B Consolidated Financial Statements

Full Consolidated Financial Statements

Bayer Group Consolidated Income Statements

B 1

€ million	Note	2015	2016
Net sales	[7]	**46,085**	**46,769**
Cost of goods sold		(21,040)	(20,295)
Gross profit		**25,045**	**26,474**
Selling expenses	[8]	(12,272)	(12,474)
Research and development expenses	[9]	(4,274)	(4,666)
General administration expenses		(2,092)	(2,256)
Other operating income	[10]	1,109	898
Other operating expenses	[11]	(1,275)	(934)
EBIT [1]		**6,241**	**7,042**
Equity-method loss	[13.1]	(9)	(26)
Financial income		371	151
Financial expenses		(1,367)	(1,280)
Financial result	[13]	**(1,005)**	**(1,155)**
Income before income taxes		**5,236**	**5,887**
Income taxes	[14]	(1,223)	(1,329)
Income from continuing operations after income taxes		**4,013**	**4,558**
Income from discontinued operations after income taxes	[6.3]	**85**	**268**
Income after income taxes		**4,098**	**4,826**
of which attributable to noncontrolling interest	[15]	(12)	295
of which attributable to Bayer AG stockholders (net income)		**4,110**	**4,531**
€			
Earnings per share	[16]		
From continuing operations	[16]		
Basic		4.87	5.12
Diluted		4.87	5.12
From discontinued operations	[16]		
Basic		0.10	0.32
Diluted		0.10	0.32
From continuing and discontinued operations	[16]		
Basic		4.97	5.44
Diluted		4.97	5.44

2015 figures restated

[1] For definition see Combined Management Report, Chapter 2.4 “Alternative Performance Measures Used by the Bayer Group.”

Bayer Group Consolidated Statements of Comprehensive Income

B 2

€ million	Note	2015	2016
Income after income taxes		**4,098**	**4,826**
of which attributable to noncontrolling interest	[15]	(12)	295
of which attributable to Bayer AG stockholders		4,110	4,531
Remeasurements of the net defined benefit liability for post-employment benefit plans	[25]	1,216	(1,036)
Income taxes	[14]	(430)	228
Other comprehensive income from remeasurements of the net defined benefit liability for post-employment benefit plans		**786**	**(808)**
Other comprehensive income that will not be reclassified subsequently to profit or loss		**786**	**(808)**
Changes in fair values of derivatives designated as cash flow hedges	[30.3]	(266)	58
Reclassified to profit or loss		304	3
Income taxes	[14]	(25)	(16)
Other comprehensive income from cash flow hedges		**13**	**45**
Changes in fair values of available-for-sale financial assets	[20]	(5)	65
Reclassified to profit or loss		1	–
Income taxes	[14]	(2)	(8)
Other comprehensive income from available-for-sale financial assets		**(6)**	**57**
Changes in exchange differences recognized on translation of operations outside the eurozone		748	703
Reclassified to profit or loss		–	(58)
Other comprehensive income from exchange differences		**748**	**645**
Other comprehensive income relating to associates accounted for using the equity method		**(20)**	**(14)**
Other comprehensive income that may be reclassified subsequently to profit or loss		**735**	**733**
Effects of changes in scope of consolidation		**–**	**–**
Total other comprehensive income [1]		**1,521**	**(75)**
of which attributable to noncontrolling interest		33	(10)
of which attributable to Bayer AG stockholders		1,488	(65)
Total comprehensive income		**5,619**	**4,751**
of which attributable to noncontrolling interest		21	285
of which attributable to Bayer AG stockholders		5,598	4,466

2015 figures restated
[1] Total changes recognized outside profit or loss

Bayer Group Consolidated Statements of Financial Position

B 3

€ million	Note	Dec. 31, 2015	Dec. 31, 2016
Noncurrent assets			
Goodwill	[17]	16,096	16,312
Other intangible assets	[17]	15,178	13,567
Property, plant and equipment	[18]	12,375	13,114
Investments accounted for using the equity method	[19]	246	584
Other financial assets	[20]	1,092	1,281
Other receivables	[23]	430	583
Deferred taxes	[14]	4,679	6,350
		50,096	**51,791**
Current assets			
Inventories	[21]	8,550	8,408
Trade accounts receivable	[22]	9,933	10,969
Other financial assets	[20]	756	6,275
Other receivables	[23]	2,017	2,210
Claims for income tax refunds		509	676
Cash and cash equivalents		1,859	1,899
Assets held for sale and discontinued operations	[6.3]	197	10
		23,821	**30,447**
Total assets		**73,917**	**82,238**
Equity	[24]		
Capital stock		2,117	2,117
Capital reserves		6,167	9,658
Other reserves		15,981	18,558
Equity attributable to Bayer AG stockholders		**24,265**	**30,333**
Equity attributable to noncontrolling interest		1,180	1,564
		25,445	**31,897**
Noncurrent liabilities			
Provisions for pensions and other post-employment benefits	[25]	10,873	11,134
Other provisions	[26]	1,740	1,780
Financial liabilities	[27]	16,513	16,180
Income tax liabilities		475	423
Other liabilities	[29]	1,065	957
Deferred taxes	[14]	826	1,330
		31,492	**31,804**
Current liabilities			
Other provisions	[26]	5,045	5,421
Financial liabilities	[27]	3,421	3,401
Trade accounts payable	[28]	5,945	6,410
Income tax liabilities		923	884
Other liabilities	[29]	1,534	2,421
Liabilities directly related to assets held for sale and discontinued operations	[6.3]	112	–
		16,980	**18,537**
Total equity and liabilities		**73,917**	**82,238**

Bayer Group Consolidated Statements of Changes in Equity

B 4

€ million	Capital stock	Capital reserves	Retained earnings incl. net income	Exchange differences	Fair-value measurement of securities
Dec. 31, 2014	**2,117**	**6,167**	**12,974**	**(1,172)**	**30**
Equity transactions with owners					
Capital increase					
Dividend payments			(1,861)		
Other changes			582	(155)	
Other comprehensive income			776	705	(6)
Income after income taxes			4,110		
Dec. 31, 2015	**2,117**	**6,167**	**16,581**	**(622)**	**24**
Equity transactions with owners					
Capital increase [1]		3,491			
Dividend payments			(2,067)		
Other changes			129	53	
Other comprehensive income			(781)	614	57
Income after income taxes			4,531		
Dec. 31, 2016	**2,117**	**9,658**	**18,393**	**45**	**81**

[1] The capital increase resulted from the issuance of mandatory convertible notes in the amount of €4,000 million on November 22, 2016. After deduction of €48 million in transaction costs and recognition of €191 million in deferred taxes, €3,491 million was allocated to capital reserves and €652 million to financial liabilities.

B 4 continued

€ million	Cash flow hedges	Revaluation surplus	Equity attributable to Bayer AG stockholders	Equity attributable to non-controlling interest	Equity
Dec. 31, 2014	**(36)**	**26**	**20,106**	**112**	**20,218**
Equity transactions with owners					
Capital increase					
Dividend payments			(1,861)	(8)	(1,869)
Other changes		(5)	422	1,055	1,477
Other comprehensive income	13		1,488	33	1,521
Income after income taxes			4,110	(12)	4,098
Dec. 31, 2015	**(23)**	**21**	**24,265**	**1,180**	**25,445**
Equity transactions with owners					
Capital increase			3,491		3,491
Dividend payments			(2,067)	(58)	(2,125)
Other changes		(4)	178	157	335
Other comprehensive income	45		(65)	(10)	(75)
Income after income taxes			4,531	295	4,826
Dec. 31, 2016	**22**	**17**	**30,333**	**1,564**	**31,897**

Bayer Group Consolidated Statements of Cash Flows

B 5

€ million	Note	2015	2016
Income after income taxes		4,013	4,558
Income taxes		1,223	1,329
Financial result		1,005	1,155
Income taxes paid		(1,699)	(2,092)
Depreciation, amortization and impairments		3,332	3,743
Change in pension provisions		(221)	(285)
(Gains) losses on retirements of noncurrent assets		(105)	(44)
Decrease (increase) in inventories		(191)	(3)
Decrease (increase) in trade accounts receivable		(1,059)	(552)
(Decrease) increase in trade accounts payable		400	452
Changes in other working capital, other noncash items		138	(2)
Net cash provided by (used in) operating activities from continuing operations		**6,836**	**8,259**
Net cash provided by (used in) operating activities from discontinued operations		54	830
Net cash provided by (used in) operating activities	[33]	**6,890**	**9,089**
Cash outflows for additions to property, plant, equipment and intangible assets		(2,517)	(2,578)
Cash inflows from sales of property, plant, equipment and other assets		193	111
Cash inflows from divestments		2	(18)
Cash inflows from (outflows for) noncurrent financial assets		(26)	(690)
Cash outflows for acquisitions less acquired cash		(176)	2
Interest and dividends received		106	89
Cash inflows from (outflows for) current financial assets		(344)	(5,645)
Net cash provided by (used in) investing activities	[34]	**(2,762)**	**(8,729)**
Capital contributions		–	3,300
Proceeds from shares of Covestro AG		1,490	–
Dividend payments		(1,869)	(2,126)
Issuances of debt		16,620	15,190
Retirements of debt		(19,549)	(15,920)
Interest paid including interest-rate swaps		(812)	(853)
Interest received from interest-rate swaps		160	59
Cash outflows for the purchase of additional interests in subsidiaries		(14)	–
Net cash provided by (used in) financing activities	[35]	**(3,974)**	**(350)**
Change in cash and cash equivalents due to business activities		**154**	**10**
Cash and cash equivalents at beginning of year		**1,853**	**1,859**
Change in cash and cash equivalents due to changes in scope of consolidation		5	3
Change in cash and cash equivalents due to exchange rate movements		(153)	27
Cash and cash equivalents at end of year		**1,859**	**1,899**

2015 figures restated

Notes to the Consolidated Financial Statements of the Bayer Group

1. Key data by segment and region

B 1/1

Key Data by Segment

	Pharmaceuticals		Consumer Health		Crop Science		Animal Health	
€ million	2015	2016	2015	2016	2015	2016	2015	2016
Net sales (external)	15,308	16,420	6,076	6,037	10,128	9,915	1,490	1,523
Change [1]	+13.3%	+7.3%	+43.1%	– 0.6%	+9.2%	–2.1%	+13.1%	+2.2%
Currency-adjusted change [1]	+8.7%	+8.7%	+40.4%	+3.5%	+2.4%	+0.2%	+4.5%	+4.8%
Intersegment sales	38	29	2	5	34	36	20	10
Net sales (total)	15,346	16,449	6,078	6,042	10,162	9,951	1,510	1,533
Other operating income	154	207	108	101	643	301	4	10
EBIT [1]	3,028	3,389	768	695	2,094	1,755	254	313
EBIT before special items [1]	3,327	3,947	1,005	987	1,872	1,898	318	320
EBITDA before special items [1]	4,616	5,251	1,456	1,411	2,406	2,421	347	349
ROCE [1]	14.4%	16.2%	4.0%	3.5%	16.3%	12.9%	47.8%	63.5%
Net cash provided by operating activities	3,157	3,368	816	874	749	2,071	348	193
Equity-method income (loss)	1	–	–	2	(1)	(1)	–	–
Equity-method investments	3	3	11	11	4	15	–	–
Assets	22,389	22,173	16,560	16,558	14,230	14,868	791	838
Capital expenditures	764	851	182	220	735	773	43	39
Additions to noncurrent assets from acquisitions	(145)	(3)	149	(1)	98	(10)	–	–
Depreciation, amortization and impairments	1,347	1,695	454	601	534	525	63	30
of which impairment losses	62	464	25	175	35	52	34	1
of which impairment loss reversals	(1)	–	–	–	–	–	–	(1)
Liabilities	8,385	8,941	1,596	1,614	5,344	5,897	678	699
Research and development expenses	2,450	2,787	250	259	1,082	1,164	134	140
Number of employees (as of Dec. 31) [2]	40,504	40,093	13,513	12,821	23,268	22,399	3,804	3,957

2015 figures restated

[1] For definition see Combined Management Report, Chapter 2.4 “Alternative Performance Measures Used by the Bayer Group.”

[2] Full-time equivalents

B 1/1 continued

Key Data by Segment

	Reconciliation									
	All Other Segments		Corporate Functions and Consolidation		Life Sciences		Covestro		Group	
€ million	2015	2016	2015	2016	2015	2016	2015	2016	2015	2016
Net sales (external)	1,097	1,042	4	6	34,103	34,943	11,982	11,826	46,085	46,769
Change [1]	−1.3%	−5.0%	−42.9%	+50.0%	+15.7%	+2.5%	+2.8%	−1.3%	+12.1%	+1.5%
Currency-adjusted change [1]	−0.8%	−4.2%	−42.9%	–	+10.7%	+4.7%	−5.1%	0.0%	+6.2%	+3.5%
Intersegment sales	2,249	2,124	(2,407)	(2,279)	–	–	64	75	–	–
Net sales (total)	3,346	3,166	(2,403)	(2,273)	–	–	12,046	11,901	46,085	46,769
Other operating income	69	91	64	77	1,042	787	67	111	1,109	898
EBIT [1]	(39)	(50)	(499)	(364)	5,606	5,738	635	1,304	6,241	7,042
EBIT before special items [1]	43	18	(472)	(344)	6,093	6,826	967	1,304	7,060	8,130
EBITDA before special items [1]	238	224	(466)	(338)	8,597	9,318	1,659	1,984	10,256	11,302
ROCE [1]	–	–	–	–	10.4%	10.3%	7.1%	15.3%	9.9%	11.0%
Net cash provided by operating activities	27	503	287	(574)	5,384	6,435	1,452	1,824	6,836	8,259
Equity-method income (loss)	–	–	–	(7)	–	(6)	(9)	(20)	(9)	(26)
Equity-method investments	–	–	1	325	19	354	227	230	246	584
Assets	2,324	2,632	8,263	15,986	64,557	73,055	9,360	9,183	73,917	82,238
Capital expenditures	311	307	5	18	2,040	2,208	514	419	2,554	2,627
Additions to noncurrent assets from acquisitions	–	–	–	–	102	(14)	27	–	129	(14)
Depreciation, amortization and impairments	195	206	6	6	2,599	3,063	733	680	3,332	3,743
of which impairment losses	4	7	–	–	160	699	69	13	229	712
of which impairment loss reversals	–	–	–	–	(1)	(1)	–	–	(1)	(1)
Liabilities	4,814	5,616	23,915	23,724	44,732	46,491	3,740	3,850	48,472	50,341
Research and development expenses	32	39	64	16	4,012	4,405	262	261	4,274	4,666
Number of employees (as of Dec. 31) [2]	19,015	19,494	709	828	100,813	99,592	15,770	15,578	116,583	115,170

2015 figures restated
[1] For definition see Combined Management Report, Chapter 2.4 “Alternative Performance Measures Used by the Bayer Group.”
[2] Full-time equivalents

B 1/2

Key Data by Region

€ million	Europe / Middle East / Africa 2015	Europe / Middle East / Africa 2016	North America 2015	North America 2016	Asia / Pacific 2015	Asia / Pacific 2016
Net sales (external) – by market	17,707	17,823	12,621	12,806	10,263	11,032
Change[1]	+ 5.0%	+ 0.7%	+ 28.0%	+ 1.5%	+ 13.2%	+ 7.5%
Currency-adjusted change[1]	+ 5.6%	+ 2.8%	+ 10.8%	+ 2.0%	+ 1.4%	+ 7.9%
Net sales (external) – by point of origin	18,528	18,808	12,332	12,375	10,022	10,786
Change[1]	+ 5.4%	+ 1.5%	+ 27.3%	+ 0.3%	+ 13.6%	+ 7.6%
Currency-adjusted change[1]	+ 6.1%	+ 3.5%	+ 9.5%	+ 0.8%	+ 1.5%	+ 8.1%
Interregional sales	10,340	10,745	3,994	4,280	828	912
Other operating income	580	331	109	223	107	126
EBIT[1]	4,119	4,673	1,483	1,128	547	1,165
Assets	34,145	39,146	20,522	21,088	9,492	9,831
Capital expenditures	1,442	1,549	587	628	402	299
Depreciation, amortization and impairments	1,874	1,997	834	1,181	496	479
Liabilities	29,116	30,506	13,461	13,478	3,583	3,428
Research and development expenses	2,944	3,285	1,051	1,081	214	229
Number of employees (as of Dec. 31)[2]	58,839	59,483	15,961	15,788	28,818	27,407

2015 figures restated
[1] For definition see Combined Management Report, Chapter 2.4 “Alternative Performance Measures Used by the Bayer Group.”
[2] Full-time equivalents

B 1/2 (continued)

Key Data by Region

€ million	Latin America 2015	Latin America 2016	Reconciliation 2015	Reconciliation 2016	Total 2015	Total 2016
Net sales (external) – by market	5,494	5,108	–	–	46,085	46,769
Change[1]	+ 3.2%	– 7.0%	–	–	+ 12.1%	+ 1.5%
Currency-adjusted change[1]	+ 7.7%	+ 0.8%	–	–	+ 6.2%	+ 3.5%
Net sales (external) – by point of origin	5,203	4,800	–	–	46,085	46,769
Change[1]	+ 3.4%	– 7.7%	–	–	12.1%	1.5%
Currency-adjusted change[1]	+ 8.7%	+ 0.6%	–	–	6.2%	3.5%
Interregional sales	582	530	(15,744)	(16,467)	–	–
Other operating income	313	218	–	–	1,109	898
EBIT[1]	591	440	(499)	(364)	6,241	7,042
Assets	5,079	5,823	4,679	6,350	73,917	82,238
Capital expenditures	123	151	–	–	2,554	2,627
Depreciation, amortization and impairments	122	80	6	6	3,332	3,743
Liabilities	1,486	1,599	826	1,330	48,472	50,341
Research and development expenses	65	71	–	–	4,274	4,666
Number of employees (as of Dec. 31)[2]	12,965	12,492	–	–	116,583	115,170

2015 figures restated
[1] For definition see Combined Management Report, Chapter 2.4 “Alternative Performance Measures Used by the Bayer Group.”
[2] Full-time equivalents

2. General information

The consolidated financial statements of the Bayer Group as of December 31, 2016, were prepared by Bayer Aktiengesellschaft (Bayer AG) according to the International Financial Reporting Standards (IFRS) issued by the International Accounting Standards Board (IASB), London, United Kingdom, and the interpretations of the IFRS Interpretations Committee (IFRS IC), both as endorsed by the European Union and in effect at the end of the reporting period. The applicable further requirements of Section 315a of the German Commercial Code were also taken into account.

Bayer AG is a global enterprise based in Germany. Its registered office is at Kaiser-Wilhelm-Allee 1, 51368 Leverkusen. Its material business activities in the fields of health care, agriculture and high-tech polymer materials took place in the reporting period in the Pharmaceuticals, Consumer Health, Crop Science, Animal Health and Covestro segments. The activities of each segment are outlined in Note [5].

The declarations required under Section 161 of the German Stock Corporation Act concerning the German Corporate Governance Code have been issued and made available to stockholders.

The Board of Management of Bayer AG prepared the consolidated financial statements of the Bayer Group on February 14, 2017. They were discussed by the Audit Committee of the Supervisory Board of Bayer AG at its meeting on February 20, 2017, and approved by the Supervisory Board at its plenary meeting on February 21, 2017.

In the income statement and statement of comprehensive income, statement of financial position, statement of cash flows and statement of changes in equity, certain items are combined for the sake of clarity. These are explained in the Notes. The income statement is prepared using the cost-of-sales method. Assets and liabilities are classified by maturity. They are regarded as current if they mature within one year or within the normal business cycle of the company or the Group, or are held for sale. The normal business cycle is defined for this purpose as beginning with the procurement of the resources necessary for the production process and ending with the receipt of cash or cash equivalents as consideration for the sale of the goods or services produced in that process. Inventories and trade accounts receivable and payable are always presented as current items. Deferred tax assets and liabilities and pension provisions are always presented as noncurrent items.

The consolidated financial statements of the Bayer Group are drawn up in euros. Amounts are stated in millions of euros (€ million) except where otherwise indicated.

The financial statements of the individual consolidated companies are prepared as of the closing date of the Group financial statements.

3. Effects of new financial reporting standards

Financial reporting standards applied for the first time in 2016

The first-time application of the following amended financial reporting standards had no impact, or no material impact, on the presentation of Bayer's financial position or results of operations, or on earnings per share.

In May 2014, the IASB published amendments to IAS 16 (Property, Plant and Equipment) and IAS 38 (Intangible Assets) entitled "Clarification of Acceptable Methods of Depreciation and Amortisation." These amendments clarify that revenue-based depreciation of property, plant and equipment or amortization of intangible assets is inappropriate.

In May 2014, the IASB published amendments to IFRS 11 (Joint Arrangements) entitled "Accounting for Acquisitions of Interests in Joint Operations." The amendments clarify the accounting for the acquisition of an interest in a joint operation in which the activity constitutes a business.

In December 2014, the IASB published its Disclosure Initiative containing amendments to IAS 1 (Presentation of Financial Statements), which are intended to clarify the disclosure requirements. They relate to materiality, line-item aggregation, subtotals, the structure of the Notes to the financial statements, the identification of significant accounting policies and the separate disclosure of the other comprehensive income of associates and joint ventures.

In December 2014, the IASB published amendments to IFRS 10 (Consolidated Financial Statements), IFRS 12 (Disclosure of Interests in Other Entities) and IAS 28 (Investments in Associates and Joint Ventures) entitled “Investment Entities: Applying the Consolidation Exception.” The amendments largely clarify which subsidiaries an investment entity must consolidate and which must be recognized at fair value through profit or loss.

Changes in accounting methods

The legal and economic independence of Covestro results in changes to the global annual impairment tests for Covestro. In the future, from the perspective of the Bayer Group, the strategic business entities of Covestro will be subjected to impairment testing as a group of cash-generating units because the goodwill of Covestro will be monitored by Bayer Group management at this aggregated level from now on.

Published financial reporting standards that have not yet been applied

The IASB and the IFRS Interpretations Committee have issued the following standards, amendments to standards, and interpretations whose application was not yet mandatory for the 2016 fiscal year and is conditional upon their endorsement by the European Union.

In July 2014, the IASB published the most recent version of IFRS 9 (Financial Instruments). The new standard contains revised rules for the classification and measurement of financial assets and liabilities, impairments of financial assets, and hedge accounting. IFRS 9 defines three instead of four measurement categories for capitalized financial instruments, with classification to be based partly on the company’s business model and partly on the characteristics of the contractual cash flows from the respective financial asset. In the case of equity instruments that are not held for trading, an entity may irrevocably opt at initial recognition either to account for such instruments at fair value through profit or loss or to recognize future changes in their fair value outside profit or loss in the statement of comprehensive income and not subsequently reclassify these changes in fair value, even upon their derecognition.

The new impairment model is based on the principle of accounting for an expected loss from the date of first-time recognition of a financial asset, before a loss event occurs. The aim of the revisions regarding hedge accounting is to achieve a more objective presentation of risk management in the financial statements. This also involved the revision of IFRS 7, leading to a requirement for additional disclosures in the Notes. IFRS 9 is to be applied for annual periods beginning on or after January 1, 2018. It was endorsed by the European Union in November 2016. The evaluation of this standard’s impact on the presentation of Bayer’s financial position and results of operations has not yet been completed. No decision has yet been made on whether to exercise the options the standard provides for facilitating the transition and for accounting for financial instruments recognized from January 1, 2018, onward. Based on current knowledge, the effects of applying the final version of IFRS 9 on the allocation of financial instruments to measurement categories and thus on the results of operations are estimated to be immaterial.

In May 2014, the IASB issued IFRS 15 (Revenue from Contracts with Customers). IFRS 15 is the new standard for revenue recognition. It clarifies that the expected consideration for goods or services must be recognized as revenue when the goods or intangible assets are transferred or the services are rendered to the customer. This principle is applied in five steps. In step 1, the contract with the customer is identified. In step 2, the distinct performance obligations in the contract are identified. In step 3, the transaction price is determined. In step 4, this transaction price is allocated to the distinct performance obligations. Finally, in step 5, revenue is recognized when the identified distinct performance obligations are satisfied, either over time or at a point in time. IFRS 15 replaces IAS 11 (Construction Contracts), IAS 18 (Revenue), IFRIC 13 (Customer Loyalty Programmes), IFRIC 15 (Agreements for the Construction of Real Estate), IFRIC 18 (Transfers of Assets from Customers) and SIC-31 (Revenue-Barter Transactions Involving Advertising Services). The new standard is to be applied for annual periods beginning on or after January 1, 2018.

Bayer currently plans to implement IFRS 15 on the basis of the modified retrospective method, accounting for the aggregate amount of any transition effects by way of an adjustment to retained earnings as of January 1, 2018, and presenting the comparative period in line with previous rules. All of the established business models for the Bayer Group's Life Science divisions were examined in the course of the implementation project. The analysis did not yet cover all material consolidated companies. Based on current knowledge, Bayer does not expect the new standard to materially affect the timing of revenue recognition for the transactions concerned or their components. The evaluation of certain individual licensing agreements has not yet been completed.

IFRS 15 clarifies the allocation of individual topics to (new) line items in the statement of financial position and to functional cost items in the income statement, and whether gross or net amounts are to be presented. Determination of the effects on the level of sales or selling expenses has not yet been completed. Based on current knowledge, however, we do not anticipate any material effects on these items. Overall, we do not currently expect any material effects on the presentation of Bayer's financial position or results of operations as a whole, or on earnings per share.

In September 2014, the IASB published amendments to IFRS 10 (Consolidated Financial Statements) and IAS 28 (Investments in Associates and Joint Ventures) entitled "Sale or Contribution of Assets between an Investor and its Associate or Joint Venture." The amendments clarify that in a transaction involving an associate or joint venture the extent of gain or loss recognition depends on whether the assets sold or contributed constitute a business. An amendment issued in December 2015 indefinitely defers the effective date of the September 2014 amendments, which were originally intended to be applied for annual periods beginning on or after January 1, 2016. The IASB is to set a new effective date.

In January 2016, the IASB issued IFRS 16 (Leases), the new standard for lease accounting. IFRS 16 introduces a uniform lease accounting model for lessees, requiring recognition of assets and liabilities for all leases with a term of more than 12 months unless such leases are immaterial. It will eliminate the current requirement for lessees to classify lease contracts as either operating leases – without recognizing the respective assets or liabilities – or as finance leases. The new standard is to be applied for annual periods beginning on or after January 1, 2019. It has not yet been endorsed by the European Union. Bayer is currently evaluating the impact the standard will have on the presentation of its financial position and results of operations.

In January 2016, the IASB published amendments to IAS 12 (Income Taxes) under the title "Recognition of Deferred Tax Assets for Unrealised Losses." These amendments clarify the accounting for deferred tax assets related to debt instruments measured at fair value. The amendments are to be applied for annual periods beginning on or after January 1, 2017. They have not yet been endorsed by the European Union. Bayer is currently evaluating the impact the amendments will have on the presentation of its financial position and results of operations.

In January 2016, the IASB published amendments to IAS 7 (Statement of Cash Flows) under its Disclosure Initiative. The following changes in liabilities arising from financing activities must be disclosed in the future: a) changes from financing cash flows; b) changes arising from obtaining or losing control of subsidiaries or other businesses; c) the effect of changes in foreign exchange rates; d) changes in fair values; e) other changes. The amendments are to be applied for annual periods beginning on or after January 1, 2017. They have not yet been endorsed by the European Union.

In April 2016, the IASB issued Clarifications to IFRS 15 (Revenue from Contracts with Customers). These amendments address three topics: identifying performance obligations, principal versus agent considerations, and licensing. They also provide some transition relief for modified contracts and completed contracts. The amendments are to be applied for annual periods beginning on or after January 1, 2018. They have not yet been endorsed by the European Union. Bayer is currently evaluating the impact the amendments will have on the presentation of its financial position and results of operations.

In June 2016, the IASB published an amendment to IFRS 2 (Share-based Payment) under the title "Classification and Measurement of Share-based Payment Transactions." This amendment provides guidance on certain accounting issues relating to cash-settled share-based payments. For example, the fair value of the equity instruments is not to be adjusted for service conditions or non-market-based performance conditions. Instead, these are to be taken into account by adjusting the number of equity instruments expected to vest. The amendment is to be applied for annual periods beginning on or after January 1, 2018. It has not yet been endorsed by the European Union. Bayer is currently evaluating the impact the amendment will have on the presentation of its financial position and results of operations.

In December 2016, the IASB published an amendment to IAS 40 (Investment Property) under the title "Transfers of Investment Property." This specifies that a property may only be transferred to or from the investment property classification when there has been an actual change in use and not when there is a mere change of intent concerning the property. The amendment is to be applied for annual periods beginning on or after January 1, 2018. It has not yet been endorsed by the European Union. Bayer is currently evaluating the impact the amendment will have on the presentation of its financial position and results of operations.

In December 2016, the IASB published "Annual Improvements to IFRS Standards 2014-2016 Cycle" as part of its annual improvements project. The amendments relate to IFRS 1 (First Time Adoption of IFRS), IFRS 12 (Disclosure of Interest in Other Entities) and IAS 28 (Investments in Associates and Joint Ventures). They mainly contain clarifications on the scope of application and other matters. The amendments to IFRS 1 and IAS 28 are to be applied for annual periods beginning on or after January 1, 2018, those to IFRS 12 for annual periods beginning on or after January 1, 2017. They have not yet been endorsed by the European Union. Bayer is currently evaluating the impact the amendments will have on the presentation of its financial position and results of operations.

