parental leave / with a dormant employment contract	43.5	479	4.8	44	25.9	523
Returned by 2016	50.6	557	94.2	865	70.4	1,422
Terminated ¹	5.9	65	1.0	9	3.7	74

¹ Includes employees who have left the company due to employer- and employee-driven terminations, severance agreements and expiration of contracts

The General Works Agreement on caring for close relatives helps Bayer employees in Germany to combine working with their role as carers.

✓ **Online Annex: A 1.4.1-10**

Our employees can take up to 10 days' paid leave to provide emergency care for family members. For longer periods, they are entitled to work part-time. During this time, their salary is topped up by drawing funds from their long-term account. Alternatively, employees who need to care for close relatives full-time can take unpaid leave for up to six months (up to one year in exceptional cases).

Initiatives to promote health and ensure safe working conditions

Our occupational health management activities include many regular preventive programs, ranging from ergonomic workplaces and stress management to incentive systems to promote healthy behavior.

✓ **Online Annex: A 1.4.1-11**

The "Healthy at Bayer" initiative helps employees in Germany take action at work to promote their health, with offerings ranging from preventive check-ups through programs to encourage healthy eating to exercise at sports clubs supported by Bayer. Health management also includes support for treating illnesses and reintegration measures.

We have activities and programs to enhance the health and vitality of our employees in many countries. One example is "B Well" in the United States, where individual health targets are defined and programs are specially designed to achieve them. The health and personal development of employees in Mexico is supported by "Vive con Bien Estar," a broadly based initiative by the Human Resources, Medical Services, Security and Communications units.

We aim to provide employees in all countries with access to affordable and targeted health offerings such as regular medical check-ups, sports programs, rehabilitation and on-site medical care. We also ensure safe working conditions and thus an environment where our employees can work without fear and undertake international business travel without risk. Our employee representatives are included in operational health management and are actively involved in its development.

✓ Online Annex: A 1.4.1-12

• **Binding agreements at Group level**

• The Bayer European Forum – which brings together management and employee representatives – has signed the Luxembourg Declaration on Workplace Health Promotion in the E.U. This involves a network of around 200 companies which aims to identify and share best practices and encourages joint measures by employers, employees and society to improve health and well-being at the workplace.

• Group-wide initiatives in Germany include the General Works Agreements on lifetime working and demographic change and on addressing demographic change at nonmanagerial level at Bayer. These agreements contain measures to reduce the workload of shift workers who work regular night shifts from the age of 55 and of all other nonmanagerial employees in Germany from the age of 57. Further, they include measures to ease the return to work of nonmanagerial employees after long-term illness, and an extensive health screening program for all employees. More than 98% of those who were eligible took part in the program to reduce the workload of older employees in 2016.

Social responsibility for employees worldwide

More than 70% of Bayer employees worldwide are included in a Bayer pension plan. The benefits provided depend on the legal, fiscal and economic conditions in each country, employee compensation and years of service. Nearly all employees worldwide either have statutory health insurance or can obtain health insurance through the company.

70%

of Bayer employees have a company pension plan.

A 1.4.1/3

Health Insurance and Pension Coverage

%	Health insurance ¹		Pension plans ²	
	2015	2016	2015	2016
Europe / Middle East / Africa	98	98	85	86
North America	93	99	99	100
Asia / Pacific	95	96	39	39
Latin America	95	99	54	57
Total	96	98	72	74

2015 figures restated

¹ Government or employer- / employee-funded

² Programs to supplement statutory pension plans

Our social responsibility is also reflected in our approach to restructuring, which includes efforts to take account of our employees' interests. In Germany, which remains Bayer's largest operational base with 37,000 employees, business-related dismissals are excluded through the end of 2020 for a large proportion of employees under an agreement with the employee representatives.

In 2016, the working conditions for around 61% of our employees worldwide were governed by collective or company agreements. At various country companies, the interests of the workforce are represented by elected employee representatives who have a right to be consulted on certain personnel-related decisions. The contractually agreed working hours of our employees do not exceed 48 hours a week in any country.

✓ Online Annex: A 1.4.1-13

A 1.4.1-13/1

Percentage of Collective Agreements by Region¹

%	2015	2016
Europe / Middle East / Africa	84	84
North America	5	5
Asia / Pacific	44	45
Latin America	53	52
Total	60	61

2015 figures restated

¹ Percentage of employees covered by collective agreements, especially on compensation and working conditions

2,600

people with disabilities work for the Bayer Group.



See also A 1.4.2.1

Our understanding of our role as a socially responsible company includes a commitment to helping disadvantaged people. We employ some 2,600 people with disabilities in 29 countries. That is around 2% of our total workforce. 36% are female and 64% male. Most employees with disabilities work for our companies in Germany, where they made up 5.1% of the workforce in 2016.

Global respect for human rights

Bayer fully supports human rights and has set out its stance in a binding global policy. We are committed to respecting and fostering human rights within our sphere of influence and to reporting transparently on the results of our activities in this area. Alongside working conditions in the Bayer Group, this centers on our expectation that human rights will be respected at all stages in the supply chain, as detailed in our Supplier Code of Conduct. In addition, our LIFE values and Corporate Compliance Policy commit all employees around the world to fair and lawful conduct toward staff, colleagues, business partners and customers. We are a founding member of the U.N. Global Compact and respect the Universal Declaration of Human Rights and a range of globally recognized declarations applicable for multinational corporations.

✓ Online Annex: A 1.4.1-14

These include, in particular, the OECD Guidelines for Multinational Enterprises, the Tripartite Declaration of Principles concerning Multinational Enterprises and Social Policy, and the core labor standards of the International Labour Organization (ILO). We also observe the U.N. Guiding Principles on Business and Human Rights.



ILO core labor standards: see Glossary



See also A 4.2

In 2016, around 87% of our employees received training in the main aspects of our Human Rights Position, in training sessions totaling 220,000 hours. That included training for internal and external security staff. The compliance organizations at Group and country level monitor compliance with the relevant corporate policies. If there are signs of violation, employees can contact their Compliance Officer at any time, anonymously if required. Alternatively, they can contact the Group-wide compliance hotline.

Societal engagement

Bayer's societal engagement focuses on people working innovatively in the areas of education & science and health & social needs who are committed to achieving a lasting improvement in living conditions. This also extends to a further focus area – sports & culture – although our involvement in professional soccer does not form part of our social sponsorship activities.

Our Access to Medicine (ATM) activities give patients in developing countries and the Emerging Markets access to our products.



See also A 1.2.1-1

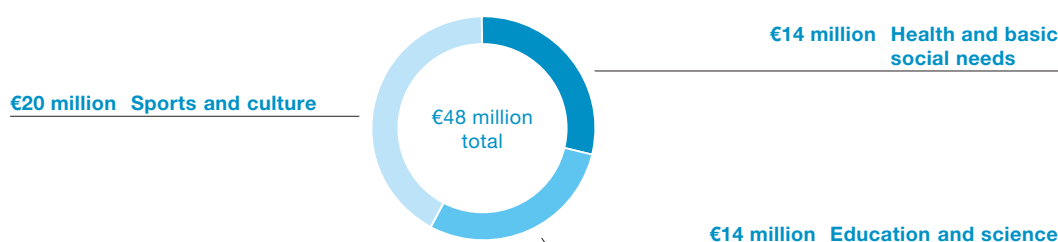
Bayer's foundation work centers on two globally active foundations that are linked to the company – the Bayer Science & Education Foundation for Life Sciences, education and medicine, and the Bayer Cares Foundation for social innovations and social commitment. An interdisciplinary committee chaired by the member of the Bayer Board of Management responsible for Innovation holds responsibility for the strategic orientation and coordination of our societal engagement. The Group-wide donation allocation and management policies form the basis for our foundation and donation activities. A large number of the initiatives are implemented in collaboration with partner organizations such as non-governmental organizations. An independent panel made up of internal and external judges decides how foundation funding is allocated. Covestro is responsible for its own social commitment activities. Donations are allocated on the basis of internal Covestro regulations.

In 2016, we invested (incl. Covestro) a total of around €48 million (2015: €51 million) in charitable activities worldwide. This was aimed at improving the quality of life at the company's various locations and contributing to solving social challenges.

Online Annex: A 1.4.1-15

A 1.4.1-15/1

Societal Engagement in 2016



For Bayer, pioneering achievements in science and society are fundamental to progress and success. For that reason, promoting cutting-edge research and supporting education and social innovation are key objectives of the Bayer foundations. Selected activities from the three key areas of health and basic social needs, education and science, and sports and culture are set out below.

Activities focusing on health and basic social needs

Encouraging social innovation

In 2016, the Bayer Cares Foundation gave the former Aspirin Social Award a new strategic orientation. Now called the Aspirin Social Innovation Award, the accolade has an international reach for the first time, focusing on social innovation in the areas of health and nutrition. All five award-winners received €20,000 of funding to expand their charitable business initiatives.

Supporting creative voluntary work

Last year, the Bayer Cares Foundation provided first-time funding for 73 volunteering projects of employees in 37 countries within the framework of the Bayer Volunteering Program. In Germany, an additional 26 projects of individuals not working at Bayer were also supported. The total funding amounts to around €341,000. All the projects offer innovative approaches to help solve social problems in the areas of health, nutrition and education in the catchment areas of the company's sites.

Rapid assistance in the event of natural disasters

In 2016, Bayer was once again active in supporting people experiencing acute hardship as a result of natural disasters. For example, we provided medicines worth €250,000 free of charge to assist in the medical care of the victims of a severe earthquake in Ecuador.

Activities focusing on education and science

Award-winning pioneering achievements

The Bayer Science & Education Foundation's Otto Bayer Award 2016 worth €75,000 went to Dr. Dirk Trauner from the University of Munich (LMU Munich). Working in the field of photo-pharmacology and chemical optogenetics, he is developing novel switches that use light to precisely control all kinds of processes in cells. This may open up new chemotherapeutic treatment opportunities, for example to cure blindness and cancer.

In 2016, the Bayer Early Excellence in Science Award worth €10,000 to each recipient went to three young researchers from Germany and Switzerland for their successful work in the fields of medicine, biology and chemistry.

Getting young people excited about science

The Bayer Science & Education Foundation helped talented young individuals in 2016 by awarding 245 scholarships worth a total of more than €1 million to students, postgraduates and apprentices in the fields of natural, life and agricultural science and medicine. This funding is intended in particular to facilitate research projects abroad. For the first time ever, youngsters from India and Africa joined children from German and U.S. schools at the Science Teens camp in the United States. Bayer was once again involved in the student support programs geared to national requirements in over 20 countries. To this end, our country organizations cooperated with universities, museums and other educational institutions.

In Germany, the focus in 2016 was on promoting innovative teaching projects, with total funding of some €550,000 for 37 specific measures at schools and other educational institutions in 18 towns and cities. The three Baylab student laboratories offered school classes a professional infrastructure that was used by over 7,500 schoolchildren and teachers in 2016 as a supplement to normal tuition.

Education program for refugee children

In 2016, the Science4Life Academy founded in 2015 by the Bayer Science & Education Foundation along with the Berlin Senate and other educational organizations produced scientific teaching materials geared specifically to the needs of refugee children and tested them at pilot schools in Berlin. The next steps are to evaluate the results and pass these on to all Germany's Federal states. In addition, the funding is to be used for a dictionary for refugee children.

Activities focusing on sports and culture

We continued our recreational, disabled and competitive sports activities in 2016. The Bayer sports clubs again made a key contribution to the broad range of sporting activities around the German sites in North Rhine-Westphalia. The 23 clubs have a total of around 45,000 members. In 2016, the major clubs also became more intensely involved as professional service providers for the company's occupational health management.

- : Bayer once again expanded its cultural activities in 2016, among other things by extending the
- : stART program for talented young artists with the stARTAcademy. A total of around 120 music,
- : dance, theater and art events took place in 2016, including an art exhibition with selected
- : works from the Bayer Collection.

1.4.2 Responsibility in Value Creation

- > Sustainability criteria consistently anchored in the supply chain
- > Strengthening efficiency and flexibility in production and logistics
- > Ethical action shapes dialogue and partnership with our customers



We aim to offer our customers innovative products and high-quality solutions. This requires us to efficiently and responsibly steer processes at all value creation stages: in procurement, in production, in logistics and in distribution.

Our supply chain is designed at both a global and regional level according to clear, sustainability-oriented criteria and standards. We not only examine and evaluate our suppliers' sustainability performance, but also offer them support through partnership-based cooperation and training measures. In this way, we are able to implement our requirements together with our suppliers in the face of serious challenges such as eliminating child labor.

We continuously work at our production sites to react more rapidly to market developments and to achieve our ambitious quality and safety objectives through increased flexibility and the expansion of capacities. To achieve this, we invest continuously in our global production network. We steer our logistics services in equal measure according to quality, safety and environmental aspects.

Our partnership with our customers is shaped by responsibility. We integrate them at an early stage into our processes and address their needs with regard to the use of our products. We systematically analyze their satisfaction with our performance and safeguard our long-term business success by deriving optimization measures from this analysis.

1.4.2.1 Procurement and Supplier Management

The procurement organization supplies the company with goods and services around the world. We exert influence on society and the environment as a result of our procurement activities and supplier relationships. Not just economic, but also ethical, ecological and social principles are therefore anchored in our Procurement policy, which is binding for all employees.

Procurement (excluding Covestro) has been organized since 2016 as a corporate function that acts centrally on behalf of all segments. Synergies can be leveraged by pooling know-how and procurement volumes. Our procurement activities are directed by the Procurement Leadership Team, which acts as the highest decision-making body for procurement issues. The team is led by the Head of Procurement, who reports directly to the Chief Financial Officer. Covestro has its own procurement organization. Unless explicitly stated otherwise, all information hereafter with the exception of the Group targets includes Covestro.

Procurement operates according to uniformly established procurement and supplier management processes. Long-term contracts and active supplier management for strategically important goods and services are important elements here. Thus we not only minimize procurement-specific risks such as supply bottlenecks or significant price fluctuations, but also safeguard the company's competitiveness and ensure smooth production processes.



[www.covestro.com/en/
company/procurement/
overview](http://www.covestro.com/en/company/procurement/overview)

€21.8 billion

Bayer's procurement
spend in 2016

We procured goods and services in 152 countries during the reporting period. Procurement spend from transactions with approximately 110,900 suppliers amounted to some €21.8 billion. In 2016, our procurement spend in Germany, the United States and Switzerland accounted for nearly 68% of our expenditures in OECD countries, which in turn made up about 54% of the Bayer Group's global procurement spend. Brazil, India and China together accounted for about 66% of expenditures in the non-OECD countries or about 13% of the total spend. The following table contains information about Bayer's procurement volumes and supplier shares based on the regional origin of goods and services.