In December 2016, the IASB published the IFRIC Interpretation 22 (Foreign Currency Transactions and Advance Consideration) relating to IAS 21 (The Effects of Changes in Foreign Exchange Rates). The Interpretation clarifies that the assets, income and expenses accounted for following a foreign currency transaction are to be translated at the same exchange rate as any related receipts or payments of advance consideration. IFRIC 22 is to be applied for annual periods beginning on or after January 1, 2018. It has not yet been endorsed by the European Union. Bayer is currently evaluating the impact the Interpretation will have on the presentation of its financial position and results of operations.

4. Basic principles, methods and critical accounting estimates

The financial statements of the consolidated companies are prepared according to uniform accounting policies and measurement principles.

The consolidated financial statements of the Group are based on the principle of the historical cost of acquisition, construction or production, with the exception of the items reflected at fair value, such as financial assets held for trading or available for sale, and derivatives.

In preparing the consolidated financial statements, the management has to make certain assumptions and estimates that may substantially impact the presentation of the Group's financial position and / or results of operations.

Such estimates, assumptions or the exercise of discretion mainly relate to the useful life of noncurrent assets, the discounted cash flows used for impairment testing and purchase price allocations, and the recognition of provisions, including those for litigation-related expenses, pensions and other benefits, taxes, environmental compliance and remediation costs, sales allowances, product liability and guarantees. Essential estimates and assumptions that may affect reporting in the various item categories of the financial statements are described in the following sections of this Note. Estimates are based on historical experience and other assumptions that are considered reasonable under given circumstances. They are continually reviewed but may vary from the actual values.

Changes in accounting policies or measurement principles in light of new or revised standards are applied retrospectively, except as otherwise provided in the respective standard. The income statement for the previous year and the opening statement of financial position for that year are adjusted as if the new accounting policies and/or measurement principles had always been applied.

Consolidation

The consolidated financial statements include subsidiaries, joint arrangements and associates.

Subsidiaries are companies over which Bayer AG is currently able to exercise power by virtue of existing rights. Power means the ability to direct the activities that significantly influence a company's profitability. Control is therefore only deemed to exist if Bayer AG is exposed, or has rights, to variable returns from its involvement with a company and has the ability to use its power over that company to affect the amount of that company's returns. The ability to control another company generally derives from Bayer AG's direct or indirect ownership of a majority of the voting rights. In the case of structured entities, however, control is based on contractual agreements. Inclusion of an entity's accounts in the consolidated financial statements begins when the Bayer Group is able to exercise control over the entity and ceases when it is no longer able to do so.

Joint operations and **joint ventures** are based on joint arrangements. A joint arrangement is deemed to exist if the Bayer Group through a contractual agreement jointly controls activities managed with a third party. Joint control is only deemed to exist if decisions regarding the relevant activities require the unanimous consent of the parties sharing control.

A joint operation is a joint arrangement whereby the parties that have joint control of the arrangement have rights to the assets, and obligations for the liabilities, relating to the arrangement. The Bayer Group recognizes the share of assets, liabilities, revenues and expenses relating to its interest in a joint operation in accordance with its rights and obligations.

A joint venture is a joint arrangement whereby the parties that have joint control of the arrangement have rights to the net assets of the arrangement. Joint ventures are accounted for using the equity method.

Associates over which Bayer AG exerts significant influence, generally through an ownership interest between 20% and 50%, are also accounted for using the equity method.

The carrying amount of a company accounted for using the equity method is adjusted annually by any change in its equity corresponding to Bayer's percentage interest in the company. Differences arising upon first-time inclusion using the equity method are accounted for according to full-consolidation principles. Bayer's share of changes in these companies' equities recognized in profit or loss – including impairment losses recognized on goodwill – are reflected in equity-method income / loss.

Companies that do not have a material impact on the Group's financial position or results of operations, either individually or in aggregate, are accounted for at cost of acquisition less any impairment losses.

Foreign currency translation

The financial statements of the individual companies for inclusion in the consolidated financial statements are prepared in their respective functional currencies. A company's functional currency is that of the economic environment in which it primarily generates and expends cash. The majority of consolidated companies carry out their activities autonomously from a financial, economic and organizational point of view, and their functional currencies are therefore the respective local currencies.

In the consolidated financial statements, the assets and liabilities of companies outside the eurozone at the start and end of the year are translated into euros at closing rates. All changes occurring during the year and all income and expense items and cash flows are translated into euros at average monthly rates. Equity components are translated at the historical exchange rates prevailing at the respective dates of their first-time recognition in Group equity.

The exchange differences arising between the resulting amounts and those obtained by translating at closing rates are recognized outside profit or loss as “Exchange differences on translation of operations outside the eurozone” (in other comprehensive income) or “Exchange differences” (in the tables in the Notes). When a company is deconsolidated or the net investment in a foreign operation is reduced, such exchange differences are reclassified from equity to profit or loss.

The exchange rates for major currencies against the euro varied as follows:

B 4/1

Exchange Rates for Major Currencies

		Closing rate		Average rate	
€1/		2015	2016	2015	2016
BRL	Brazil	4.31	3.43	3.64	3.84
CAD	Canada	1.51	1.42	1.42	1.47
CHF	Switzerland	1.08	1.07	1.07	1.09
CNY	China	7.06	7.35	6.97	7.36
GBP	United Kingdom	0.73	0.86	0.73	0.82
JPY	Japan	131.07	123.36	134.28	120.06
MXN	Mexico	18.91	21.78	17.56	20.62
RUB	Russia	80.67	64.30	67.23	73.79
USD	United States	1.09	1.05	1.11	1.11

In 2016, as in prior years, the rules of IAS 29 (Financial Reporting in Hyperinflationary Economies) were relevant for Bayer S.A., Venezuela. Gains and losses incurred upon adjusting the carrying amounts of nonmonetary assets and liabilities and of items in the income statement for inflation are recognized in other operating income and expenses.

Starting in January 2016, foreign currency translation and valuation were switched to the “hyperinflation-adjusted” SIMADI exchange rate. This is determined internally because reliable exchange rates are not available externally. It was initially based on the official SIMADI rate and has subsequently been adjusted in line with published inflation rates. The exchange rate thus calculated was VEF 2,737 to the U.S. dollar at the end of December 2016. The resulting U.S. dollar amounts were then translated at the dollar / euro closing-date rate.

Foreign currency measurement

In the separate financial statements of the individual consolidated companies, monetary items, such as receivables and liabilities, that are denominated in currencies other than the respective functional currency are measured at closing rates. Related exchange differences are recognized in profit or loss as exchange gains or losses under other financial income or expenses.

Net sales and other operating income

All revenues derived from the selling of products or rendering of services or from licensing agreements are recognized as sales. Other operational revenues are recognized as other operating income. Sales are recognized in profit or loss when the significant risks and rewards of ownership of the goods have been transferred to the customer, the company retains neither continuing managerial involvement to the degree usually associated with ownership nor effective control over the goods sold, the amount of revenue and costs incurred or to be incurred can be measured reliably, and it is sufficiently probable that the economic benefits associated with the transaction will flow to the company.

Sales are stated net of sales taxes, other taxes and sales deductions at the fair value of the consideration received or to be received. Sales deductions are estimated amounts for rebates, cash discounts and product returns. They are deducted at the time the sales are recognized, and appropriate provisions are recorded. Sales deductions are estimated primarily on the basis of historical experience, specific contractual terms and future expectations of sales development. It is unlikely that factors other than these could materially affect sales deductions in the Bayer Group. Adjustments to provisions made in prior periods for rebates, cash discounts or product returns were of secondary importance for income before income taxes in the years under report.

Provisions for rebates in 2016 amounted to 4.2% of total net sales (2015: 3.8%). In addition to rebates, Group companies offer cash discounts for prompt payment in some countries. Provisions for cash discounts as of December 31, 2016 and December 31, 2015 were less than 0.1% of total net sales for the respective year.

Sales are reduced by the amount of the provisions for expected returns of defective goods or of saleable products that may be returned under contractual arrangements. The net sales are reduced on the date of sale or on the date when the amount of future returns can be reasonably estimated. Provisions for product returns in 2016 amounted to 0.4% of total net sales (2015: 0.4%). If future product returns cannot be reasonably estimated and are significant to a sales transaction, the revenues and the related cost of sales are deferred until a reasonable estimate can be made or the right to return the goods has expired.

Some of the Bayer Group's revenues are generated on the basis of licensing agreements under which third parties have been granted rights to products and technologies. Payments received, or expected to be received, that relate to the sale or out-licensing of technologies or technological expertise are recognized in profit or loss as of the effective date of the respective agreement if all rights relating to the technologies and all obligations resulting from them have been relinquished under the contract terms. However, if rights to the technologies continue to exist or obligations resulting from them have yet to be fulfilled, the payments received are deferred accordingly. Upfront payments and similar nonrefundable payments received under these agreements are recorded as other liabilities and recognized in profit or loss according to the degree of performance over the estimated performance period stipulated in the agreement.

License agreements and research and development collaboration agreements may be multiple-deliverable arrangements with varying consideration terms, such as upfront payments and milestone or similar payments. Such agreements therefore have to be assessed to determine whether the revenues allocated to individual deliverables must be recognized at different points in time and therefore form separate units of account.

To qualify as a separate unit of account for revenue recognition purposes, a deliverable must have value to the licensee on a standalone basis. If this is not the case, the agreement as a whole or a combination of individual deliverables that has value on a standalone basis forms a unit of account.

If necessary goods have yet to be delivered or necessary services provided for a unit of account and such delivery or provision is probable, nonrefundable (royalty) payments already received are recognized through profit or loss over the periods in which these goods are delivered or these services are provided.

Income may also arise from the exchange of intangible assets. The amount recognized is generally based on the fair value of the assets given up, calculated using the discounted cash flow method. If the assets given up are internally generated, the gain from the exchange generally equals their fair value.

Research and development expenses

For accounting purposes, research expenses are defined as costs incurred for current or planned investigations undertaken with the prospect of gaining new scientific or technical knowledge and understanding. Development expenses are defined as costs incurred for the application of research findings or specialist knowledge to plans or designs for the production, provision or development of new or substantially improved products, services or processes, respectively, prior to the commencement of commercial production or use.

Research and development expenses are incurred in the Bayer Group for in-house research and development activities as well as numerous research and development collaborations and alliances with third parties.

Research and development expenses mainly comprise the costs for active ingredient discovery, clinical studies, research and development activities in the areas of application technology and engineering, field trials, regulatory approvals and approval extensions.

Research costs cannot be capitalized. The conditions for capitalization of development costs are closely defined: an intangible asset must be recognized if, and only if, there is reasonable certainty of receiving future cash flows that will cover an asset's carrying amount. Since our own development projects are often subject to regulatory approval procedures and other uncertainties, the conditions for the capitalization of costs incurred before receipt of approvals are not normally satisfied.

In the case of research and development collaborations, a distinction is generally made between payments on contract signature, upfront payments, milestone payments and cost reimbursements for work performed. If an intangible asset (such as the right to the use of an active ingredient) is acquired in connection with any of these payment obligations, the respective payment is capitalized even if it is uncertain whether further development work will ultimately lead to the production of a saleable product. Reimbursements of the cost of research or development work are recognized in profit or loss, except where they are required to be capitalized.

Income taxes

Income taxes comprise the taxes levied on taxable income in the individual countries along with changes in deferred tax assets and liabilities that are recognized in profit or loss. The income taxes recognized are reflected at the amounts likely to be payable under the statutory regulations in force, or already enacted in relation to future periods, at the end of the reporting period.

Complex tax regulations may give rise to uncertainties with respect to their interpretation and the amounts and timing of future taxable income. Given the wide range of international business relationships and the long-term nature and complexity of existing contractual agreements, differences arising between the actual results and the assumptions made, or future changes to such assumptions, could necessitate adjustments to tax income and expense in future periods. The Group establishes provisions for taxes, based on reasonable estimates, for liabilities to the tax authorities of the respective countries that are uncertain as to their amount and the probability of their occurrence. The amount of such provisions is based on various factors, such as experience with previous tax audits and differing legal interpretations by the taxable entity and the responsible tax authority.

In compliance with IAS 12 (Income Taxes), deferred taxes are recognized for temporary differences between the carrying amounts of assets and liabilities in the statement of financial position prepared according to IFRS and their tax bases. Deferred taxes are also recognized for consolidation measures and for loss carryforwards, interest carryforwards and tax credits that are likely to be usable.

Deferred tax assets relating to deductible temporary differences, tax credits, loss carryforwards and interest carryforwards are recognized where it is sufficiently probable that taxable income will be available in the future to enable them to be used. Deferred tax liabilities are recognized on temporary differences taxable in the future. Deferred taxes are calculated at the rates which – on the basis of the statutory regulations in force, or already enacted in relation to future periods, as of the closing date – are expected to apply in the individual countries at the time of realization. Deferred tax assets and deferred tax liabilities are offset if they relate to income taxes levied by the same taxation authority and Bayer has a legal right to settle on a net basis. Material effects of changes in tax rates or tax law on deferred tax assets and liabilities are generally accounted for in the period in which the changes are enacted. Such effects are recognized in profit or loss except where they relate to deferred taxes that were recognized outside profit or loss, in which case they are recognized in other comprehensive income.

Deferred and current taxes are recognized in profit or loss unless they relate to items recognized outside profit or loss in other comprehensive income, in which case they, too, are recognized in other comprehensive income.

The probability that deferred tax assets resulting from temporary differences, loss carryforwards or interest carryforwards can be used in the future is the subject of forecasts by the individual consolidated companies regarding their future earnings situation and other parameters.

Deferred tax liabilities are recognized on planned dividend payments by subsidiaries. Where no dividend payment is planned for the foreseeable future, no deferred tax liability is recognized on the difference between the proportionate net assets according to IFRS and the tax base of the investment in the subsidiary.

Goodwill

In a business combination, goodwill is capitalized at the acquisition date. It is measured at its cost of acquisition, which is the excess of the acquisition price for shares in a company over the acquired net assets. The net assets are the balance of the fair values of the acquired identifiable assets and the assumed liabilities and contingent liabilities.

Goodwill is not amortized, but tested annually for impairment. Details of the annual impairment tests are given under “Procedure used in global impairment testing and its impact.” Once an impairment loss has been recognized on goodwill, it is not reversed in subsequent periods.

Other intangible assets

An “other intangible asset” is an identifiable nonmonetary asset without physical substance, other than goodwill (such as a patent, a trademark or a marketing right). It is capitalized if the future economic benefits attributable to the asset will probably flow to the company and the cost of acquisition or generation of the asset can be reliably measured.

Other intangible assets are recognized at the cost of acquisition or generation. Those with a determinable useful life are amortized accordingly on a straight-line basis over a period of up to 30 years, except where their actual depletion demands a different amortization pattern. Determination of the expected useful lives of such assets and the amortization patterns is based on estimates of the period for which they will generate cash flows. An impairment test is performed if there is an indication of possible impairment.

Other intangible assets with an indefinite life (such as the Bayer Cross trademark) and intangible assets not yet available for use (such as research and development projects) are not amortized, but tested annually for impairment.

Property, plant and equipment

Property, plant and equipment is depreciated by the straight-line method over an asset’s useful life, except where depreciation based on actual depletion is more appropriate.

The following depreciation periods are applied throughout the Group:

B 4/2

Useful Life of Property, Plant and Equipment	
Buildings	20 to 50 years
Outdoor infrastructure	10 to 20 years
Storage tanks and pipelines	10 to 20 years
Plant installations	6 to 20 years
Machinery and equipment	6 to 12 years
Furniture and fixtures	4 to 10 years
Vehicles	5 to 8 years
Computer equipment	3 to 5 years
Laboratory and research facilities	3 to 5 years

When assets are sold, closed down or scrapped, the difference between the net proceeds and the net carrying amount of the assets is recognized as a gain or loss in other operating income or expenses, respectively.

Investment property comprises land and buildings not being used for operational or administrative purposes. It is measured using the cost model. The fair value of the investment property reported in the Notes is determined using the discounted cash flow method, comparisons with the current market values of similar properties, or reports from external experts.

Financial assets

Financial assets comprise loans and receivables, acquired equity and debt instruments, cash and cash equivalents, and derivatives with positive fair values.

Regular-way purchases and sales of financial assets are generally posted on the settlement date. Financial assets are initially recognized at fair value plus transaction costs. The transaction costs incurred for the purchase of financial assets held at fair value through profit or loss are expensed immediately.

If there are substantial and objective indications of a decline in the value of loans and receivables, held-to-maturity financial assets or available-for-sale financial assets, an impairment test is performed. Indications of possible impairment include a high probability of insolvency, a significant deterioration in credit standing, a material breach of contract, operating losses reported by a company over several years, a reduction in market value, the financial restructuring of the debtor, or the disappearance of an active market for the asset.

Financial assets are derecognized when contractual rights to receive cash flows from the financial assets expire or the financial assets are transferred together with all material risks and benefits.

Inventories

In accordance with IAS 2 (Inventories), inventories encompass assets consumed in production or in the rendering of services (raw materials and supplies), assets in the production process for sale (work in process), goods held for sale in the ordinary course of business (finished goods and goods purchased for resale), and advance payments on inventories. Inventories are recognized at their cost of acquisition or production – calculated by the weighted-average method – or at their net realizable value, whichever is lower. The net realizable value is the estimated selling price in the ordinary course of business less estimated cost to complete and selling expenses.

Cash and cash equivalents

Cash and cash equivalents comprise cash, checks received and balances with banks and companies. Cash equivalents are highly liquid short-term financial investments that are subject to an insignificant risk of changes in value, are easily convertible into a known amount of cash and have a maturity of three months or less from the date of acquisition or investment.

Provisions for pensions and other post-employment benefits

Within the Bayer Group, post-employment benefits are provided under defined contribution and / or defined benefit plans. In the case of defined contribution plans, the company pays contributions to publicly or privately administered pension plans on a mandatory, contractual or voluntary basis. Once the contributions have been paid, the company has no further payment obligations. The regular contributions constitute expenses for the year in which they are due and as such are included in the functional cost items, and thus in EBIT. All other post-employment benefit systems are defined benefit plans, which may be either unfunded, i.e. financed by provisions, or funded, i.e. financed through pension funds.

The present value of provisions for defined benefit plans and the resulting expense are calculated in accordance with IAS 19 (Employee Benefits) by the projected unit credit method. The future benefit obligations are valued by actuarial methods and spread over the entire employment period on the basis of specific assumptions regarding beneficiary structure and the economic environment. These relate mainly to the discount rate, future salary and pension increases, variations in health care costs, and mortality rates.

The discount rates used are calculated from the yields of high-quality corporate bond portfolios in specific currencies with cash flows approximately equivalent to the expected disbursements from the pension plans. The uniform discount rate derived from this interest-rate structure is thus based on the yields, at the closing date, of a portfolio of AA-rated corporate bonds whose weighted residual maturities approximately correspond to the duration necessary to cover the entire benefit obligation.

The fair value of plan assets is deducted from the present value of the defined benefit obligation for pensions and other post-employment benefits to determine the net defined benefit liability. The obligations and plan assets are valued at regular intervals of not more than three years. Comprehensive actuarial valuations for all major plans are performed annually as of December 31. Plan assets in excess of the benefit obligation are reflected in other receivables, subject to the asset ceiling specified in IAS 19 (Employee Benefits).

The balance of all income and expenses relating to defined benefit plans, except the net interest on the net liability, is recognized in EBIT. The net interest is reflected in the financial result under other financial income and expenses.

The effects of remeasurements of the net defined benefit liability are reflected in the statement of comprehensive income as other comprehensive income. They consist of actuarial gains and losses, the return on plan assets and changes in the effects of the asset ceiling, less the respective amounts included in net interest. Deferred taxes relating to the effects of remeasurements are also recognized in other comprehensive income.

Other provisions

Other provisions are recognized for present legal and constructive obligations arising from past events that will probably give rise to a future outflow of resources, provided that a reliable estimate can be made of the amount of the obligations.

If the projected obligation declines as a result of a change in the estimate, the provision is reversed by the corresponding amount and the resulting income recognized in the operating expense item(s) in which the original charge was recognized.

To enhance the information content of the estimates, certain provisions that could have a material effect on the financial position or results of operations of the Group are tested for their sensitivity to changes in the underlying parameters. To reflect uncertainty about the likelihood of the assumed events actually occurring, the impact of a five-percentage-point change in the probability of occurrence is examined in each case. This analysis has not shown other provisions to be materially sensitive.

Provisions for environmental protection are recorded if future cash outflows are likely to be necessary to ensure compliance with environmental regulations or to carry out remediation work, such costs can be reliably estimated and no future benefits are expected from such measures. Provisions for environmental protection mainly relate to the rehabilitation of contaminated land, recultivation of landfills, and redevelopment and water protection measures.

Estimating the future costs of environmental protection and remediation involves many uncertainties, particularly with regard to the status of laws, regulations and the information available about conditions in the various countries and at the individual sites. Significant factors in estimating the costs include previous experiences in similar cases, the conclusions in expert opinions obtained regarding the Group's environmental programs, current costs and new developments affecting costs, management's interpretation of current environmental laws and regulations, the number and financial position of third parties that may become obligated to participate in any remediation costs on the basis of joint liability, and the remediation methods likely to be deployed. Changes in these assumptions could impact future reported results of the Group.

Taking into consideration experience gained to date regarding environmental matters of a similar nature, provisions are believed to be adequate based upon currently available information. Given the difficulties inherent in estimating liabilities in the businesses in which the Group operates, especially those for which the risk of environmental damage is greater in relative terms (Crop Science and Covestro), it remains possible that material additional costs will be incurred beyond the amounts accrued. It may transpire during remediation work that additional expenditures are necessary over an extended period and that these exceed existing provisions and cannot be reasonably estimated.

Provisions for restructuring only cover expenses that arise directly from restructuring measures, are necessary for restructuring and are not related to future business operations. Such expenses include severance payments to employees and compensation payments in respect of rented property that can no longer be used.

Restructuring measures may include the sale or termination of business units, site closures, relocations of business activities or fundamental reorganizations of business units.

Trade-related provisions are recorded mainly for the granting of rebates or discounts, product returns, obligations in respect of services already received but not yet invoiced, and impending losses or onerous contracts.

As a global enterprise with a diverse business portfolio, the Bayer Group is exposed to numerous legal risks for which **provisions for litigations** must be established under certain conditions – particularly in the areas of product liability, competition and antitrust law, patent disputes, tax law and environmental protection.

Litigations and other judicial proceedings often raise complex issues and are subject to many uncertainties and complexities including, but not limited to, the facts and circumstances of each particular case, the jurisdiction in which each suit is brought and differences in applicable law. The outcomes of currently pending and future proceedings generally cannot be predicted. It is particularly difficult to assess the likely outcomes of class actions for damages or mass compensation claims in the United States, which may give rise to significant financial risks for the Bayer Group. As a result of a judgment in court proceedings, regulatory decisions or the conclusion of a settlement, the Bayer Group may incur charges for which no accounting measures have yet been taken for lack of reasonable estimability or which exceed presently established provisions and the insurance coverage.

The Bayer Group considers the need for accounting measures in respect of pending or future litigations, and the extent of any such measures, on the basis of the information available to its legal department and in close consultation with legal counsel acting for the Bayer Group.

Where it is more likely than not that such a litigation will result in an outflow of resources that is already reasonably estimable, a provision for litigation is recorded in the amount of the present value of the expected cash outflows. Such provisions cover the estimated payments to the plaintiffs, court and procedural costs, attorney costs and the cost of potential settlements.

It is frequently impossible to reliably determine the existence of a present obligation or reasonably estimate the probability that a potential outflow of resources will result from a pending or future litigation. The status of the material “legal risks” is described in Note [32]. Due to the special nature of these litigations, provisions generally are not established until initial settlements allow an estimate of potential amounts or judgments have been issued. Provisions for legal defense costs are established if it is probable that material costs will have to be incurred for external legal counsel to defend the company’s legal position.

Internal and external legal counsel evaluates the current status of the Bayer Group’s material legal risks at the end of each reporting period. The need to establish or adjust a provision and the amount of the provision or adjustment are determined on this basis. Adjusting events are reflected up to the date of preparation of the consolidated financial statements. The measurement of provisions in the case of class actions or mass compensation claims is mainly based on any settlements reached during the past year and on pending or anticipated future claims.

Provisions for personnel commitments mainly include those for variable one-time payments under short-term incentive programs and for stock-based compensation. Also reflected here are commitments for service awards, early retirements and pre-retirement part-time working arrangements. Provisions for severance payments resulting from restructuring are reflected in provisions for restructuring.

Miscellaneous provisions include those for other liabilities, contingent liabilities from business combinations, and asset retirement obligations (other than those included in provisions for environmental protection).

Financial liabilities

Financial liabilities comprise primary financial liabilities and negative fair values of derivatives.

Liabilities for contingent consideration arising from business combinations are measured at fair value. Changes in fair value are recognized through profit or loss as of the respective closing date.

Financial liabilities are derecognized when the contractual obligation is discharged or canceled, or has expired.

An assessment of the mandatory convertible notes issued in 2016 was performed to determine whether these should be accounted for entirely as debt or split into an equity component and a debt component. The assessment identified Bayer's right to early conversion of the notes as an important criterion in this regard, and the economic substance of this right was examined. The early conversion right has economic substance with respect to maintaining the current credit rating if early conversion can prevent a rating downgrade. In this event, future savings of credit interest would more than offset the cost of early conversion by Bayer.

On the basis of this assessment, the mandatory convertible notes are accounted for as a hybrid financial instrument. The directly attributable costs along with the debt component, which corresponds to the present value of the future interest payments, are deducted from the proceeds of the issue. The debt component is included in financial liabilities. The remaining amount is the equity component, which is reflected in capital reserves.

Other receivables and liabilities

Accrued items and other nonfinancial assets and liabilities are carried at amortized cost. They are amortized to income by the straight-line method or according to performance of the underlying transaction.

Grants and subsidies from third parties that serve to promote investment are reflected in the statement of financial position under other liabilities and amortized to income over the useful lives of the respective investments or in line with the terms of the grant or subsidy.

Derivatives

The Bayer Group uses derivatives to mitigate the risk of changes in exchange rates, interest rates or prices and to hedge stock-based compensation programs. The instruments used include forward exchange contracts, interest-rate swaps and stock options. Derivatives are recognized at the trade date.

Contracts concluded in order to receive or deliver nonfinancial items for the company's own purposes are not accounted for as derivatives but treated as pending transactions. Where embedded derivatives are identified that are required to be separated from the pending transactions, they are accounted for separately. To take advantage of market opportunities or cover possible peak demand, a nonmaterial volume of transactions may be entered into for which the possibility of immediate resale cannot be excluded. Such transactions are allocated to separate portfolios upon acquisition and accounted for as derivatives according to IAS 39.

Derivatives are carried at fair value. Positive fair values at the end of the reporting period are reflected in financial assets, negative fair values in financial liabilities. Changes in the fair values of these derivatives are recognized directly in profit or loss except where hedge accounting is used.

Changes in the fair values of the effective portion of derivatives designated as cash flow hedges are initially recognized outside profit or loss in accumulated other comprehensive income. They are reclassified to profit or loss when the underlying transaction is realized. If such a derivative is sold or ceases to qualify for hedge accounting, the change in its value continues to be recognized in accumulated other comprehensive income until the forecasted transaction is realized. If the forecasted transaction is no longer expected to occur, the amount previously recognized in accumulated other comprehensive income has to be reclassified to profit or loss. The ineffective portion of gains or losses on derivatives designated as cash flow hedges is recognized either in other operating income or expenses or in the financial result, depending on the type of underlying transaction.

Changes in the fair values of derivatives designated as fair-value hedges and the adjustments in the carrying amounts of the underlying transactions are recognized in profit or loss.

Changes in the fair values of forward exchange contracts and currency options serving as hedges of items in the statement of financial position are reflected in other financial income and expenses as exchange gains or losses, while changes in the values of interest-rate swaps and interest-rate options are recognized in interest income or expense. Changes in the fair values of commodity futures and options, and of forward exchange contracts used to hedge forecasted sales transactions in foreign currencies, are recognized in other operating income or expenses. Changes in the fair values of stock options or forward stock transactions used to hedge stock-based employee compensation are initially recognized outside profit or loss and subsequently reclassified to profit or loss in the functional costs over the periods of the Aspire programs.

The income and expense reflected in the financial result pertaining to the derivatives and the underlying transactions are shown separately. Income and expense are not offset.

Acquisition accounting

Acquired businesses are accounted for using the acquisition method, which requires that the assets acquired and liabilities assumed be recorded at their respective fair values on the date Bayer obtains control. Ancillary acquisition costs are recognized as expenses in the periods in which they occur.

The application of the acquisition method requires certain estimates and assumptions to be made, especially concerning the fair values of the acquired intangible assets, property, plant and equipment and the liabilities assumed at the acquisition date, and the useful lives of the acquired intangible assets, property, plant and equipment.

Measurement is based to a large extent on anticipated cash flows. If actual cash flows vary from those used in calculating fair values, this may materially affect the Group’s future results of operations. In particular, the estimation of discounted cash flows from intangible assets under development, patented and non-patented technologies and brands is based on assumptions concerning, for example:

- The outcomes of research and development activities regarding the efficacy of a crop protection or seed product, compound, results of clinical trials, etc.
- The probability of obtaining regulatory approvals in individual countries
- Long-term sales projections
- Possible selling price erosion due to offerings of unpatented products following patent expirations
- The behavior of competitors (launch of competing products, marketing initiatives, etc.)

For significant acquisitions, the purchase price allocation is carried out with assistance from independent third-party valuation specialists. The valuations are based on the information available at the acquisition date.

In step acquisitions, the fair values of the acquired entity’s assets and liabilities are measured in accordance with IFRS 3 (Business Combinations) at the date on which control is obtained. Any resulting adjustments to the fair value of the existing interest are recognized in profit or loss. The carrying amount of the assets and liabilities already recognized in the statement of financial position is then adjusted accordingly.

Divestment accounting

Divestments of shares in subsidiaries that result in a loss of control are generally accounted for in profit or loss.

When shares in a subsidiary are gradually divested in several tranches, a reduction in the majority shareholding without the loss of control is reflected outside profit or loss and results in an increase in the equity attributable to noncontrolling stockholders. If Bayer AG loses control of an entity but retains significant influence, the entity is accounted for as an associate using the equity method. If Bayer can no longer exert significant influence following a loss of control, the remaining interest is immediately classified as an available-for-sale financial asset and recognized at fair value outside profit or loss.

Procedure used in global impairment testing and its impact

Impairment tests are performed not only on individual items of intangible assets, property, plant and equipment, but also at the level of cash-generating units or groups of cash-generating units. A cash-generating unit is the smallest identifiable group of assets that generates cash inflows that are largely independent of the cash inflows from other assets or groups of assets. The Bayer Group regards its strategic business entities or groups of strategic business entities, as well as certain product families, as cash-generating units and subjects them to global impairment testing. The strategic business entities constitute the second financial reporting level below the segments.

Cash-generating units and unit groups are globally tested if there is an indication of possible impairment. Those to which goodwill is allocated are tested at least annually.

Impairment testing involves comparing the carrying amount of each cash-generating unit, unit group or item of intangible assets, property, plant or equipment to the recoverable amount, which is the higher of its fair value less costs of disposal or value in use. If the carrying amount exceeds the recoverable amount, an impairment loss must be recognized for the difference. In this case an impairment loss is first recognized on any goodwill allocated to the cash-generating unit or unit group. Any remaining part of the impairment loss is then allocated among the other noncurrent nonfinancial assets of the cash-generating unit or unit group in proportion to their carrying amounts. The resulting expense is reflected in the functional item of the income statement in which the depreciation or amortization of the respective assets is recognized. The same applies to income from impairment loss reversals.

The recoverable amount is generally determined on the basis of the fair value less costs of disposal, taking into account the present value of the future net cash flows as market prices for the individual units are not normally available. These are forecasted on the basis of the Bayer Group's current planning, the planning horizon normally being three to five years. Forecasting involves making assumptions, especially regarding future selling prices, sales volumes, costs, market growth rates, economic cycles and exchange rates. These assumptions are based on internal estimates along with external market studies. Where the recoverable amount is the fair value less costs of disposal, the cash-generating unit or unit group is measured from the viewpoint of an independent market participant. Where the recoverable amount is the value in use, the cash-generating unit, unit group or individual asset is measured as currently used. In either case, net cash flows beyond the planning period are determined on the basis of long-term business expectations using the respective individual growth rates derived from market information. The fair value less costs of disposal is determined on the basis of unobservable inputs (Level 3).

The net cash inflows are discounted at a rate equivalent to the weighted average cost of equity and debt capital. To allow for the different risk and return profiles of the Bayer Group's principal businesses, the after-tax cost of capital is calculated separately for each reporting segment, and a segment-specific capital structure is defined by benchmarking against comparable companies in the same industry sector. The cost of equity corresponds to the return expected by stockholders, while the cost of debt is based on the conditions on which comparable companies can obtain long-term financing. Both components are derived from capital market information.

The growth rates applied for impairment testing in 2016 and 2015 and the capital cost factors used to discount the expected cash flows are shown in the following table:

B 4/3

Impairment Testing Parameters

	Growth rate		After-tax cost of capital	
%	2015	2016	2015	2016
Pharmaceuticals	0.0	0.0	6.2	5.5
Radiology	0.0	0.0	6.2	5.5
Consumer Health	0.0	0.0	6.2	5.2
Crop Protection	2.3	2.1	6.3	5.3
Seeds	1.9	1.7	6.3	5.3
Environmental Science	1.8	2.4	6.3	5.3
Animal Health	0.0	0.0	6.2	5.3
Covestro	1.8	1.8	6.1	5.4

In light of the legal and economic independence of Covestro, its strategic business entities were impairment-tested as a group of cash-generating units from the point of view of the Bayer Group.

No impairment losses were recognized on goodwill on the basis of the global annual impairment testing of the cash-generating units and unit groups in 2016 or 2015. Impairment losses on intangible assets, property, plant and equipment – net of €1 million (2015: €1 million) in impairment loss reversals – totaled €711 million (2015: €229 million). Details are provided in Notes [17] and [18].

Although the estimates of the useful lives of certain assets, assumptions concerning the macroeconomic environment and developments in the industries in which the Bayer Group operates, and estimates of the discounted future cash flows are believed to be appropriate, changes in assumptions or circumstances could require changes in the analysis. This could lead to the recognition of additional impairment losses in the future or – except in the case of goodwill – to reversals of previously recognized impairment losses if developments are contrary to expectations.

The sensitivity analysis for cash-generating units and unit groups to which goodwill is allocated was based on a 10% reduction in future cash flows, a 10% increase in the weighted average cost of capital or a one-percentage-point reduction in the long-term growth rate. Bayer concluded that no impairment loss would need to be recognized on goodwill in any cash-generating unit or unit group under these conditions.

5. Segment reporting

At Bayer, the Board of Management – as the chief operating decision-maker – allocates resources to the operating segments and assesses their performance. The reportable segments and regions are identified, and the disclosures selected, in line with the internal financial reporting system (management approach) and based on the Group accounting policies outlined in Note [4].

In 2015, the Bayer Group comprised three subgroups, with operations subdivided into strategic business entities known as divisions (HealthCare), business groups (CropScience) and business units (Covestro; formerly MaterialScience). On December 31, 2015, there were four reportable segments. In September 2015, it was decided to introduce a new organizational structure effective January 1, 2016, in line with Bayer's focus on the Life Science businesses. The former Bayer HealthCare subgroup was dissolved, and the Radiology business is now assigned to the Pharmaceuticals segment. The Consumer Health segment consists entirely of the consumer care business. Animal Health is a reportable segment. The Bayer Crop-Science subgroup became the Crop Science segment. Covestro remains a reportable segment.

In the Crop Science segment, the Crop Protection / Seeds and Environmental Science operating segments were combined, mainly in light of the comparable nature of their products for the agricultural industry, such as in the area of crop protection and the related comparable production processes and comparable distribution methods, including via wholesalers in particular.

The segments' activities are as follows:

B 5/1

Activities of the Segments

Segment	Activities
Pharmaceuticals	Development, production and marketing of prescription products, especially for cardiology and women's health care; specialty therapeutics in the areas of oncology, hematology and ophthalmology; diagnostic imaging equipment and the necessary contrast agents
Consumer Health	Development, production and marketing of mainly nonprescription (OTC = over-the-counter) products in the dermatology, dietary supplement, analgesic, gastrointestinal, cold, allergy, sinus and flu, foot care and sun protection categories
Crop Science [1]	Development, production and marketing of a broad portfolio of products in seeds and plant traits, crop protection and nonagricultural pest control
Animal Health	Development, production and marketing of prescription and nonprescription veterinary products
Covestro	Development, production and marketing of raw materials for polyurethanes; polycarbonate granules and sheets; raw materials for coatings, adhesives and sealants; and by-products of polyether production and of chlorine production and use

[1] Following the signing of a sales agreement with SBM Développement SAS, Lyon, France, the Consumer business of the Environmental Science unit was no longer reported under continuing operations in 2016.

Business activities that cannot be allocated to any other segment are reported under "All other segments." These primarily include the services provided by the service areas: Business Services, Technology Services and Currenta.

The items in "Corporate Functions and Consolidation" mainly comprise the Bayer holding companies and the Bayer Lifescience Center, which focuses on the development of crucial, cross-species innovations. They also include the increase or decrease in expenses for Group-wide long-term stock-based compensation arising from fluctuations in the performance of Bayer stock, and the consolidation of intersegment sales (2016: €2.3 billion; 2015: €2.4 billion).

In Table B 1/2 “Key Data by Region” as of December 31, 2016, the Europe region is combined with the Middle East and Africa. Latin America is a separate region. The regional breakdown is in line with the internal regional responsibilities of the individual members of the Bayer AG Board of Management. The prior-year figures are restated accordingly. The reconciliation in the table “Key Data by Region” eliminates interregional items and transactions and reflects income, expenses, assets and liabilities not allocable to geographical areas.

The segment data are calculated as follows:

- Tables B 1/1 “Key Data by Segment” and B 1/2 “Key Data by Region” and the present chapter contain supplementary performance indicators that are not subject to requirements of the financial reporting standards governing the preparation of the Combined Management Report and the consolidated financial statements. The most important of these indicators are EBIT, EBITDA, EBIT before special items, EBITDA before special items, and the return on capital employed. These supplementary indicators are defined, and their calculation explained, in Chapter 2.4 “Alternative Performance Measures Used by the Bayer Group” of the Combined Management Report in the Bayer Annual Report 2016.
- The intersegment sales reflect intra-Group transactions effected at transfer prices fixed on an arm’s-length basis.
- The net cash provided by operating activities is the cash flow from operating activities as defined in IAS 7 (Statement of Cash Flows).
- The segment assets comprise all assets serving the respective segment, stated as of December 31, including material participating interests of direct relevance to business operations.
- Starting in 2016, the cash flow return on investment (CFROI) was replaced by the return on capital employed (ROCE) as a value-based indicator. Both CFROI and ROCE constitute alternative performance measures.
- The equity items reflect the earnings and carrying amounts of investments accounted for using the equity method.
- Since the financial management of Group companies is carried out centrally by Bayer AG, financial liabilities are not directly allocated among the segments. Consequently, the liabilities shown for the individual segments do not include financial liabilities. These are included in the reconciliation.
- The number of employees on either permanent or temporary contracts is stated in full-time equivalents (FTE), with part-time employees included on a pro-rated basis in line with their contractual working hours. The figures do not include apprentices.

Reconciliations

The reconciliations of EBITDA before special items, EBIT before special items and EBIT to Group income before income taxes and of the assets and liabilities of the segments to the assets and liabilities, respectively, of the Group are given in the following tables.

B 5/2

Reconciliation of Segments' EBITDA Before Special Items to Group Income Before Income Taxes

€ million	2015	2016
EBITDA before special items of segments	10,722	11,640
EBITDA before special items of Corporate Functions and Consolidation	(466)	(338)
EBITDA before special items[1]	**10,256**	**11,302**
Depreciation, amortization and impairment losses / loss reversals before special items of segments	(3,190)	(3,166)
Depreciation, amortization and impairment losses / loss reversals before special items of Corporate Functions and Consolidation	(6)	(6)
Depreciation, amortization and impairment losses / loss reversals before special items	**(3,196)**	**(3,172)**
EBIT before special items of segments	7,532	8,474
EBIT before special items of Corporate Functions and Consolidation	(472)	(344)
EBIT before special items[1]	**7,060**	**8,130**
Special items of segments	(792)	(1,068)
Special items of Corporate Functions and Consolidation	(27)	(20)
Special items[1]	**(819)**	**(1,088)**
EBIT of segments	6,740	7,406
EBIT of Corporate Functions and Consolidation	(499)	(364)
EBIT[1]	**6,241**	**7,042**
Financial result	(1,005)	(1,155)
Income before income taxes	**5,236**	**5,887**

2015 figures restated
[1] For definition see Combined Management Report, Chapter 2.4 "Alternative Performance Measures Used by the Bayer Group."

B 5/3

Reconciliation of Segments' Assets to Group Assets

€ million	2015	2016
Assets of the operating segments	**65,654**	**66,252**
Corporate Functions and Consolidation assets	181	507
Nonallocated assets	7,899	15,479
Assets of discontinued operations	183	–
Group assets	**73,917**	**82,238**

B 5/4

Reconciliation of Segments' Liabilities to Group Liabilities

€ million	2015	2016
Liabilities of the operating segments	**24,557**	**26,617**
Corporate Functions and Consolidation liabilities	2,645	1,996
Nonallocated liabilities	21,158	21,728
Liabilities directly related to discontinued operations	112	–
Group liabilities	**48,472**	**50,341**

The reconciliation of segment sales to Group sales is apparent from the table of key data by segment in Note [1].

Information on geographical areas

The following table provides a regional breakdown of external sales by market and of intangible assets, property, plant and equipment:

B 5/5

Information on Geographical Areas

	Net sales (external) – by market		Intangible assets and property, plant and equipment	
€ million	2015	2016	2015	2016
Germany	4,925	4,809	12,385	12,468
United States	11,168	11,310	14,420	14,297
China	4,212	4,603	3,260	2,938
Switzerland	691	662	5,298	5,047
Other	25,089	25,385	8,286	8,243
Total	**46,085**	**46,769**	**43,649**	**42,993**

2015 figures restated

Information on major customers

Revenues from transactions with a single customer in no case exceeded 10% of Bayer Group sales in 2016 or 2015.

GRI G4-17

6. Scope of consolidation; subsidiaries and affiliates

6.1 Changes in the scope of consolidation

Changes in the scope of consolidation in 2016 were as follows:

B 6.1/1

Change in Number of Consolidated Companies

Bayer AG and consolidated companies	Germany	Other countries	Total
December 31, 2015	68	239	307
Changes in scope of consolidation	–	1	1
Additions	–	2	2
Retirements	(4)	(5)	(9)
December 31, 2016	64	237	301

The decrease in the total number of consolidated companies in 2016 was primarily due to mergers among Group companies.

Bayer Pearl Polyurethane Systems LLC, United Arab Emirates, is fully consolidated because the Bayer Group holds a majority of the voting rights.

Pure Salt Baytown LLC, United States, is fully consolidated as a structured entity. The Bayer Group guarantees the liabilities of Pure Salt Baytown LLC to banks. These liabilities, which are reflected in full in the consolidated statement of financial position, amounted to €12 million as of December 31, 2016 (2015: €17 million).

The above table includes one joint operation, LyondellBasell Covestro Manufacturing Maasvlakte V.O.F., Netherlands, as of December 31, 2016 (2015: one). Pursuant to IFRS 11, Bayer's share of this company's assets, liabilities, revenues and expenses are included in the consolidated financial statements in accordance with Bayer's rights and obligations. The main purpose of LyondellBasell Covestro Manufacturing Maasvlakte V.O.F., Netherlands, is the joint production of propylene oxide (PO) for Covestro and its partner Lyondell.

GRI G4-17

In conjunction with the acquisition of the consumer care business of Merck & Co., Inc., United States, Bayer entered into a strategic collaboration with that company. This collaboration is included in the consolidated financial statements as a joint operation. Bayer and Merck & Co., Inc., have mutually agreed to collaborate on the development, production, life-cycle management and marketing of active ingredients and products in the field of soluble guanylate cyclase (sGC) modulation.

Five (2015: four) associates and six (2015: three) joint ventures were accounted for in the consolidated financial statements using the equity method. Details of these companies are given in Note [19].

Flagship Ventures V Agricultural Fund, L.P., United States, was included in the consolidated financial statements for the first time in 2015 and classified as an associate. Bayer has no control over this associate despite owning 99.9% of the capital, but is able to significantly influence its financial and operating policy decisions.

Bayer Trendlines AG Innovation Fund, Limited Partnership, Israel, was included in the consolidated financial statements for the first time in 2016 and classified as an associate. Bayer is a limited partner and has no control over this entity due to contractual restrictions, despite owning 100% of the capital.

Nanjing Baijingyu Pharmaceutical Co., Ltd., China, was classified as an associate in view of Bayer's representation on its executive committee and supervisory board. This enables Bayer to significantly influence its financial and operating policy decisions despite owning only 15% of its voting rights and capital.

A total of 72 (2015: 71) subsidiaries, including one (2015: one) structured entity and 12 (2015: 12) associates or joint ventures that in aggregate are immaterial to the Bayer Group's financial position and results of operations are neither consolidated nor accounted for using the equity method, but are recognized at cost. The immaterial subsidiaries accounted for less than 0.2% of Group sales, less than 0.2% of equity and less than 0.2% of total assets.

Details of subsidiary and affiliated companies pursuant to Section 313 of the German Commercial Code can be accessed at **www.bayer.com/owner16**.

The following domestic subsidiaries availed themselves in 2016 of certain exemptions granted under Section 264, Paragraph 3, and Section 264b of the German Commercial Code regarding the publication of legal-entity financial statements:

B 6.1/2

German Exempt Subsidiaries

Company name	Place of business	Bayer's interest (%)
Adverio Pharma GmbH	Schönefeld	100.0
AgrEvo Verwaltungsgesellschaft mbH	Frankfurt am Main	100.0
Alcafleu Management GmbH & Co. KG	Schönefeld	99.9
Bayer 04 Immobilien GmbH	Leverkusen	100.0
Bayer 04 Leverkusen Fußball GmbH	Leverkusen	100.0
Bayer Altersversorgung GmbH	Leverkusen	100.0
Bayer Animal Health GmbH	Leverkusen	100.0
Bayer Beteiligungsverwaltung Goslar GmbH	Leverkusen	100.0
Bayer Business Services GmbH	Leverkusen	100.0
Bayer Chemicals Aktiengesellschaft	Leverkusen	100.0
Bayer Consumer Care Deutschland GmbH	Berlin	100.0
Bayer CropScience Aktiengesellschaft	Monheim am Rhein	100.0
Bayer CropScience Biologics GmbH	Wismar	100.0

B 6.1/2 (continued)

German Exempt Subsidiaries

Company name	Place of business	Bayer's interest (%)
Bayer CropScience Deutschland GmbH	Langenfeld	100.0
Bayer Direct Services GmbH	Leverkusen	100.0
Bayer Gastronomie GmbH	Leverkusen	100.0
Bayer Gesellschaft für Beteiligungen mbH	Leverkusen	100.0
Bayer Innovation GmbH	Leverkusen	100.0
Bayer Intellectual Property GmbH	Monheim am Rhein	100.0
Bayer Real Estate GmbH	Leverkusen	100.0
Bayer Schering Pharma AG	Berlin	100.0
Bayer Vital GmbH	Leverkusen	100.0
Bayer Weimar GmbH und Co. KG	Weimar	100.0
Bayer-Handelsgesellschaft mit beschränkter Haftung	Leverkusen	100.0
BGI Deutschland GmbH	Leverkusen	100.0
Chemion Logistik GmbH	Leverkusen	100.0
Dritte Bayer Real Estate VV GmbH & Co. KG	Schönefeld	100.0
Erste Bayer Real Estate VV GmbH & Co. KG	Schönefeld	100.0
Erste K-W-A Beteiligungsgesellschaft mbH	Leverkusen	100.0
Fünfte Bayer Real Estate VV GmbH & Co. KG	Schönefeld	100.0
GP Grenzach Produktions GmbH	Grenzach-Wyhlen	100.0
Hild Samen GmbH	Marbach am Neckar	100.0
Intendis GmbH	Berlin	100.0
Intraserv GmbH & Co. KG	Schönefeld	100.0
Jenapharm GmbH & Co. KG	Jena	100.0
KOSINUS Grundstücks-Verwaltungsgesellschaft mbH & Co. Gamma OHG	Schönefeld	100.0
KVP Pharma+Veterinär Produkte GmbH	Kiel	100.0
MENADIER Heilmittel GmbH	Berlin	100.0
Schering-Kahlbaum Gesellschaft mit beschränkter Haftung	Berlin	100.0
Sechste Bayer Real Estate VV GmbH & Co. KG	Schönefeld	100.0
Siebte Bayer VV GmbH	Leverkusen	100.0
Steigerwald Arzneimittelwerk GmbH	Darmstadt	100.0
TECTRION GmbH	Leverkusen	100.0
TravelBoard GmbH	Leverkusen	100.0
Vierte Bayer Real Estate VV GmbH & Co. KG	Schönefeld	100.0
Zweite Bayer Real Estate VV GmbH & Co. KG	Schönefeld	100.0
Zweite K-W-A Beteiligungsgesellschaft mbH	Leverkusen	100.0

6.2 Business combinations and other acquisitions

Business combinations and other acquisitions in 2016

Adjustments to purchase prices and purchase price allocations effected in 2016 relating to previous years' transactions totaled minus €5 million. Adjustments to purchase price allocations and other adjustments increased the total carrying amount of goodwill by €9 million.

The changes in goodwill mainly resulted from the following purchase price allocation adjustment: On July 1, 2015, Crop Science completed the acquisition of all the shares of SeedWorks India Pvt. Ltd., based in Hyderabad, India. The company is specialized in the breeding, production and marketing of hybrid seeds of tomato, hot pepper, okra and gourds. It has research and seed processing locations in Bangalore and Hyderabad, respectively. The purchase of SeedWorks India is intended to further strengthen Crop Science's vegetable seed business in India. A purchase price of €80 million was agreed, pertaining mainly to patents, research and development projects and goodwill.

Improved information obtained about the acquired assets in the first quarter of 2016 in the course of the global purchase price allocation led to decreases of €23 million in intangible assets and €8 million in deferred tax liabilities and a corresponding increase of €13 million in goodwill in the opening statement of financial position. In addition, the purchase price declined by €2 million to €78 million following completion of the final purchase price negotiations.

On February 12, 2016, Bayer and CRISPR Therapeutics AG, Basel, Switzerland, established the joint venture Casebia Therapeutics LLP, Ascot, United Kingdom. Its purpose is the development and commercialization of new methods to treat blood disorders, blindness and heart diseases. Capital contribution liabilities of US$255 million to Casebia Therapeutics LLP were recognized in the statement of financial position as of December 31, 2016. These liabilities mature on December 31, 2020, at the latest. US$45 million was already paid in 2016, and a further US$60 million was paid on January 3, 2017.

On December 9, 2016, Bayer and Versant Ventures, San Francisco, United States, established the joint venture BlueRock Therapeutics LP, San Francisco, United States. The company will be active in the field of next-generation regenerative medicine. Its goal is to develop induced pluripotent stem cell (iPSC) therapies to cure a range of diseases. As of December 31, 2016, Bayer had capital contribution obligations of US$150 million pertaining to the establishment of the joint venture. This amount should be paid by December 31, 2020, at the latest.

Acquisitions after the end of the reporting period

On January 3, 2017, Bayer acquired the Cydectin™ portfolio in the United States from Boehringer Ingelheim Vetmedica Inc., St. Joseph, United States. The acquisition comprises the CYDECTIN Pour-On, CYDECTIN Injectable and CYDECTIN Oral Drench endectocides for cattle and sheep. The acquisition is intended to strengthen the antiparasitics portfolio in the United States through the addition of endectocides. An initial purchase price of approximately €150 million was agreed, which is subject to the usual price adjustment mechanisms. The purchase price was provisionally allocated mainly to trademarks and goodwill. The purchase price allocation currently remains incomplete pending compilation and review of the relevant financial information.

Planned acquisitions

On September 14, 2016, Bayer signed a definitive merger agreement with Monsanto Company, St. Louis, Missouri, United States, which provides for Bayer's acquisition of all outstanding shares in Monsanto Company against a cash payment of US$128 per share. At the time this corresponded to an expected transaction volume of approximately US$66 billion, comprising an equity value (purchase price) of approximately US$56 billion and net debt to be assumed in an amount of US$10 billion, which includes pension obligations as of May 31, 2016, as well as liabilities for payments under stock-based compensation programs. Bayer thus has a contingent financial commitment in the amount of approximately US$56 billion to acquire Monsanto's entire outstanding capital stock. The agreed transaction has been partially hedged against the euro / U.S. dollar currency risk using derivatives contracts.

The transaction brings together two different, but highly complementary businesses. Monsanto is a leading global provider of agricultural products, including seeds and seed technologies, herbicides, and digital platforms to give farmers agronomic recommendations. The combined business will offer a comprehensive set of solutions to meet growers' current and future needs, including enhanced solutions in high-quality seeds and traits, digital farming, and crop protection. The combination also brings together both companies' leading innovation capabilities and R&D technology platforms.

Syndicated bank financing of US$56.9 billion was committed by Bank of America Merrill Lynch, Credit Suisse, Goldman Sachs, HSBC and JP Morgan upon the signing of the merger agreement. The bank financing was subsequently syndicated to more than 20 other partner banks of Bayer.

Bayer intends to finance the transaction with a combination of debt and equity. The planned equity component amounts to approximately US$19 billion in total. As the first part of the equity component, Bayer placed €4 billion in mandatory convertible notes on November 22, 2016, excluding subscription rights for existing stockholders of the company. The remainder of the equity component is expected to be raised by way of a rights issue. The net proceeds from the issuance of the mandatory convertible notes were used for the early replacement of a portion of the undrawn syndicated bank credit facility. Details of the mandatory convertible notes issue are provided in Note [24].

The stockholders of Monsanto Company approved the merger with the requisite majority on December 13, 2016. The transaction remains subject to customary closing conditions, including relevant antitrust and other regulatory approvals. Closing of the transaction is currently expected by the end of 2017.

The merger agreement provides for payment by Bayer of a US$2 billion reverse break fee including, in particular, in the event that the necessary antitrust approvals are not granted by June 14, 2018, and Bayer or Monsanto therefore terminates the merger agreement.

Acquisitions in 2015

In 2015, the following acquisitions were accounted for in accordance with IFRS 3:

On March 2, 2015, Covestro successfully completed the acquisition of all the shares of Thermoplast Composite GmbH, Germany, a technology leader specializing in the production of thermoplastic fiber composites. The aim of the acquisition is to expand the range of polycarbonate materials for major industries to include composites made from continuous fiber-reinforced thermoplastics. A purchase price of €18 million was agreed, including a variable component of €4 million. The purchase price mainly pertained to patents and goodwill.

In connection with the acquisition of the consumer care business of Merck & Co., Inc., Whitehouse Station, New Jersey, United States, in 2014, the production facilities at the Pointe-Claire site in Canada were acquired on July 1, 2015. Of the agreed €67 million purchase price, €61 million pertains to property, plant and equipment.

The global purchase price allocation for the consumer care business acquired from Merck & Co., Inc. in 2014 was completed in September 2015. This resulted in an €821 million increase in deferred tax assets due to temporary differences between the carrying amounts of intangible assets in the IFRS financial statements and those reported for tax purposes, along with a corresponding decline in goodwill in the statement of financial position. These adjustments were effected retroactively as of the date of acquisition pursuant to IFRS 3.45 ff. In addition, the purchase price was reduced by €8 million in 2015 on the basis of agreed purchase price adjustment mechanisms.

Settlements were reached in August 2015 in the court proceedings initiated by former minority stockholders of Bayer Pharma AG (formerly Bayer Schering Pharma AG). The additional payment made as a result represents a subsequent purchase price adjustment according to the March 31, 2004, version of IFRS 3 in effect at the acquisition date. The goodwill was increased by €261 million in 2013 based on the status of the proceedings at that time. Following the settlements in August 2015, it was possible to finally determine the goodwill arising from the acquisition. It was therefore necessary to reduce the goodwill amount by €115 million in 2015 as a result of the proceedings. Both the increase and the reduction were recognized outside profit or loss against the liability resulting from the minority stockholders' compensation claim.

The global purchase price allocation for Dihon Pharmaceutical Group Co. Ltd., Kunming, Yunnan, China, acquired in 2014, was completed in October 2015. The main outcomes were increases in the amounts recognized for trademarks (€18 million), other provisions (€19 million) and other liabilities (€27 million). The purchase price was reduced by €43 million in 2015 due to adjustment mechanisms.

6.3 Divestments, material sale transactions and discontinued operations

Divestments and discontinued operations in 2016

The effects of divestments and discontinued operations in 2016 and those from previous years on the consolidated financial statements were as follows:

The sale of the Diabetes Care business to Panasonic Healthcare Holdings Co., Ltd., Tokyo, Japan, for around €1 billion was completed on January 4, 2016. The sale includes the leading Contour™ portfolio of blood glucose monitoring meters and strips, as well as other products such as Breeze™2, Elite™ and Microlet™ lancing devices.

The sale of the Diabetes Care business also comprises further significant obligations by Bayer that will be fulfilled over a period of up to two years subsequent to the date of divestment. The sale proceeds will be recognized accordingly over this period and reported as income from discontinued operations. Deferred income has been recognized in the statement of financial position and will be dissolved as the obligations are fulfilled. Of this, an amount of €497 million was recognized in sales in 2016. The €71 million outflow of net assets is reflected accordingly in the cost of goods sold.

The obligations to be fulfilled over a period of up to two years after the divestment of the Diabetes Care business are also reported as discontinued operations in the income statement and the statement of cash flows. These resulted in sales of €76 million in 2016. This information is provided from the standpoint of the Bayer Group and does not present these activities as a separate entity. It is therefore not possible to compare these sales against the proceeds from operational product sales achieved in 2015.

The items in the statement of financial position pertaining to the Diabetes Care business are shown in the segment reporting under "All Other Segments." In addition to the aforementioned deferred income (€469 million), the statement of financial position includes other receivables (net: €66 million), deferred tax assets (net: €73 million), income tax liabilities (€65 million) and miscellaneous provisions (€9 million).

The sale of the Consumer business (CS Consumer) of Bayer's Environmental Science unit to SBM Développement SAS, Lyon, France, was completed on October 4, 2016. The Consumer business encompasses the Bayer Garden and Bayer Advanced businesses in Europe and North America. These activities are reported as discontinued operations in the income statement and the statement of cash flows.