✓ Online Annex: A 1.4.2.1-1

A 1.4.2.1-1/1

Procurement Spend and Number of Suppliers in OECD and Non-OECD Countries in 2016

	Spend		Suppliers	
	€ billion	%	Number	%
OECD countries				
Germany	5.3	24.2	22,108	19.9
United States	5.3	24.2	11,540	10.4
Switzerland	1.2	5.6	1,789	1.6
Other	5.7	26.0	42,649	38.5
Total	17.5	80.0	78,086	70.4
Non-OECD countries				
China	1.9	8.7	3,432	3.1
India	0.5	2.3	3,785	3.4
Brazil	0.5	2.2	2,546	2.3
Other	1.5	6.9	23,052	20.8
Total	4.4	20.1	32,815	29.6



Local procurement:
see Glossary

Bayer purchases locally wherever possible in order to adequately react to the requirements of our sites and strengthen regional economies. In 2016, this applied to 71% of our procurement spend at our main business locations, and also 71% of procurement spend in all countries worldwide. The following table shows the main procurement products in 2016.

✓ Online Annex: A 1.4.2.1-2

A 1.4.2.1-2/1

Main Procurement Products

Pharmaceuticals	Zetia (finished product), cell media culture (raw material), Betaferon (interferon-beta-1b) (bulk product) and Eylea protein (bulk product), packaging materials
Consumer Health	Active ingredients (e.g. naproxen sodium, loratadine, paracetamol), vitamins (e.g. vitamin C and B), auxiliaries, finished products (e.g. Canesten, Dr. Scholl's, Berocca), packaging materials
Crop Science	Active ingredients (e.g. mancozeb), adjuvants and solvents (e.g. rapeseed oil, toluene, ammonia), complex intermediates (e.g. pyridine polyfluoride), packaging materials
Animal Health	Active ingredients (e.g. moxidectin, praziquantel and permethrin), finished products, packaging materials (e.g. Seresto tins)
Covestro	Key basic raw materials are benzene and phenol, propylene oxide, toluene, acetone and hexamethylenediamine

The use of renewable raw materials plays only a subordinated role at Bayer for portfolio reasons. We primarily use renewable raw materials when it makes technical, economic and ecological sense to do so.

✓ Online Annex: A 1.4.2.1-3

At Pharmaceuticals, a number of hormones are synthesized through certain sterols and phytoosterols that result as byproducts during the production of plant oils from soybeans, oilseed rape / canola or sunflowers, as well as during wood processing. We additionally purchase various steroids that are manufactured from diosgenin or its intermediate stages. This substance is usually obtained from yam grown in countries such as China. We also use raw materials such as water, glucose, yeast, soybean starch, castor oil and corn steep water in our fermentation processes.

For some products, Consumer Health uses extracts of plant leaves. We take great care with the cultivation and extraction of the raw materials for manufacturing plant-based pharmaceuticals. The controlled, integrated cultivation and extraction of plant-based raw materials take place according to local regulations, e.g. the GACP (Good Agricultural and Collection Practice) guidelines of the European Medicines Agency.

Crop Science processes soy, e.g. in the production of crop protection products. To support the maintenance of sustainability criteria in soy cultivation, Crop Science is a member of the Round Table for Responsible Soy (RTRS) and, starting in 2017, intends to purchase RTRS certificates corresponding to the soybean consumption in its production. In addition, we cooperate with farmers to support the certification of their soybean production in accordance with international standards.

We use a small amount of palm oil derivatives in some of our Life Science products. As the production of palm oil is often associated with social and ecological problems, Bayer takes part in the Round Table for Sustainable Palm Oil (RSPO). In 2017, we plan to purchase so-called RSPO credits, which promote the sustainable production of palm oil, according to the quantities used by us.

Covestro is developing processes for the replacement of raw materials derived from crude oil. In 2016, for example, it launched the commercial production of a curing agent for polyurethane coatings and adhesives based on renewable raw materials. The product is 70% based on raw materials derived from biomass that does not compete with food production.

Bayer sustainability requirements defined in its Supplier Code of Conduct

Bayer regards adherence to sustainability standards within its supply chain as a crucial factor in the value chain and an important lever for minimizing risks. A four-step process is thus established throughout the Group to improve sustainability practices in the supply chain comprising the elements awareness-raising, supplier nomination, sustainability performance evaluation and development. It is defined in a special instruction and centrally steered by a sustainability team whose management reports to the Procurement Leadership Team.

Our sustainability requirements are established in Bayer's Supplier Code of Conduct. Based on the principles of the U.N. Global Compact and our Human Rights Position, it establishes the basic foundation for this cooperation. For this reason, not just economic standards, but also ethical and environmental, social and governance (ESG) standards apply for the selection and evaluation of new and existing suppliers. The Code of Conduct is integrated into electronic ordering systems and contracts throughout the Bayer Group. Furthermore, our standard supply contracts contain clauses that authorize Bayer to verify suppliers' compliance with our sustainability requirements.



Group target 2017:
evaluation of all strategically important suppliers

Group target 2020:
evaluation of all potentially high-risk suppliers with significant Bayer spend; see also A 1.2.1



www.tfs-initiative.com

www.pscinitiative.org



Group target 2020:
development and establishment of a new sustainability standard for our supply base; see also A 1.2.1

Evaluating the sustainability performance of our suppliers

Bayer verifies the observance of the Code requirements by our suppliers through online assessments and on-site audits. Suppliers are selected for these evaluations based on a combination of country and material risks as well as strategic importance in accordance with our Group targets. By 2017, Bayer plans to evaluate all strategically important suppliers according to sustainability-relevant criteria (target attainment as of 2016: 98%). This group includes suppliers with a major influence on business in terms of, for example, procurement spend and long-term collaboration prospects (3-5 years). By 2020, we also aim to evaluate all those suppliers with a significant procurement spend (> €1 million p.a.) that are regarded as potentially high-risk suppliers (target attainment as of 2016: 83%).

Bayer carries out the online assessments together with an established provider of sustainability performance evaluations (EcoVadis). The assessment criteria comprise the areas environment, labor practices and human rights, ethics and sustainable procurement. On-site audits are carried out by independent external auditors. Audits are based on the criteria of the Together for Sustainability (TfS) initiative and the Pharmaceutical Supply Chain Initiative (PSCI). In both initiatives, Bayer works together with other companies to standardize sustainability assessments and audits of suppliers in the same industry and to leverage synergies by sharing information. In line with our Group target, we plan to develop and introduce a sustainability standard for our suppliers by 2020. In addition, Bayer auditors evaluate suppliers with regard to sustainability aspects focusing on health, safety and environmental protection.

Online Annex: A 1.4.2.1-4

A 1.4.2.1-4/1

Supplier Assessments and Audits

	2015	2016
Sustainability assessments ¹ via the EcoVadis platform	521	795
Sustainability audits ² by external auditors	71	73
Sustainability/HSE ³ audits by Bayer auditors	107	168

¹ Initial and re-assessments of suppliers working for Bayer; initiated by Bayer and shared as part of the TfS initiative

² Initial and follow-up audits of suppliers working for Bayer; initiated by Bayer and shared as part of the TfS and PSCI initiatives

³ Health, safety, environmental protection

Within the scope of the TfS initiative, a total of 1,773 supplier assessments using EcoVadis and 241 audits – performed, for example, in Poland, Mexico and South Korea – were successfully completed in 2016. In the same year, 51 shared audits were carried out through PSCI, for example in China, India, Israel and Brazil.

Verifying the requirements with new suppliers

Our Life Science businesses undertake separate evaluations of suppliers with regard to the contract manufacturing of quality-relevant goods and services. These evaluations cover the areas of health, safety and environmental protection among others and are performed prior to the commencement of business operations.

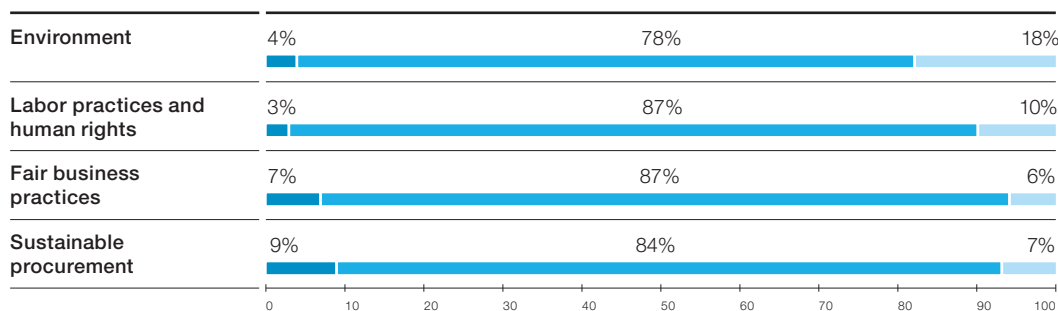
Furthermore, the Life Science businesses obligate potentially risky, newly selected suppliers with a prospective annual procurement spend in excess of €1 million to undergo an EcoVadis sustainability assessment or an on-site audit. The relevant suppliers evaluated in this way in 2016 met our sustainability requirements.

The online assessments and on-site audits are analyzed and documented so that – in the event of unsatisfactory results – specific improvement measures can be defined with the suppliers. In 2016, this applied above all to the categories Ethics, Sustainable Procurement and Health and Safety. In 2016, 24 suppliers (3% of those evaluated) posted a critical result (assessment level low). These suppliers were requested by Bayer to rectify the identified weaknesses on the basis of specific action plans. Overall some 400 of our suppliers improved their sustainability performance in 2016.

Online Annex: A 1.4.2.1-5

A 1.4.2.1-5/1

Online Supplier Assessments by Category



Valuation levels: Low Medium High

Number of suppliers assessed: 795

Improvement measures in the supply chain taking effect

We monitor the implementation of the improvements demanded by us through re-assessments or follow-up audits. Numerous suppliers also voluntarily undergo a re-assessment in order to improve their results. In 2016, 583 suppliers underwent a re-assessment through the EcoVadis platform, of whom approximately 67% improved their sustainability performance. Nine follow-up audits verified the rectification of previously identified deficiencies. In 2016, Bayer was not prompted to end any supplier relationship due solely to sustainability performance.

Additional verification processes were established for the fulfillment of further international regulations. This applies, for example, to regulations that require companies to disclose the origin of certain raw materials such as so-called conflict minerals.



Conflict minerals:
see Glossary

Online Annex: A 1.4.2.1-6

Target: elimination of conflict raw materials

International regulations such as the Dodd-Frank Act in the United States obligate companies to disclose the origin of certain raw materials. The purpose of this is to rule out that minerals from conflict regions such as the Democratic Republic of the Congo or its neighboring countries find their way into products through the supply chain. Bayer has questioned about 150 of its first-tier suppliers who could potentially be impacted by this issue. Nearly 65% of them confirmed to us that they do not procure potential conflict minerals. It was agreed with the remaining suppliers during verification processes that they must ensure compliance with the requirements.

Training measures and dialogue on the issue of sustainability

We support our procurement employees in the implementation of our procurement processes and sustainability requirements with targeted Group-wide training measures. In the reporting period, 244 procurement employees completed training courses explaining the EcoVadis sustainability assessment process. We also offer our suppliers a wide range of development and dialogue opportunities in order to familiarize them with Bayer's sustainability requirements.

GRI G4-26

✓ **Online Annex: A 1.4.2.1-7**

- In 2016, Crop Science used its Supplier Days in India and China as an important dialogue platform for sustainability requirements. Covestro also carried out a Supplier Day in India for its strategically important suppliers. In addition, we offered further Supplier Days, training and workshops in China and India in cooperation with our industry initiatives PSCI and TfS. The Supplier Academy developed by TfS in 2016 and the sustainability webinars developed by PSCI itself offer further training components for suppliers.

Tackling child labor in the seed supply chain

A key challenge for sustainable supplier management in the Group is to counter child labor in the seed supply chain of the Crop Science segment. Our position on this is unequivocal and includes a strict ban on child labor. We therefore also obligate our suppliers along our value chain to strictly refrain from employing children. For many years, Bayer has taken systematic action to prevent child labor in the cotton, rice and vegetable seed supply chain in India, Bangladesh and the Philippines through its Child Care Program and conducts inspections locally. In 2016, Bayer for the first time also inspected external producers of vegetable seed in China and Thailand. No cases of child labor were identified. In addition, Bayer continues to raise awareness of the issue among its suppliers and their local environment and clearly communicates its requirements.

✓ **Online Annex: A 1.4.2.1-8**

· **Bonuses and sanctions for suppliers**

- Crop Science's comprehensive activities in its Child Care Program include the observation and monitoring of the seed produced through wage labor in India. To this end, the corporate auditor EY (formerly Ernst & Young), India, carries out unannounced visits to farms in four Indian districts, among other measures. Suppliers who can verify that they strictly observe our ban on child labor receive a bonus along with training in raising agricultural efficiency. Graduated sanctions are applied for noncompliance. These range from written warnings to termination of the contract in the case of repeated noncompliance.

· **Supporting school education is a key element**

- Bayer regards school attendance not only as essential for children's development but also as an effective tool for preventing child labor. We therefore also visit the parents of children we find working in the fields to convince them of the importance of school education. We promote this in India with the "Learning for Life" initiative within our Child Care Program, which focuses both on fostering scientific knowledge and on general vocational training. This covers everything from reintegrating children into the regular school system to vocational training measures. Between 2005 and the end of 2016, "Learning for Life" reached more than 6,200 children and young people.

Thanks to a stringent monitoring system, which is supported by local educational initiatives, there are now only very few instances of child labor among our contractors, which we nonetheless closely track and immediately put a stop to.

The Child Care Program Advisory Council, comprised of international experts and recognized professionals, supports Bayer in the protection of children's rights and the objective of seed production without child labor. We measure the success of our comprehensive program using the indicator "Child labor incidence as a percentage of total monitorings of laborers."