The effects of these and other, smaller divestments made in 2016 were as follows:

B 6.3/1

Divested Assets and Liabilities

€ million	2015	2016
Goodwill	–	36
Patents and technologies	–	4
Other intangible assets	–	16
Inventories	–	184
Provisions for pensions and other post-employment benefits	–	(28)
Other provisions	–	(97)
Divested net assets	**–**	**115**

The income statements for the discontinued operations are given below:

B 6.3/2

Income Statements for Discontinued Operations

€ million	Diabetes Care 2015	Diabetes Care 2016	CS Consumer 2015	CS Consumer 2016	Total 2015	Total 2016
Net sales	**947**	**573**	**239**	**195**	**1,186**	**768**
Cost of goods sold	(380)	(146)	(118)	(121)	(498)	(267)
Gross profit	**567**	**427**	**121**	**74**	**688**	**501**
Selling expenses	(386)	(9)	(95)	(83)	(481)	(92)
Research and development expenses	(48)	(1)	(7)	(11)	(55)	(12)
General administration expenses	(36)	(12)	(6)	(9)	(42)	(21)
Other operating income / expenses	(20)	(4)	(4)	(55)	(24)	(59)
EBIT[1]	**77**	**401**	**9**	**(84)**	**86**	**317**
Financial result	**–**	**–**	**–**	**–**	**–**	**–**
Income before income taxes	**77**	**401**	**9**	**(84)**	**86**	**317**
Income taxes	3	(76)	(4)	27	(1)	(49)
Income after income taxes	**80**	**325**	**5**	**(57)**	**85**	**268**

[1] For definition see Combined Management Report, Chapter 2.4 "Alternative Performance Measures Used by the Bayer Group."

The discontinued operations affected the Bayer Group statements of cash flows as follows:

B 6.3/3

Statements of Cash Flows for Discontinued Operations

€ million	Diabetes Care 2015	Diabetes Care 2016	CS Consumer 2015	CS Consumer 2016	Total 2015	Total 2016
Net cash provided by (used in) operating activities	43	788	11	42	54	830
Net cash provided by (used in) investing activities	(4)	–	(2)	–	(6)	–
Net cash provided by (used in) financing activities	(39)	(788)	(9)	(42)	(48)	(830)
Change in cash and cash equivalents	**–**	**–**	**–**	**–**	**–**	**–**

As no cash is assigned to discontinued operations, the balance of the cash provided is deducted again in financing activities.

Divestments and material sale transactions in 2015

On March 2, 2015, Animal Health completed the sale of two equine products, Legend / Hyonate and Marquis, to Merial, Inc., Duluth, Georgia, United States. A purchase price of €120 million was agreed. The one-time payment was accounted for as deferred income. The purchase prices for Legend / Hyonate and Marquis are being reflected in sales and earnings over a four-year and a three-year period, respectively, as Bayer has entered into further significant obligations.

Notes to the Income Statements

7. Net sales

Net sales are derived primarily from product deliveries. Total reported net sales for 2016 amounted to €46,769 million, rising by €684 million, or 1.5%, compared to 2015. The increase resulted from the following factors:

B 7/1

Factors in Sales Development

	2016	
	€ million	**%**
Volume	1,936	+ 4.2
Price	(348)	– 0.7
Currency	(913)	– 2.0
Portfolio	9	–
Total	**684**	**+ 1.5**

Breakdowns of net sales by segment and region are given in the table in Note [1].

8. Selling expenses

Selling expenses comprise all expenses incurred in the reporting period for the sale, storage and transportation of saleable products, advertising, the provision of advice to customers, and market research. Selling expenses were comprised as follows:

B 8/1

Selling Expenses

€ million	2015	2016
Internal and external sales force	4,761	4,828
Advertising and customer advice	2,986	2,970
Physical distribution and warehousing of finished products	1,255	1,421
Commission and licensing expenses	1,396	1,514
Other selling expenses	1,874	1,741
Total	**12,272**	**12,474**

2015 figures restated

9. Research and development expenses

Research and development expenses and their accounting treatment are defined in Note [4]. Breakdowns of research and development expenses by segment and region are given in Note [1].

10. Other operating income

Other operating income was comprised as follows:

B 10/1

Other Operating Income

€ million	2015	2016
Gains on retirements of noncurrent assets	137	66
Reversals of impairment losses on receivables	32	20
Reversals of unutilized provisions	25	131
Gains from derivatives	272	259
Miscellaneous operating income	643	422
Total	**1,109**	**898**
of which special items	336	115

2015 figures restated

Income from reversals of unutilized provisions include an amount of €104 million from the reversal of provisions for the Yasmin™/YAZ™ litigation.

Miscellaneous operating income included a €32 million gain incurred by Bayer 04 Leverkusen Fußball GmbH from the sale of transfer rights and a payment of €32 million received from insurers (Covestro segment). A reimbursement payment relating to the termination of a contract accounted for income of €27 million (Covestro segment). In the Crop Science segment, milestone payments led to income of €21 million. In the Pharmaceuticals segment, a €14 million compensation payment was received in connection with the closure of the production site in Putuo, China. Income of €19 million resulted from the reimbursement of indirect taxes paid in previous years (Covestro segment). A €10 million gain was incurred on the sale of the BAYQUIK™ technology to Chemetics, Inc., Canada (Other segments).

In 2015, gains from retirements of noncurrent assets included an amount of €53 million from the sale of trademark rights for the Biovital™, Benerva™, Bactine™ and ProPlus™ brands (Consumer Health segment).

Miscellaneous operating income in 2015 included €314 million in claims against Dow AgroSciences LLC, United States, for damages and royalty payments resulting from the infringement of Bayer's rights to the Liberty Link™ weed control system (Crop Science segment).

11. Other operating expenses

Other operating expenses were comprised as follows:

B 11/1

Other Operating Expenses

€ million	2015	2016
Losses on retirements of noncurrent assets	(32)	(22)
Impairment losses on receivables	(183)	(171)
Expenses related to significant legal risks	(151)	(262)
Losses from derivatives	(626)	(181)
Miscellaneous operating expenses	(283)	(298)
Total	**(1,275)**	**(934)**
of which special items	(247)	(205)

2015 figures restated

Of the impairment losses on receivables, €115 million pertained to past-due receivables in Brazil. In 2015, impairment losses of €91 million were recognized on receivables from the Venezuelan exchange control authority because the authority did not allocate U.S. dollars at the subsidized exchange rate with respect to the full amounts of older receivables.

The €262 million in expenses for significant legal risks mainly included accounting measures taken in connection with legal proceedings relating to the products Xarelto™, Essure™ and Cipro™/Avelox™. In 2015, the €151 million in expenses for significant legal risks mainly included accounting measures taken in connection with legal proceedings relating to the products Luna™, LL Rice™ and Xarelto™.

Miscellaneous operating expenses included €48 million (2015: €51 million) in donations to charitable causes (all segments). Expenses of €34 million pertained to provisions established for environmental protection measures in the United States (Crop Science segment).

As in the previous year, the remaining amount of miscellaneous operating expenses comprised a large number of individually immaterial items at the subsidiaries.

12. Personnel expenses and employee numbers

Personnel expenses for continuing operations rose in 2016 by €181 million to €11,357 million (2015: €11,176 million). The change was mainly due to compensation adjustments and increases in employee bonuses, which together offset opposing currency effects.

B 12/1

Personnel Expenses

€ million	2015	2016
Salaries	8,991	9,171
Social expenses and expenses for pensions and other benefits	2,185	2,186
of which for defined contribution pension plans	557	581
of which for defined benefit and other pension plans	503	483
Total	**11,176**	**11,357**

2015 figures restated

The personnel expenses shown here do not contain the interest portion of the allocation to personnel-related provisions – mainly for pensions and other post-employment benefits – which is included in the financial result under other financial expenses (Note [13.3]).

The average numbers of employees, classified by corporate function, were as shown in the table below:

B 12/2

Employees

	2015	2016
Production	51,280	50,326
Marketing and distribution	42,212	40,756
Research and development	14,462	15,016
General administration	9,376	9,590
Total	**117,330**	**115,688**
Apprentices	2,332	2,393

2015 figures restated

The number of employees on either permanent or temporary contracts is stated in full-time equivalents (FTE), with part-time employees included on a pro-rated basis in line with their contractual working hours. The figures do not include apprentices.

13. Financial result

The financial result for 2016 was minus €1,155 million (2015: minus €1,005 million), comprising an equity-method loss of €26 million (2015: €9 million), financial expenses of €1,280 million (2015: €1,367 million) and financial income of €151 million (2015: €371 million). Details of the components of the financial result are provided below.

13.1 Income (loss) from investments in affiliated companies

The net income (loss) from investments in affiliated companies was comprised as follows:

B 13.1/1

Income (Loss) from Investments in Affiliated Companies

€ million	2015	2016
Net loss from investments accounted for using the equity method (equity-method loss)	(9)	(26)
Expenses		
Impairment losses on investments in affiliated companies	(1)	(2)
Income		
Impairment loss reversals on investments in affiliated companies	–	–
Income / losses from investments in affiliated companies and from profit and loss transfer agreements (net)	3	–
Gains from the sale of investments in affiliated companies	31	6
Total	**24**	**(22)**

The main components of the loss (2015: income) from investments in affiliated companies were the €24 million (2015: €23 million) equity-method loss from the associate PO JV, LP, United States, and the minus €2 million (2015: €14 million) aggregate of the equity-method income and losses of the remaining joint ventures and associates accounted for using the equity method.

Further details of the companies accounted for using the equity method are given in Note [19].

13.2 Net interest expense

The net interest expense was comprised as follows:

B 13.2/1

Net Interest Expense

€ million	2015	2016
Expenses		
Interest and similar expenses	(752)	(684)
Interest expenses for derivatives (held for trading)	(25)	(3)
Income		
Interest and similar income	297	137
Interest income from derivatives (held for trading)	25	2
Total	**(455)**	**(548)**

Interest and similar expenses included interest expense of €42 million (2015: €49 million) relating to nonfinancial liabilities. Interest and similar income included interest income of €10 million (2015: €133 million) from nonfinancial assets.

13.3 Other financial income and expenses

Other financial income and expenses were comprised as follows:

B 13.3/1

Other Financial Income and Expenses

€ million	2015	2016
Expenses		
Interest portion of interest-bearing provisions	(287)	(294)
Exchange loss	(254)	(193)
Miscellaneous financial expenses	(48)	(104)
Income		
Miscellaneous financial income	15	6
Total	**(574)**	**(585)**

The interest portion of noncurrent provisions comprised €276 million (2015: €276 million) in interest expense for pension and other post-employment benefit provisions plus €18 million (2015: €11 million) in effects of interest expense and interest-rate fluctuations for other provisions and corresponding overfunding. The interest expense for pension and other post-employment benefit provisions included €736 million (2015: €712 million) for the unwinding of discount on the present value of the defined benefit obligation and €460 million (2015: €436 million) in interest income from plan assets.

The miscellaneous financial expenses included €51 million in commitment fees and other fees related to the syndicated bank financing for the planned acquisition of Monsanto.

14. Taxes

The breakdown of tax expense by origin was as follows:

B 14/1

Tax Expense by Origin

€ million	2015	2015 Of which income taxes	2016	2016 Of which income taxes
Taxes paid or accrued				
Current income taxes				
Germany	(1,140)		(934)	
Other countries	(1,114)		(991)	
Other taxes				
Germany	(44)		(86)	
Other countries	(221)		(204)	
	(2,519)	**(2,254)**	**(2,215)**	**(1,925)**
Deferred taxes				
from temporary differences	1,056		577	
from tax loss carryforwards and tax credits	(25)		19	
	1,031	**1,031**	**596**	**596**
Total	**(1,488)**	**(1,223)**	**(1,619)**	**(1,329)**

2015 figures restated

The other taxes mainly include land, vehicle and other indirect taxes. They are reflected in the respective functional cost items.

The deferred tax assets and liabilities were allocable to the following items in the statements of financial position:

B 14/2

Deferred Tax Assets and Liabilities

€ million	Dec. 31, 2015 Deferred tax assets	Dec. 31, 2015 Deferred tax liabilities	Dec. 31, 2016 Deferred tax assets	Dec. 31, 2016 Deferred tax liabilities
Intangible assets	1,411	1,910	1,478	1,766
Property, plant and equipment	253	678	264	692
Financial assets	18	183	240	224
Inventories	943	63	1,267	32
Receivables	98	580	71	547
Other assets	28	14	39	13
Provisions for pensions and other post-employment benefits	3,601	1,213	3,637	983
Other provisions	1,025	90	1,083	112
Liabilities	714	91	793	133
Tax loss and interest carryforwards	393	–	473	–
Tax credits	191	–	177	–
	8,675	**4,822**	**9,522**	**4,502**
of which noncurrent	7,398	4,750	7,868	3,662
Set-off	(3,996)	(3,996)	(3,172)	(3,172)
Total	**4,679**	**826**	**6,350**	**1,330**

Deferred taxes on remeasurements, recognized outside profit or loss, of the net liability for defined benefit pension and other post-employment benefits increased equity by €228 million (2015: diminished equity by €430 million). Deferred taxes on changes, recognized outside profit or loss, in fair values of available-for-sale financial assets and derivatives designated as cash flow hedges diminished equity by €24 million (2015: diminished equity by €27 million). These effects on equity are reported in the statement of comprehensive income.

The use of tax loss carryforwards reduced current income taxes in 2016 by €152 million (2015: €136 million). The use of tax credits reduced current income taxes by €18 million (2015: €21 million).

Of the total tax loss and interest carryforwards of €5,447 million, including interest carryforwards of €118 million (2015: €5,497 million, including interest carryforwards of €72 million), an amount of €2,269 million, including interest carryforwards of €0 million (2015: €1,812 million, including interest carryforwards of €0 million) is expected to be usable within a reasonable period. The decrease in tax loss and interest carryforwards was mainly due to the favorable overall business development. Deferred tax assets of €473 million (2015: €393 million) were recognized for the amount of tax loss and interest carryforwards expected to be usable.

The use of €3,178 million of tax loss and interest carryforwards, including interest carryforwards of €118 million (2015: €3,685 million, including interest carryforwards of €72 million) was subject to legal or economic restrictions. Consequently, no deferred tax assets were recognized for this amount. If these tax loss and interest carryforwards had been fully usable, deferred tax assets of €294 million (2015: €322 million) would have been recognized.

Tax credits of €177 million were recognized in 2016 (2015: €191 million) as deferred tax assets. The use of €38 million (2015: €41 million) of tax credits was subject to legal or economic restrictions. Consequently, no deferred tax assets were recognized for this amount.

Unusable tax credits, tax loss carryforwards and interest carryforwards will expire as follows:

B 14/3

Expiration of Unusable Tax Credits, Tax Loss Carryforwards and Interest Carryforwards

	Tax credits		Tax loss and interest carryforwards	
€ million	Dec. 31, 2015	Dec. 31, 2016	Dec. 31, 2015	Dec. 31, 2016
Within one year	4	4	17	4
Within two years	–	–	70	1
Within three years	4	4	25	31
Within four years	–	–	32	132
Within five years	26	29	234	31
Thereafter	6	–	3,307	2,979
Total	**40**	**37**	**3,685**	**3,178**

In 2016, subsidiaries that reported losses for 2016 or 2015 recognized net deferred tax assets totaling €2,575 million (2015: €2,455 million) from temporary differences and tax loss carryforwards. These assets were considered to be unimpaired because the companies concerned were expected to generate taxable income in the future.

Deferred tax liabilities of €41 million were recognized in 2016 (2015: €35 million) for planned dividend payments by subsidiaries. Deferred tax liabilities were not recognized for temporary differences on €20,069 million (2015: €12,087 million) of retained earnings of subsidiaries because these earnings are to be reinvested for an indefinite period.

The reported tax expense of €1,329 million for 2016 (2015: €1,223 million) differed by €128 million (2015: €119 million) from the expected tax expense of €1,457 million (2015: €1,342 million) that would have resulted from applying an expected weighted average tax rate to the pre-tax income of the Group. This average rate, derived from the expected tax rates of the individual Group companies, was 24.7% in 2016 (2015: 25.6%). The effective tax rate was 22.6% (2015: 23.4%).

The reconciliation of expected to reported income tax expense and of the expected to the effective tax rate for the Group was as follows:

B 14/4

Reconciliation of Expected to Actual Income Tax Expense

	2015		2016	
	€ million	%	€ million	%
Expected income tax expense and expected tax rate	**1,342**	**25.6**	**1,457**	**24.7**
Reduction in taxes due to tax-free income				
Income related to the operating business	(155)	(3.0)	(161)	(2.7)
Income from affiliated companies and divestment proceeds	(10)	(0.2)	(2)	–
First-time recognition of previously unrecognized deferred tax assets on tax loss and interest carryforwards	(30)	(0.6)	(27)	(0.5)
Use of tax loss and interest carryforwards on which deferred tax assets were not previously recognized	(6)	(0.1)	(19)	(0.3)
Increase in taxes due to non-tax-deductible expenses				
Expenses related to the operating business	148	2.8	153	2.6
Impairment losses on investments in affiliated companies	7	0.1	2	–
New tax loss and interest carryforwards unlikely to be usable	81	1.5	45	0.8
Existing tax loss and interest carryforwards on which deferred tax assets were previously recognized but which are unlikely to be usable	16	0.3	6	0.1
Tax income (-) and expenses (+) relating to other periods	(95)	(1.8)	(80)	(1.4)
Tax effects of changes in tax rates	(25)	(0.5)	(4)	(0.1)
Other tax effects	(50)	(0.7)	(41)	(0.6)
Actual income tax expense and effective tax rate	**1,223**	**23.4**	**1,329**	**22.6**

2015 figures restated

15. Income/losses attributable to noncontrolling interest

Income attributable to noncontrolling interest amounted to €468 million (2015: €115 million). Losses attributable to noncontrolling interest amounted to €173 million (2015: €127 million).

16. Earnings per share

Earnings per share from continuing operations are determined according to IAS 33 (Earnings per Share) by dividing net income (income after income taxes attributable to Bayer AG stockholders) minus income from discontinued operations after income taxes (attributable to Bayer AG stockholders) by the weighted average number of shares. Earnings per share for continuing and discontinued operations are calculated by dividing net income by the weighted average number of shares.

In November 2016, Bayer placed €4.0 billion in mandatory convertible notes without granting subscription rights to existing stockholders of the company. According to IAS 33.23, the weighted average number of shares increases as soon as the notes contract is signed, and this increase must be taken into account in calculating undiluted and diluted earnings per share. The new weighted average number of shares is based on the minimum conversion price of €90, which determines the maximum conversion ratio. Undiluted and diluted earnings per share are not adjusted for financing expenses incurred in connection with the mandatory convertible notes because the interest component was recognized outside profit or loss when the notes were placed. Further details of the mandatory convertible notes are provided in Note [24].

Because the undiluted and diluted earnings per share were determined for each interim reporting period, earnings per share for the full year or year to date may differ from the sum of the earnings per share for the respective interim reporting periods.

B 16/1

Earnings per Share

€ million	**2015**	**2016**
Income from continuing operations after income taxes	4,013	4,558
Income from discontinued operations after income taxes	85	268
Income after income taxes	4,098	4,826
of which attributable to noncontrolling interest	(12)	295
of which attributable to Bayer AG stockholders (net income)	4,110	4,531
	Shares	Shares
Weighted average number of shares	**826,947,808**	**832,502,808**
Earnings per share (€)		
From continuing operations		
Basic	4.87	5.12
Diluted	4.87	5.12
From discontinued operations		
Basic	0.10	0.32
Diluted	0.10	0.32
From continuing and discontinued operations		
Basic	4.97	5.44
Diluted	4.97	5.44

2015 figures restated

Notes to the Statements of Financial Position

17. Goodwill and other intangible assets

Changes in intangible assets in 2016 were as follows:

B 17/1

Changes in Intangible Assets

€ million	Acquired goodwill	Patents and technologies	Trademarks	Marketing and distribution rights	Production rights	R&D projects	Other rights and advance payments	Total
Cost of acquisition or generation, December 31, 2015	**16,096**	**13,069**	**10,952**	**1,944**	**2,172**	**946**	**2,600**	**47,779**
Changes in scope of consolidation	–	–	–	–	–	–	–	–
Acquisitions	9	1	–	–	–	(23)	–	(13)
Capital expenditures	–	55	3	47	5	96	157	363
Retirements	–	(6)	(47)	(14)	(25)	(108)	(80)	(280)
Transfers	–	5	–	50	3	(43)	(15)	–
Transfers (IFRS 5)	–	(5)	(8)	(15)	(16)	–	(11)	(55)
Inflation adjustment (IAS 29)	3	–	–	–	–	–	–	3
Exchange differences	204	43	145	32	(1)	19	15	457
December 31, 2016	**16,312**	**13,162**	**11,045**	**2,044**	**2,138**	**887**	**2,666**	**48,254**
Accumulated amortization and impairment losses, December 31, 2015	**–**	**8,277**	**3,083**	**1,134**	**2,021**	**225**	**1,765**	**16,505**
Changes in scope of consolidation	–	–	–	–	–	–	(1)	(1)
Retirements	–	(2)	(38)	(14)	(25)	(106)	(66)	(251)
Amortization and impairment losses in 2016	–	1,007	604	144	48	109	160	2,072
Amortization	–	708	393	137	28	–	129	1,395
Impairment losses	–	299	211	7	20	109	31	677
Impairment loss reversals	–	–	(1)	–	–	–	–	(1)
Transfers	–	–	–	–	–	–	–	–
Transfers (IFRS 5)	–	(5)	(8)	(15)	(16)	–	(11)	(55)
Exchange differences	–	35	33	19	(1)	7	13	106
December 31, 2016	**–**	**9,312**	**3,673**	**1,268**	**2,027**	**235**	**1,860**	**18,375**
Carrying amounts, December 31, 2016	**16,312**	**3,850**	**7,372**	**776**	**111**	**652**	**806**	**29,879**
Carrying amounts, December 31, 2015	**16,096**	**4,792**	**7,869**	**810**	**151**	**721**	**835**	**31,274**

The capitalized patents and technologies include an amount pertaining to the active ingredient alemtuzumab (product name: Lemtrada™) for the treatment of multiple sclerosis. Bayer gave back the worldwide distribution rights for alemtuzumab to Genzyme Corp., United States, in 2009 and in return received global co-promotion rights and an entitlement to royalties and revenue-based milestone payments. Genzyme Corp. received marketing approval for alemtuzumab in Europe in 2013 and in the United States in 2014. Bayer has decided not to exercise its co-promotion rights.

Impairment losses of €676 million were recognized on intangible assets, net of €1 million in impairment loss reversals. In the Pharmaceuticals reporting segment, the current assessment of the market environment and lower revenue expectations led to impairment losses of €391 million on intangible assets in connection with the product Essure™. In addition, impairment losses of €56 million were recognized on research and development projects, mainly in the oncology area. In the Consumer Health reporting segment, impairment losses of €132 million on a dermatology product trademark in Russia and €28 million on a nutritional supplement trademark in the United States were recognized due to a weaker market environment. In the Crop Science reporting segment, recent research findings necessitated impairment losses of €20 million on production rights in the Environmental Science unit, and a €20 million impairment loss was also recognized on a research and development project in Crop Protection due to a delayed market introduction.

The remaining impairment losses pertained to intangible assets in the Crop Science (€11 million), Pharmaceuticals (€9 million), Covestro (€9 million) and Consumer Health (€1 million) segments. A €1 million impairment loss in the Animal Health segment was reversed.

Details of acquisitions and divestments are provided in Notes [6.2] and [6.3]. The impairment testing procedure for goodwill and other intangible assets is explained in Note [4].

Changes in intangible assets in 2015 were as follows:

B 17/2

Changes in Intangible Assets (Previous Year)

€ million	Acquired goodwill	Patents and technologies	Trademarks	Marketing and distribution rights	Production rights	R&D projects	Other rights and advance payments	Total
Cost of acquisition or generation, December 31, 2014	**15,347**	**12,827**	**10,242**	**1,808**	**2,168**	**882**	**3,189**	**46,463**
Changes in scope of consolidation	–	4	–	–	–	–	1	5
Acquisitions	(5)	39	53	–	–	26	(20)	93
Capital expenditures	–	77	–	52	–	107	152	388
Retirements	–	(33)	(35)	(55)	–	(7)	(966)	(1,096)
Transfers	–	40	–	75	(2)	(113)	–	–
Transfers (IFRS 5)	(34)	(2)	(14)	(33)	–	–	(20)	(103)
Inflation adjustment (IAS 29)	7	–	–	–	–	–	–	7
Exchange differences	781	117	706	97	6	51	264	2,022
December 31, 2015	**16,096**	**13,069**	**10,952**	**1,944**	**2,172**	**946**	**2,600**	**47,779**

B 17/2 (continued)

Changes in Intangible Assets (Previous Year)

€ million	Acquired goodwill	Patents and technologies	Trademarks	Marketing and distribution rights	Production rights	R&D projects	Other rights and advance payments	Total
Accumulated amortization and impairment losses, December 31, 2014	**–**	**7,428**	**2,588**	**1,039**	**1,911**	**153**	**2,344**	**15,463**
Changes in scope of consolidation	–	4	–	–	–	–	–	4
Retirements	–	(17)	(31)	(55)	–	(7)	(949)	(1,059)
Amortization and impairment losses in 2015	–	801	447	148	106	66	183	1,751
Amortization	–	801	422	147	106	–	161	1,637
Impairment losses	–	–	25	1	–	66	22	114
Impairment loss reversals	–	–	–	–	–	–	–	–
Transfers	–	–	1	1	(2)	–	–	–
Transfers (IFRS 5)	–	(1)	–	(25)	–	–	(19)	(45)
Exchange differences	–	62	78	26	6	13	206	391
December 31, 2015	**–**	**8,277**	**3,083**	**1,134**	**2,021**	**225**	**1,765**	**16,505**
Carrying amounts, December 31, 2015	**16,096**	**4,792**	**7,869**	**810**	**151**	**721**	**835**	**31,274**
Carrying amounts, December 31, 2014	**15,347**	**5,399**	**7,654**	**769**	**257**	**729**	**845**	**31,000**

Changes in the carrying amounts of goodwill for the reporting segments in 2016 and 2015 were as follows:

B 17/3

Goodwill by Reporting Segment

€ million	Pharmaceuticals	Consumer Health	Crop Science	Animal Health	Covestro	Bayer Group
Carrying amounts, January 1, 2015	**7,215**	**5,698**	**2,137**	**54**	**243**	**15,347**
Change in scope of consolidation	–	–	–	–	–	–
Acquisitions	(133)	71	50	–	7	(5)
Retirements	–	–	–	–	–	–
Impairment losses in 2015	–	–	–	–	–	–
Transfers	–	–	–	–	–	–
Transfers (IFRS 5)	–	(34)	–	–	–	(34)
Inflation adjustment (IAS 29)	1	6	–	–	–	7
Exchange differences	234	446	90	–	11	781

B 17/3 (continued)

Goodwill by Reporting Segment

€ million	Pharma-ceuticals	Consumer Health	Crop Science	Animal Health	Covestro	Bayer Group
Carrying amounts, December 31, 2015	**7,317**	**6,187**	**2,277**	**54**	**261**	**16,096**
Change in scope of consolidation	–	–	–	–	–	–
Acquisitions	(3)	(1)	13	–	–	9
Retirements	–	–	–	–	–	–
Impairment losses in 2016	–	–	–	–	–	–
Transfers	–	–	–	–	–	–
Transfers (IFRS 5)	–	–	–	–	–	–
Inflation adjustment (IAS 29)	–	3	–	–	–	3
Exchange differences	84	84	31	2	3	204
Carrying amounts, December 31, 2016	**7,398**	**6,273**	**2,321**	**56**	**264**	**16,312**

2015 figures restated

Goodwill and other intangible assets with an indefinite useful life that are of material significance for the Bayer Group are allocated to the following cash-generating units or unit groups as of the end of the reporting period:

B 17/4

Intangible Assets with an Indefinite Useful Life

Reporting segment	Cash-generating unit / unit group	Goodwill (€ million)	Material intangible assets with indefinite useful life (€ million)
Pharmaceuticals	Pharmaceuticals	6,114	454
Consumer Health	Consumer Care	6,273	22
Crop Science	Crop Protection	1,291	63
Crop Science	Seeds	540	129

In the case of research and development projects, the point in time from which a capitalized asset can be expected to generate an economic benefit for the company cannot be determined. Such assets are therefore classified as having an indefinite useful life. Development projects were capitalized at a total amount of €652 million as of the end of 2016 (2015: €721 million).

Another intangible asset classified as having an indefinite useful life is the Bayer Cross, which was reacquired for the North America region in 1994, having been awarded to the United States and Canada under the reparations agreements at the end of the First World War. The period for which the Bayer Group will derive an economic benefit from this name cannot be determined as Bayer intends to make continuous use of it. The Bayer Cross is capitalized at €108 million.

18. Property, plant and equipment

Changes in property, plant and equipment in 2016 were as follows:

B 18/1

Changes in Property, Plant and Equipment

€ million	Land and buildings	Plant installations and machinery	Furniture, fixtures and other equipment	Construction in progress and advance payments	Total
Cost of acquisition or construction, December 31, 2015	**9,685**	**19,418**	**2,142**	**2,295**	**33,540**
Changes in scope of consolidation	–	–	–	–	–
Acquisitions	–	–	–	–	–
Capital expenditures	248	369	206	1,441	2,264
Retirements	(69)	(262)	(158)	(9)	(498)
Transfers	407	698	82	(1,187)	–
Transfers (IFRS 5)	(14)	(4)	(1)	(1)	(20)
Inflation adjustment (IAS 29)	3	1	–	–	4
Exchange differences	86	115	26	12	239
December 31, 2016	**10,346**	**20,335**	**2,297**	**2,551**	**35,529**
Accumulated depreciation and impairment losses, December 31, 2015	**5,255**	**14,303**	**1,578**	**29**	**21,165**
Changes in scope of consolidation	–	–	–	–	–
Retirements	(49)	(245)	(139)	(6)	(439)
Depreciation and impairment losses in 2016	334	936	235	5	1,510
Depreciation	314	927	234	–	1,475
Impairment losses	20	9	1	5	35
Impairment loss reversals	–	–	–	–	–
Transfers	5	(4)	–	(1)	–
Transfers (IFRS 5)	(2)	(1)	(1)	–	(4)
Exchange differences	49	122	12	–	183
December 31, 2016	**5,592**	**15,111**	**1,685**	**27**	**22,415**
Carrying amounts, December 31, 2016	**4,754**	**5,224**	**612**	**2,524**	**13,114**
Carrying amounts, December 31, 2015	**4,430**	**5,115**	**564**	**2,266**	**12,375**

Impairment losses totaling €35 million were recognized on property, plant and equipment in the reporting segments Consumer Health (€14 million), Pharmaceuticals (€8 million), Covestro (€4 million), Crop Science (€1 million), Animal Health (€1 million) and All Other Segments (€7 million).