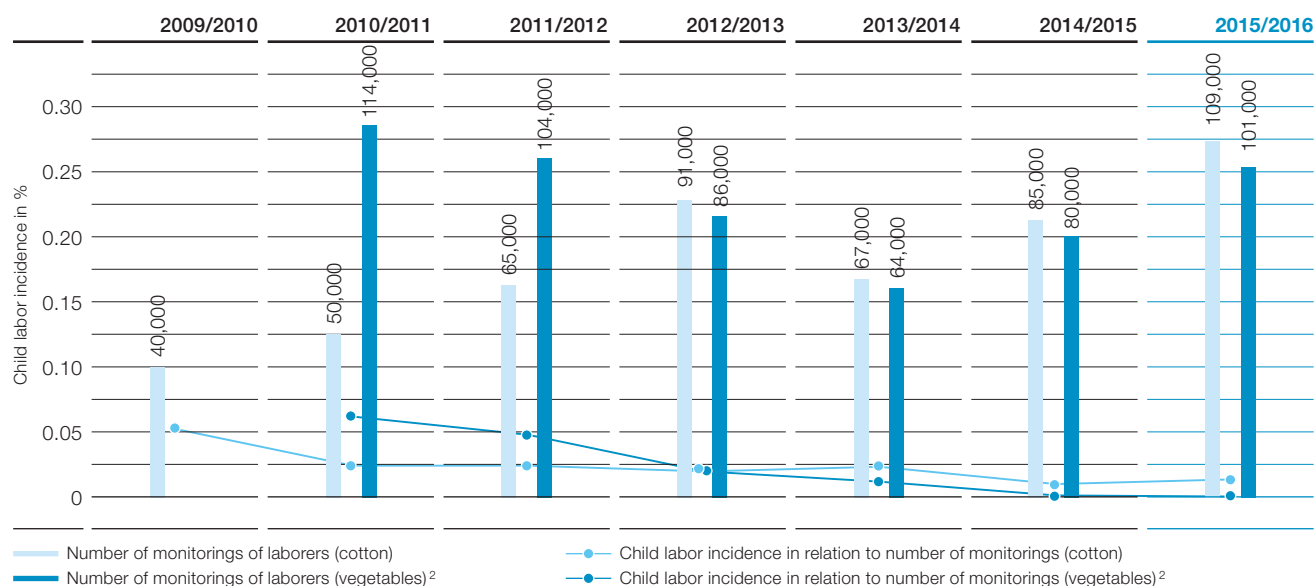
[www.bayer.com/
child-care](http://www.bayer.com/child-care)

Online Annex: A 1.4.2.1-9

The table informs about the development of the indicator that Bayer uses in the evaluation of child labor cases.

A 1.4.2.1-9/1

Child Labor Incidence in the Production of Cotton and Vegetable Seed for Bayer in Relation to the Total Number of Monitorings¹



¹ The figures cover several growing cycles per cultivation year. In India the cultivation year runs from the middle of one year to the middle of the next, depending on climatic conditions and the various seed types. Cumulated depiction on the basis of control inspections performed (at least 3 per cultivation season for vegetables and up to 6 per season for cotton).

² Vegetable seed included in field monitoring from 2010/2011 onward; for vegetables, cultivation areas and number of monitorings refer to a combination of various seed types. Each type of seed has its own monitoring intensity.

1.4.2.2 Production and Logistics

Production according to high quality, safety and environmental standards

Bayer operates production facilities at more than 140 sites in 39 countries. The safe and responsible operation of our facilities and the comprehensive safety of our employees and the people who live near our sites are of utmost importance to Bayer. Bayer also places great importance on protecting the environment and using materials and energy efficiently. We use our HSEQ management systems to steer these processes. Our commitment to environmental protection, health and safety extends beyond the scope of legal requirements. For capital expenditure projects exceeding €10 million, it particularly includes factoring in environmental aspects and performing a voluntary ecological assessment. In the case of acquisitions, we examine whether the applicable environmental and occupational safety regulations and fundamental employee rights are complied with at the production sites in question. Group policies additionally stipulate that new production sites must not be set up in areas that are statutorily protected with regard to natural characteristics, biodiversity or other factors.



See also A 1.4.3.2 and A 1.4.3.3

Online Annex: A 1.4.2.2-1

Few sites close to protected areas

In an updated comparison of the geographical coordinates of our production sites against those of internationally recognized protected areas (ASEAN Heritage, Barcelona Convention, UNESCO-MAB Biosphere Reserve, Wetlands and World Heritage Convention and Ramsar Convention), we identified three sites that are within a radius of three kilometers from such areas. These are the Blesbokspruit protected areas in South Africa, Moreton Bay in Australia and Reserva Costa Atlantica de Tierra del Fuego (Atlantic Coast of "Land of Fire") in Argentina. None of the sites examined is directly located in any of the named protected areas.



Bayer worldwide:
see also A 1.1.1/1



€720 million

is being invested in
production capacities for
hemophilia medicines.

Pharmaceuticals and Consumer Health

Both segments operate their own production sites around the world at which active ingredients are manufactured and at which formulation and packaging services are performed for the product portfolio.

Both Pharmaceuticals and Consumer Health continuously invest in their global production networks. Production capacities for the manufacture of hemophilia A products are being established at the Wuppertal and Leverkusen sites in Germany through the perennial and currently biggest capital expenditure program of Pharmaceuticals with a total volume of €720 million. The Beijing site in China is also being considerably expanded with a capital expenditure volume of some €100 million. Consumer Health's biggest investment project, also with a volume of around €100 million, comprises the modification and expansion of its production sites in China.

A 1.4.2.2/1

Strategic Investments in Property, Plant and Equipment at Pharmaceuticals and Consumer Health

2016

Pharmaceuticals	Production capacities for new rFactor VIII therapies in Wuppertal and Leverkusen, Germany
	Expansion of R&D laboratory capacities in Wuppertal, Germany
	Modernization of research facilities in Berlin, Germany
	Modernization of site infrastructure in Wuppertal and Leverkusen, Germany
	Expansion of production capacities in Beijing, China
	Expansion of Quality Control Biologics in Berkeley, California, United States
Consumer Health	Reconstruction and expansion of production site in Majinpu, China

2015

Pharmaceuticals	Production capacities for new rFactor VIII therapies in Wuppertal, Germany
	Expansion of R&D laboratory capacities in Wuppertal, Germany
	Modernization of research facilities in Berlin, Germany
	Modernization of site infrastructure in Wuppertal and Leverkusen, Germany
	Expansion of production capacities in Beijing, China
	Expansion of Quality Control Biologics in Berkeley, California, United States
Consumer Health	–



Bayer worldwide:
see also A 1.1.1/1



€2.4 billion

was invested by
Crop Science between
2013 and 2016 in the
production of crop
protection products
and seed.

Crop Science

The products of Crop Science are mainly produced at the segment's own production sites. Numerous decentralized formulation and filling sites enable the company to quickly react to the needs of local markets. At these sites the active ingredients are processed according to local requirements and application areas. Packaging of the products also takes place in these facilities. Production of seeds takes place at locations close to our customers in Europe, Asia, and North and South America at our own farms or under contract.

We invested some €2.4 billion overall in property, plant and equipment between 2013 and 2016 to satisfy increased demand for crop protection products and seed. In addition to the expansion of production capacities, this included expansion of our research and development facilities. Here the focus was on the United States and Germany and on our network of breeding stations for various crops in Europe, North and Latin America.

A 1.4.2.2/2

Strategic Investments in Property, Plant and Equipment at Crop Science

2016

	Capacity expansions for herbicides in the United States and Germany
	Construction of a production facility for insecticides in Dormagen, Germany
	Expansion of production capacities for fungicides in Dormagen, Germany
	Expansion of R&D facilities in Monheim, Germany
	Establishment of breeding stations for various plant species worldwide
	Expansion of R&D facilities in Raleigh, North Carolina, United States

2015

	Capacity expansions for herbicides in the United States and Germany
	Construction of production facilities for insecticides in Vapi, India, and Dormagen, Germany
	Expansion of production capacities for fungicides in Dormagen, Germany
	Expansion of R&D facilities in Monheim, Germany
	Establishment of breeding stations for various plant species worldwide
	Expansion of R&D facilities in Raleigh, North Carolina, United States

Animal Health

We procure the active ingredients for our Animal Health products both from internal sources within Bayer and external suppliers worldwide. Our globally marketed animal health products are mainly manufactured at the sites in Kiel, Germany, and Shawnee, Kansas, United States.

Covestro

Covestro's network includes eight world-scale production sites. We also operate several production facilities in selected countries for the formulation and supply of customized polycarbonate granule compounds and the manufacture of semi-finished products (polycarbonate sheets). Covestro also operates regional production facilities for derivatives of the Coatings, Adhesives, Specialties Business Unit and for functional films made of polycarbonate or thermoplastic polyurethane. Covestro continuously invests in its global production network:



Bayer worldwide: see also A 1.1.1/1



A 1.4.2.2/3

Strategic Investments in Property, Plant and Equipment at Covestro

2016

	Capacity expansion of MDI facility in Brunsbüttel, Germany
	Start-up of a production line for CO ₂ -based polyols in Dormagen, Germany
	Continuation and finalization of capital expenditure projects from 2014
	– Doubling of production capacity for polycarbonate in Shanghai, China
	– Doubling of production capacity for the aliphatic isocyanate HDI in Shanghai, China

2015

	Construction of a production line for CO ₂ -based polyols in Dormagen, Germany
	Continuation of capital expenditure projects from 2014
	– Doubling of production capacity for polycarbonate in Shanghai, China
	– Doubling of production capacity for the aliphatic isocyanate HDI in Shanghai, China

Efficient logistics concept implemented

Logistics at Bayer comprises not just the transport and warehousing of goods, but in fact the entire steering and monitoring of all flows of goods and logistics data for the Bayer Group. We work continuously to develop logistics concepts that account for safety, environmental and cost aspects in equal measure. Areas of focus in the ecological field include the reduction of energy consumption and CO₂ emissions, for example by minimizing air transport or using logistic concepts that include rail- and waterways.



See also A 1.4.3

With an agile corporate structure, we operate according to management systems and directives with global validity. We use both internal capacities and external logistics partners for storage and transport services. Bayer selects these according to strict safety, environmental and quality criteria. Alongside the Corporate Supply Chain unit, each segment maintains its own logistics activities that are aligned toward the unique circumstances of the respective business model and products.

1.4.2.3 Marketing and Distribution

Our marketing and distribution activities are primarily geared toward acquiring new clients and retaining existing customers over the long term. In this area too, responsible practices are a top priority for Bayer.

Close distribution network and intensive customer dialogue

To consolidate and further build on our position in the different markets, we continuously work to optimize our market- and customer-specific distribution network and customer dialogue. Depending on market conditions, we supply our customers in the health care sector, in agriculture, in industry and in the private sector through wholesalers, specialist retailers or direct sales organizations. We have established our distribution channels at the international, regional and local levels in accordance with demand.

A high level of customer satisfaction is essential for our long-term success. We therefore systematically analyze both the diverse needs and satisfaction of, as well as complaints made by, our customers in the respective segments. We foster partnership and dialogue with our customers with the help of a variety of distribution tools and marketing formats.

✓ Online Annex: A 1.4.2.3-1

Pharmaceuticals and Consumer Health

Numerous distribution channels in the health care sector

The products of Pharmaceuticals are primarily distributed through wholesalers, pharmacies and hospitals. The products of Consumer Health are generally sold in pharmacies, with supermarket chains, online specialists and other large retailers also playing a significant role in certain markets such as the United States.

Broad range of customer dialogue

Our customer environment includes in equal measure patients, consumers, physicians, pharmacists, caretakers, patient organizations, health policy decision-makers and opinion leaders, partners from research and development, and health authorities and health care payers. Our activities with all customer groups ultimately focus on the health and well-being of patients and consumers. Owing to the heterogeneity of these groups we take specific steps in each case when entering into dialogue with our customers.

Market research provides us with information on our customers' needs and positions that we use as a basis for further activities. Through surveys with respect to various indications, therapeutic areas and regions, we regularly assess the satisfaction of our customers.

Different legal requirements apply for prescription medicines than for nonprescription medicines or medical devices with regard to the collection of customer satisfaction data. Taking account of these requirements, the Pharmaceuticals and Consumer Health segments conduct primary market and data research. Systematic internet analyses additionally give us a better understanding of our stakeholders' opinions, interests and networks.

Pharmaceuticals, for example, engages in dialogue with patient organizations and groups so as to improve disease awareness and market access for innovative therapies.

Consumer Health has now successfully introduced its excellence program to improve customer orientation in 22 countries, with more to follow in 2017. With this program we aim to make Bayer the leading health care company in the areas of market development strategies, distribution and trading.

Crop Science

User-oriented distribution system at Crop Protection

We market our crop protection products in more than 120 countries, mainly through wholesalers or directly through retailers. Our seeds are sold to growers, seedling companies, specialist retailers and the processing industry. Plant traits developed using modern breeding methods are either incorporated into proprietary seed varieties or licensed to other seed companies. We market our Environmental Science range of pest and weed control products through wholesalers and specialist retailers to professional users in the green industry, forestry, industrial vegetation management and pest control, as well as in the area of public health to combat malaria and dengue fever, for example. The latter is mainly transacted through tendering by government agencies and NGOs.

Marketing to customers through new technologies

The customers of Crop Science vary according to product, region and culture. This results in different customer wishes and trends such as industrialization 4.0 with new technologies like digital farming and also rising demands with respect to food safety and quality.

We want to focus more strongly on our customers and their special needs and offer them tailored solutions. As a result, we realigned our Marketing organization in 2016. Through our locally aligned marketing activities ("field marketing") in particular, we want to improve both the speed and content of our customer relations. In addition, we want to determine customer satisfaction through surveys every two years depending on the country organization. In 2016, we conducted such surveys in Japan and Hungary.

Crop Science is intensifying its direct cooperation with farmers through the Bayer Forward Farming initiative. Our solutions for sustainable agriculture in practice are demonstrated at Bayer ForwardFarms. Since the program was launched, Crop Science has been successively expanding this type of cooperation worldwide.



www.forwardfarming.com

Animal Health

Depending on national regulatory frameworks, we market our animal health products through veterinarians and other distribution channels such as pharmacies or retail stores. Depending on the respective market segment, Animal Health conducts studies on customer satisfaction and customer retention. Performance indicators are developed from long-term studies in order to measure customer satisfaction.

Covestro

Covestro's products are mainly supplied to the automotive and transportation, construction, wood processing and furniture, and electrical / electronics industries. Covestro markets its products mostly through regional and local distribution channels. Three globally established supply chain centers for Covestro's most important regions pool all information streams from order acceptance to dispatch planning, delivery and complaint acceptance. They serve as the central link to the customers and aim to ensure the rapid and smooth processing of orders. Covestro systematically analyzes customer satisfaction worldwide through the regular evaluation of complaints and assessments by customers. Corrective and prevention measures are derived from this.

Commitment to ethical conduct

In the development, sale and marketing of our products, we do not tolerate bribery or any other form of improper exertion of influence on our business partners. The corresponding rules of conduct are established in our Corporate Policy "Responsible Marketing & Sales." Furthermore, we are committed to ethical advertising and communication for all our products and services. Our minimum standards are derived from laws and other statutory regulations, industry codes and internal rules.



Compliance: see
Glossary

As part of our compliance management system, we register and investigate any suspected violation of our responsible marketing principles. This applies to complaints both from within the company and as notified to us from outside.



See also A 3.2.1
and A 4.2

Our corporate policy and the respective training programs are implemented decentrally in the segments.

✓ Online Annex: A 1.4.2.3-2

Pharmaceuticals and Consumer Health

The marketing and distribution of pharmaceuticals, medical devices and nonprescription (over-the-counter = OTC) medications are strictly regulated and subject to relevant laws that we are committed to observing. Also applicable at Bayer at the global or regional levels are industry codes adopted by relevant associations of the pharmaceuticals and medical devices industries. In many countries, furthermore, these standards are further concretized by local codes – all of which apply to prescription pharmaceuticals and many of which additionally apply to nonprescription medicines.

All codes of the International Federation of Pharmaceutical Manufacturers & Associations (IFPMA) serve as a binding minimum global standard for all pharmaceutical products marketed by Bayer. In addition, Bayer observes the codes of the European Federation of Pharmaceutical Industries and Associations (EFPIA) for dealings with health care professionals and patient organizations. The WHO's Ethical Criteria for Medicinal Drug Promotion, together with national ethical standards that are usually also enshrined in industry codes at the local level, represent the minimum global standard for the advertising of human pharmaceutical products at Bayer.

All the aforementioned codes contain provisions governing, among other issues, advertising material standards, the distribution of samples, cooperation with medical and pharmaceutical specialist groups in connection with speaker and consultancy contracts, and scientific studies. Adherence to these codes is designed to ensure the independence of both health care professionals and patient organizations. Based on the new EFPIA transparency code and the corresponding local interpretations, Pharmaceuticals discloses any grants to health care professionals and organizations annually for the preceding calendar year.

Bayer compliance rules supplement codes

The most important internal Bayer corporate policy is our Anti-Corruption Procedure. The key requirements and the minimum global standard for compliant and ethical conduct are summarized in the Anti-Corruption Compliance Manual, which applies worldwide at Pharmaceuticals and Consumer Health. Principles for ethically and legally acceptable advertising for pharmaceuticals and medical devices are set out in a further Bayer corporate policy. Should several regulations be relevant, Bayer principally applies the more stringent standards.

Training measures on product-related communication and anti-corruption are fundamental elements of the system at Bayer. The principles communicated in these training courses provide an overview of globally applicable minimum requirements for cooperation with key stakeholders in the health care industry, such as physicians, hospitals or patient organizations. The courses explain general compliance principles and also give specific instructions in relation to nonreciprocal benefits and the exchange of services with health care professionals.

Crop Science

Crop Science follows the guidelines of its Product Stewardship Policy with regard to the distribution and use of its crop protection products. This policy, which also satisfies the requirements of the Corporate Policy "Responsible Marketing & Sales," is based on the International Code of Conduct issued by the Food and Agriculture Organization of the United Nations (FAO). We carry out training courses on this topic worldwide and make available corresponding materials to the employees online.

Responsible business practices in marketing and sales are addressed at Crop Science in compliance training courses and are also an integral element of marketing and sales excellence training measures.

Animal Health

In the marketing and use of its products, Animal Health not only observes statutory regulations, but also further-reaching Group-wide policies and voluntary industry-wide commitments. Where several regulations are applicable, Animal Health principally observes the more stringent requirements. Most of our companion and farm animal products are subject to the provisions of drug advertising law.

Covestro

In the marketing of its products, Covestro consistently observes its Responsible Marketing & Sales Policy. The importance of observing antitrust law and preventing corruption is regularly emphasized in training programs, internal communications and discussions with management.

1.4.3 Safety for People and the Environment

- > High level of product stewardship and risk prevention determines our activities
- > Occupational health and transportation safety further improved
- > More efficient use of energy and water



We are fully aware of our stakeholders' high expectations regarding our products and processes. The quality and safety of our products, the safe and responsible operation of our facilities and the comprehensive protection of our employees and the people who live near our sites are of the utmost importance to us. Bayer also considers environmental protection and the responsible use of natural resources to be extremely important.

Responsibility for health, safety, environmental protection and quality (HSEQ) lies with the Group Board of Management. Group-wide HSEQ management systems are in place and incorporated into the business processes. Responsibility for steering and control lies with the two new corporate functions, "Health, Safety & Sustainability" and "Quality," which stipulate responsibilities and framework conditions, among other things, through corporate policies, targets and key performance indicators (KPIs).

Operational responsibility lies with the corresponding line organizations of the segments, which steer HSEQ independently with management systems, committees and working groups. All relevant HSEQ performance indicators from our production sites are compiled in a Group-wide Bayer site information system (BaySIS). The continuous review and revision of policies by the corporate

functions, regular mandatory internal audits and external certification processes ensure that the systems at all production sites effectively meet the specific requirements in each case.

The excellent performance of our HSEQ management systems for the areas of health, safety, environmental protection and quality also reduces running costs by avoiding damage and disruptions to work and production.

Standards and certifications

Bayer's HSEQ management systems are based on recognized international standards. Regular upkeep of the management systems and appropriate training and certification also underpin our commitment to the chemical industry's Responsible Care™ initiative and in particular the guidelines of the Responsible Care Global Charter.

With regard to HSE management system coverage based on energy consumption, around 95% of all our production sites had an HSE management system audited by Bayer in 2016. Some 97% of our business activities were certified externally to at least one internationally recognized standard. A Group-wide certification plan aims to achieve virtually complete coverage in accordance with external standards in both environmental and occupational safety management by 2017. One hundred percent coverage is not feasible owing to the frequent changes in our site portfolio.

A 1.4.3/1

Standards and Certifications

in % of business activities based on energy consumption	2012	2013	2014	2015	2016
Certification to external standards					
ISO 14001 certification/EMAS validation	84	84	91	93	94
OHSAS 18001 ¹ certification	30	30	34	80	86
ISO 50001 ² certification	–	–	40	47	49
Degree of coverage with certification to at least one of the above standards	89	90	95	93	97
HSE management systems internally audited by Bayer	99	99	94	96	95

¹ The rise in 2015 is due to the increased OHSAS 18001 certification of Covestro sites.

² Group values determined from 2014 onward

Quality management

The Quality function ensures uniform quality standards across all segments and functions along with the continuous improvement of all quality-related processes. The quality requirements derived from regulatory requirements, permits and authorizations, relevant standards of nongovernmental organizations and industry associations and customer expectations are regularly reviewed and integrated into an internal quality management system.

Our segments have quality management systems based on sector-specific international standards. Group-wide, coverage with this kind of certification is over 98% based on energy consumption.

✓ Online Annex: A 1.4.3-1

Pharmaceuticals and Consumer Health

The quality management system of these two segments forms the basis for the highest possible safety standards in the manufacturing of pharmaceuticals and medical devices, which are subject to strict quality requirements. It is therefore based on internationally recognized standards such as ISO (e.g. ISO 9001, 17025 and 13485) and ICH (International Conference on Harmonization of Technical Requirements for Registration of Pharmaceuticals for Human Use), as well as on rules for good working practice (GxP) in the development and manufacture of pharmaceuticals (e.g. Good Manufacturing Practices (GMP)), Good Distribution Practices (GDP) and Good Clinical Practices (GCP). Compliance with the relevant standards is regularly audited by internal experts, regulatory authorities and external consultants. These audits also cover our suppliers and institutes sub-contracted by us.



GxP: see Glossary

• **Crop Science**

• Product manufacture at Crop Science is performed according to ISO 9001. Compliance with manufacturing standards and registered product specifications is regularly monitored by external auditors. All our products are approved/authorized by the relevant national authorities and thus fulfill the respective requirements with regard to quality and user safety.

• **Animal Health**

• Our veterinary medicine products also comply with stringent GxP quality standards stipulated in relevant statutory requirements applying to development, approval, manufacture, marketing and safety monitoring. According to this, safety is to be ensured for the animals to be treated, people and the environment alike. Within the scope of the statutory approval procedures and, if required, re-registrations, Animal Health carries out studies in order to verify the quality, efficacy and safety of its products. Regular official inspections and internal audits check compliance with legal requirements. The audits also cover institutes subcontracted by us, service providers and suppliers.

• **Covestro**

• Covestro's quality management system is certified to the international standard ISO 9001. Over 99% of reporting production and nonproduction sites worldwide are certified.

1.4.3.1 Product Stewardship

We consider product stewardship to mean that our products satisfy the highest quality standards and are safe for people, animals and the environment when properly used. All substances and finished products undergo extensive testing and evaluation in the interest of product safety. We assess possible health and environmental risks along the entire value chain and implement the appropriate measures to mitigate risks based on this.

We strictly observe the legal requirements, and our voluntary commitment and internal standards go beyond these in many areas. This is steered by the Corporate Health, Safety & Sustainability function, which is responsible for implementing the related policies and maintaining the HSE management systems.

Implementing statutory requirements

Extensive legal regulations apply to all Bayer products. Chemical substances are subject to the European chemicals regulation REACH (Registration, Evaluation, Authorisation and Restriction of Chemicals) and the CLP regulation (Regulation on Classification, Labelling and Packaging of Substances and Mixtures). The classification and labeling of chemicals enables users in the European Union to become informed about the risks associated with chemicals.



<https://echa.europa.eu/regulations/reach>

✓ Online Annex: A 1.4.3.1-1

• **Requirements of the REACH and CLP regulations met**

• The registration obligation under REACH applies irrespective of marketing activities for all substances that we produce or import in quantities of more than one metric ton. There is also an authorization procedure that limits the use of particularly hazardous substances or can lead to their replacement or ban. To fulfill the requirements of REACH, we have approved Group-wide and segment-specific policies.

: Already registered substances are also regularly evaluated by the authorities. For Bayer substances this can result in additional testing requirements, new risk management measures or inclusion in the REACH authorization procedure. To date, one Bayer substance has required authorization. The authorities enforce the implementation of REACH through regular inspections. So far none of the inspections at Bayer has resulted in complaints. We also require our suppliers to confirm conformity with REACH for all substances they supply to us.

: In the European Union, the Globally Harmonized System (GHS) for the classification and labeling of chemicals is implemented through the CLP regulation. The purpose of the GHS is to achieve a globally standardized system for classifying chemicals and labeling them appropriately on packaging and in safety data sheets. Bayer assesses all its marketed products and implements the GHS worldwide.



Biocides: see Glossary

Before any product is introduced to the market, we assess it to determine whether it is safe. Furthermore, the end products from our Life Science segments – such as pharmaceuticals, crop protection products and biocides – are subject to specific approval/authorization procedures.



www.icca-chem.org/responsible-care

Voluntary commitment by Bayer

Since 1994, Bayer has supported the voluntary Responsible Care™ initiative of the chemical industry and the associated Responsible Care™ Global Charter. We cover all main elements of the charter at all Group sites with our HSEQ management systems. We are also actively involved in the further development of scientific risk assessment through our work in associations and initiatives.

✓ Online Annex: A 1.4.3.1-2

: Comprehensive support for association activities

: International associations such as the European and international chemical industry associations (CEFIC, ICCA) and the OECD (Organisation for Economic Cooperation and Development), as well as initiatives such as ECETOC (European Centre for Ecotoxicology and Toxicology of Chemicals), work to evolve the scientific assessment of chemicals, develop new test methods and oversee the implementation of statutory regulations. Bayer actively supports these efforts through its activities in the associations. We are also involved, for example, in the ICCA Long-Range Research Initiative and in the WHO and E.U. action plans for improving health and environmental protection. In addition, we support the Global Product Strategy (GPS), a voluntary commitment of the chemical industry initiated by the International Council of Chemical Associations (ICCA). Its objective is to improve knowledge about chemical products, especially in Emerging Markets and developing countries, and thus increase safety in the handling of these products.

We continuously evaluate our substances' properties already at the research and development stage. The development of products with undesirable properties is discontinued in application of the precautionary principle.

✓ Online Annex: A 1.4.3.1-3

: We accept the precautionary principle as explained in Principle 15 of the Rio Declaration of the United Nations and communiqué COM (2000) 1 of the European Commission as a possible consumer protection and risk management tool. It is applied whenever there is no final scientific certainty in a given area and evidence also exists that people or the environment could suffer significant or irreversible damage. In our view, the focus should not be unilaterally on hazard potential, but rather on a balanced benefit-risk evaluation.

In Europe we operate under strict legal requirements. We voluntarily apply comparable standards around the world, independent of the respective national legislation. In this way we are ensuring that substance assessments comparable to those established under REACH will also be applied at all non-European Bayer sites. We support this through our Group target for product stewardship: by 2020, we will assess the hazard potential of all substances of our Life Sciences (> 99%) used in quantities exceeding one metric ton per annum. By the end of 2016 we had assessed 66% of these substances. The applicable assessment steps and measures are established in our Corporate Policy "Substance Information and Availability."



Group target 2020: assessment of the hazard potential of all substances > 1 metric ton p.a.; see also A 1.2.1

We carry out risk assessments for chemicals according to recognized scientific methods such as those described in the Guidance on Information Requirements and Chemical Safety Assessment of the ECHA (European Chemicals Agency). Should the analysis reveal that it is not safe to use a certain chemical, we take the steps to mitigate risks.

Product information for safe use

We pay special attention to our customers in the safe handling and use of our products. Bayer compiles safety data sheets for all products regardless of whether or not these are legally required. We offer suitable packaging information for all end consumer products, an example being package inserts for pharmaceuticals.

✓ Online Annex: A 1.4.3.1-4

- **Continuous examination and communication**
- Risk mitigation measures can range from revised application recommendations to the substitution of a substance. In this case, the use of the substitute must be economically and technically feasible. The substitution of chemicals is basically a continuous task for the chemical and pharmaceutical industry in order to generate new or substantially improved products and processes. This is integral to our commitment to Responsible Care.
-
- Safety data sheets are the central means of communication for safety-relevant information about substances and mixtures in the supply chain. Targeting professional users, they contain information on the substance's properties and on its safe use. In addition, technical information is provided for professional use.

In accordance with the respective product safety and information obligations, all segments compile product information both for raw materials and for intermediates or end products. IT systems enable worldwide access to this information, including as regards product labeling.

Risk assessment of products on the market

Our stewardship also involves the monitoring of all products that are already available on the market. We have established processes throughout the company aimed at addressing inquiries on product safety or problems with our products. This feedback is consistently accounted for in our risk assessment, which also covers substances that are regarded as potentially high-risk by regulatory authorities and independent institutions.

Responsible use of biotechnology

We currently use biotechnological methods in pharmaceutical product development and production and in the area of crop protection. At Pharmaceuticals, the products involved include Betaferon™ / Betaseron™, Eylea™ and Kogenate™, while at Animal Health this concerns Zelnate™ – a nonantibiotic immunostimulant product. Further biotechnologically manufactured active ingredients are undergoing clinical development. Plant biotechnology can improve and secure crop yields and the stress tolerance of plants.

For Bayer, safety is a priority in the use of biotechnology. In addition to legal and regulatory requirements, Bayer has formulated a corporate policy on the responsible use of gene technology. We provide our stakeholders with comprehensive information about our products and services in accordance with our Corporate Policy "Responsible Marketing & Sales."

✓ **Online Annex: A 1.4.3.1-5**

• **Activities of the segments**

• Pharmaceuticals, Consumer Health and Animal Health have established strict safety measures for handling biological agents in the global "Biological Safety" and the "Requirements for the safe handling of biological agents" procedural instructions.