In 2016, borrowing costs of €31 million (2015: €33 million) were capitalized as components of the cost of acquisition or construction of qualifying assets, applying an average interest rate of 2.5% (2015: 2.5%).

Capitalized property, plant and equipment included assets with a total net value of €471 million (2015: €533 million) held under finance leases. The cost of acquisition or construction of these assets as of the closing date totaled €867 million (2015: €915 million). They comprised plant installations and machinery with a carrying amount of €191 million (2015: €220 million), buildings with a carrying amount of €146 million (2015: €168 million) and other property, plant and equipment with a carrying amount of €134 million (2015: €145 million). For information on the liabilities arising from finance leases, see Note [27].

In 2016, rental payments of €429 million (2015: €263 million) were made for assets leased under operating leases as defined in IAS 17 (Leases).

Lease payments of €3 million are expected to be received in 2017 from operating leases – as defined in IAS 17 (Leases) – pertaining to property, plant and equipment, excluding the investment property stated below. Lease payments totaling €4 million are expected to be received between 2018 and 2021 and lease payments totaling €0 million after 2021.

Investment property

The fair values of investment property are mainly determined using the income approach based on internal valuations for buildings and developed sites, and using the market comparison approach for undeveloped sites.

The total carrying amount of investment property as of December 31, 2016, was €136 million (December 31, 2015: €164 million). The fair value of this property was €507 million (2015: €484 million). The rental income from investment property was €18 million (2015: €13 million), and the operating expenses directly allocable to this property amounted to €11 million (2015: €8 million). A further amount of €3 million (2015: €1 million) in operating expenses was directly allocable to investment property from which no rental income was derived.

Changes in property, plant and equipment in 2015 were as follows:

B 18/2

Changes in Property, Plant and Equipment (Previous Year)

€ million	Land and buildings	Plant installations and machinery	Furniture, fixtures and other equipment	Construction in progress and advance payments	Total
Cost of acquisition or construction, December 31, 2014	**9,088**	**18,144**	**2,009**	**2,078**	**31,319**
Changes in scope of consolidation	–	3	1	–	4
Acquisitions	33	2	1	–	36
Capital expenditures	230	390	239	1,309	2,168
Retirements	(167)	(429)	(185)	(58)	(839)
Transfers	273	797	56	(1,126)	–
Transfers (IFRS 5)	1	(64)	(4)	–	(67)
Inflation adjustment (IAS 29)	7	2	1	–	10
Exchange differences	220	573	24	92	909
December 31, 2015	**9,685**	**19,418**	**2,142**	**2,295**	**33,540**
Accumulated depreciation and impairment losses, December 31, 2014	**4,940**	**13,426**	**1,482**	**43**	**19,891**
Changes in scope of consolidation	–	1	1	–	2
Retirements	(101)	(397)	(156)	(72)	(726)
Depreciation and impairment losses in 2015	317	945	232	38	1,532
Depreciation	294	892	230	–	1,416
Impairment losses	23	53	2	38	116
Impairment loss reversals	–	(1)	–	–	(1)
Transfers	–	(1)	1	–	–
Transfers (IFRS 5)	1	(57)	(3)	–	(59)
Exchange differences	98	387	21	20	526
December 31, 2015	**5,255**	**14,303**	**1,578**	**29**	**21,165**
Carrying amounts, December 31, 2015	**4,430**	**5,115**	**564**	**2,266**	**12,375**
Carrying amounts, December 31, 2014	**4,148**	**4,718**	**527**	**2,035**	**11,428**

19. Investments accounted for using the equity method

Five (2015: four) associates and six (2015: three) joint ventures were accounted for in the consolidated financial statements using the equity method.

B 19/1

Associates and Joint Ventures Accounted for Using the Equity Method

Company name	Place of business	Bayer's interest (%)
Associates		
Bayer Trendlines AG Innovation Fund, L.P.[1]	Misgav, Israel	100
Flagship Ventures V Agricultural Fund, L.P.[1]	Cambridge, U.S.A.	99.9
Nanjing Baijingyu Pharmaceutical Co., Ltd.	Nanjing, China	15
Paltough Industries (1998) Ltd.	Kibbutz Ramat Yochanan, Israel	25
PO JV, LP	Wilmington, U.S.A.	39.4
Joint ventures		
Bayer Zydus Pharma Private Limited	Mumbai, India	50
BlueRock Therapeutics GP LLC	San Francisco, U.S.A.	50
BlueRock Therapeutics LP	San Francisco, U.S.A.	50
Casebia Therapeutics LLC	Cambridge, U.S.A.	50
DCSO Deutsche Cyber-Sicherheitsorganisation GmbH	Berlin, Germany	25
DIC Covestro Polymer Ltd.	Tokyo, Japan	50

[1] For information concerning the interest in this company see Note [6.1]

In 2000, Bayer acquired the polyols business and parts of the propylene oxide (PO) production operations of Lyondell Chemicals with the objective of ensuring access to patented technologies and safeguarding the long-term supply of PO, a starting product for polyurethane. As part of this strategy, a company was established to produce PO (PO JV, LP, United States, in which Covestro holds a 39.4% interest). Covestro benefits from fixed long-term supply quotas / volumes of PO from this company's production. The two following tables contain summarized data from the income statements and statements of financial position of the associated company PO JV, LP, United States, which is accounted for using the equity method, and show the respective amounts recognized in the consolidated financial statements of the Bayer Group.

B 19/2

Income Statement Data PO JV, LP, Wilmington, U.S.A.

€ million	2015	2016
Net sales	1,695	1,659
Net loss after taxes	(56)	(53)
Share of net loss after taxes	(23)	(24)
Share of total comprehensive income after taxes	**(23)**	**(24)**

B 19/3

Data from the Statements of Financial Position of PO JV, LP, Wilmington, U.S.A.

€ million	Dec. 31, 2015	Dec. 31, 2016
Noncurrent assets	475	469
Equity	475	469
Share of equity	**201**	**202**
Other	(3)	(4)
Carrying amount	**198**	**198**

The item “Other” mainly comprises differences arising from adjustments of data to Bayer’s uniform accounting policies, along with purchase price allocations and their amortization in profit or loss.

In December 2015, Bayer and CRISPR Therapeutics AG, Switzerland, agreed to establish a company to develop and commercialize new, breakthrough therapeutics for blood disorders, blindness and congenital heart diseases. The joint venture Casebia Therapeutics, established at the beginning of 2016, has access to gene-editing technology from CRISPR Therapeutics in specific disease areas, as well as access to protein engineering expertise and relevant disease know-how through Bayer. The two following tables contain summarized data from the income statements and statements of financial position of the joint venture Casebia Therapeutics LLC, United States, which is accounted for using the equity method, and show the respective amounts recognized in the consolidated financial statements of the Bayer Group.

B 19/4

Income Statement Data of Casebia Therapeutics LLC, Cambridge, U.S.A.

€ million	2015	2016
Net sales	–	–
Net loss after taxes	–	(8)
Share of net loss after taxes	–	(4)
Share of total comprehensive income after taxes	**–**	**(4)**

B 19/5

Data from the Statements of Financial Position of Casebia Therapeutics LLC, Cambridge, U.S.A.

€ million	Dec. 31, 2015	Dec. 31, 2016
Noncurrent assets	-	68
Current assets	-	4
Noncurrent liabilities	-	-
Current liabilities	-	3
Equity	-	69
Share of equity	**-**	**38**
Other	-	242
Carrying amount	**-**	**280**

The item "Other" comprises Bayer's outstanding capital contribution obligation.

The following table contains a summary of the aggregated income statement data and aggregated carrying amounts of the individually nonmaterial associates accounted for using the equity method.

B 19/6

Income Statement Data and Carrying Amount of Associates Accounted for Using the Equity Method

€ million	2015	2016
Income after taxes	12	11
Share of income after taxes	1	3
Share of total comprehensive income after taxes	**1**	**3**
Carrying amount	**37**	**49**

The following table contains a summary of the aggregated income statement data and aggregated carrying amounts of the individually nonmaterial joint ventures that are accounted for using the equity method.

B 19/7

Income Statement Data and Carrying Amount of Joint Ventures Accounted for Using the Equity Method

€ million	2015	2016
Income after taxes	6	–
Share of income after taxes	3	(1)
Share of total comprehensive income after taxes	**3**	**(1)**
Carrying amount	**11**	57

20. Other financial assets

The other financial assets were comprised as follows:

B 20/1

Other Financial Assets

€ million	Dec. 31, 2015 Total	Dec. 31, 2015 Of which current	Dec. 31, 2016 Total	Dec. 31, 2016 Of which current
Loans and receivables	65	21	2,140	2,087
Available-for-sale financial assets	1,177	266	4,629	3,517
of which debt instruments	1,092	262	4,371	3,514
of which equity instruments	85	4	258	3
Held-to-maturity financial investments	73	6	65	8
Receivables from derivatives	526	463	714	663
Receivables under lease agreements	7	–	8	–
Total	**1,848**	**756**	**7,556**	**6,275**

Loans and receivables included €1,770 million in bank deposits and €305 million in commercial paper.

The debt instruments categorized as available-for-sale financial assets included capital of €612 million (2015: €610 million) provided to Bayer-Pensionskasse VVaG (Bayer-Pensionskasse) for its effective initial fund, and jouissance right capital (Genussrechtskapital) of €154 million (2015: €153 million), also provided to Bayer-Pensionskasse. Also reported in this category were investments of €3,513 million (2015: €119 million) in money market funds.

The equity instruments categorized as available-for-sale financial assets included the €98 million interest held in CRISPR Therapeutics AG, Switzerland, along with €32 million (2015: €40 million) in instruments whose fair value could not be determined from a stock exchange or other market price or by discounting reliably determinable future cash flows. These equity instruments were recognized at cost.

Further information on the accounting for receivables from derivatives is given in Note [30].

Receivables under lease agreements relate to finance leases where Bayer is the lessor and the economic owner of the leased assets is the lessee. These receivables comprised expected lease payments of €39 million (2015: €38 million), including €31 million (2015: €31 million) in interest. Of the expected lease payments, €1 million (2015: €1 million) is due within one year, €2 million (2015: €2 million) within the following four years and €36 million (2015: €35 million) in subsequent years.

21. Inventories

Inventories were comprised as follows:

B 21/1

Inventories

€ million	Dec. 31, 2015	Dec. 31, 2016
Raw materials and supplies	2,296	2,396
Work in process, finished goods and goods purchased for resale	6,241	5,991
Advance payments	13	21
Total	**8,550**	**8,408**

Impairment losses recognized on inventories were reflected in the cost of goods sold. They were comprised as follows:

B 21/2

Impairments of Inventories

€ million	2015	2016
Accumulated impairment losses, January 1	**(477)**	**(427)**
Changes in scope of consolidation	(5)	–
Impairment losses in the reporting period	(216)	(321)
Impairment loss reversals or utilization	246	346
Exchange differences	21	(18)
Transfers (IFRS 5)	4	4
Accumulated impairment losses, December 31	**(427)**	**(416)**

22. Trade accounts receivable

Trade accounts receivable less impairment losses amounted to €10,969 million (2015: €9,933 million) on the closing date and were comprised as follows:

B 22/1

Trade Accounts Receivable

€ million	2015	2016
Trade accounts receivable (before impairments)	10,181	11,377
Accumulated impairment losses	(248)	(408)
Carrying amount, December 31	**9,933**	**10,969**
of which noncurrent	46	144

Changes in impairment losses on trade accounts receivable were as follows:

B 22/2

Impairments of Trade Accounts Receivable

€ million	2015	2016
Accumulated impairment losses, January 1	**(233)**	**(248)**
Impairment losses in the reporting period	(84)	(165)
Impairment loss reversals or utilization	46	35
Exchange differences	23	(30)
Accumulated impairment losses, December 31	**(248)**	**(408)**

Trade accounts receivable amounting to €10,954 million (2015: €9,858 million) were not individually impaired. Of this amount, €1,161 million (2015: €1,251 million) was past due or due immediately on the closing date.

The amounts of impaired and past-due trade accounts receivable are summarized in the following table:

B 22/3

Impaired and Past-Due Trade Accounts Receivable

		Of which neither impaired nor past due at the closing date	Of which unimpaired but past due at the closing date				Of which impaired at the closing date
Carrying amount € million			**up to 3 months**	**3–6 months**	**6–12 months**	**more than 12 months**	
December 31, 2016	10,969	9,793	780	162	125	94	15
December 31, 2015	9,933	8,607	823	202	109	117	75

The gross carrying amount of individually impaired trade accounts receivable was €192 million (2015: €245 million). The impairment losses recognized on these assets totaled €177 million (2015: €170 million), resulting in a net carrying amount of €15 million (2015: €75 million).

The unimpaired receivables were deemed to be collectible on the basis of established credit management processes and individual assessments of customer risks. Recognized impairment losses included an appropriate allowance for the default risk as of the end of the reporting period.

Receivables from government health service institutions, especially in Greece, Italy, Portugal and Spain, are under special observation in view of the government debt crisis. Although there were no material defaults on such receivables in 2016 or 2015, it is possible that future developments in these countries could result in payment delays and / or defaults. This could necessitate the recognition of impairment losses due to new occurrences. Trade accounts receivable from government health service institutions in the above countries at the end of 2016 totaled €134 million (2015: €168 million).

An excess-of-loss policy exists for the Pharmaceuticals, Consumer Health and Animal Health segments as part of a global credit insurance program. More than 80% of the receivables of these segments are insured up to a maximum total annual compensation payment of €150 million (2015: €100 million). A global excess-of-loss policy has also existed for the Crop Science segment since January 2016. In this global credit insurance program, more than 80% of this segment’s receivables are insured up to a maximum total annual compensation payment of €300 million.

A further €743 million (2015: €559 million) of receivables was secured by advance payments, letters of credit or guarantees or by liens on land, buildings or harvest yields.

23. Other receivables

Other receivables were comprised as follows:

B 23/1

Other Receivables

€ million	Dec. 31, 2015 Total	Dec. 31, 2015 Of which current	Dec. 31, 2016 Total	Dec. 31, 2016 Of which current
Other tax receivables	746	658	764	746
Deferred charges	384	348	549	358
Reimbursement claims	97	81	120	104
Net defined benefit asset	30	–	26	–
Receivables from employees	39	36	50	49
Miscellaneous receivables	1,151	894	1,284	953
Total	**2,447**	**2,017**	**2,793**	**2,210**

The reimbursement claims of €120 million (2015: €97 million) mainly consisted of receivables from insurance companies in connection with product liability claims.

Miscellaneous receivables included a €441 million (2015: €423 million) receivable from Dow AgroSciences LLC, United States, for damages and royalty payments resulting from the infringement of Bayer's rights to the Liberty Link™ weed control system.

Of the €690 million (2015: €565 million) in financial receivables included in other receivables, €612 million (2015: €460 million) was neither impaired nor past due. Receivables of €50 million (2015: €65 million) were due immediately or up to three months past due. Receivables of €27 million (2015: €39 million) were more than three months past due.

Other receivables are stated net of impairment losses totaling €56 million (2015: €55 million), of which €52 million (2015: €52 million) related to a receivable from the Venezuelan exchange control authority reflecting the right to receive U.S. dollars at a preferential rate.

24. Equity

The foremost objectives of our financial management are to help bring about a sustained increase in Bayer's value for the benefit of all stakeholders, and to ensure the Group's creditworthiness and liquidity. The pursuit of these goals means reducing our cost of capital, optimizing our capital structure, improving our financing cash flow and effectively managing risk.

The rating agencies commissioned by Bayer assess Bayer's creditworthiness as follows:

B 24/1

Rating

	Long-term rating	Short-term rating
S & P Global Ratings	A–	A–2
Moody's	A3	P–2

These ratings reflect the company's good creditworthiness and ensure access to a broad investor base for financing. Both S & P Global Ratings and Moody's are currently considering a rating downgrade in view of the agreed acquisition of Monsanto Company. Bayer will continue to target an investment-grade rating after the successful closing of the Monsanto acquisition. We remain committed to the single "A" credit rating category over the long term.

Apart from utilizing cash inflows from our operating business to reduce net financial debt, we are implementing our financial strategy by way of vehicles such as the subordinated hybrid bonds issued in July 2014 and April 2015, the mandatory convertible notes issued in November 2016, the authorized and conditional capital created by resolutions of the Annual Stockholders' Meeting, and a potential share buyback program. Bayer's Articles of Incorporation do not stipulate capital ratios.

The changes in the various components of equity during 2015 and 2016 are shown in the consolidated statements of changes in equity.

Capital stock

The capital stock of Bayer AG on December 31, 2016 amounted to €2,117 million (2015: €2,117 million), divided into 826,947,808 (2015: 826,947,808) registered no-par shares, and was fully paid in. Each no-par share confers one voting right.

Authorized and conditional capital

The authorized and conditional capital was comprised as follows:

B 24/2

Authorized and Conditional Capital

Capital	Resolution	Amount / shares	Expires	Purpose
Authorized capital I	April 29, 2014	€530 million	April 28, 2019	Increase the capital stock by issuing new no-par shares against cash contributions and / or contributions in kind, the latter not to exceed €423 million
Authorized capital II	April 29, 2014	€212 million	April 28, 2019	Increase the capital stock by issuing new no-par shares against cash contributions
Conditional capital	April 29, 2014	€212 million / up to 82,694,750 shares	April 28, 2019	Increase the capital stock by granting no-par shares to the holders of bonds with warrants or convertible notes, profit participation certificates or income bonds; the authorizations to issue such instruments are limited to a total nominal amount of €6 billion.

Capital increases are effected by issuing new registered no-par shares. Stockholders must normally be granted subscription rights. However, subscription rights may be excluded under certain conditions stated in the authorization resolutions. Absent a further resolution of the Annual Stockholders' Meeting on the exclusion of stockholders' subscription rights, the Board of Management will only use the existing authorizations to increase the capital stock out of the authorized or conditional capital – while excluding stockholders' subscription rights – up to a total amount of 20% of the capital stock that existed when the respective resolutions were adopted by the Annual Stockholders' Meeting on April 29, 2014. All issuances or sales of no-par shares or of bonds with warrants or conversion rights or obligations that are effected while excluding stockholders' subscription rights also count toward this 20% limit. Details of the authorized and conditional capital are provided in the Notice of the Annual Stockholders' Meeting of April 29, 2014, and on the Bayer website.

On November 22, 2016, Bayer placed mandatory convertible notes in the amount of €4,000 million without granting subscription rights to existing stockholders of the company. The notes, denominated in units of €100,000, were issued by Bayer Capital Corporation B.V. under the subordinated guarantee of Bayer AG. At maturity, the outstanding amount of the notes will be mandatorily converted into registered no-par shares of Bayer AG. After deduction of €48 million in transaction costs and recognition of €191 million in deferred taxes, €3,491 million were allocated to capital reserves and €652 million to financial liabilities. The deferred taxes result from temporary differences in accounting for the liability component and were recognized outside profit or loss in equity. The issuance of the mandatory convertible notes constitutes a utilization of conditional capital.

The authorized capital has not been utilized so far.

Accumulated comprehensive income

Accumulated comprehensive income comprises retained earnings and accumulated other comprehensive income. The retained earnings include prior years' undistributed income of consolidated companies and all remeasurements of the net liability for defined benefit pension and other post-employment benefit plans that are recognized outside profit or loss. The accumulated other comprehensive income comprises exchange differences, the changes in fair values of cash flow hedges and available-for-sale financial assets, and the revaluation surplus. In 2016, an amount of €4 million (2015: €5 million) corresponding to the annual amortization / depreciation of the respective assets was transferred from the revaluation surplus to retained earnings. The reserves for exchange differences included an amount of minus €51 million (2015: minus €45 million) attributable to associates and joint ventures accounted for using the equity method.

Dividend

Under the German Stock Corporation Act (AktG), the dividend payment is determined by the distributable profit reported in the annual financial statements of Bayer AG, which are prepared according to the German Commercial Code. Retained earnings were diminished by payment of the dividend of €2.50 per share for 2015. The proposed dividend for the 2016 fiscal year is €2.70 per share, which would result in a total dividend payment of €2,233 million. Payment of the proposed dividend is contingent upon approval by the stockholders at the Annual Stockholders' Meeting and therefore is not recognized as a liability in the consolidated financial statements.

Noncontrolling interest

In April 2016, Bayer AG contributed 10 million shares it held in Covestro AG – equivalent to 4.9% of the outstanding shares – to Bayer Pension Trust e.V. Bayer therefore currently holds 64.2% of the shares in the capital stock of Covestro AG.

The changes in noncontrolling interest in equity during 2015 and 2016 are shown in the following table:

B 24/3

Components of Noncontrolling Interest in Equity

€ million	2015	2016
January 1	**112**	**1,180**
Changes in equity not recognized in profit or loss		
Remeasurements of the net pension liability	10	(27)
Changes in fair value of cash flow hedges	–	–
Changes in fair value of securities	–	–
Exchange differences on translation of operations outside the eurozone	23	17
Other changes in equity	1,055	157
Dividend payments	(8)	(58)
Income after income taxes	**(12)**	**295**
December 31	**1,180**	**1,564**

The reserves for exchange differences included an amount of minus €28 million (2015: minus €20 million) attributable to associates and joint ventures accounted for using the equity method.

Noncontrolling interest mainly pertained to the following companies:

B 24/4

Material Noncontrolling Interests

		Covestro AG *		Bayer CropScience Limited, India	
		2015	2016	2015	2016
Interest held	%	30.9	35.8	31.4	31.4
Equity attributable to noncontrolling interest	€ million	1,092	1,472	73	85
Dividends paid to noncontrolling interest	€ million	0	52	3	3
Current assets	€ million	4,237	4,268	52	55
Noncurrent assets	€ million	6,294	5,966	304	352
Current liabilities	€ million	4,564	2,474	11	11
Noncurrent liabilities	€ million	2,355	3,544	92	97
Sales	€ million	12,082	11,904	465	484
Income after income taxes	€ million	352	806	6	44
Total comprehensive income	€ million	558	747	15	47
Net cash provided by (used in) operating activities	€ million	1,473	1,786	44	–
Net cash provided by (used in) investing activities	€ million	(380)	(1,042)	53	(4)
Net cash provided by (used in) financing activities	€ million	(645)	(1,122)	(79)	(9)

* Including direct and indirect subsidiaries

25. Provisions for pensions and other post-employment benefits

Provisions were established for defined benefit obligations pertaining to pensions and other post-employment benefits. The net liability was accounted for as follows:

B 25/1

Net Defined Benefit Liability Reflected in the Statement of Financial Position

€ million	Pensions		Other post-employment benefits		Total	
	Dec 31, 2015	Dec 31, 2016	Dec 31, 2015	Dec 31, 2016	Dec 31, 2015	Dec 31, 2016
Provisions for pensions and other post-employment benefits (net liability)	**10,454**	**10,736**	**419**	**398**	**10,873**	**11,134**
of which Germany	8,972	9,176	–	–	8,972	9,176
of which other countries	1,482	1,560	419	398	1,901	1,958
Net defined benefit asset	**29**	**25**	**1**	**1**	**30**	**26**
of which Germany	23	23	–	–	23	23
of which other countries	6	2	1	1	7	3
Net defined benefit liability	**10,425**	**10,711**	**418**	**397**	**10,843**	**11,108**
of which Germany	8,949	9,153	–	–	8,949	9,153
of which other countries	1,476	1,558	418	397	1,894	1,955

The expenses for defined benefit plans for pensions and other post-employment benefits comprised the following components:

B 25/2

Expenses for Defined Benefit Plans

	Pension plans						Other post-employment benefit plans	
	Germany		Other countries		Total		Other countries	
€ million	2015	2016	2015	2016	2015	2016	2015	2016
Current service cost	362	350	99	102	461	452	17	16
Past service cost	27	26	(3)	(5)	24	21	–	(1)
of which plan curtailments	–	–	(2)	1	(2)	1	–	–
Plan settlements	–	–	–	(9)	–	(9)	–	–
Plan administration cost paid out of plan assets	–	3	1	1	1	4	–	–
Net interest	204	204	52	52	256	256	20	20
Total	**593**	**583**	**149**	**141**	**742**	**724**	**37**	**35**

In addition, a total of minus €1,036 million in effects of remeasurements of the net defined benefit liability was recognized in 2016 outside profit or loss (2015: €1,216 million). Of this amount, minus €1,063 million (2015: €1,185 million) related to pension obligations, €34 million (2015: €53 million) to other post-employment benefit obligations, and minus €7 million (2015: minus €22 million) to the effects of the asset ceiling.

The net defined benefit liability developed as follows:

B 25/3

Changes in Net Defined Benefit Liability

€ million	Defined benefit obligation	Fair value of plan assets	Effects of the asset ceiling	Net defined benefit liability
Germany				
January 1, 2016	**19,148**	**10,199**	**–**	**(8,949)**
Acquisitions	–	–	–	–
Divestments / changes in the scope of consolidation	(4)	(2)	–	2
Current service cost	350			(350)
Past service cost	26			(26)
(Gains) / losses from plan settlements	–			–
Net interest	452	248	–	(204)
Net actuarial (gain) loss	1,610			(1,610)
of which due to changes in financial assumptions	1,563			(1,563)
of which due to changes in demographic assumptions	1			(1)
of which due to experience adjustments	46			(46)
Return on plan assets excluding amounts recognized as interest income		669		669
Remeasurement of asset ceiling			–	–
Employer contributions		878		878
Employee contributions	39	39		–
Payments due to plan settlements	–	–		–
Benefits paid out of plan assets	(219)	(219)		–
Benefits paid by the company	(440)			440
Plan administration cost paid from plan assets		(3)		(3)
Reclassification to current assets / liabilities held for sale	–	–	–	–
December 31, 2016	**20,962**	**11,809**	**–**	**(9,153)**
Other countries				
January 1, 2016	**7,660**	**5,799**	**(32)**	**(1,893)**
Acquisitions	–	1	–	1
Divestments / changes in the scope of consolidation	(4)	(3)	–	1
Current service cost	118			(118)
Past service cost	(6)			6
(Gains) / losses from plan settlements	(9)			9
Net interest	284	215	(3)	(72)
Net actuarial (gain) loss	515			(515)
of which due to changes in financial assumptions	650			(650)
of which due to changes in demographic assumptions	(89)			89
of which due to experience adjustments	(46)			46
Return on plan assets excluding amounts recognized as interest income		427		427
Remeasurement of asset ceiling			(7)	(7)
Employer contributions		152		152
Employee contributions	12	12		–
Payments due to plan settlements	(83)	(84)		(1)
Benefits paid out of plan assets	(295)	(295)		–
Benefits paid by the company	(87)	–		87
Plan administration costs paid out of plan assets	–	(1)		(1)
Reclassification to current assets / liabilities held for sale	–	–	–	–
Exchange differences	(72)	(96)	(7)	(31)
December 31, 2016	**8,033**	**6,127**	**(49)**	**(1,955)**
of which other post-employment benefits	867	471	–	(396)
Total, December 31, 2016	**28,995**	**17,936**	**(49)**	**(11,108)**

B 25/4

Changes in Net Defined Benefit Liability (Previous Year)

€ million	Defined benefit obligation	Fair value of plan assets	Effects of the asset ceiling	Net defined benefit liability
Germany				
January 1, 2015	**20,339**	**10,025**	**–**	**(10,314)**
Acquisitions	–	–	–	–
Divestments / changes in the scope of consolidation	21	17	–	(4)
Current service cost	362			(362)
Past service cost	27			(27)
(Gains) / losses from plan settlements	–			–
Net interest	425	221	–	(204)
Net actuarial (gain) loss	(1,393)			1,393
of which due to changes in financial assumptions	(1,371)			1,371
of which due to changes in demographic assumptions	–			–
of which due to experience adjustments	(22)			22
Return on plan assets excluding amounts recognized as interest income		(262)		(262)
Remeasurement of asset ceiling			–	–
Employer contributions		387		387
Employee contributions	37	37		–
Payments due to plan settlements	–	–		–
Benefits paid out of plan assets	(215)	(215)		–
Benefits paid by the company	(433)			433
Plan administration cost paid from plan assets		–		–
Reclassification to current assets / liabilities held for sale	(22)	11	–	11
December 31, 2015	**19,148**	**10,199**	**–**	**(8,949)**
Other countries				
January 1, 2015	**7,432**	**5,560**	**(9)**	**(1,881)**
Acquisitions	4	–	–	(4)
Divestments / changes in the scope of consolidation	–	–	–	–
Current service cost	116			(116)
Past service cost	(3)			3
(Gains) / losses from plan settlements	–			–
Net interest	287	215	–	(72)
Net actuarial (gain) loss	(318)			318
of which due to changes in financial assumptions	(310)			310
of which due to changes in demographic assumptions	(79)			79
of which due to experience adjustments	71			(71)
Return on plan assets excluding amounts recognized as interest income		(211)		(211)
Remeasurement of asset ceiling			(22)	(22)
Employer contributions		148		148
Employee contributions	11	11		–
Payments due to plan settlements	–	–		–
Benefits paid out of plan assets	(289)	(289)		–
Benefits paid by the company	(60)	–		60
Plan administration costs paid out of plan assets	–	(1)		(1)
Reclassification to current assets / liabilities held for sale	(20)	(8)	–	12
Exchange differences	501	374	(1)	(128)
December 31, 2015	**7,661**	**5,799**	**(32)**	**(1,894)**
of which other post-employment benefits	836	418	–	(418)
Total, December 31, 2015	**26,809**	**15,998**	**(32)**	**(10,843)**

The benefit obligations pertained mainly to Germany (72%; 2015: 71%), the United States (14%; 2015: 15%) and the United Kingdom (7%; 2015: 7%). In Germany, current employees accounted for about 46% (2015: 44%), retirees or their surviving dependents for about 47% (2015: 49%) and former employees with vested pension rights for about 7% (2015: 7%) of entitlements under defined benefit plans. In the United States, current employees accounted for about 25% (2015: 26%), retirees or their surviving dependents for about 53% (2015: 61%) and former employees with vested pension rights for about 22% (2015: 13%) of entitlements under defined benefit plans.