• Crop Science has established the necessary requirements for the responsible use of biotechnology in both the Product Stewardship Policy and the Seeds Stewardship Directives. Furthermore, Crop Science maintained its focus on the conscientious use of plant biotechnology products through its membership of the Excellence Through Stewardship (ETS) organization. Audits by ETS-certified auditors are required to maintain ETS membership, and in 2016 Crop Science completed eight audits in Europe, the United States and Africa.

Our commitment to preserving biodiversity

We take into account influences on biodiversity throughout the entire value chain and have established our principles in our own position. There we commit ourselves to the United Nations Convention on Biological Diversity and the associated Nagoya Protocol, which regulates access to genetic resources and the balanced and fair sharing of the arising benefits. Crop Science commits itself through an internal policy to ensure that Bayer only acquires and uses genetic resources in harmony with international and national legislation.

✓ **Online Annex: A 1.4.3.1-6**

• Biodiversity strengthens the resilience of ecosystems and is a key condition for the maintenance of sustainable agriculture. With its products and services, Crop Science contributes to this. Our goal is to help our customers to integrate responsible crop protection methods into agricultural operations and to preserve soil and water quality and the habitats of insects, pollinators and birds. We work together with farmers on solutions for producing more food through sustainable agriculture without, for example, increasing the use of crop protection products.

• Various ecological enhancement measures are undertaken to support resilient ecosystems, such as enhancing the biodiversity of pollinators by planting flowering strips and the more extensive cultivation of slopes to protect against erosion. These can help farmers improve, for example, soil fertility and water regulation in their fields, or boost the pollination activities of insects and thus increase their yields and biodiversity. At the Bayer ForwardFarms, the host farmers and the company demonstrate to the public how sustainable agriculture and ecological enhancement measures work in practice.

• In addition, as a member of the Association of Research-Based Pharmaceutical Companies, Bayer supports the association's position on the U.N. Convention on Biological Diversity. Among other things, a corresponding policy, which applies to all sites of Pharmaceuticals and Consumer Health, takes into account that both segments concentrate on the chemical synthesis of substances using state-of-the-art technologies in medicinal, combinatorial and computational chemistry. If natural substances are used during research into new pharmaceuticals, they are first checked with respect to compliance with the Convention on Biological Diversity.



www.forward
farming.com

Commitment to animal welfare

Animal studies are legally required and essential from a scientific viewpoint to assess the safety and efficacy of our products. We aim to minimize the use of study animals and to employ alternative methods whenever possible. We respect all legal requirements pertaining to animal welfare, compliance with which is verified through both regulatory authorities and internal audits. Bayer's principles on animal welfare and animal studies apply in countries without special legislation. Bayer's Global Animal Welfare Committee monitors compliance with these guidelines within the Bayer Group and in external studies. Our principles also apply to both the research institutes we commission and our suppliers, whose compliance with our animal welfare requirements we regularly monitor.



www.animalstudies.bayer.com

✓ Online Annex: A 1.4.3.1-7

• Commitment to reducing animal studies

• Based on the performance indicators of our Animal Welfare Committee, we each year analyze the development of animal numbers, the distribution according to species and the burden placed on our test animals, as well as evaluate studies and discuss possible steps in accordance with the 3Rs principle (replace, reduce, refine). We are able to demonstrate that since 2005, the number of study animals used per €1 million research budget (including animals in Bayer studies performed by contract research organizations) has declined from 96 animals to around 27 animals in 2016.

• Bayer participates in several consortia and projects that aim to reduce the number of animals used in studies or improve the studies' validity. We participate, for example, in the Center for Alternatives to Animal Testing (CAAT), and scientists from Pharmaceuticals are involved in the leadership of the eTOX project and in the MARCAR and K4DD projects within the scope of the Innovative Medicines Initiative (IMI). Employees from Crop Science are represented on the Board of Administration and the Scientific Committee of the European Centre for Ecotoxicology and Toxicology of Chemicals (ECETOC). In Germany, we are active in the Centre for Documentation and Evaluation of Alternative Methods to Animal Experiments.



3Rs principle:
see Glossary



www.etoxproject.eu/
www.imi-marcar.eu/project.html
www.imi.europa.eu/content/k4dd



Innovative Medicines Initiative (IMI):
see Glossary

Protection against product counterfeiting

Counterfeit medicines and crop protection products harbor substantial risks for patients and consumers. Product counterfeiting can only be addressed internationally through a joint approach by industry, associations, governmental agencies and nongovernmental organizations. Bayer consistently advocates the strengthening and expansion of existing laws and provisions aimed at the identification and confiscation of illegal products. We want to additionally protect customers and products through extensive measures of our own.

✓ Online Annex: A 1.4.3.1-8

• Combating counterfeit medications

• Through the "Beware of Counterfeits" campaign, Bayer informs patients on the internet about the risks of counterfeit pharmaceuticals and provides patients with tips on how they can protect themselves. Through the use of various technological means in production, we constantly strive to ensure that patients, too, can distinguish between original and counterfeit products.

• We support the establishment of a Europe-wide system for the identification of original pharmaceuticals that satisfies the requirements of the E.U. Falsified Medicine Directive. In addition, Bayer participates in the Pharmaceutical Industry Initiative to Combat Crime of Interpol to counteract pharmaceutical counterfeiting. In 2016, a research project (ALPhA) supported by the German Ministry of Education and Research with Bayer's participation was completed. This established the need for a minimum harmonization of criminal conduct definitions and penalties at the E.U. level in criminal law relating to medicine. Close cooperation between all stakeholders is necessary in the future to achieve practical success in fighting counterfeiting and prevent the sale of counterfeit pharmaceuticals on the internet. Bayer is intensively involved in such alliances and has been a partner to the "Innovation Power for Safety in Industry" initiative since 2016.



www.bayer.com/counterfeits

Combating illegal crop protection products

To protect against the import of counterfeit and illegal crop protection products into the E.U., Crop Science intensively advocates the uniform interpretation and implementation of existing E.U. regulations in all E.U. member states. We support regulatory authorities worldwide through chemical analysis to identify counterfeit products. In addition, we conduct our own inspections in the market in all countries and actively support initiatives by associations. In 2016, we reviewed our strategy to protect against illegal crop protection products and rolled the revised version out worldwide.

As part of our product stewardship programs, we provide information material about the risks of counterfeit and illegal crop protection products and train customers, dealers, farmers and regulatory authorities. We document all indications of suspicious and potentially counterfeit or illegal Crop Science products. We work constantly to counterfeit-proof our products through the use of security features. In 2016, we identified patent and trademark violations in China, India and Brazil, and successfully defended our rights.

Pharmaceuticals and Consumer Health

Benefit-risk management for pharmaceuticals and medicinal products

The Pharmaceuticals and Consumer Health segments continuously assess the medical benefit-risk profile of their pharmaceuticals and medicinal products throughout their entire product life cycle. The efficacy, safety and tolerability of pharmaceuticals are studied in Phases I-III of preclinical and clinical development. The documentation submitted to the regulatory authorities contains the results of these studies and a comprehensive benefit-risk assessment. It is essential for a new pharmaceutical or medicinal product to satisfy regulatory safety requirements if it is to receive marketing authorization. According to these regulations, the segments continue to compile safety-relevant information in a dedicated database following market launch. This information is continuously assessed and the benefit-risk balance regularly evaluated by medical experts of various disciplines in the global Pharmacovigilance Department. In this process, Bayer works closely with the regulatory and supervisory authorities at international and national levels. Further safety-relevant information is compiled using Post-Authorization Safety Studies (PASS) conducted after approval. The results are entered into the PASS registry in compliance with E.U. pharmacovigilance legislation.

The most important regulatory authorities for Bayer are:

- the U.S. Food and Drug Administration (FDA)
- the European Medicines Agency (EMA)
- the Pharmaceuticals and Medical Devices Agency Japan (PMDA)
- the China Food and Drug Administration (CFDA)



Pharmacovigilance: see Glossary

Online Annex: A 1.4.3.1-9

Responsibility of safety management teams

The Pharmaceuticals and Consumer Health segments have a global pharmaceutical monitoring system in which experts from various disciplines work together in safety management teams (SMTs). These teams evaluate the benefit and safety data and other relevant product information so as to identify potential safety concerns at an early stage or detect possible changes in the benefit-risk ratio.

In addition to internal safety data from clinical trials, post-marketing studies and spontaneous adverse event reports, the company uses external databases and information from scientific publications to conduct assessments. SMTs produce detailed safety risk management plans that are updated as soon as relevant new benefit-risk data become available. Implementation of risk mitigation activities is coordinated by local SMTs in the country organizations. All processes are documented, regularly updated and integrated into the quality management system.

Should risks be identified, Bayer immediately undertakes steps to safeguard the health of patients and consumers in coordination with the authorities. These measures range from updating product information for patients, consumers and physicians through patient education brochures and further training measures for medical specialists to direct communication with medical experts (Direct Healthcare Professional Communication, DHPC) and even product withdrawals if necessary.

Analysis of residues of pharmaceuticals in the environment

Active pharmaceutical ingredients can enter the environment through human or animal excreta, through improper disposal or during production. Surface waters are particularly relevant here. Pharmaceuticals and Consumer Health carry out their own ecotoxicological investigations of pharmaceutical residues and degradation products to assess the potential environmental impact of these products. In connection with the approval process for human and veterinary pharmaceuticals in Europe and the United States, an environmental risk assessment takes place for all new active ingredients. Based on currently available information, the existing concentrations of individual active pharmaceutical ingredients in drinking water do not have any relevant adverse effects on human health. This subject is dealt with in particular by a WHO report on pharmaceuticals in drinking water published in 2012 that comes to the conclusion that traceable effects on human health through the current extent of exposure via drinking water are highly improbable. We are following the discussion and actively participating in the stakeholder dialogue.

Bayer complies worldwide with all statutory requirements regarding wastewater thresholds at its production sites. In line with the regulatory requirements, these are reviewed by supervisory authorities and external consultants and also at regular intervals through audits by internal experts.

To further reduce or completely avoid traces of pharmaceuticals entering the environment, we are taking our own measures in production. In addition, as part of the Eco-Pharmaco-Stewardship initiative of European pharmaceutical associations, we have adopted their methods for the risk assessment of pharmaceutical traces in production wastewater. Bayer has reviewed its production sites according to these methods and, where necessary, taken site-specific measures aimed at a further reduction. We are also participating actively in various research projects to develop reduction measures.

✓ Online Annex: A 1.4.3.1-10

• Participation in extensive research projects

- Bayer coordinates the “Intelligence-led Assessment of Pharmaceuticals in the Environment” project in Europe, which seeks new ways to improve environmental risk assessment. The goal is to develop models and methods for determining possible environmental risks of pharmaceutical substances in early development stages and to prioritize for further environmental assessment existing substances that previously have not been evaluated.
- In Germany, Bayer, as member of the steering committee, participated in the “Risk Management of Emerging Compounds and Pathogens in the Water Cycle” initiative sponsored by the German Ministry for Education and Research (BMBF). At the conclusion of the initiative in 2016, the results were presented and, overall, Germany’s flowing waters were attested to be in good condition. Within the scope of the precautionary principle, however, further-reaching purification of wastewater is recommended for the future.
- Bayer is also involved in the stakeholder dialogue initiated by the German government in 2016 on the issue of micropollutant strategy. This dialogue process is aimed at developing a strategy to prevent the water-polluting effects of certain chemicals, including active pharmaceutical ingredients. The results and recommended measures are expected to be summarized in a position paper in the summer of 2017.



www.medicinesforeurope.com/key-topics/#section-5

Crop Science

Focusing on product safety

Product safety and environmental compatibility play a central role in the development of crop protection products and technologies so that they are harmless to people and animals and can be used without constituting an unjustifiable ecological burden. For this they require official authorization, which is regulated by numerous international and national laws and provisions. The requirements for marketing authorization, particularly as pertains to the environment, have risen sharply in recent years. Crop Science satisfies all the regulatory requirements of the countries in which our products are sold.

In tests required by law, Crop Science already examines the products during the development phase with regard to their mode of action, their (eco)toxicological properties and the extent of potential remaining trace concentrations in plants and the environment. Each new crop protection active ingredient and each new technology must undergo these studies and tests to ensure that the active ingredient can be applied effectively as a product and that its use or that of the relevant technology is safe for people, animals and the environment.

Furthermore, Bayer has made a voluntary commitment to market only those crop protection products whose active ingredients are registered in at least one OECD country. In its sale and application of crop protection products and technologies, Crop Science observes the International Code of Conduct on Pesticide Management of the United Nations Food and Agriculture Organization (FAO). We implement all major aspects of responsible product handling in our Product Stewardship Program, which is based on the principles of our Product Stewardship Policy.

✓ Online Annex: A 1.4.3.1-11

Model projects for water protection in agriculture

The targeted use of crop protection products that minimize discharge outside of the treated crops is very important to Crop Science. Through best management practices, Crop Science supports agriculture in safe and environmentally friendly land cultivation and the disposal of residual liquids following the application of crop protection products.

In the area of water pollution mitigation, we give recommendations and advice to our customers particularly with regard to biological remediation systems such as Phytobac™. These systems are intended to prevent point source discharges of crop protection active ingredients into water bodies that are generated during the filling and cleaning of spraying devices or the disposal of residual liquids. The system is now being tested in numerous E.U. countries and offered commercially by suppliers. In Europe, around 4,100 remediation systems are currently in operation.

Erosion and runoff processes on agricultural land can also lead to substance emissions into adjacent water systems. In this context, we are collaborating with external partners on the development of a web-based geoinformation system for water protection in agriculture. This enables the visualization of site-related risks by means of high-resolution risk maps supplemented with proposals for proven procedures. It is planned for this system to be used as an advisory tool for water protection in agriculture.

To more effectively account for increasing demands with regard to environmental protection and occupational health and safety, Crop Science and its external partner agrotop GmbH have developed a closed, contamination-preventing discharge system for liquid crop protection products. It consists of sealed canisters that enable partial and full discharge and completely clean themselves.



www.bayer.com/phytobac

Bayer Bee Care: strengthening bee health

As a Life Science company, we know how important healthy bees are as pollinators for sustainable food production and are aware of the key role they play in ecosystems. Promoting the health of pollinators and sustainable agriculture is of tremendous importance for our business. Within our Bee Care Program, we combine all activities in the area of pollinator health and safety. We operate Bee Care Centers in Germany and the United States for this purpose and have also established a global Bee Care network.



www.beeecare.bayer.com

✓ Online Annex: A 1.4.3.1-12

Objectives of the Bee Care Program

Health problems among bees and other pollinators are caused by a number of complex factors. These include pests, parasites, disease, extreme environmental and weather conditions, the availability of food, and certain agricultural and beekeeping practices. Bayer is involved in numerous projects and partnerships to more closely study these factors and strengthen bee health.

Within the framework of the Bee Care Program, we proactively approach numerous stakeholder groups – including industry partners, scientists, farmers, beekeepers, governmental agencies, nongovernmental organizations, investors and representatives of the food value chain. Our goal is together to seek opportunities for cooperating in the field of bee and general pollinator health and to make our activities more transparent. For example, in 2016 we participated in a round of discussions in London on bee protection organized by Hermes Investment Management.

Activities to effectively protect bees

In North America, Bayer has launched a public appeal to create new foraging habitat for bees as part of its “Feed a bee” initiative. In addition, in the United States, through the partnership with the bee research society “Apis m.,” important stimulus was gained in 2016 for implementing research projects whose results benefit beekeeping (Healthy Hives 2020 program).

In Germany, Bayer looks at how insect biodiversity-enhancing measures work and is conducting a major, multi-year study on this subject in agriculturally oriented regions. In South America, we finance projects studying the attractiveness of various crops so as to better understand the relationship between pollinators and local crops and to optimize the use of crop protection products.

In connection with research into controlling the Varroa mite, a dangerous parasite for honey bees, Bayer has developed a plastic strip treated with an active ingredient that protects beehives from mite infestation. The product is expected to be available to beekeepers by 2017 to combat the Varroa mite.

We do everything possible to minimize risks to bees – through extensive safety testing, risk assessment, product stewardship measures and the development of bee-friendly crop protection products and processes.

Ongoing re-evaluation of neonicotinoids

We are convinced that neonicotinoids are user-safe insecticides with a positive environmental profile, and are not dangerous to bees when used responsibly and according to labeling instructions. This was confirmed by risk evaluations performed during marketing authorization reviews by the responsible authorities of countries outside Europe. In Europe, however, Bayer products that contain two of our neonicotinoid compounds have been prohibited since 2013 from use in crops that are attractive to bees. The European Commission has recently instructed the European Food Safety Authority (EFSA) to examine all newly available data and reports from the past two years. The results are expected for the beginning of 2017.



Neonicotinoids:
see Glossary

: Bayer has brought the restriction on neonicotinoid use in the E.U. before the Court of Justice of
 : the European Union in order to clarify the legal basis of the Commission's decision. This deci-
 : sion is based on an assessment by the EFSA that in turn is based on neither a validated nor an
 : officially recognized risk assessment system. With a view to future investment decisions, the
 : company is primarily asking that the court clarify the regulatory framework.

Involving customers and partners

The application of crop protection products requires the greatest possible care. We therefore support our customers and partners worldwide in the proper and safe handling of our seed and crop protection products. Targeted training measures particularly for farmers and dealers are designed to improve safety for users and thus also the environment and consumers. The objective is to increase the scope of our training activities worldwide.

✓ Online Annex: A 1.4.3.1-13

: Training for farmers and Bayer employees

: We continued our training activities worldwide in 2016. Farmers were taught how to use
 : crop protection products effectively and safely, and thus increase the yield and quality of their
 : harvested goods. Subsequently, new marketing possibilities can arise that offer smallholder
 : farmers in particular the chance to generate higher profits.

: Safe use training offerings are an important aspect here. In 2016, around 950,000 farmers
 : worldwide were trained in the safe use of crop protection products. The majority of these train-
 : ing measures took place as part of customer events since safety training is an integral part of
 : our business activity. We also conducted safe use training courses in numerous countries in
 : 2016 in cooperation with partners such as local, regional and international associations.

: Bayer focuses on training activities in countries where there are no statutory requirements as
 : regards certification in the safe handling of crop protection products. We therefore establish
 : plans of action with our regional organizations for the respective prioritized countries that are
 : then implemented locally.

: Our product stewardship measures also include internal employee training measures. Our
 : Product Stewardship Policy provides information on all principles for the responsible handling
 : of our products, combined with specific instructions for use for our employees and those who
 : work with our products.

Users of our products can contact Crop Science through a range of communication channels should they have complaints or feedback or wish to report any incidents. These include direct contact with our sales staff; our standard hotline, which is printed on all our product packaging; and, in Germany for example, the "Agrar Telefon" expert hotline.

Animal Health

Safety standards for animal health products

In line with the statutory requirements, strict safety and quality standards also apply to animal health products, animal feed and feed additives. Within the scope of the approval/authorization procedures, Animal Health carries out detailed studies in order to ensure the safety of its products for the treated animals, people and the environment alike. A particular focus lies on monitoring veterinary pharmaceutical safety and on activities aimed at responsible product use.

✓ Online Annex: A 1.4.3.1-14

• **Safety and control system for animal health products**

• We continuously compile all safety-relevant information such as reports of suspected adverse effects of pharmaceuticals in our own global safety database. This information is evaluated and reported to the responsible authorities in accordance with national regulations. In this process, Animal Health works closely with the responsible regulatory and supervisory authorities at the national and supranational levels. This includes especially the European Medicines Agency (EMA) and the national agencies in the EEA, the U.S. Food and Drug Administration (FDA), the Environmental Protection Agency (EPA) and the responsible authorities in other countries.

• **Responsible use of antibacterial active ingredients**

• We work together with veterinarians, pharmacists, farmers and private animal-owners worldwide to promote the correct handling of our products. We participate in the “European Platform for the responsible use of medicines in animals” and engage in dialogue with stakeholders from academia, politics and society.

• In line with our “Prudent Use Policy,” we support the responsible use of antibiotics, in particular of fluoroquinolones. We are convinced that effective antibacterial active ingredients are essential for the treatment of infectious diseases in animals. Animal Health promotes their proper use, for example through strict guidelines. We also work intensively on the development of alternative strategies to antimicrobial treatment. Since 2015, we have been marketing Zelnate™, a nonantibiotic immunostimulant.

Covestro

Comprehensive assessment of health, safety and environmental risks

The safe handling and use of our products are of utmost importance. Besides statutorily required safety information, therefore, Covestro provides additional information such as safety summaries within the scope of the Global Product Strategy (GPS) of the International Council of Chemical Associations (ICCA). Covestro complies with all regulatory requirements for the protection of consumer health, including the use of the chemical bisphenol A. The company makes available both GPS information and product safety assessments through the “Product Safety First” internet portal.



www.productsafetyfirst.covestro.com

✓ Online Annex: A 1.4.3.1-15

• As a contribution to the safe handling of chemicals, risk assessments are conducted according to recognized scientific principles. Here Covestro makes use, for example, of the Guidance on Information Requirements and Chemical Safety Assessment of the ECHA (European Chemicals Agency). On the basis of a hazard assessment and an exposure assessment, it is determined what additional information is required to describe the risk posed by a product. All product groups undergo a multi-stage product safety assessment.

1.4.3.2 Safety

Safety management and the continuous development of a safety culture are a cornerstone of corporate responsibility in the Bayer Group. Preventing accidents and incidents in day-to-day work, when operating production facilities, and on work-related travel and transportation routes where people or the environment may suffer harm or damage has top priority for us. Responsibility for safety is defined through appropriate directives such as our Corporate Policy “Safety at the Bayer Group.” Our safety management is based on four pillars:

Safety Pillars



Occupational health and safety

Safeguarding the occupational health and safety of our employees, and of the employees of contractors and suppliers on our company premises and under the supervision of Bayer, is one of our core tasks. This entails preventing work-related accidents and occupational illnesses, assessing potential hazards, ensuring comprehensive risk management and creating a healthy working environment. The rate of occupational injuries has been falling for several years. Intensive training once again contributed to this success in 2016.



See also A 1.4.1



Group target 2020: reduction of 35% in occupational safety incident rate (RIR); see also A 1.2.1

The basis of our reporting on occupational injuries is the Recordable Incident Rate (RIR), which covers all injuries to employees requiring medical treatment that goes beyond simple first aid. This includes injuries both with and without lost workdays. In 2016, the RIR rate dropped to 0.39 cases per 200,000 hours worked, corresponding to 489 occupational injuries worldwide. This means that, in statistical terms, one recordable incident occurred for almost every 516,000 hours worked. We were also able to improve with respect to our Group target (RIR excl. Covestro). The Lost Time Recordable Incident Rate (LTRIR), which exclusively records reportable injuries with lost workdays, was higher than in the previous year.

✓ Online Annex: A 1.4.3.2-1

- : Occupational illnesses are included in both parameters (LTRIR and RIR), regardless of whether
- : or not they are listed in national registers of occupational diseases. As lists of occupational dis-
- : eases are not globally standardized and in many countries do not exist at all, we document all
- : occupational illnesses, provided they have been diagnosed and recognized by a physician. 14
- : new cases of occupational illnesses were reported throughout the Bayer Group in 2016. Most
- : of these were related to the musculoskeletal system and were caused, for example, by com-
- : puter work or lifting.
- :
- : Bayer universally and regularly subjects all workplaces to a risk assessment and a hazard anal-
- : ysis. These analyses are used to derive risk mitigation measures that, in conjunction with tar-
- : geted studies, are designed to prevent occupational illnesses from arising. In accordance with
- : our occupational health and safety policy, we offer our employees regular medical examinations
- : – in some cases on a mandatory basis – in all countries in which this is legally permissible. The
- : focus here is on the risks that exist at each workplace. Furthermore, all respective country-
- : specific provisions for mandatory examinations are complied with.

Regrettably, four people lost their lives in work-related accidents in 2016. Two Bayer employees were killed in traffic accidents and two contractor employees died after falling from heights, including from scaffolding. All the fatalities occurred in India.

A 1.4.3.2/2

Recordable Occupational Injuries

	2012	2013	2014	2015	2016
Occupational injuries without lost workdays (RIR ¹)	0.49	0.47	0.43	0.42	0.39
Occupational injuries without lost workdays (RIR ¹) Life Sciences	0.50	0.49	0.44	0.43	0.40
Occupational injuries with lost workdays (LTRIR ²)	0.27	0.26	0.22	0.21	0.23
Fatal injuries (total)	2	2	4	2	4
of which Bayer employees	2	1	3	2	2
of which contractor employees ³	–	1	1	–	2

¹ RIR = Recordable Incident Rate² LTRIR = Lost Time Recordable Incident Rate³ Employees working for third parties whose accidents occurred on our company premises and under Bayer supervision

✓ Online Annex: A 1.4.3.2-2

A 1.4.3.2-2/1

Recordable Incident Rate (RIR) by Region

	2012	2013	2014	2015	2016
Europe/Middle East/Africa	0.58	0.75	0.68	0.62	0.46
North America	0.53	0.49	0.64	0.58	0.65
Asia/Pacific	0.21	0.20	0.14	0.12	0.14
Latin America	0.42	0.31	0.25	0.32	0.38
Total	0.49	0.47	0.43	0.42	0.39

2015 figures restated

As in previous years, we hardly recorded any accidents involving contact with chemicals in 2016. A significant proportion of our accidents and injuries have behavior-linked causes. Our Behavioral Safety Program launched by the Group Board of Management is addressing this problem.

✓ Online Annex: A 1.4.3.2-3

Behavioral Safety Program heightens safety awareness

This initiative focuses on safety-conscious conduct by our employees. To prevent behavior-related accidents, we introduced an extensive Behavioral Safety Program in 2015. To this end, the existing safety culture was recorded and evaluated in all fields of work, primarily, however, in the production units. We evaluated 54 sites of the Crop Science, Pharmaceuticals and Consumer Health segments around the world in 2016 and, based on the results of these evaluations, drew up plans of action. Intensive training measures are in place to prevent accidents and injuries in the future before they happen. Initial behavioral improvements have been identified in areas in which the program has already been implemented. Specific training goals are designed to help reduce the Recordable Incident Rate.

Process and plant safety

We aim to design and operate our processes and facilities in such a way that they do not pose any inappropriate risks to employees, the environment or the community. To improve the safety of our production facilities and processes worldwide, Bayer is continually working to further develop the safety culture, the expertise of employees and the relevant standards for assessing risks. The corresponding Corporate Policy "Process and Plant Safety" updated in 2016 specifies globally harmonized procedures and standards. This is regularly reviewed to take into account changes in legislation, new procedures and additional quality assurance processes.

✓ **Online Annex: A 1.4.3.2-4**

: In a key move to maintain and improve safety awareness, the globally binding training program TOPPS (Top Performance in Process and Plant Safety) has been further extended. Participation in this program is compulsory for all Bayer employees who are able to influence process and plant safety at production and auxiliary facilities and is documented in the Bayer training system. This rule has become an integral part of the Group's HSEQ management systems. TOPPS training documentation for face-to-face training and web-based training is available in several languages.

The central Bayer competence center for process and plant safety in Leverkusen, Germany, the regional centers in Asia and the United States, and plant safety experts at all production sites work together in a global network.

✓ **Online Annex: A 1.4.3.2-5**

: Our experts work in international working groups such as the European Chemical Industry Council (CEFIC) on developing a global reporting standard for key performance indicators in plant safety and are also heavily involved in sharing experiences in this area, both nationally and internationally, at an industrial level.

A globally standardized KPI – Loss of Primary Containment (LoPC) – applies as an early indicator for plant safety incidents and is integrated into Group-wide safety reporting. LoPC refers to the leakage of chemical substances or energy in amounts above defined thresholds from their primary containers, such as pipelines, pumps, tanks or drums. The LoPC Incident Rate (LoPC-IR) indicates the number of LoPC incidents per 200,000 hours worked. In 2016, the LoPC-IR was 0.32 (2015: 0.22). Bayer's LoPC reporting is based on the standards of the European Chemical Industry Council (CEFIC), which apply throughout Europe.

✓ **Online Annex: A 1.4.3.2-6**

: The causes of every reported LoPC incident are analyzed to further improve safety at existing plants. The results of the cause analyses are publicized across the Group. The LoPC-IR parameter and the globally established training program for process and plant safety are helping us to improve employees' safety awareness.

: The reporting threshold was set at such a low level that even material and energy leaks that have no impact on employees, neighbors or the environment are systematically recorded and reported. This approach supports our commitment to maintain the integrity of our facilities.

A 1.4.3.2/3

Rate of Plant Safety Incidents (LoPC-IR)

	2012	2013	2014	2015	2016
Loss of Primary Containment Incident Rate (LoPC-IR) ¹	0.38	0.35	0.23	0.22	0.32
LoPC-IR ¹ Life Sciences	0.21	0.16	0.13	0.11	0.17

¹ Number of LoPC incidents per 200,000 working hours



Group target 2020:
reduction of 30% in
process and plant
safety incidents;
see also A 1.2.1

As part of its Group-wide crisis management, Bayer operates a global early warning system – the Bayer Emergency Response System.

✓ **Online Annex: A 1.4.3.2-7**

: A corporate policy provides a globally applicable standard procedure for recording and reporting unusual incidents such as hazards to the safety of our employees, plants or facilities, and regulates the Bayer Group's crisis management. The handling of such incidents is the responsibility of the local crisis organization/emergency response team. For this purpose, organizational precautions with defined responsibilities and procedures have been implemented at the sites/in the countries. Depending on the situation, these involve business partners and the local community around the sites.