The actual return on the assets of defined benefit plans for pensions or other post-employment benefits amounted to €1,519 million (2015: minus €34 million) and €40 million (2015: minus €3 million), respectively.

The following table shows the defined benefit obligations for pensions and other post-employment benefits along with the funded status of the funded obligations.

B 25/5

Defined Benefit Obligation and Funded Status

	Pension obligation		Other post-employment benefit obligation		Total	
€ million	2015	2016	2015	2016	2015	2016
Defined benefit obligation	**25,973**	**28,128**	**836**	**867**	**26,809**	**28,995**
of which unfunded	1,126	1,231	101	125	1,227	1,356
of which funded	24,847	26,897	735	742	25,582	27,639
Funded status of funded obligations						
Overfunding	61	74	1	1	62	75
Underfunding	9,328	9,506	318	272	9,646	9,778

Pension and other post-employment benefit obligations

Group companies provide retirement benefits for most of their employees, either directly or by contributing to privately or publicly administered funds. The way these benefits are provided varies according to the legal, fiscal and economic conditions of each country, the benefits generally being based on employee compensation and years of service. The obligations relate both to existing retirees' pensions and to pension entitlements of future retirees.

Bayer has set up funded pension plans for its employees in various countries. The most appropriate investment strategy is determined for each defined benefit pension plan based on the risk structure of the obligations (especially demographics, the current funded status, the structure of the expected future cash flows, interest sensitivity, biometric risks etc.), the regulatory environment and the existing level of risk tolerance or risk capacity. A strategic target investment portfolio is then developed in line with the plan's risk structure, taking capital market factors into consideration. Further determinants are risk diversification, portfolio efficiency and the need for both a country-specific and a global risk / return profile centered on ensuring the payment of all future benefits. As the capital investment strategy for each pension plan is developed individually in light of the plan-specific conditions listed above, the investment strategies for different pension plans may vary considerably. For example, the proportion of plan assets invested in equities is greater with the non-German pension plans than with the plans domiciled in Germany. The investment strategies are generally aligned less toward maximizing absolute returns and more toward the maximum probability of being able to finance pension commitments over the long term. For plan assets, stress scenarios are simulated and other risk analyses (such as value at risk) undertaken with the aid of risk management systems.

Bayer-Pensionskasse VVaG (Bayer-Pensionskasse), Leverkusen, Germany, is by far the most significant of the pension plans. It has been closed to new members since 2005. This legally independent fund is regarded as a life insurance company and therefore is subject to the German Insurance Supervision Act. The benefit obligations covered by Bayer-Pensionskasse comprise retirement, surviving dependents' and disability pensions. It constitutes a multi-employer plan, to which the active members and their employers contribute. The company contribution is a certain percentage of the employee contribution. This percentage is the same for all participating employers, including those outside the Bayer Group, and is set by agreement between the plan's executive committee and its supervisory board, acting on a proposal from the responsible actuary. It takes into account the differences between the actuarial estimates and the actual values for the factors used to determine liabilities and contributions. Bayer may also adjust the company contribution in agreement with the plan's executive committee and its supervisory board, acting on a proposal from the responsible actuary. The plan's liability is governed by Section 1, Paragraph 1, Sentence 3 of the German Law on the Improvement of Occupational Pensions. This means that if the pension plan exercises its right under the articles of association to reduce benefits, each participating employer has to make up the resulting difference. Bayer is not liable for the obligations of participating employers outside the Bayer Group, even if they cease to participate in the plan.

Pension entitlements for people who joined Bayer in Germany in 2005 or later are granted via Rheinische Pensionskasse VVaG, Leverkusen. Future pension payments from this plan are based on contributions and the return on plan assets; a guaranteed interest rate applies.

Another important pension provision vehicle is Bayer Pension Trust e.V. (BPT). This covers further retirement provision arrangements of the Bayer Group, such as deferred compensation, pension obligations previously administered by Schering Altersversorgung Treuhand e.V., and components of other direct commitments.

The defined benefit pension plans in the United States have been frozen for some years, and no significant new entitlements can be earned under these plans. The assets of all the U.S. pension plans are held by a master trust for reasons of efficiency. The applicable regulatory framework is based on the Employee Retirement Income Security Act (ERISA), which includes a statutory 80% minimum funding requirement to avoid benefit restrictions. The actuarial risks, such as investment risk, interest-rate risk and longevity risk, remain with the company.

The defined benefit pension plans in the United Kingdom have been closed to new members for some years. Plan assets in the U.K. are administered by independent trustees, who are legally obligated to act solely in the interests of the beneficiaries. A technical assessment is performed every three years in line with U.K. regulations. This serves as the basis for developing a plan to cover any potential financing requirements. Here, too, the actuarial risks remain with the company.

The other post-employment benefit obligations outside Germany mainly comprised health care benefit payments for retirees in the United States.

The fair value of the plan assets to cover pension and other post-employment benefit obligations was as follows:

B 25/6

Fair Value of Plan Assets as of December 31

			Pension obligations		Other post-employment benefit obligations	
	Germany		Other countries		Other countries	
€ million	2015	2016	2015	2016	2015	2016
Plan assets based on quoted prices in active markets						
Real estate and special real estate funds	–	–	199	215	19	22
Equities and equity funds	2,105	2,919	1,855	1,861	130	149
Callable debt instruments	–	–	182	263	–	–
Noncallable debt instruments	112	556	752	736	121	128
Bond funds	3,543	3,754	1,744	1,823	90	104
Derivatives	18	11	(5)	(3)	–	–
Cash and cash equivalents	158	243	84	114	8	17
Other	–	–	4	6	–	–
	5,936	**7,483**	**4,815**	**5,015**	**368**	**420**
Plan assets for which quoted prices in active markets are not available						
Real estate and special real estate funds	517	563	83	124	–	–
Equities and equity funds	90	115	59	72	–	–
Callable debt instruments	1,555	1,525	2	–	–	–
Noncallable debt instruments	1,832	1,870	–	–	–	–
Bond funds	–	–	60	72	–	–
Derivatives	(2)	1	–	–	–	–
Other	271	252	362	373	50	51
	4,263	**4,326**	**566**	**641**	**50**	**51**
Total plan assets	**10,199**	**11,809**	**5,381**	**5,656**	**418**	**471**

The fair value of plan assets in Germany included real estate leased by Group companies, recognized at a fair value of €82 million (2015: €61 million), and Bayer AG shares and bonds held through investment funds, recognized at their fair value of €41 million (2015: €48 million) and €3 million (2015: €3 million), respectively. In April 2016, Bayer AG contributed 10 million shares it held in Covestro AG – equivalent to 4.9% of the outstanding shares – to BPT. This equity position had a market value of €652 million as of December 31, 2016. In 2016, Covestro placed short-term securities with a volume of €450 million into Metzler Trust e.V. In 2015, Bayer placed short-term securities with a volume of €300 million into BPT. The other plan assets comprised mortgage loans granted, other receivables and qualified insurance policies.

Risks

The risks from defined benefit plans arise partly from the defined benefit obligations and partly from the investment in plan assets. The risks lie in the possibility that higher direct pension payments will have to be made to the beneficiaries and / or that additional contributions will have to be made to plan assets in order to meet current and future pension obligations.

Demographic / biometric risks

Since a large proportion of the defined benefit obligations comprises lifelong pension payments to retirees or surviving dependents' pensions, longer claim periods or earlier claims may result in higher benefit obligations, higher benefit expense and / or higher pension payments than previously anticipated.

Investment risks

If the actual return on plan assets were below the return anticipated on the basis of the discount rate, the net defined benefit liability would increase, assuming there were no changes in other parameters. This could happen as a result of a drop in share prices, increases in market rates of interest, default of individual debtors or the purchase of low-risk but low-interest bonds, for example.

Interest-rate risk

A decline in capital market interest rates, especially for high-quality corporate bonds, would increase the defined benefit obligation. This effect would be at least partially offset by the ensuing increase in the market values of the debt instruments held.

Measurement parameters and their sensitivities

The following weighted parameters were used to measure the obligations for pensions and other post-employment benefits as of December 31 of the respective year:

B 25/7

Parameters for Benefit Obligations

	Germany		Other countries		Total	
%	2015	2016	2015	2016	2015	2016
Pension obligations						
Discount rate	2.40	1.80	3.85	3.25	2.75	2.15
of which U.S.A.			4.00	3.70	4.00	3.70
of which U.K.			3.80	2.65	3.80	2.65
Projected future salary increases	3.00	2.75	3.35	3.50	3.10	2.95
Projected future benefit increases	1.75	1.50	3.20	3.35	2.15	1.95
Other post-employment benefit obligations						
Discount rate	–	–	4.45	4.35	4.45	4.35

In Germany the Heubeck 2005 G mortality tables were used, in the United States the RP-2014 Mortality Tables, and in the United Kingdom 95% of S1NXA.

The following weighted parameters were used to measure the expense for pension and other post-employment benefits in the respective year:

B 25/8

Parameters for Benefit Expense

	Germany		Other countries		Total	
%	2015	2016	2015	2016	2015	2016
Pension obligations						
Discount rate	2.20	2.40	3.70	3.85	2.55	2.75
Projected future salary increases	3.00	3.00	3.65	3.35	3.15	3.10
Projected future benefit increases	1.75	1.75	3.30	3.20	2.10	2.15
Other post-employment benefit obligations						
Discount rate	–	–	3.95	4.45	3.95	4.45

The parameter sensitivities were computed by expert actuaries based on a detailed evaluation similar to that performed to obtain the data presented in Table B 25/4. Altering individual parameters by 5 percentage points (mortality by 10% per beneficiary) while leaving the other parameters unchanged would have impacted pension and other post-employment benefit obligations as of year end 2016 as follows:

B 25/9

Sensitivity of Benefit Obligations

	Germany		Other countries		Total	
€ million	Increase	Decrease	Increase	Decrease	Increase	Decrease
Pension obligations						
0.5%-pt. change in discount rate	(1,752)	2,014	(478)	539	(2,230)	2,553
0.5%-pt. change in projected future salary increases	135	(125)	50	(47)	185	(172)
0.5%-pt. change in projected future benefit increases	1,107	(1,009)	139	(94)	1,246	(1,103)
10% change in mortality	(670)	752	(195)	209	(865)	961
Other post-employment benefit obligations						
0.5%-pt. change in discount rate	–	–	(48)	53	(48)	53
10% change in mortality	–	–	(24)	27	(24)	27

B 25/10

Sensitivity of Benefit Obligations (prior year)

	Germany		Other countries		Total	
€ million	Increase	Decrease	Increase	Decrease	Increase	Decrease
Pension obligations						
0.5%-pt. change in discount rate	(1,544)	1,767	(450)	504	(1,994)	2,271
0.5%-pt. change in projected future salary increases	121	(113)	47	(44)	168	(157)
0.5%-pt. change in projected future benefit increases	1,006	(919)	127	(96)	1,133	(1,015)
10% change in mortality	(597)	669	(173)	185	(770)	854
Other post-employment benefit obligations						
0.5%-pt. change in discount rate	–	–	(46)	51	(46)	51
10% change in mortality	–	–	(21)	24	(21)	24

Provisions are also set up for the obligations, mainly of U.S. subsidiaries, to provide post-employment benefits in the form of health care cost payments for retirees. The valuation of health care costs was based on the assumption that they will increase at a rate of 6.8%, which should gradually decline to 5.0% by 2023 (assumption in 2015: 7.0%, which should gradually decline to 5.0% by 2023). The following table shows the impact on other post-employment benefit obligations and total benefit expense of a one-percentage-point change in the assumed cost increase rates:

B 25/11

Sensitivity to Health Care Cost Increases

	Increase of one percentage point		Decrease of one percentage point	
€ million	**2015**	**2016**	**2015**	**2016**
Impact on other post-employment benefit obligations	79	77	(68)	(66)
Impact on benefit expense	5	4	(4)	(3)

Payments made and expected future payments

The following payments or asset contributions correspond to the employer contributions made or expected to be made to funded benefit plans:

B 25/12

Employer Contributions Paid or Expected

	Germany			Other countries		
€ million	**2015**	**2016**	**2017 expected**	**2015**	**2016**	**2017 expected**
Pension obligations	387	878	74	148	151	123
Other post-employment benefit obligations	–	–	–	–	1	1
Total	**387**	**878**	**74**	**148**	**152**	**124**

Bayer has currently committed to make deficit contributions for its U.K. pension plans of approximately GBP 16 million annually through 2019. For its U.S. pension plans, Bayer made payments of US$50 million in 2016 and expects to make payments of US$50 million in 2017, the latter amount being subject to change depending on future circumstances.

Pensions and other post-employment benefits payable in the future from funded and unfunded plans are estimated as follows:

B 25/13

Future Benefit Payments

	Payments out of plan assets				Payments by the company			
	Pensions		Other post-employment benefits		Pensions		Other post-employment benefits	
€ million	**Germany**	**Other countries**	**Other countries**	**Total**	**Germany**	**Other countries**	**Other countries**	**Total**
2017	223	297	9	529	452	76	35	563
2018	226	305	9	540	457	77	38	572
2019	230	312	9	551	464	78	42	584
2020	236	321	9	566	471	83	43	597
2021	242	331	9	582	477	91	45	613
2022-2026	1,310	1,715	46	3,071	2,454	477	252	3,183

The weighted average term of the pension obligations is 18 years (2015: 17.3 years) in Germany and 13.3 years (2015: 13.4 years) in other countries. The weighted average term of the obligations for other post-employment benefits in other countries is 11.5 years (2015: 11.5 years).

26. Other provisions

Changes in the various provision categories in 2016 were as follows:

B 26/1

Changes in Other Provisions

€ million	Other Taxes	Environ-mental protec-tion	Restruc-turing	Trade-related commit-ments	Litigations	Personnel commit-ments	Miscella-neous	Total
December 31, 2015	**65**	**272**	**306**	**2,113**	**663**	**3,099**	**267**	**6,785**
Additions	18	67	113	4,679	240	3,109	382	8,608
Utilization	(32)	(23)	(121)	(4,019)	(280)	(2,503)	(230)	(7,208)
Reversal	(12)	(5)	(29)	(477)	(123)	(457)	(48)	(1,151)
Reclassification to current liabilities	–	–	–	(12)	–	(1)	–	(13)
Interest cost	–	4	–	–	–	18	–	22
Exchange differences	2	6	7	91	12	25	15	158
December 31, 2016	**41**	**321**	**276**	**2,375**	**512**	**3,290**	**386**	**7,201**

The provisions recognized in the statement of financial position as of December 31, 2016, were expected to be utilized as follows:

B 26/2

Expected Utilization of Other Provisions

€ million	Other Taxes	Environ-mental protec-tion	Restruc-turing	Trade-related commit-ments	Litigations	Personnel commit-ments	Miscella-neous	Total
2017	17	69	93	2,241	280	2,451	270	5,421
2018	–	31	79	66	152	147	6	481
2019	–	21	71	28	3	90	1	214
2020	–	11	11	5	1	186	1	215
2021	1	4	6	6	4	57	24	102
2022 or later	23	185	16	29	72	359	84	768
Total	**41**	**321**	**276**	**2,375**	**512**	**3,290**	**386**	**7,201**

The provisions were partly offset by claims for refunds in the amount of €110 million (2015: €97 million), which were recognized as receivables. These claims mainly related to product liability.

Restructuring

Provisions for restructuring included €179 million (2015: €180 million) for severance payments and €97 million (2015: €126 million) for other restructuring expenses, which mainly comprised other costs related to the closure of production facilities.

In the Pharmaceuticals segment, restructuring took place mainly in the areas of marketing and supply network optimization as part of the Continuous Efficiency Program. Provisions were established for this restructuring primarily in Japan, France and the United States. Provisions for the above and other restructuring measures in Pharmaceuticals as of December 31, 2016, totaled €66 million. Of this amount, severance payments accounted for €62 million and other restructuring expenses for €4 million.

In the Consumer Health segment, the restructuring initiated in prior years to integrate the acquired businesses continued. Provisions for restructuring in this segment totaled €8 million as of December 31, 2016. Of this amount, severance payments accounted for €7 million and other restructuring expenses for €1 million.

In the Crop Science segment, restructuring took place mainly in connection with the "Advancing our leadership strategy" program, which aims to increase customer focus, promote innovation and improve efficiency. The restructuring initiated in the United States in prior years, involving the closure of several carbamate production facilities and a formulation plant, continued in addition. Provisions for the above and other restructuring measures in Crop Science as of December 31, 2016, totaled €104 million. Of this amount, severance payments accounted for €53 million and other restructuring expenses for €51 million.

Provisions for restructuring in the Animal Health segment as of December 31, 2016, totaled €8 million. Of this amount, severance payments accounted for €5 million and other restructuring expenses for €3 million.

Provisions for restructuring at Covestro mainly existed for the closure of an MDI production facility at the site in Tarragona, Spain. The restructuring provisions at Covestro as of December 31, 2016, totaled €66 million. Of this amount, severance payments accounted for €31 million and other restructuring expenses for €35 million.

Restructuring continued in the central functions, particularly in France, to enhance their efficiency. Also included here are provisions for the residual costs for the closure of a Covestro production facility at the Belford Roxo site in Brazil. The restructuring provisions in the central functions as of December 31, 2016, totaled €24 million. Of this amount, severance payments accounted for €21 million and other restructuring expenses for €3 million.

Litigations

The legal risks currently considered to be material, and their development, are described in Note [32].

Personnel commitments

Stock-based compensation programs

Bayer offers stock-based compensation programs collectively to different groups of employees. As required by IFRS 2 (Share-based Payment) for compensation systems involving cash settlement, awards to be made under the stock-based programs are covered by provisions in the amount of the fair value of the obligations existing as of the date of the financial statements vis-à-vis the respective employee group. All resulting valuation adjustments are recognized in profit or loss.

The following table shows the changes in provisions for the various programs:

B 26/3

Changes in Provisions for Stock-Based Compensation Programs

€ million	Aspire I	Aspire II	Aspire 2.0	Aspire I Covestro	Aspire II Covestro	Covestro Prisma	Total
December 31, 2015	**125**	**339**	**–**	**22**	**59**	**–**	**545**
Additions	61	204	90	5	13	15	388
Utilization	(54)	(149)	–	(8)	(23)	–	(234)
Reversal	(71)	(194)	(7)	(2)	(2)	–	(276)
Exchange differences	–	3	2	–	1	–	6
December 31, 2016	**61**	**203**	**85**	**17**	**48**	**15**	**429**

The value of the Aspire tranches that were fully earned at the end of 2016, resulting in payments at the beginning of 2017, was €241 million (2015: €230 million).

The net expense for all stock-based compensation programs in 2016 was €118 million (2015: €248 million), including €5 million (2015: €6 million) for the BayShare program, €2 million (2015: €0 million) for Covestro's stock participation program and €1 million income from (2015: €8 million expense for) grants of virtual Bayer shares.

The fair value of the obligations under the Aspire I, Aspire II and Aspire 2.0 programs (excluding Aspire programs for Covestro) was calculated using the Monte Carlo simulation method based on the following key parameters:

B 26/4

Parameters for Monte Carlo Simulation

	2015	2016
Dividend yield	1.96%	2.90%
Risk-free interest rate	(0.159)%	(0.670)%
Volatility of Bayer stock	25.61%	22.78%
Volatility of EURO STOXX 50	19.08%	11.66%
Correlation between Bayer stock price and the EURO STOXX 50	0.83	0.67

Long-term incentive program for members of the Board of Management and other senior executives (Aspire I)

From 2005 through 2015, members of the Board of Management and other senior executives were entitled to participate in Aspire I on the condition that they purchased a certain number of Bayer shares – determined for each individual according to specific guidelines – and retained them for the full term of the program. A percentage of the executive's annual base salary – according to his or her position – was defined as a target for variable payments (Aspire target opportunity). Depending on the performance of Bayer stock, both in absolute terms and relative to the EURO STOXX 50 index over a four-year performance period, participants receive a payment of up to 300% of their individual Aspire target opportunity at the end of the period. The prices used to determine the amount of the payment are the averages of the official closing prices of Bayer shares over the last 30 stock-exchange trading days of the respective year. The tranche issued in 2012 expired at the end of 2015, and the maximum payment of 300% was made at the beginning of 2016. The tranche issued in 2013 expired at the end of 2016, and a payment of 270% was made at the beginning of 2017.

Long-term incentive program for middle management (Aspire II)

From 2005 through 2015, other senior managers were offered Aspire II, which is similar to Aspire I but did not require a personal investment in Bayer shares. The amount of the payment is based entirely on the absolute performance of Bayer stock over a four-year period. The maximum payment is 250% of each manager's Aspire target opportunity. The prices used to determine the amount of the payment are the averages of the official closing prices of Bayer shares over the last 30 stock-exchange trading days of the respective year. The tranche issued in 2012 expired at the end of 2015, and the maximum payment of 250% was made at the beginning of 2016. The tranche issued in 2013 expired at the end of 2016, and a payment of 220% was made at the beginning of 2017.

Long-term incentive program Aspire 2.0

Since 2016, Aspire has been offered to all eligible employees in a new, standardized format named Aspire 2.0. For the Board of Management, there is an additional hurdle in the form of a comparison between the performance of Bayer stock and that of the EURO STOXX 50. Aspire 2.0 is also based on a target value, which is a percentage of each employee's annual base salary, the percentage varying according to his or her position. This target value is multiplied by the employee's STI payment factor for the previous year to give the Aspire grant value. The STI payment factor reflects the employee's individual performance and the business performance under the global short-term incentive program (STI). The Aspire grant value is converted into virtual Bayer shares by dividing it by the share price at the start of the program. The program's performance is based on these virtual shares. The fair value of the obligations is determined from the price of Bayer stock at year end and the dividends paid up to that time. The payment made at the end of each tranche is determined by multiplying the number of virtual shares by the Bayer share price at that time and adding an amount equivalent to the dividends paid during the period of the tranche. The maximum payment for Aspire 2.0 is 250% of the Aspire grant value.

Special arrangement for Covestro employees concerning the Aspire programs

The compensation programs described above were modified for Covestro employees in December 2015 in light of the legal carve-out of the Covestro companies and the subsequent stock exchange listing of Covestro AG.

The arrangement for the 2012 tranches of both Aspire programs was the same as for Bayer employees. Based on the development of Bayer's share price, the maximum payment amounts were reached for both programs (Aspire I and Aspire II). Payments of 300% and 250%, respectively, were therefore made at the beginning of 2016.

Valuation for the other three Aspire tranches issued in 2013, 2014 and 2015, respectively, was based on the average price of Bayer shares on the last 30 trading days of 2015 (€119.17). This price was fixed in advance as the end price. Thus the amounts of the payments from the three remaining tranches – where these were fully vested – were already finally determined at the end of 2015. A payment of at least 100% is guaranteed. The tranches issued in 2013 expired at the end of 2016, and payments of 300% (Aspire I) and 250% (Aspire II) were made at the beginning of 2017.

Long-term incentive program for members of the Board of Management and other senior executives of Covestro (Prisma)

Effective January 1, 2016, Covestro established a new long-term compensation program named Prisma for the 2016-2019 performance period. Senior executives and other managers are eligible to participate. A percentage of the executive's annual base salary – according to his or her position – is defined as a target for variable payments (Prisma target opportunity). Depending on the performance of Covestro stock including dividends paid (total shareholder return) – both in absolute terms and relative to the STOXX Europe 600 Chemicals index – over a four-year performance period, participants are granted a payment of up to 200% of their individual Prisma target opportunity at the end of the period. Payment for the performance period ending December 31, 2019, will be made in January 2020 according to the performance of Covestro stock over the period. This will be determined by comparing the average stock price on the last 30 trading days of 2019 to the price at the start of the performance period. The fair value of the obligations was calculated using the Monte Carlo simulation method based on parameters applicable at the closing date.

BayShare 2016

All management levels and nonmanagerial employees are offered an annual stock participation program known as BayShare, under which Bayer subsidizes their personal investments in the company's stock. The discount under this program in 2016 was 20% (2015: 20%) of the subscription amount. Employees stated a fixed amount that they wished to invest in shares. The maximum subscription amount in Germany was set at €2,500 (2015: €2,500) or €5,000 (2015: €5,000), depending on the employee's position. The shares thus acquired must be retained until December 31, 2017.

In 2016, employees purchased a total of about 259,000 shares (2015: 208,000 shares) under the BayShare program.

Stock participation program at Covestro in 2016

The stock participation program at Covestro named Covestment allowed employees of Covestro AG and participating Group companies in Germany to invest a fixed amount of their compensation – plus a subsidy from the company – in Covestro shares. The subsidy, which will be reassessed annually, was 30% in 2016. The total amount for which shares could be purchased was capped at €1,200 or €3,600, depending on the employee's position. The shares were purchased at the volume-weighted average price of Covestro shares on four trading days in November 2016. Employees purchased a total of about 126,000 shares under the Covestment program. These shares must be retained until December 31, 2017.

27. Financial liabilities

Financial liabilities were comprised as follows:

B 27/1

Financial Liabilities

	Dec. 31, 2015		Dec. 31, 2016	
€ million	Total	Of which current	Total	Of which current
Bonds and notes / promissory notes	15,547	1,235	15,991	2,010
Liabilities to banks	2,779	1,174	1,837	820
Liabilities under finance leases	474	59	436	59
Liabilities from derivatives	765	598	587	309
Other financial liabilities	369	355	730	203
Total	**19,934**	**3,421**	**19,581**	**3,401**

A breakdown of financial liabilities by contractual maturity is given below:

B 27/2

Maturities of Financial Liabilities

€ million	Dec. 31, 2015	€ million	Dec. 31, 2016
2016	3,421	2017	3,401
2017	2,245	2018	3,241
2018	2,828	2019	2,456
2019	2,066	2020	44
2020	45	2021	2,714
2021 or later	9,329	2022 or later	7,725
Total	**19,934**	**Total**	**19,581**

In addition to promissory notes in the amount of €45 million (2015: €120 million), the Bayer Group has issued the following bonds and notes:

B 27/3

Bonds and Notes

Effective interest rate	Stated rate		Nominal volume	Dec. 31, 2015 € million	Dec. 31, 2016 € million
		Bayer AG, Germany			
Floating[1]	Floating[1]	DIP bond 2014/2016	EUR 500 million	500	–
1.253%	1.125%	DIP bond 2014/2018	EUR 750 million	748	749
5.774%	5.625%	DIP bond 2006/2018	GBP 250 million	339	292
5.541%	5.625%	DIP bond 2006/2018 (increase)	GBP 100 million	137	117
2.086%	1.875%	DIP bond 2014/2021	EUR 750 million	753	755
3.811%	3.750%	Hybrid bond 2014/2024[7]/2074	EUR 1,500 million	1,493	1,494
2.517%	2.375%	Hybrid bond 2015/2022[7]/2075	EUR 1,300 million	1,289	1,290
3.093%	3.000%	Hybrid bond 2014/2020[7]/2075	EUR 1,750 million	1,743	1,745
		Bayer Capital Corporation B.V., Netherlands			
1.333%	1.250%	DIP bond 2014/2023	EUR 500 million	497	497
6.061%	5.625%	Mandatory Convertible Notes[8] 2016/2019	EUR 4,000 million	–	–
		Bayer Corporation, U.S.A.			
6.670%	6.650%	Notes 1998/2028	US$350 million	342	351
		Bayer Holding Ltd., Japan			
0.858%	0.816%	DIP bond 2012/2017	JPY 30 billion	229	243
1.493%	1.459%	DIP bond 2010/2017	JPY 10 billion	76	81
3.654%	3.575%	DIP bond 2008/2018	JPY 15 billion	115	122
0.629%	0.594%	DIP bond 2013/2019	JPY 10 billion	76	81
		Bayer Nordic SE, Finland			
Floating[2]	Floating[2]	DIP bond 2013/2016	EUR 200 million	200	–
Floating[3]	Floating[3]	DIP bond 2014/2017	EUR 500 million	500	500
		Bayer U.S. Finance LLC, U.S.A.			
Floating[4]	Floating[4]	Notes 2014/2016	US$500 million	459	–
Floating[5]	Floating[5]	Notes 2014/2017	US$400 million	367	379
1.615%	1.500%	Notes 2014/2017	US$850 million	779	806
2.564%	2.375%	Notes 2014/2019	US$2,000 million	1,826	1,889
3.096%	3.000%	Notes 2014/2021	US$1,500 million	1,372	1,419
3.579%	3.375%	Notes 2014/2024	US$1,750 million	1,587	1,642
		Covestro AG, Germany			
Floating[6]	Floating[6]	DIP bond 2016/2018	EUR 500 million	–	500
1.076 %	1.000%	DIP bond 2016/2021	EUR 500 million	–	497
1.782 %	1.750%	DIP bond 2016/2024	EUR 500 million	–	497
		Total		**15,427**	**15,946**

[1] Floating-rate coupon comprising three-month EURIBOR plus 22 basis points
[2] Floating-rate coupon comprising three-month EURIBOR plus 35 basis points
[3] Floating-rate coupon comprising three-month EURIBOR plus 22 basis points
[4] Floating-rate coupon comprising three-month USD-LIBOR plus 25 basis points
[5] Floating-rate coupon comprising three-month USD-LIBOR plus 28 basis points
[6] Floating-rate coupon comprising three-month EURIBOR plus 60 basis points
[7] Date of first option to early redeem the bond at par
[8] The mandatory convertible notes were allocated to capital reserves and to other financial liabilities.