Transportation safety

Great importance is attached to transportation safety within the Bayer safety culture. This applies both to the transportation of our products on public routes, particularly of hazardous goods, and to processes such as loading, unloading, classification, labeling, packaging and selecting the right logistics partners. These are decided on using a defined procedure, and their fulfillment of safety and quality standards is assessed. The implementation of a dedicated corporate policy ensures that all materials are handled in line with applicable regulations and the potential hazard they pose. As part of our voluntary Responsible Care activities, transportation safety instructions are also drawn up for nonhazardous materials and corresponding distribution safety audits performed. Our transportation safety management is an integral part of HSE management and is implemented by a network of experts and users with practical experience.

✓ **Online Annex: A 1.4.3.2-8**

: Details are specified in the corporate policies "Health, Safety, Environment and Quality (HSEQ) Audits" and "Transportation Safety." A globally aligned transportation safety committee acts as a forum for exchanging information and standardizing procedures between the segments. In 2016, the panel focused on issues such as training in transportation safety, the review of internal process instructions and the evaluation, selection and auditing of our logistics service providers.

In total, well over three million transport movements took place in 2016. Bayer aims to minimize the number of incidents through preventive measures. Despite our extensive safety precautions and training activities, residual risks can result in transport incidents. These include accidents that cause personal injury or significant damage to property and environmental impact resulting from the release of substances or leakage of hazardous goods. They are recorded in detail and assessed based on defined criteria. The 12 transport incidents in 2016 were mainly traffic accidents.

✓ **Online Annex: A 1.4.3.2-9**

A 1.4.3.2-9/1

Transport Incidents by Means of Transport					
	2012	2013	2014	2015	2016
Road	6	8	11	11	12
Rail	0	0	1	1	0
Sea	0	3	0	0	0
Total	6	11	12	12	12

The following table provides an overview of the transport incidents in 2016.

A 1.4.3.2-9/2

Transport Incidents 2016¹

	Personal injury
Crop Science, Belford Roxo, Brazil, February 13, 2016 During transportation, a truck loaded with Bayer product tipped over, causing a product spill. This was cleaned up and disposed of in a professional manner.	No
Covestro, Verona, Italy, March 18, 2016 During transportation, the packaging of a pallet was damaged, leading to leakage of a product. The product was cleaned up and disposed of in a professional manner.	No
Covestro, Erfstadt, Germany, April 12, 2016 During an evasive maneuver, a tank trailer loaded with a Covestro product tipped over on a highway. No product leaked out.	Yes
Crop Science, Thane, India, June 13, 2016 A truck loaded with Bayer product was involved in a traffic accident. A passer-by died as a result of the accident.	Yes
Covestro, Le Muy, France, June 27, 2016 A truck loaded with Covestro product collided with other vehicles at the tail end of a traffic jam. A driver from a transport company died as a result of the accident. No product leaked out.	Yes
Covestro, São Paulo, Brazil, July 5, 2016 During transportation, drums containing product were damaged. These and the product that had leaked into the catchment space were cleaned up and disposed of in a professional manner.	No
Covestro, Springfield, Missouri, United States, July 10, 2016 A truck trailer overturned during transportation. Around 2,500 kg of granules escaped. The content of the container and the released granules were taken up and disposed of in a professional manner. The driver suffered minor injuries.	Yes
Covestro, Oldenburg, Germany, August 17, 2016 During loading at a logistics service provider, a product container was damaged. The material that had leaked inside the truck and the residual amount still in the container were taken up and disposed of in a professional manner.	No
Pharmaceuticals, Leverkusen, Germany, October 27, 2016 A truck loaded with Bayer product collided with a mobile sign truck. A highway maintenance worker died as a result.	Yes
Covestro, Tashkent, Uzbekistan, November 3, 2016 During transportation, two product containers were damaged. The material that had leaked inside the tank and the residual amount still in the containers were taken up and disposed of in a professional manner. One of the customer's employees suffered a slight injury.	Yes
Crop Science, Belford Roxo, Brazil, November 19, 2016 Following a collision with another vehicle, a truck loaded with Bayer product tipped over, spilling the content of one container on the road. This was cleaned up and disposed of in a professional manner.	No
Crop Science, Villefranche, France, November 22, 2016 While loading a truck, a container of product was damaged by a forklift truck. The product was cleaned up and disposed of in a professional manner.	No

¹ Standard practice at Bayer is to record every fatality reported to us relating to our business activities. A difference between the number of fatalities in Table A 1.4.3.2/2 and Table A 1.4.3.2-9/2 may occur because for occupational injuries, by definition, we show only fatalities of Bayer and contractor employees who were under immediate Bayer supervision.

1.4.3.3 Environmental Protection

We meet our responsibility to protect the environment in many different ways. We are continuously working to reduce the environmental impact of our business activities and develop product solutions that benefit the environment. For us, an efficient approach to raw materials and energy makes both ecological and economic sense. Our measures help reduce environmental impact and at the same time cut the costs associated with materials, energy, emissions and disposal.

We use many means to make our production processes more resource-friendly and lower the emissions they generate. In line with our claim we are also committed to minimizing wastewater pollution. Systematic waste management and recycling activities reduce the amount of materials to be disposed of.

Responsibilities and framework conditions are stipulated at Group level, e.g. by corporate policies, targets and key performance indicators (KPIs). We use certified HSEQ management systems to control operational implementation. Our environmental standards apply worldwide.

Energy consumption

Total energy consumption slightly higher than last year

In 2016, the Group's total energy consumption rose by 1.6% to 84.5 petajoules. In calculating the total energy consumption, we differentiate between primary energy consumption – mainly of fossil fuels for our own generation of electricity and steam – and secondary energy consumption, which reflects the purchase of electricity, steam and refrigeration energy and the use of process heat. Primary energy consumption rose in 2016 by 1.0% and secondary energy consumption by 2.2%. This increase in energy requirements is due to increased production activities at the Leverkusen and Krefeld-Uerdingen sites in Germany.

A 1.4.3.3/1

Energy Consumption in the Bayer Group¹

TJ	2012	2013	2014	2015	2016
Primary energy consumption for the in-house generation of electricity & steam	49,047	47,582	45,572	42,996	43,424
Natural gas	30,411	29,796	31,580	28,813	27,552
Coal	15,954	15,094	12,611	12,755	13,420
Liquid fuels	656	416	421	350	465
Waste	1,005	1,282	833	1,523	1,800
Other ²	1,021	994	127	(445)	187
Secondary energy consumption	34,137	33,266	39,745	40,186	41,070
Electricity ³	25,849	25,560	27,177	25,977	28,070
Steam	(121)	(801)	3,579	4,694	3,576
Steam from waste heat (process heat)	9,144	9,146	9,639	9,974	10,010
Refrigeration energy	(735)	(639)	(650)	(459)	(586)
Total energy consumption	83,184	80,848	85,317	83,182	84,494
Total energy consumption Life Sciences	28,481	27,972	26,288	24,677	26,243

¹ Energy consumption is netted which may result in negative values.

² E.g. hydrogen

³ The proportion of primary energy sources used in generating the electricity consumed depends on the respective national electricity mix.

Energy efficiency target of Life Science areas achieved and newly formulated

We measure energy efficiency based on the relationship between energy consumption in megawatt hours (MWh) and manufactured sales volume (in metric tons). With a reduction of 0.5%, the manufactured sales volume of the Life Sciences was about the same level as the previous year, while energy consumption rose by around 6.3%, mainly at our service company Currenta, which serves among other functions as the energy provider for Bayer and third parties. As a result, our energy efficiency deteriorated by around 6.8% compared with the previous year.

A 1.4.3.3/2

Energy Efficiency

in MWh/t	2012	2013	2014	2015	2016
Energy efficiency of Life Sciences	8.86	8.54	7.62	6.34	6.77

In line with our Group target, we are endeavoring to improve energy efficiency by 10% by 2020 compared to 2012. With an increase in energy efficiency of almost 24% compared with the base year 2012, we had achieved this target by the end of 2016.

On account of Covestro becoming legally independent, the magnitude of our manufactured sales volume and also our energy requirement has significantly fallen. For that reason, when calculating



Group target 2020: improvement of 10% in energy efficiency; see also A 1.2.1

our energy efficiency in the future we want to use a more appropriate reference value for our product portfolio. With effect from reporting year 2017, we shall indicate energy efficiency for our Life Science areas Pharmaceuticals, Consumer Health, Crop Science and Animal Health as the relationship between the energy we use and our external sales, instead of the manufactured sales volume. For that reason, we have adjusted our previous target so that it is now to improve our energy efficiency by 10% by 2020 compared with the base year of 2015.

Combined heat and power processes account for high proportion of in-house energy generation

Around 90% of our own energy generation comes from highly efficient combined heat and power processes. In addition, we purchase electricity on the market – through energy exchanges, for example. The electricity and heat generated and purchased are used in our own production facilities and third-party facilities (especially of Lanxess Deutschland GmbH as the other shareholder of our service company Currenta). The proportion of renewable energies is determined by the energy mix of our energy suppliers. We comment in detail on these issues in our CDP Report.



CDP: see Glossary



www.bayer.com/
CDP-Climate

Air emissions

At Bayer, air emissions are caused mainly by the generation and consumption of electricity, steam and process heat. Thanks to the various measures in our Bayer Climate Program – such as introducing energy management systems and production/process innovations – we have achieved a significant reduction in emissions over the past 10 years, which goes hand in hand with an improvement in energy efficiency. We have documented our successful reduction of greenhouse gas (GHG) emissions in the CDP reports and in 2016 received an excellent rating, the leadership status with the highest score of A.

As a Life Science company too, we want to continue helping to protect the climate on several levels. This includes reducing our production-related emissions with ambitious targets relating to energy efficiency and cutting specific greenhouse gas emissions. In the future, we will be focusing more on lowering emissions in nonproduction areas. These include our vehicle fleet (Sustainable Fleet initiative), looking into increased use of electric vehicles (electric mobility programs), further developing our information and communication technologies (Green IT) in terms of environmental aspects and investigating potential ways to lower greenhouse gas emissions along the value chain.

✓ Online Annex: A 1.4.3.3-1

- : We are also working further to reduce our CO₂ emissions in connection with our global fleet of
- : over 25,000 vehicles. At an average level of 145 g/km for the just over 5,000 vehicles newly
- : registered in 2016, these remained at approximately the same level as in 2015 (141 g/km). Our
- : goal is to reduce average CO₂ emissions to 110 g/km for new vehicles registered in 2020. To
- : achieve this, we shall implement further measures in 2017 such as pilot projects on e-mobility.

Transparency on greenhouse gas emissions

Bayer reports all Group greenhouse gas emissions in line with the requirements of the Greenhouse Gas Protocol (GHG Protocol). Direct emissions from our own power plants, waste incineration plants and production facilities (Scope 1) and indirect emissions from the procurement of electricity, steam and refrigeration energy (Scope 2) are determined at all production locations and relevant research and administrative sites.

Since 2015, we have reported in line with the updated GHG Protocol guideline for Scope 2, which states that indirect emissions must be reported according to both the location-based and the market-based methods.



GHG Protocol:
see Glossary

A 1.4.3.3/3

Group Greenhouse Gas Emissions¹

Million metric tons of CO ₂ equivalents	2012	2013	2014	2015	2016
Total direct emissions ²	4.24	4.09	4.02	4.41	4.30
of which from Life Sciences ³	0.75	0.73	0.69	0.91	0.73
Total indirect emissions ⁴ according to the location-based method	4.71	4.85	5.03	4.94	5.00
of which from Life Sciences ³	0.88	0.89	0.90	0.88	0.88
Total indirect emissions ⁴ according to the market-based method	4.72	4.91	5.53	5.30	5.57
of which from Life Sciences ³	0.93	0.93	0.96	0.92	0.93
Total greenhouse gas emissions according to the market-based method⁵	8.96	9.00	9.55	9.71	9.87
of which from Life Sciences ³	1.68	1.66	1.65	1.83	1.66
Specific greenhouse gas emissions from Life Sciences ³ (t CO ₂ e/t) according to the market-based method ^{5,6}	1.88	1.83	1.72	1.69	1.54

¹ Portfolio-adjusted in accordance with the GHG Protocol² In 2016, 84.21% of emissions were CO₂ emissions, 15.38% N₂O emissions, just under 0.37% partially fluorinated hydrocarbons and 0.04% methane.³ Excluding Currenta⁴ Typically, CO₂ in incineration processes accounts for over 99% of all greenhouse gas emissions. When determining indirect emissions, our calculations are therefore limited to CO₂ and indicate direct emissions in CO₂ equivalents.⁵ The market-based method of the new Scope 2 GHG Protocol most reliably reflects the indirect emissions and the success of emissions reduction measures, so we used emissions volumes calculated using this method when calculating the total and specific greenhouse gas emissions.⁶ Specific Group emissions are calculated from the total volume of direct emissions, indirect emissions calculated using the market-based method of the new Scope 2 GHG Protocol and emissions from the vehicle fleet, divided by the manufactured sales volume of the segments in metric tons. Quantities attributable to the supply of energy to external companies are deducted from the direct and indirect emissions.

In line with the GHG Protocol, in our energy balance we include all greenhouse gas (GHG) emissions from the conversion of primary energy sources into electricity, steam or refrigeration energy, even though a significant proportion of our direct emissions comes from the generation of energy that is delivered to other companies. Consequently, our absolute figures for greenhouse gas emissions are higher than the actual emissions resulting from Bayer's business activities alone.

In 2016, we recorded a slight increase of 1.7% in total GHG emissions in the Group, although those of the Life Sciences without Currenta fell by 9.5%. Direct emissions diminished across the Group by 2.4%, mainly due to the sale of the chemical park infrastructure at the site in Institute, West Virginia, United States. Indirect emissions (market-based method) rose by 5.1%. This was essentially due to enhanced energy requirements as a result of increased production activities at the Chempark Leverkusen, Dormagen and Krefeld-Uerdingen sites in Germany. We were again able to reduce the specific greenhouse gas emissions (total emissions divided by the manufactured sales volume) of our Life Sciences (here excluding Currenta). With a reduction of 18% compared with 2012 levels, we have already achieved our previous Group target of reducing specific greenhouse gas emissions by 15% by the year 2020.



Group target 2020: reduction of 15% in specific greenhouse gas emissions; see also A 1.2.1

As with the calculation method for our energy efficiency, we are also intending to change our reporting of specific greenhouse gas emissions from 2017 onward. We are planning to indicate these as the relationship between the greenhouse gas emissions of our Life Sciences and our external sales instead of the manufactured sales volume. We have thus adjusted our Group target accordingly and are looking to achieve a 20% reduction in specific greenhouse gas emissions by 2020 compared with 2015. This new target more adequately reflects our contribution to climate protection and takes into account our new corporate orientation as a Life Science company.



www.bayer.com/
CDP-Climate

The reporting of all relevant indirect emissions from the value chain is bindingly regulated by the GHG Protocol Corporate Value Chain (Scope 3) Accounting & Reporting Standard. Following a thorough examination, Bayer has identified nine essential Scope 3 categories, which we report on in detail in the CDP Report.