Debt Issuance Programme

An important means of external financing are the bonds issued under the Debt Issuance Programme (DIP), previously known as the multi-currency European Medium Term Notes (EMTN) program. The Debt Issuance Programme allows bonds in different currencies and with different maturities to be placed flexibly with investors.

Hybrid bonds

The hybrid bonds issued by Bayer AG are subordinated, and 50% of their amount is treated by Moody's and S & P Global Ratings as equity. They therefore have a more limited effect on the Group's rating-relevant debt indicators than senior borrowings.

Mandatory convertible notes

On November 22, 2016, Bayer Capital Corporation B.V. placed subordinated mandatory convertible notes in the amount of €4,000 million, which will be converted into no-par shares of Bayer AG at maturity. The notes represented the first part of the equity component of the financing for the planned acquisition of Monsanto Company. After deducting transaction costs of €48 million and recognition of deferred taxes of €191 million, €3,491 million were allocated to capital reserves and €652 million to other financial liabilities.

Bayer AG guarantees all the notes and bonds issued by subsidiaries (except Covestro companies).

Lease liabilities

Lease payments totaling €609 million (2015: €646 million), including €173 million (2015: €172 million) in interest, are to be made under finance leases to the respective lessors in future years.

The liabilities under finance leases mature as follows:

B 27/4

Lease Liabilities

€ million	Dec. 31, 2015		
Maturity	Lease payments	Interest component	Liabilities under finance leases
2016	86	27	59
2017	76	23	53
2018	68	20	48
2019	60	18	42
2020	60	15	45
2021 or later	296	69	227
Total	**646**	**172**	**474**

€ million	Dec. 31, 2016		
Maturity	Lease payments	Interest component	Liabilities under finance leases
2017	88	29	59
2018	76	24	52
2019	68	21	47
2020	59	17	42
2021	57	15	42
2022 or later	261	67	194
Total	**609**	**173**	**436**

Other information

As of December 31, 2016, the Group had undrawn credit facilities at its disposal totaling €55 billion (2015: €6.2 billion), including €50 billion in bridge financing for the planned acquisition of Monsanto Company and €1.5 billion in facilities available to Covestro.

Further information on the accounting for liabilities from derivatives is given in Note [30].

28. Trade accounts payable

Trade accounts payable comprised €6,403 million (2015: €5,937 million) due within one year and €7 million (2015: €8 million) due after one year.

29. Other liabilities

Other liabilities comprised:

B 29/1

Other Liabilities

€ million	Dec. 31, 2015 Total	Dec. 31, 2015 Of which current	Dec. 31, 2016 Total	Dec. 31, 2016 Of which current
Other tax liabilities	435	428	544	527
Deferred income	1,148	204	1,463	651
Liabilities to employees	217	210	229	219
Liabilities for social expenses	174	165	168	157
Accrued interest on liabilities	189	180	186	181
Miscellaneous liabilities	436	347	788	686
Total	**2,599**	**1,534**	**3,378**	**2,421**

Deferred income included an upfront payment, originally amounting to US$1 billion, in connection with the strategic pharmaceutical collaboration agreed between Bayer and Merck & Co., Inc., United States, in the field of soluble guanylate cyclase (sGC) modulation. This deferred income is being amortized over a period of 13.5 years as the obligations are satisfied. The remaining amount deferred at the end of 2016 was €660 million (2015: €719 million). The amount amortized in 2016 was €59 million (2015: €59 million).

Deferred income also included the proceeds from the sale of the Diabetes Care business at the beginning of 2016. The original sale proceeds of around €1 billion are being realized over a period of up to 24 months as the obligations are satisfied. €469 million remained deferred at the end of 2016.

The deferred income included €62 million (2015: €62 million) in grants and subsidies received from governments, of which €15 million (2015: €7 million) was reversed and recognized in profit or loss.

The miscellaneous liabilities included €271 million (2015: €125 million) from derivatives.

30. Financial instruments

The system used by the Bayer Group to manage credit risks, liquidity risks and the different types of market price risk (interest-rate and currency risks), together with its objectives, methods and procedures, is outlined in the Opportunity and Risk Report, which forms part of the Combined Management Report.

30.1 Financial instruments by category

The following table shows the carrying amounts and fair values of financial assets and liabilities for each financial instrument category and a reconciliation to the corresponding line item in the statements of financial position. Since the line items “Other receivables,” “Trade accounts payable” and “Other liabilities” contain both financial instruments and nonfinancial assets or liabilities (such as other tax receivables or advance payments for services to be received in the future), the reconciliation is shown in the column headed “Nonfinancial assets / liabilities.”

B 30.1/1

Carrying Amounts and Fair Values of Financial Instruments

Dec. 31, 2016

€ million	Carried at amortized cost Carrying amount	Carried at fair value [Fair value for information [1]] Based on quoted prices in active markets (Level 1) Carrying amount	Based on observable market data (Level 2) Carrying amount	Based on unobservable inputs (Level 3) Carrying amount	Nonfinancial assets/liabilities Carrying amount	**Carrying amount in the statement of financial position**
Trade accounts receivable	10,969					10,969
Loans and receivables	10,969					10,969
Other financial assets	2,245	523	3,985	803		7,556
Loans and receivables	2,148		[2,145]	[16]		2,148
Available-for-sale financial assets	32	520	3,283	794		4,629
Held-to-maturity financial assets	65		[68]			65
Derivatives that qualify for hedge accounting			269			269
Derivatives that do not qualify for hedge accounting		3	433	9		445
Other receivables	633			57	2,103	2,793
Loans and receivables	633		[633]			633
Available-for-sale financial assets				57		57
Nonfinancial assets					2,103	2,103
Cash and cash equivalents	1,899					1,899
Loans and receivables	1,899		[1,899]			1,899
Total financial assets	**15,746**	**523**	**3,985**	**860**		**21,114**
of which loans and receivables	15,649					15,649
of which available-for-sale financial assets	32	520	3,283	851		4,686
Financial liabilities	18,994		587			19,581
Carried at amortized cost	18,994	[16,040]	[3,362]			18,994
Derivatives that qualify for hedge accounting			312			312
Derivatives that do not qualify for hedge accounting			275			275
Trade accounts payable	6,035				375	6,410
Carried at amortized cost	6,035					6,035
Nonfinancial liabilities					375	375
Other liabilities	840	2	252	25	2,259	3,378
Carried at amortized cost	840		[840]			840
Carried at fair value (nonderivative)				8		8
Derivatives that qualify for hedge accounting			165			165
Derivatives that do not qualify for hedge accounting		2	87	17		106
Nonfinancial liabilities					2,259	2,259
Total financial liabilities	**25,869**	**2**	**839**	**25**		**26,735**
of which carried at amortized cost	25,869					25,869
of which derivatives that qualify for hedge accounting			477			477
of which derivatives that do not qualify for hedge accounting		2	362	17		381

[1] The exemption provisions under IFRS 7.29(a) were applied for information on specific fair values.

B 30.1/2

Carrying Amounts and Fair Values of Financial Instruments

						Dec. 31, 2015
	Carried at amortized cost		Carried at fair value [Fair value for information[1]]		Non-financial assets / liabilities	
		Based on quoted prices in active markets (Level 1)	Based on observable market data (Level 2)	Based on unobservable inputs (Level 3)		
€ million	Carrying amount	Carrying amount	Carrying amount	Carrying amount	Carrying amount	Carrying amount in the statement of financial position
Trade accounts receivable	9,933					9,933
Loans and receivables	9,933					9,933
Other financial assets	185	363	509	791		1,848
Loans and receivables	72		[64]	[18]		72
Available-for-sale financial assets	40	363		774		1,177
Held-to-maturity financial assets	73		[74]			73
Derivatives that qualify for hedge accounting			125			125
Derivatives that do not qualify for hedge accounting			384	17		401
Other receivables	506			59	1,882	2,447
Loans and receivables	506		[506]			506
Available-for-sale financial assets				59		59
Nonfinancial assets					1,882	1,882
Cash and cash equivalents	1,859					1,859
Loans and receivables	1,859		[1,859]			1,859
Total financial assets	**12,483**	**363**	**509**	**850**		**14,205**
of which loans and receivables	12,370					12,370
of which available-for-sale financial assets	40	363		833		1,236
Financial liabilities	19,169		765			19,934
Carried at amortized cost	19,169	[15,440]	[4,121]			19,169
Derivatives that qualify for hedge accounting			470			470
Derivatives that do not qualify for hedge accounting			295			295
Trade accounts payable	5,680				265	5,945
Carried at amortized cost	5,680					5,680
Nonfinancial liabilities					265	265
Other liabilities	606		117	45	1,831	2,599
Carried at amortized cost	606		[606]			606
Carried at fair value (nonderivative)				37		37
Derivatives that qualify for hedge accounting			93			93
Derivatives that do not qualify for hedge accounting			24	8		32
Nonfinancial liabilities					1,831	1,831
Total financial liabilities	**25,455**		**882**	**45**		**26,382**
of which carried at amortized cost	25,455					25,455
of which derivatives that qualify for hedge accounting			563			563
of which derivatives that do not qualify for hedge accounting			319	8		327

[1] The exemption provisions under IFRS 7.29(a) were applied for information on specific fair values.

The loans and receivables reflected in other financial assets and the liabilities measured at amortized cost also include receivables and liabilities under finance leases in which Bayer is the lessor or lessee and which are therefore measured in accordance with IAS 17.

Because of the short maturities of most trade accounts receivable and payable, other receivables and liabilities, and cash and cash equivalents, their carrying amounts at the closing date do not significantly differ from the fair values.

The fair values of loans and receivables, held-to-maturity financial investments and of financial liabilities carried at amortized cost that are given for information are the present values of the respective future cash flows. The present values are determined by discounting the cash flows at a closing-date interest rate, taking into account the term of the assets or liabilities and the creditworthiness of the counterparty. Where a market price is available, however, this is deemed to be the fair value.

The fair values of available-for-sale financial assets correspond to quoted prices in active markets (Level 1), are determined using valuation techniques based on observable market data as of the end of the reporting period (Level 2) or are the present values of the respective future cash flows, determined on the basis of unobservable inputs (Level 3).

The fair values of derivatives for which no publicly quoted prices exist in active markets (Level 1) are determined using valuation techniques based on observable market data as of the end of the reporting period (Level 2). In applying valuation techniques, credit value adjustments are determined to allow for the contracting party's credit risk.

Currency and commodity forward contracts are measured individually at their forward rates or forward prices on the closing date. These depend on spot rates or prices, including time spreads. The fair values of interest-rate hedging instruments and cross-currency interest-rate swaps are determined by discounting future cash flows over the remaining terms of the instruments at market rates of interest, taking into account any foreign currency translation as of the closing date.

Fair values estimated using unobservable inputs are categorized within Level 3 of the fair value hierarchy. This applies to certain available-for-sale debt or equity instruments, in some cases to the fair values of embedded derivatives, and to obligations for contingent consideration in business combinations. Credit risk is frequently the principal unobservable input used to determine the fair values of debt instruments classified as available-for-sale financial assets by the discounted cash flow method. Here the credit spreads of comparable issuers are applied. A significant increase in credit risk could result in a lower fair value, whereas a significant decrease could result in a higher fair value. However, a relative change of 10% in the credit spread does not materially affect the fair value.

Embedded derivatives are separated from their respective host contracts. Such host contracts are generally sale or purchase agreements relating to the operational business. The embedded derivatives cause the cash flows from the contracts to vary with exchange-rate or price fluctuations. The internal measurement of embedded derivatives is mainly performed using the discounted cash flow method, which is based on unobservable inputs. These include planned sales and purchase volumes, and prices derived from market data. Regular monitoring is carried out based on these fair values as part of quarterly reporting.

The changes in the amount of financial assets and liabilities recognized at fair value based on unobservable inputs (Level 3) for each financial instrument category were as follows:

B 30.1/3

Development of Financial Assets and Liabilities (Level 3)

				2015				2016
€ million	Available-for-sale financial assets	Derivatives (net)	Liabilites measured at fair value (non-derivative)	Total	Available-for-sale financial assets	Derivatives (net)	Liabilites carried at fair value (non-derivative)	Total
Carrying amounts of net assets/(net liabilities), Jan. 1	**803**	**6**	**(31)**	**778**	**833**	**9**	**(37)**	**805**
Gains (losses) recognized in profit or loss	22	(12)	(3)	7	18	(17)	23	24
of which related to assets/liabilities recognized in the statements of financial position	22	(17)	(3)	2	18	(17)	–	1
Gains (losses) recognized outside profit or loss	19	–	–	19	9	–	–	9
Additions of assets/(liabilities)	11	–	(4)	7	46	–	–	46
Settlements of (assets)/liabilities	(22)	9	1	(12)	(23)	–	6	(17)
Transfers (IFRS 5)	–	6	–	6	–	–	–	–
Transfers to a different fair-value hierarchy	–	–	–	–	(32)	–	–	(32)
Net carrying amounts of assets/(liabilities), Dec. 31	**833**	**9**	**(37)**	**805**	**851**	**(8)**	**(8)**	**835**

The changes recognized in profit or loss were included in other operating income/expenses, interest income or exchange gains/losses.

Income, expense, gains and losses on financial instruments can be assigned to the following categories:

B 30.1/4

Income, Expense, Gains and Losses on Financial Instruments

€ million	Loans and receivables	Held-to-maturity financial investments	Available-for-sale financial assets	Held for trading	Liabilities carried at amortized cost	Total
						2016
Interest income	44	–	21	2	62	129
Interest expense	–	–	–	(3)	(642)	(645)
Income / expenses from affiliated companies	–	–	–	–	–	–
Changes in fair value	–	–	–	(77)	–	(77)
Impairment losses	(171)	–	(2)	–	–	(173)
Impairment loss reversals	26	–	–	–	–	26
Exchange gains / losses	355	–	–	(103)	(374)	(122)
Gains / losses from retirements	–	–	6	–	–	6
Other financial income / expenses	(1)	–	–	–	(34)	(35)
Net result	**253**	**–**	**25**	**(181)**	**(988)**	**(891)**

B 30.1/5

Income, Expense, Gains and Losses on Financial Instruments (Previous Year)

€ million	Loans and receivables	Held-to-maturity financial investments	Available-for-sale financial assets	Held for trading	Liabilities carried at amortized cost	Total
						2015
Interest income	55	1	22	25	86	189
Interest expense	–	–	–	(25)	(703)	(728)
Income / expenses from affiliated companies	–	–	3	–	–	3
Changes in fair value	–	–	–	147	–	147
Impairment losses	(93)	–	(1)	–	–	(94)
Impairment loss reversals	32	–	–	–	–	32
Exchange gains / losses	450	–	–	(235)	(679)	(464)
Gains / losses from retirements	–	–	31	–	–	31
Other financial income / expenses	(1)	–	13	–	(12)	–
Net result	**443**	**1**	**68**	**(88)**	**(1,308)**	**(884)**

The interest expense of €642 million (2015: €703 million) from nonderivative financial liabilities also included the income and expense from interest-rate swaps that qualified for hedge accounting. Interest income from financial assets not measured at fair value through profit or loss amounted to €65 million (2015: €73 million). Interest income from interest-rate derivatives that qualified for hedge accounting was €62 million (2015: €86 million). The changes in fair values of financial assets held for trading related mainly to forward commodity contracts and embedded derivatives.

Derivatives that form part of a master netting arrangement, constitute a financial asset or liability and can only be netted in the event of breach of contract by, or insolvency of, one of the contracting parties do not satisfy, or only partially satisfy, the criteria for offsetting in the statement of financial position according to IAS 32. The volume of such derivatives with positive fair values was €630 million (2015: €415 million), and the volume with negative fair values was €762 million (2015: €761 million). Included here is an amount of €362 million (2015: €256 million) in positive and negative fair values of derivatives concluded with the same contracting party.

30.2 Maturity analysis

The liquidity risks to which the Bayer Group was exposed from its financial instruments at the end of the reporting period comprised obligations for future interest and repayment installments on financial liabilities and the liquidity risk arising from derivatives, as shown in the table in Note [30.3].

In addition, loan commitments existed for an as yet unpaid €1,213 million (2015: €1,213 million) portion of the effective initial fund of Bayer-Pensionskasse VVaG, which may result in further payments by Bayer AG (€1,005 million) and / or Covestro AG (€208 million) in subsequent years.

B 30.2/1

Maturity Analysis of Financial Instruments

€ million	Dec. 31, 2016 Carrying amount	2017	2018	2019	2020	2021	after 2021 Interest and repayment
Financial liabilities							
Bonds and notes / promissory notes	15,991	2,261	2,160	2,367	295	2,916	8,093
Liabilities to banks	1,837	884	998	39	–	–	9
Remaining liabilities	1,166	293	303	382	61	58	268
Trade accounts payable	6,035	6,028	4	2	1	–	–
Other liabilities							
Accrued interest on liabilities	186	181	1	1	1	–	2
Remaining liabilities	662	626	3	5	2	1	25
Liabilities from derivatives							
Derivatives that qualify for hedge accounting	477	178	231	157	2	–	–
Derivatives that do not qualify for hedge accounting	381	374	3	4	2	1	1
Receivables from derivatives							
Derivatives that qualify for hedge accounting	269	210	23	4	3	2	–
Derivatives that do not qualify for hedge accounting	445	467	2	2	1	1	1
Loan commitments	–	1,213	–	–	–	–	–
Financial guarantees	–	14	–	–	–	–	3

B 30.2/2

Maturity Analysis of Financial Instruments

€ million	Dec. 31, 2015 Carrying amount	2016	2017	2018	2019	2020	after 2020 Interest and repayment
Financial liabilities							
Bonds and notes/promissory notes	15,547	1,475	2,334	1,704	2,282	277	9,845
Liabilities to banks	2,779	1,221	298	1,387	38	–	10
Remaining liabilities	843	440	79	69	60	61	307
Trade accounts payable	5,680	5,673	3	3	2	–	–
Other liabilities							
Accrued interest on liabilities	189	180	1	2	1	1	4
Remaining liabilities	454	420	5	2	1	1	25
Liabilities from derivatives							
Derivatives that qualify for hedge accounting	563	397	11	122	50	–	–
Derivatives that do not qualify for hedge accounting	327	312	8	1	3	1	2
Receivables from derivatives							
Derivatives that qualify for hedge accounting	125	66	26	13	2	2	1
Derivatives that do not qualify for hedge accounting	401	379	2	3	2	2	4
Loan commitments	–	1,213	–	–	–	–	–
Financial guarantees	–	14	–	–	–	–	2

30.3 Information on derivatives

Asset and liability fair values and future cash flows are exposed to currency, interest-rate and commodity price risks. Derivatives are used to reduce this risk. In some cases they are designated as hedging instruments in a hedge accounting relationship.

Currency risks

Foreign currency receivables and liabilities are hedged using foreign exchange derivatives without the existence of a hedge accounting relationship. A bond of Bayer AG denominated in British pounds was swapped on the issuance date into a fixed-rate euro bond by means of a cross-currency interest-rate swap, which was designated as a cash flow hedge. Cross-currency interest-rate swaps used to hedge intra-Group loans were also designated as cash flow hedges.

Fluctuations in future cash flows resulting from forecasted foreign currency transactions and procurement activities are avoided partly through derivatives contracts, most of which are designated as cash flow hedges.

Foreign currency risks related to the planned acquisition of Monsanto Company were partially hedged with currency derivatives, which were designated as cash flow hedges.

Interest-rate risk

The interest-rate risks from fixed-interest borrowings are managed in part using interest-rate swaps. Two interest-rate swaps in the total amount of €200 million were designated as fair value hedges for the €750 million DIP bond issued in 2014 and maturing in 2021.

Losses of €1 million were recorded on fair-value hedging instruments in 2016 (2015: €26 million). Gains of €1 million were recorded on the underlying hedged items (2015: €25 million).

Commodity price risks

Hedging contracts are also used to partly reduce exposure to fluctuations in future cash outflows and inflows resulting from price changes on procurement and selling markets.

Hedging of obligations under stock-based employee compensation programs

A portion of the obligations to make variable payments to employees under stock-based compensation programs (Aspire) is hedged against share price fluctuations using derivatives contracts that are settled in cash at maturity. These derivatives are designated as cash flow hedges.

Further information on cash flow hedges

Accumulated other comprehensive income from cash flow hedges increased in 2016 by €44 million (2015: decreased by €203 million) due to changes in the fair values of derivatives net of tax. Total changes of €3 million in the fair values of derivatives were expensed in 2016 (2015: €304 million). The respective prorated deferred tax income of €2 million (2015: €88 million) was likewise recognized through profit or loss.

No material ineffective portions of hedges required recognition through profit or loss in 2016 or 2015.

The income and expense from cash flow hedges recognized in accumulated other comprehensive income mainly comprised gains of €204 million (2015: €91 million) and losses of €143 million (2015: €90 million) from the hedging of forecasted transactions in foreign currencies and the planned acquisition of Monsanto Company. Of these gains and losses, a net amount of minus €91million (2015: minus €5 million) will be reclassifiable to profit or loss within one year, and a net amount of €2 million (2015: €6 million) in subsequent years.

The fair values of existing contracts in the major categories at the end of the reporting period are indicated in the following table together with the included volumes of cash flow hedges.

B 30.3/1

Fair Values of Derivatives

€ million	Dec. 31, 2015 Notional amount[1]	Dec. 31, 2015 Positive fair value	Dec. 31, 2015 Negative fair value	Dec. 31, 2016 Notional amount[1]	Dec. 31, 2016 Positive fair value	Dec. 31, 2016 Negative fair value
Currency hedging of recorded transactions	**22,275**	**337**	**(753)**	**22,645**	**299**	**(587)**
Forward exchange contracts	19,896	336	(283)	20,454	296	(273)
of which cash flow hedges	–	–	–	–	–	–
Cross-currency interest-rate swaps	2,379	1	(470)	2,191	3	(314)
of which cash flow hedges	2,362	–	(470)	2,146	3	(312)
Currency hedging of forecasted transactions	**4,082**	**99**	**(100)**	**17,799**	**317**	**(206)**
Forward exchange contracts	3,627	86	(99)	3,805	48	(145)
of which cash flow hedges	3,255	78	(90)	3,672	43	(138)
Currency options	455	13	(1)	13,994	269	(61)
of which cash flow hedges	368	13	(1)	13,698	161	(5)
Interest-rate hedging of recorded transactions	**200**	**13**	**–**	**200**	**14**	**–**
Interest-rate swaps	200	13	–	200	14	–
of which fair value hedges	200	13	–	200	14	–
Commodity price hedging	**91**	**14**	**(12)**	**168**	**5**	**(4)**
Forward commodity contracts	86	12	(10)	167	4	(4)
Commodity option contracts	5	2	(2)	1	1	–
Hedging of stock-based employee compensation programs	**80**	**21**	**(2)**	**532**	**48**	**(22)**
Share price options	30	21	–	152	48	–
of which cash flow hedges	30	21	–	152	48	–
Share price forwards	50	–	(2)	380	–	(22)
of which cash flow hedges	50	–	(2)	380	–	(22)
Total	**26,728**	**484**	**(867)**	**41,344**	**683**	**(819)**
of which current derivatives	25,022	435	(692)	38,349	635	(514)
for currency hedging	24,931	420	(680)	38,111	597	(510)
for interest-rate hedging[2]	–	1	–	–	3	–
for commodity price hedging	91	14	(12)	168	5	(4)
for hedging of stock-based employee compensation programs	–	–	–	70	30	–

[1] The notional amount is reported as gross volume, which also contains economically closed hedges.
[2] The portion of the fair value of long-term interest-rate swaps that relates to current interest payments is classified as current.

31. Contingent liabilities and other financial commitments

Contingent liabilities

The following warranty contracts, guarantees and other contingent liabilities existed at the end of the reporting period:

B 31/1

Contingent Liabilities

€ million	Dec. 31, 2015	Dec. 31, 2016
Warranties	99	100
Guarantees	123	264
Other contingent liabilities	562	444
Total	**784**	**808**

The guarantees mainly comprise a declaration issued by Bayer AG to the trustees of the U.K. pension plans guaranteeing the pension obligations of Bayer Public Limited Company and Bayer CropScience Limited. Under the declaration, Bayer AG – in addition to the two companies – undertakes to make further payments into the plans upon receipt of a payment request from the trustees. The net liability with respect to these defined benefit plans as of December 31, 2016, rose to €264 million (2015: €123 million) due to the sharp drop in interest rates.

Other financial commitments

The other financial commitments were as follows:

B 31/2

Other Financial Commitments

€ million	Dec. 31, 2015	Dec. 31, 2016
Operating leases	891	1,101
Orders already placed under purchase agreements	690	722
Capital contribution commitments	391	182
Definitive merger agreement with Monsanto Company, St. Louis, Missouri, U.S.A. [1]	–	53,000
Unpaid portion of the effective initial fund	1,213	1,213
Potential payment obligations under R&D collaboration agreements	2,887	2,444
Revenue-based milestone payment commitments	2,241	1,839
Total	**8,313**	**60,501**

[1] The contingent financial commitment of around US$56 billion was translated at the closing rate.

On September 14, 2016, Bayer signed a definitive merger agreement with Monsanto Company, St. Louis, Missouri, United States, which provides for Bayer's acquisition of all outstanding shares in Monsanto Company against a cash payment of US$128 per share. Bayer thus has a contingent financial commitment in the amount of approximately US$56 billion to acquire Monsanto's entire outstanding capital stock. Further details of this planned acquisition are given in Note [6.2].

The nondiscounted future minimum lease payments relating to operating leases totaled €1,101 million (2015: €891 million). The maturities of the respective payment obligations were as follows:

B 31/3

Operating Leases

Maturing in	Dec. 31, 2015	Maturing in	Dec. 31, 2016
	€ million		€ million
2016	195	2017	237
2017	155	2018	192
2018	110	2019	161
2019	94	2020	138
2020	79	2021	102
2021 or later	258	2022 or later	271
Total	**891**	**Total**	**1,101**

Financial commitments resulting from orders already placed under purchase agreements related to planned or ongoing capital expenditure projects totaled €722 million (2015: €690 million).

The Bayer Group has entered into cooperation agreements with third parties under which it has agreed to fund various research and development projects or has assumed other payment obligations based on the achievement of certain milestones or other specific conditions. If all of these payments have to be made, their maturity distribution as of December 31, 2016, was expected to be as set forth in the following table. The amounts shown represent the maximum payments to be made, and it is unlikely that they will all fall due. Since the achievement of the conditions for payment is highly uncertain, both the amounts and the dates of the actual payments may vary considerably from those stated in the table.

B 31/4

Potential Payment Obligations Under R&D Collaboration Agreements

Maturing in	Dec. 31, 2015	Maturing in	Dec. 31, 2016
	€ million		€ million
2016	262	2017	233
2017	229	2018	151
2018	96	2019	333
2019	240	2020	66
2020	78	2021	28
2021 or later	1,982	2022 or later	1,633
Total	**2,887**	**Total**	**2,444**

In addition to the above commitments, there were also revenue-based milestone payment commitments totaling €1,839 million (2015: €2,241 million), of which €1,834 million (2015: €2,237 million) was not expected to fall due until 2022 (2015: 2021) or later. These commitments are also highly uncertain.

32. Legal risks

As a global company with a diverse business portfolio, the Bayer Group is exposed to numerous legal risks, particularly in the areas of product liability, competition and antitrust law, anticorruption, patent disputes, tax assessments and environmental matters. The outcome of any current or future proceedings cannot normally be predicted. It is therefore possible that legal or regulatory judgments or future settlements could give rise to expenses that are not covered, or not fully covered, by insurers' compensation payments and could significantly affect our revenues and earnings.

Legal proceedings currently considered to involve material risks are outlined below. The legal proceedings referred to do not represent an exhaustive list.

Product-related litigation

Yasmin™ / YAZ™: Most of the lawsuits and claims concerning Bayer's drospirenone-containing oral contraceptives in the United States have been resolved. Claimants allege that users have suffered personal injuries, some of them fatal, from the use of Yasmin™ and / or YAZ™ or their generic versions, and seek compensatory and punitive damages, claiming, in particular, that Bayer had not adequately warned of the alleged risks.

As of January 23, 2017, lawsuits and claims of approximately 100 claimants remain pending against Bayer in the United States. Without admission of liability, Bayer is considering about a dozen of the lawsuits and claims for possible settlement after a case-specific analysis of medical records.

A few U.S. State Attorney Generals are investigating alleged violations of consumer protection statutes, including off-label promotion and failure to warn. One Attorney General has filed an action against Bayer.