In 2016, the Bayer Group was involved in European emissions trading with 18 plants in total. The greenhouse gas emissions of these plants amounted to approximately 2.32 million metric tons of CO₂ equivalents.

Other direct emissions into the air reduced

Emissions of ozone-depleting substances (ODS) fell by 23.0% in 2016. Emissions of volatile organic compounds (VOCs) excluding methane decreased by 30.5%.

Online Annex: A 1.4.3.3-2

The main source of both types of emissions is the Crop Science site in Vapi, India, which accounts for 96.0% of ODS emissions and 48.0% of VOC emissions at Bayer. The project initiated at this site four years ago to reduce these emissions continues to have an impact. Group-wide VOC emissions fell by 30.5% compared with the previous year, and ODS emissions by 23.0%. Another subproject was implemented at Vapi in 2016: a central waste air treatment facility brings together the many different sources of emissions at the site, which in the future will lead to a further significant reduction in these emissions.

Through the optimized operation of the power plants at the German sites in Leverkusen and Krefeld-Uerdingen, total emissions of sulfur dioxides fell by 15.3%. Particulate emissions also declined, in this case by 29.1%, caused by the reduction at the Covestro site in Baytown, Texas, United States. Nitrogen oxide emissions were 2.2% lower. Carbon monoxide emissions increased by 7.4%, on the other hand. This is the result of an improved analysis method at the German sites in Dormagen and Krefeld-Uerdingen.

A 1.4.3.3-2/1

Other Direct Air Emissions

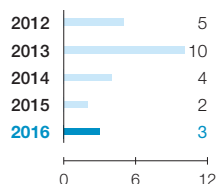
1,000 metric tons	2012	2013	2014	2015	2016
ODS ¹	0.0163	0.0157	0.0148	0.0117	0.0090
VOC ²	2.60	2.27	2.12	1.61	1.12
CO	1.00	0.94	0.91	0.93	1.00
NO _x	3.07	2.51	2.36	2.42	2.36
SO _x	1.85	1.32	1.22	1.17	0.99
Particulates	0.18	0.16	0.25	0.23	0.16

¹ Ozone-depleting substances (ODS) in CFC-11 equivalents

² Volatile organic compounds (VOC) excluding methane

A 1.4.3.3/4

Number of Environmental Incidents



Higher number of environmental incidents

The number of environmental incidents – i.e. incidents that result in the release of substances into the environment – increased from two to three in 2016. Factors that determine whether there is a reporting obligation include, in particular, the nature and quantity of the substance, the amount of damage caused and any consequences for nearby residents. In accordance with our internal voluntary commitment, we report any leakage of substances with a high hazard potential from a quantity of 100 kg upward.

Online Annex: A 1.4.3.3-3

A 1.4.3.3-3/1

Environmental Incidents 2016

	Personal injury
Pharmaceuticals, Wuppertal, Germany, April 18, 2016 A large volume of wastewater flowed into a nearby river on account of a leak at a sewer shaft. The leak could be repaired.	No
Pharmaceuticals, Karachi, Pakistan, June 23, 2016 During transfer from a main container to a day tank, 2,000 l of diesel accidentally leaked into a drain.	No
Covestro, Antwerp, Belgium, July 28, 2016 An unintentional leak of solvent occurred upon starting a pump. The contaminated soil was taken up and disposed of in a professional manner after consultation with the relevant authorities.	No

The following incident was registered and analyzed but does not count as an environmental incident under Bayer criteria.

A 1.4.3.3-3/2

Incident Not Considered an Environmental or Transport Incident under Bayer Criteria

	Description	Comments
Animal Health, Kiel, Germany, April 3, 2016	Spillage of liquid waste in a storeroom	A waste container fell down causing the spillage of a flammable liquid product. This was cleaned up and disposed of in a professional manner. Due to the small quantity involved, the incident was not recorded as an environmental incident but as a plant safety incident (LoPC).

Use of water and emissions into water

Effective water management at sites in water-scarce areas

Clean water in sufficient quantities is essential for supplying our production sites and the surrounding areas. In the future too, industrial water usage must not lead to local problems such as a shortage of water for the people living in the area. Our Water Position commits us to compliance with international and local legislation to protect water resources and use them efficiently.

We used the WBCSD Global Water Tool™ to identify all Bayer sites that are located in regions affected or threatened by water shortage. In line with our Group target, these sites are to establish a water management system that takes the local conditions sufficiently into account by 2017. This involves analyzing their water usage, quality and discharge data annually along with site-specific initiatives using a method developed at Bayer. During the evaluation in 2015, specific measures were agreed to initiate more effective water management at the sites where there is room for improvement. The analysis in the reporting year revealed that the proportion of sites examined that have effective water management has increased from around 58% (2015) to 95% (2016).



Group target 2017: establishment of water management at all sites in water-scarce areas; see also A 1.2.1

Online Annex: A 1.4.3.3-4

- This has been achieved, for example, by establishing measures to control water consumption more closely and make greater use of rainwater. In addition, the efficiency of treatment cycles in production processes has been further improved and measures have been taken to recycle water. Employee training and awareness campaigns encouraging economical water usage have also proved productive.



CDP: see Glossary


[www.bayer.com/
CDP-Water](http://www.bayer.com/CDP-Water)

Bayer supports the CEO Water Mandate of the U.N. Global Compact with the goal of working with key stakeholders to develop sustainable strategies for water usage. In our annual response to the CDP Water Disclosure, we report in detail on our water usage, the company-specific water footprint and the associated opportunities and risks. This represents a progress report for the CEO Water Mandate.

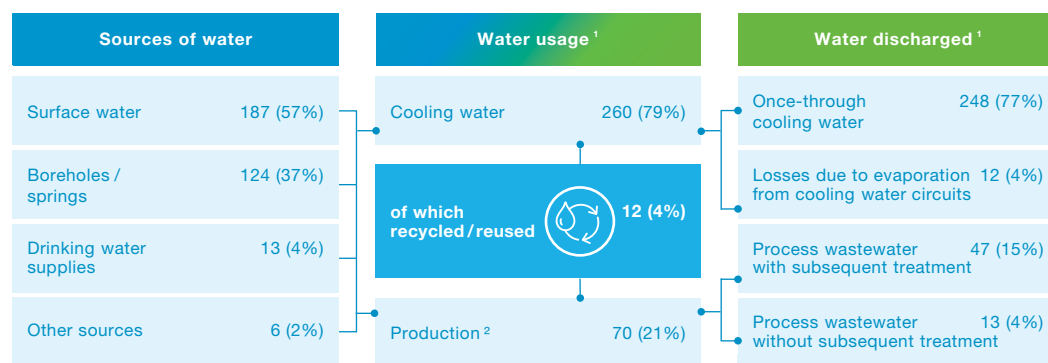
Water use

In 2016, total water use in the Group fell by 4.8% to around 330 million cubic meters. Some 79% of all water used by Bayer is cooling water that is only heated and does not come into contact with products. It can be returned to the water cycle without further treatment in line with the relevant official permits. At our production facilities, we endeavor to use water several times and to recycle it. Water is currently recycled at 36 sites, accounting for 42% of the total water use. The various forms of recycling include closed cooling cycles, reuse of treated wastewater and recirculation of steam condensates as process water. A total of around 11.8 million cubic meters of water was reused in 2016.

Online Annex: A 1.4.3.3-5

A 1.4.3.3-5/1

Water Use in the Bayer Group in 2016 (million m³)



¹ The differences between volumes of water consumed and water discharged can be explained, for example, by unquantified losses due to evaporation, leaks, quantities of water used as raw materials in products and volumes of condensate generated through the use of steam as a source of energy.

² Sum from production processes, sanitary wastewater and rinsing and cleaning processes in production

The amounts of water from each source have remained at a comparable level since 2012.

Online Annex: A 1.4.3.3-6

A 1.4.3.3-6/1

Net Water Intake by Source

million m³	2012	2013	2014	2015	2016
Water consumption	384	361	350	346	330
of which from surface water	248	226	223	212	187
of which from boreholes / springs	123	120	112	118	124
of which from public drinking water supplies	7	9	9	10	13
of which from other sources, e.g. rainwater	6	6	6	6	6

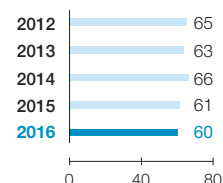
Wastewater treatment benefits environment

All wastewater is subject to strict controls before it is discharged into the various disposal channels. The total quantity of wastewater, including process and sanitary wastewater, was 60 million cubic meters in 2016, which is 3.1% down on 2015. 78.5% of Bayer's wastewater worldwide was purified in wastewater treatment plants (Bayer or third-party facilities). Following careful analysis, the remaining volume was categorized as environmentally safe according to official provisions. Part of it was used to water gardens and agricultural land.

The goal is to minimize our emissions into wastewater. For this reason, in 2016, alternative means were applied, for example, for the disposal of 0.148 million cubic meters of product-containing wastewater such as incineration, distillation or chemical treatment. Discharges of phosphorus into wastewater fell by 14.2%, due among other reasons to reduced production volumes at the Kaohsiung site in Taiwan. All other emissions into water were lower than last year or at the same level.

A 1.4.3.3/5

Process Wastewater Volume
million m³



A 1.4.3.3/6

Emissions into Water

1,000 metric tons	2012	2013	2014	2015	2016
Phosphorus	0.15	0.11	0.10	0.10	0.09
Nitrogen	0.70	0.69	0.76	0.56	0.57
TOC ¹	1.42	1.53	1.20	1.16	1.14
Heavy metals	0.0098	0.0091	0.0063	0.0064	0.0054
Inorganic salts	1,048	946	845	927	931
COD ²	4.25	4.58	3.59	3.48	3.42

¹ Total organic carbon

² Chemical oxygen demand; calculated value based on TOC figures (TOC x 3 = COD)

Waste and recycling

Systematic waste management minimizes material consumption and disposal volumes. Safe disposal channels with separation according to the type of waste and economically expedient recycling processes serve this purpose. Production fluctuations and building refurbishment / land remediation work also influence waste volumes and recycling paths.

Higher volumes of waste

In 2016, the total volume of waste generated rose by 1.9% and the volume of nonhazardous waste by 3.1%, in particular due to demolition work at the Crop Science site in Institute, West Virginia, United States. With regard to hazardous waste generated, the volume from the power plant at the Chempark Leverkusen site rose by 1% owing to the recent categorization of fluidized bed ash as hazardous waste.

A 1.4.3.3/7

Waste Generated¹

1,000 metric tons	2012	2013	2014	2015	2016
Total waste generated	1,014	899	896	940	958
Hazardous waste ²	603	467	487	541	547
of which hazardous waste from production	397	417	442	488	507

¹ Waste generated by Bayer only

² Definition of hazardous waste in accordance with the local laws in each instance

The volume of waste disposed of rose by 2.2% in total. The volume proportions for the three main types of disposal (landfill, incineration and recycling) have remained similar over the past five years.

✓ **Online Annex: A 1.4.3.3-7**

Recycling refers to processes that reutilize waste in some way. In 2016, the volume of recycled waste was 290,000 metric tons. Expressed as a proportion of the total waste disposed of, this represented a level of 30%. The amount of recycled waste depends on site-specific conditions such as changes to the product portfolio, other production volumes, variations in the intensity of construction measures and recycling projects.

A 1.4.3.3-7/1

Waste by Means of Disposal

1,000 metric tons	2012	2013	2014	2015	2016
Total volume of waste disposed of¹	1,021	915	898	949	969
Volume removed to landfill	360	293	248	248	267
Volume incinerated	341	351	363	371	336
Volume recycled	301	249	260	296	290
Others ²	19	22	27	34	76
Total volume of hazardous waste disposed of³	603	467	487	541	547
Volume removed to landfill	175	53	65	75	67
Volume incinerated / recycled	428	414	422	466	480

¹ Bayer serves as a certified waste disposal plant operator at various sites. At these locations, Bayer disposes not only of its own waste but also of waste from third parties (companies not belonging to the Bayer Group). For that reason, the volume of waste disposed of differs slightly from the volume of waste generated by Bayer.

² E.g. passed on to third parties (e.g. providers / waste disposal companies)

³ Waste generated by Bayer only; definition of hazardous waste in accordance with the local laws in each instance

In 2016, the waste incineration plants operated by Currenta generated approximately 675,000 metric tons of steam from the incineration of around 230,000 metric tons of hazardous waste from the Chempark sites and some external production companies. Compared to using fossil energy sources, this reduced CO₂ emissions in 2016 by approximately 160,000 metric tons.

Recycling potential realized

In addition to satisfying economic and environmental criteria, the recycling and treatment of our materials also has to comply with legal requirements. This results in restrictions, in particular in the areas of pharmaceuticals and crop protection. Throughout the Group, we make use of opportunities for recycling within the framework of legal regulations.

✓ **Online Annex: A 1.4.3.3-8**

Pharmaceuticals, Consumer Health and Animal Health

Production-related recycling takes place in line with the requirements of the relevant production site. When determining the best means of disposal, recycling options are explicitly included, and are to be considered preferable to landfilling or incineration. The disposal of pharmaceutical products is subject to strict safety criteria, so no recycling is possible for the portfolios of these segments. Packaging materials are recycled in line with national regulations as part of the country-specific infrastructure for waste disposal.

Crop Science

Material-based recycling is important in Crop Science's active ingredient and intermediate product manufacture. Solvents, catalysts and intermediates are repeatedly processed and returned to the production process. Since these are recycling steps that are closely linked with the process, there is no global regulation. Material-based recycling is regulated separately at each production site. In the global process development of active ingredients and intermediates, material recycling is considered an important development criterion. In accordance with Crop Science's global Environment Policy, all Crop Science sites are obliged to prevent, recycle and reduce waste and dispose of it safely and in line with good environmental practices.

Crop Science does not take back crop protection products it has sold, except in the case of production defects. Packaging materials are disposed of or recycled in line with national legislation. In many countries with no legal regulation, the industry has set up a returns system in collaboration with other providers.

Returns of obsolete stocks of crop protection products are limited to justifiable individual cases. However, the crop protection product industry has set up voluntary initiatives in various countries for the proper disposal of obsolete stocks. As part of its activities in the CropLife association, Crop Science is working with the United Nations' Food and Agriculture Organization (FAO) and the World Bank to support the proper collection and disposal of obsolete stocks in Africa.

Covestro

Covestro supports the reuse and processing of its materials. For example, some waste with a high calorific value generated by production processes can undergo thermal recycling to produce steam for the company's own production facilities.

In parallel to this, Covestro is endeavoring to reduce the amount of waste resulting from product usage. Examples include its involvement in associations such as PlasticsEurope. Covestro continues to support, for example, the "Zero Pellet Loss" initiative, with the goal of preventing the loss of plastic pellets on the way from production to the finished article delivered to the customer.