As of January 23, 2017, 13 lawsuits seeking class action certification had been served upon Bayer in Canada. In two of these lawsuits a class has been certified. Two motions for certification of a class action are pending in Israel.

Bayer believes that it has meritorious defenses and will continue to defend itself vigorously against all claims that are not considered for settlement.

Mirena™: As of January 23, 2017, lawsuits from approximately 2,600 users of Mirena™, a levonorgestrel-releasing intrauterine system providing long-term contraception, had been served upon Bayer in the United States (excluding lawsuits no longer pending). Plaintiffs allege personal injuries resulting from the use of Mirena™, including perforation of the uterus, ectopic pregnancy or idiopathic intracranial hypertension, and seek compensatory and punitive damages. Plaintiffs claim, inter alia, that Mirena™ is defective and that Bayer knew or should have known of the risks associated with it and failed to adequately warn its users. Additional lawsuits are anticipated. Most of the cases pending in U.S. federal courts have been consolidated in a multidistrict litigation proceeding for common pre-trial management. In July 2016, the multidistrict litigation court granted summary judgment dismissing approximately 1,230 cases pending before that court. Plaintiffs have appealed the decision. As of January 23, 2017, five Canadian lawsuits relating to Mirena™ seeking class action certification had been served upon Bayer. Bayer believes it has meritorious defenses and intends to defend itself vigorously.

Xarelto™: As of January 23, 2017, U.S. lawsuits from approximately 16,400 recipients of Xarelto™, an oral anticoagulant for the treatment and prevention of blood clots, had been served upon Bayer. Plaintiffs allege personal injuries from the use of Xarelto™, including cerebral, gastrointestinal or other bleeding and death, and seek compensatory and punitive damages. They claim, amongst other things, that Xarelto™ is defective and that Bayer knew or should have known of these risks associated with the use of Xarelto™ and failed to adequately warn its users. Additional lawsuits are anticipated. Cases pending in U.S. federal courts have been consolidated in a multidistrict litigation for common pre-trial management. As of January 23, 2017, ten Canadian lawsuits relating to Xarelto™ seeking class action certification had been served upon Bayer. Bayer believes it has meritorious defenses and intends to defend itself vigorously.

Essure™: As of January 23, 2017, U.S. lawsuits from approximately 3,700 users of Essure™, a medical device offering permanent birth control with a nonsurgical procedure, had been served upon Bayer. Plaintiffs allege personal injuries from the use of Essure™, including hysterectomy, perforation, pain, bleeding, weight gain, nickel sensitivity, depression and unwanted pregnancy. Additional lawsuits are anticipated. As of January 23, 2017, two Canadian lawsuits relating to Essure™ seeking class action certification had been served upon Bayer. Bayer believes it has meritorious defenses and intends to defend itself vigorously.

In connection with the above-mentioned proceedings, Bayer is insured against statutory product liability claims against Bayer to the extent customary in the respective industries and has, based on the information currently available, taken appropriate accounting measures for anticipated defense costs. However, the accounting measures relating to Yasmin™ / YAZ™ and Essure™ claims exceed the available insurance coverage. Concerning Yasmin™ / YAZ™, the accounting measures include costs for agreed and anticipated future settlements based on the information currently available and based on the number of pending and estimated future claims alleging venous clot injuries.

Patent disputes

Beyaz™ / Safyral™: Beyaz™ and Safyral™ are Bayer's oral contraceptives containing folate. In 2015, a U.S. federal court ruled in favor of Bayer regarding both the validity of its patent and the infringement thereof by Watson Laboratories, Inc. ("Watson"). Watson had filed Abbreviated New Drug Applications with a Paragraph IV certification ("ANDA IV") seeking approval of generic versions of both Beyaz™ and Safyral™ in the United States. In May 2016, the U.S. Court of Appeals for the Federal Circuit invalidated the patent claims asserted by Bayer and reversed the judgment by the U.S. federal court. Bayer petitioned the U.S. Supreme Court to review the decision by the U.S. Court of Appeals for the Federal Circuit. In January 2017, the U.S. Supreme Court denied Bayer's petition. The decision by the U.S. Court of Appeals for the Federal Circuit against Bayer is now final. In 2015, Bayer filed two lawsuits against Lupin Ltd. and Lupin Pharmaceuticals, Inc. (together "Lupin") in a U.S. federal court for infringement of the same patent. Prior to this in 2015, Bayer had received two notices of an ANDA IV application by Lupin seeking approval to market generic versions of Safyral™ and Beyaz™ in the United States. In view of the May 2016 decision by the U.S. Court of Appeals for the Federal Circuit, the U.S. federal court ruled in favor of Lupin in November 2016. This decision is now also final.

Betaferon™ / Betaseron™: In 2010, Bayer filed a complaint against Biogen Idec MA Inc. in a U.S. federal court seeking a declaration by the court that a patent issued to Biogen in 2009 is invalid and not infringed by Bayer's production and distribution of Betaseron™, Bayer's drug product for the treatment of multiple sclerosis. Biogen is alleging patent infringement by Bayer through Bayer's production and distribution of Betaseron™ and Extavia™ and has sued Bayer accordingly. Bayer manufactures Betaseron™ and distributes the product in the United States. Extavia™ is also a drug product for the treatment of multiple sclerosis; it is manufactured by Bayer, but distributed in the United States by Novartis Pharmaceuticals Corporation, another defendant in the lawsuit. In March 2016, the U.S. federal court decided a disputed issue regarding the scope of the patent in Biogen's favor. Bayer disagrees with the decision, which may be appealed at the conclusion of the proceedings in the U.S. federal court.

Damoctocog alfa pegol (BAY 94-9027, long-acting rFVIII): In 2013, Bayer filed a lawsuit against Nektar Therapeutics in the district court of Munich, Germany. In this proceeding, Bayer claims rights to certain European patent applications based on a past collaboration between Bayer and Nektar in the field of hemophilia. The European patent applications with the title "Polymer-factor VIII moiety conjugates" are part of a patent family registered in the name of Nektar comprising further patent applications and patents in other countries including the United States. However, Bayer believes that the patent family does not include any valid patent claim relevant for Bayer's drug candidate BAY 94-9027 for the treatment of hemophilia A.

Nexavar™: In 2015, Bayer filed patent infringement lawsuits in a U.S. federal court against Mylan Pharmaceuticals Inc. and Mylan Inc. (together "Mylan"). In 2014 and 2015, Bayer had received notices of an ANDA IV application pursuant to which Mylan seeks approval of a generic version of Bayer's cancer drug Nexavar™ in the United States. In November 2016, Bayer received another notice of such an ANDA IV application by Teva Pharmaceuticals USA, Inc. In December 2016, Bayer filed a patent infringement lawsuit against Teva Pharmaceuticals USA, Inc. and Teva Pharmaceutical Industries LTD in the same U.S. federal court.

Stivarga™: In December 2016, Bayer filed patent infringement lawsuits in a U.S. federal court against Apotex, Inc. and Apotex Corp. (together "Apotex") and against Teva Pharmaceuticals USA, Inc. and Teva Pharmaceutical Industries LTD (together "Teva"). In November 2016, Bayer had received notices of an ANDA IV application pursuant to which Apotex and Teva each seek approval of a generic version of Bayer's cancer drug Stivarga™ in the United States.

Xarelto™: In 2015, Bayer and Janssen Pharmaceuticals, Inc. filed a patent infringement lawsuit in a U.S. federal court against Aurobindo Pharma Limited, Aurobindo Pharma USA, Inc. (together "Aurobindo"), Breckenridge Pharmaceutical Inc. ("Breckenridge"), Micro Labs Ltd., Micro Labs USA Inc. (together "Micro Labs"), Mylan Pharmaceuticals Inc., Mylan Inc. (together "Mylan"), Prinston Pharmaceutical Inc. ("Prinston"), Sigmapharm Laboratories, LLC ("Sigmapharm"), Torrent Pharmaceuticals, Limited and Torrent Pharma Inc. (together "Torrent"). Earlier in 2015, Bayer had received notices of an ANDA IV application by Aurobindo, Breckenridge, Micro Labs, Mylan, Prinston, Sigmapharm and Torrent, each seeking approval to market a generic version of Xarelto™, an oral anticoagulant for the treatment and prevention of blood clots, in the United States. In January 2016, Bayer received another notice of such an ANDA IV application by InvaGen Pharmaceuticals, Inc. ("InvaGen"). In February 2016, Bayer and Janssen Pharmaceuticals, Inc. filed a patent infringement lawsuit against InvaGen in the same U.S. federal court.

Bayer believes it has meritorious defenses in the above ongoing patent disputes and intends to defend itself vigorously.

Further legal proceedings

Trasylol™ / Avelox™: A qui tam complaint relating to marketing practices for Trasylol™ (aprotinin) and Avelox™ (moxifloxacin) filed by a former Bayer employee is pending in the United States District Court in New Jersey. The U.S. government has declined to intervene at the present time.

Newark Bay Environmental Matters: In the United States, Bayer is one of numerous parties involved in a series of claims brought by federal and state environmental protection agencies. The claims arise from operations by entities which historically were conducted near Newark Bay or surrounding bodies of water, or which allegedly discharged hazardous waste into these waterways or onto nearby land. Bayer and the other potentially responsible parties are being asked to remediate and contribute to the payment of past and future remediation or restoration costs and damages. In August 2016, Bayer learned that two major potentially responsible parties had filed for protection under Chapter 11 of the U.S. Bankruptcy Code. While Bayer remains unable to determine the extent of its liability for these matters, this development is likely to adversely affect the share of costs potentially allocated to Bayer.

In the Lower Passaic River matter, a group of more than sixty companies including Bayer is investigating contaminated sediments in the riverbed under the supervision of the United States Environmental Protection Agency (EPA) and other governmental authorities. Future remediation will involve some form of dredging, the nature and scope of which are not yet defined, and potentially other tasks. The cost of the investigation and the remediation work may be substantial if the final remedy involves extensive dredging and disposal of impacted sediments. In the Newark Bay matter, an unaffiliated party is currently conducting an investigation of sediments in Newark Bay under EPA supervision. The investigation is in a preliminary stage. Bayer has contributed to certain investigation costs in the past and may incur costs for future investigation and remediation activities in Newark Bay.

Bayer has also been notified by governmental authorities acting as natural resource trustees that it may have liability for natural resource damages arising from the contamination of the Lower Passaic River, Newark Bay and surrounding water bodies. Bayer is currently unable to determine the extent of its liability.

Asbestos: A further risk may arise from asbestos litigation in the United States. In many cases, the plaintiffs allege that Bayer and co-defendants employed third parties on their sites in past decades without providing them with sufficient warnings or protection against the known dangers of asbestos. Additionally, a Bayer affiliate in the United States is the legal successor to companies that sold asbestos products until 1976. Union Carbide has agreed to indemnify Bayer for this liability. Bayer believes it has meritorious defenses and intends to defend itself vigorously.

Covestro U.S. Lawsuit: In September 2016, Covestro LLC – along with three other defendants – was served with a lawsuit filed by a law firm in a California federal court. The parties recently agreed to change the venue to a federal court in the District of Columbia. The aim of the lawsuit is to recover financial damages in the form of statutory fines allegedly owed by the defendants to the United States Environmental Protection Agency for the companies' failure to disclose health risk information associated with the manufacture and handling of TDI, MDI and PMDI. Under the pertinent statutes, the U.S. government was afforded an opportunity to intervene and prosecute the claims, but it has declined to do so. Accordingly, the law firm is prosecuting the claims on the government's behalf. Violations of the Toxic Substances Control Act ("TSCA") and False Claims Act ("FCA") are asserted. Covestro will defend itself vigorously and regards the claims asserted against the company as meritless.

Tax proceedings:

Stamp taxes in Greece: In 2014, 2016 and 2017, a Greek administrative court of first instance dismissed Bayer's lawsuits against the assessment of stamp taxes and contingent penalties in the total amounts of approximately €130 million on certain intra-Group loans to a Greek subsidiary. Bayer is convinced that the decisions are wrong and has appealed or will do so in due course. Bayer believes it has meritorious arguments to support its legal position and intends to defend itself vigorously.

Notes to the Statements of Cash Flows

The statement of cash flows shows how cash inflows and outflows during the fiscal year affected the cash and cash equivalents of the Bayer Group. Cash flows are classified by operating, investing and financing activities in accordance with IAS 7 (Statement of Cash Flows). Effects of changes in the scope of consolidation are stated separately.

Of the cash and cash equivalents, an amount of €15 million (2015: €17 million) had limited availability due to foreign exchange restrictions. Past experience has shown such restrictions to be of short duration. The above amount included €1 million (2015: €3 million) of exchange-restricted cash in Venezuela. The conversion of cash from Venezuelan bolivars (VEF) into U.S. dollars is subject to a government approval process.

The cash flows reported by consolidated companies outside the eurozone are translated at average monthly exchange rates, with the exception of cash and cash equivalents, which are translated at closing rates. The “Change in cash and cash equivalents due to exchange rate movements” is reported in a separate line item.

33. Net cash provided by (used in) operating activities

Following the switch to a different value management concept, the gross cash flow is no longer used as an indicator. The previous disclosure of “income taxes paid or accrued” is replaced by “income taxes paid.” This has also resulted in amendments to “Changes in other working capital, other noncash items.”

The transfers of bonds with a total value of €450 million (2015: €300 million) to pension funds and of Covestro shares with a value of €337 million to Bayer Pension Trust e.V. were noncash transactions and therefore did not result in operating cash outflows.

34. Net cash provided by (used in) investing activities

The net cash outflow for investing activities in 2016 amounted to €8,729 million (2015: €2,762 million).

Additions to property, plant and equipment and intangible assets in 2016 resulted in a cash outflow of €2,578 million (2015: €2,517 million). Cash inflows from sales of property, plant and equipment and intangible assets amounted to €111 million (2015: €193 million).

The net cash outflow for noncurrent and current financial assets amounted to €6,335 million (2015: €370 million).

The transfers of bonds in the total amount of €450 million (2015: €300 million) to pension funds were noncash transactions and therefore did not result in investing cash inflows.

35. Net cash provided by (used in) financing activities

In 2016 there was a net cash outflow of €350 million (2015: €3,974 million) for financing activities. Net loan repayments amounted to €730 million (2015: €2,929 million).

Cash outflows for dividend payments amounted to €2,126 million (2015: €1,869 million). Net interest payments – including payments for and receipts from interest-rate swaps – rose to €794 million (2015: €652 million). The net inflow of €3,952 million from the mandatory convertible notes is reflected as a capital contribution of €3,300 million and a borrowing of €652 million. In 2015, the proceeds from the stock market flotation of Covestro AG accounted for a €1,490 million cash inflow.

The transfer of Covestro shares with a value of €337 million to Bayer Pension Trust e.V. was a noncash transaction and therefore did not result in a financing cash inflow.

Other Information

36. Audit fees

The following fees for the services of the worldwide network of PricewaterhouseCoopers (PwC), including PricewaterhouseCoopers Aktiengesellschaft Wirtschaftsprüfungsgesellschaft (PwC AG WPG), were recognized as expenses:

B 36/1

Audit Fees

	PwC		of which PwC AG WPG	
€ million	2015	2016	2015	2016
Financial statements auditing	17	16	7	7
Audit-related services and other audit work	9	2	9	1
Tax consultancy	3	3	–	–
Other services	7	7	5	5
Total	**36**	**28**	**21**	**13**

The fees for the auditing of financial statements mainly comprised those for the audits of the consolidated financial statements of the Bayer Group and the financial statements of Bayer AG and its subsidiaries. The decrease in fees for audit-related services and other audit work mainly resulted from the absence of fees related to the carve-out and stock market flotation of Covestro, which took place in 2015.

The Independent Auditor’s Report on the consolidated financial statements for fiscal 2016 was signed by Dr. Peter Bartels and Eckhard Sprinkmeier. Eckhard Sprinkmeier is the responsible audit partner. Dr. Peter Bartels signed the Independent Auditor’s Report for the first time for the year ended December 31, 2012, and Eckhard Sprinkmeier for the year ended December 31, 2014. PwC has served as the auditor of Bayer’s consolidated financial statements since the merger of Price Waterhouse Deutschland and Coopers & Lybrand Deutsche Revision in 1998. The predecessor firm of Coopers & Lybrand Deutsche Revision had already audited Bayer’s consolidated financial statements for some years prior to that date.

37. Related parties

Related parties as defined in IAS 24 (Related Party Disclosures) are those legal entities and natural persons that are able to exert influence on Bayer AG and its subsidiaries or over which Bayer AG or its subsidiaries exercise control or joint control or have a significant influence. They include, in particular, nonconsolidated subsidiaries, joint ventures and associates included in the consolidated financial statements at cost of acquisition or using the equity method, and post-employment benefit plans, as well as the corporate officers of Bayer AG whose compensation is reported in Note [38] and in the Compensation Report, which forms part of the Combined Management Report.

Transactions with nonconsolidated subsidiaries, joint ventures and associates included in the consolidated financial statements at cost of acquisition or using the equity method, and post-employment benefit plans are carried out on an arm's-length basis.

The following table shows the volume of transactions with related parties included in the consolidated financial statements of the Bayer Group at amortized cost or using the equity method, and with post-employment benefit plans:

B 37/1

Related Parties

€ million	Sales of goods and services 2015	Purchases of goods and services 2015	Receiv-ables 2015	Liabilities 2015	Sales of goods and services 2016	Purchases of goods and services 2016	Receiv-ables 2016	Liabilities 2016
Nonconsolidated subsidiaries	21	4	11	22	4	5	9	19
Joint ventures	25	–	4	1	24	–	4	243
Associates	36	645	–	4	34	557	3	6
Post-employment benefit plans	–	–	822	68	–	–	823	63

Goods and services in the amount of €524 million (2015: €609 million) were purchased from the associate PO JV, LP, Wilmington, United States, mainly in the course of day-to-day business operations.

Liabilities rose mainly with respect to Casebia Therapeutics Limited Liability Partnership, Ascot, United Kingdom, the newly established joint venture with CRISPR Therapeutics AG, Basel, Switzerland.

Intercompany profits and losses for companies accounted for in the consolidated financial statements using the equity method were immaterial in 2016 and 2015.

Bayer AG has undertaken to provide jouissance right capital (Genussrechtskapital) in the form of an interest-bearing loan with a nominal volume of €150 million (2015: €150 million) for Bayer-Pensionskasse VVaG. The entire amount remained drawn as of December 31, 2016. The carrying amount as of December 31, 2016, was €154 million (2015: €153 million). Loan capital was first provided to Bayer-Pensionskasse VVaG in 2008 for its effective initial fund. This capital had a nominal volume of €595 million as of December 31, 2016 (2015: €595 million). The carrying amount as of December 31, 2016, was €612 million (2015: €610 million). The outstanding receivables, comprised of different tranches, are each subject to a five-year interest-rate adjustment mechanism. Interest income of €18 million was recognized for 2016 (2015: €22 million).

38. Total compensation of the Board of Management and the Supervisory Board, advances and loans

The compensation of the Board of Management comprises short-term payments, stock-based payments and post-employment benefits.

The following table shows the individual components of the Board of Management's compensation according to IFRS:

B 38/1

Board of Management Compensation according to IFRS

€ thousand	2015	2016
Fixed annual compensation	4,455	6,385
Fringe benefits	207	664
Total short-term non-performance-related compensation	**4,662**	**7,049**
Short-term performance-related cash compensation	5,983	9,063
Total short-term compensation	**10,645**	**16,112**
Stock-based compensation (virtual Bayer shares) earned in the respective year	5,983	–
Change in value of existing entitlements to stock-based compensation (virtual Bayer shares)	556	(1,275)
Stock-based compensation (Aspire) earned in the respective year	2,330	5,217
Change in value of existing entitlements to stock-based compensation (Aspire)	272	(923)
Total stock-based compensation (long-term incentive)	**9,141**	**3,019**
Service cost for pension entitlements earned in the respective year	2,891	3,902
Total long-term compensation	**12,032**	**6,921**
Severance indemnity in connection with the termination of a service contract	1,131	4,542
Aggregate compensation (IFRS)	**23,808**	**27,575**

In addition to the above compensation, actuarial losses of €3,196 thousand (2015: gains of €2,309 thousand) incurred in connection with pension obligations to the currently serving members of the Board of Management were recognized outside profit or loss. These changes mainly resulted from the decline (2015: slight increase) in the level of interest rates.

Further details are provided in the Compensation Report, which forms part of the Combined Management Report.

In addition to the provisions of €6,575 thousand (2015: €5,983 thousand) for the short-term variable cash compensation, an amount of €7,777 thousand (2015: €18,663 thousand) was recognized in the statement of financial position for future payments of stock-based compensation based on virtual shares to the members of the Board of Management serving as of December 31, 2016.

An amount of €7,288 thousand (2015: €7,110 thousand) was recognized in the statement of financial position for future payments of stock-based compensation based on the Aspire program to the members of the Board of Management serving as of December 31, 2016.

The present value of the defined benefit pension obligation for the members of the Board of Management serving as of December 31, 2016, was €38,427 thousand (2015: €33,491 thousand).

Pension payments to former members of the Board of Management and their surviving dependents in 2016 amounted to €12,800 thousand (2015: €13,416 thousand). The defined benefit obligation for former members of the Board of Management and their surviving dependents amounted to €188,850 thousand (2015: €172,767 thousand).

The compensation of the Supervisory Board amounted to €3,479 thousand (2015: €3,291 thousand).

In addition to their compensation as members of the Supervisory Board, those employee representatives who are employees of Bayer Group companies receive compensation unrelated to their service on the Supervisory Board. The total amount of such compensation in 2016 was €939 thousand (2015: €741 thousand).

Pension obligations for employee representatives on the Supervisory Board amounted to €4,399 thousand (2015: €3,756 thousand).

There were no advances or loans to members of the Board of Management or the Supervisory Board outstanding as of December 31, 2016, or at any time during 2016 or 2015.

39. Events After the End of the Reporting Period

Acquisition of Cydectin™

On January 3, 2017, Bayer acquired the Cydectin™ portfolio in the United States from Boehringer Ingelheim Vetmedica Inc., St. Joseph, United States. A payment of €158 million was made on January 3, 2017, in connection with the acquisition.

Leverkusen, February 14, 2017

Bayer Aktiengesellschaft

The Board of Management

Responsibility Statement

To the best of our knowledge, and in accordance with the applicable reporting principles for financial reporting, the consolidated financial statements give a true and fair view of the assets, liabilities, financial position and profit or loss of the Bayer Group, and the combined management report includes a fair review of the development and performance of the business and the position of the Bayer Group and Bayer AG, together with a description of the principal opportunities and risks associated with the expected development of the Bayer Group and Bayer AG.

Leverkusen, February 14, 2017
Bayer Aktiengesellschaft

The Board of Management

Werner Baumann
Chairman

Liam Condon

Johannes Dietsch

Dr. Hartmut Klusik

Kemal Malik

Erica Mann

Dieter Weinand

C Further Information

Governance Bodies

Supervisory Board

Members of the Supervisory Board held offices as members of the supervisory board or a comparable supervising body of the corporations listed (as at December 31, 2016, or the date on which they ceased to be members of the Supervisory Board of Bayer AG) and as shown attended the meetings of the Supervisory Board and committees to which he or she belonged:

Werner Wenning
Leverkusen, Germany
(born October 21, 1946)

Chairman of the Supervisory Board effective October 2012

Chairman of the Supervisory Board of Bayer AG

Memberships on other supervisory boards:

- E.ON SE (Chairman) (until June 2016)
- Henkel Management AG
- Siemens AG (Vice Chairman)

Memberships in comparable supervising bodies of German or foreign corporations:

- Henkel AG & Co. KGaA (Member of the Shareholders' Committee)

Attendance at Supervisory Board and committee meetings: 19 of 19

Oliver Zühlke
Solingen, Germany
(born December 11, 1968)

Vice Chairman of the Supervisory Board effective July 2015

Member of the Supervisory Board effective April 2007

Chairman of the Bayer Central Works Council

Memberships on other supervisory boards:

- Bayer Pharma AG (until January 2017)

Attendance at Supervisory Board and committee meetings: 10 of 12

Dr. Paul Achleitner
Munich, Germany
(born September 28, 1956)

Member of the Supervisory Board effective April 2002

Chairman of the Supervisory Board of Deutsche Bank AG

Memberships on other supervisory boards:

- Daimler AG
- Deutsche Bank AG (Chairman)

Memberships in comparable supervising bodies of German or foreign corporations:

- Henkel AG & Co. KGaA (Member of the Shareholders' Committee)

Attendance at Supervisory Board and committee meetings: 13 of 13

Dr. rer. nat. Simone Bagel-Trah
Düsseldorf, Germany
(born January 10, 1969)

Member of the Supervisory Board effective April 2014

Chairwoman of the Supervisory Board of Henkel AG & Co. KGaA and Henkel Management AG and of the Shareholders' Committee of Henkel AG & Co. KGaA

Memberships on other supervisory boards:

- Henkel AG & Co. KGaA (Chairwoman)
- Henkel Management AG
- Heraeus Holding GmbH

Memberships in comparable supervising bodies of German or foreign corporations:

- Henkel AG & Co. KGaA (Chairwoman of the Shareholders' Committee)

Attendance at Supervisory Board meetings: 5 of 5

Dr. Clemens Börsig
Frankfurt am Main, Germany
(born July 27, 1948)

Member of the Supervisory Board effective April 2007

Member of various supervisory boards

Memberships on other supervisory boards:

- Daimler AG
- Linde AG

Memberships in comparable supervising bodies of German or foreign corporations:

- Emerson Electric Co.
- Istituto per le Opere di Religione (Member of the Board of Superintendence) (until May 2016)

Attendance at Supervisory Board meetings: 5 of 5

André van Broich
Dormagen, Germany
(born June 19, 1970)

Member of the Supervisory Board effective April 2012

Chairman of the Works Council of the Dormagen site

Memberships on other supervisory boards:

- Bayer CropScience AG (until January 2017)

Attendance at Supervisory Board and committee meetings: 7 of 7

Thomas Ebeling
Muri bei Bern, Switzerland
(born February 9, 1959)

Member of the Supervisory Board effective April 2012

Chief Executive Officer of ProSiebenSat.1 Media SE

Memberships in comparable supervising bodies of German or foreign corporations:

- Lonza Group AG

Attendance at Supervisory Board meetings: 5 of 5

Johanna W. (Hanneke) Faber
Amstelveen, Netherlands
(born April 19, 1969)

Member of the Supervisory Board effective April 2016

Chief E-Commerce and Innovation Officer and Member of the Executive Committee of Koninklijke Ahold Delhaize N.V.

Attendance at Supervisory Board meetings: 3 of 3

Dr.-Ing. Thomas Fischer
Krefeld, Germany
(born August 27, 1955)

Member of the Supervisory Board effective October 2005

Chairman of the Managerial Employees Committee of Covestro Deutschland AG

Memberships on other supervisory boards:

- Covestro AG
- Covestro Deutschland AG

Attendance at Supervisory Board and committee meetings: 9 of 9

Reiner Hoffmann
Wuppertal, Germany
(born May 30, 1955)

Member of the Supervisory Board effective October 2006

Chairman of the German Trade Union Confederation

Attendance at Supervisory Board meetings: 5 of 5

Yüksel Karaaslan
Hohen Neuendorf, Germany
(born March 1, 1968)

Member of the Supervisory Board effective April 2012

Chairman of the Bayer Group Works Council

Vice Chairman of the Bayer Central Works Council

Chairman of the Works Council of the Berlin site

Memberships on other supervisory boards:

- Bayer Pharma AG
  (Vice Chairman)
  (until January 2017)

Attendance at Supervisory Board and committee meetings: 8 of 8

Petra Kronen
Krefeld, Germany
(born August 22, 1964)

Member of the Supervisory Board effective July 2000

Chairwoman of the Central Works Council of Covestro

Chairwoman of the Works Council of Covestro of the Uerdingen site

Memberships on other supervisory boards:

- Covestro AG (Vice Chairwoman)
- Covestro Deutschland AG
  (Vice Chairwoman)

Attendance at Supervisory Board and committee meetings: 7 of 8

Frank Löllgen
Cologne, Germany
(born June 14, 1961)

Member of the Supervisory Board effective November 2015

North Rhine District Secretary of the German Mining, Chemical and Energy Industrial Union

Memberships on other supervisory boards:

- IRR-Innovationsregion Rheinisches Revier GmbH
- Evonik Industries AG

Attendance at Supervisory Board and committee meetings: 8 of 8

Dr. rer. nat. Helmut Panke
Munich, Germany
(born August 31, 1946)

Member of the Supervisory Board until April 2016

Member of various supervisory boards

Memberships in comparable supervising bodies of German or foreign corporations:

- Microsoft Corporation
- Singapore Airlines Limited

Attendance at Supervisory Board and committee meetings: 4 of 4

Prof. Dr. Wolfgang Plischke
Aschau im Chiemgau, Germany
(born September 15, 1951)

Member of the Supervisory Board effective April 2016

Independent consultant

Memberships in comparable supervising bodies of German or foreign corporations:

- Evotec AG (Chairman)

Attendance at Supervisory Board and committee meetings: 6 of 6

Sue H. Rataj
Sebastopol, U.S.A.
(born January 8, 1957)

Member of the Supervisory Board effective April 2012

Member of the Board of Directors of Cabot Corporation, Boston, U.S.A.

Member of the Board of Directors of Agilent Technologies Inc., Santa Clara, U.S.A.

Attendance at Supervisory Board meetings: 5 of 5

Petra Reinbold-Knape
Gladbeck, Germany
(born April 16, 1959)

Member of the Supervisory Board effective April 2012

Member of the Executive Committee of the German Mining, Chemical and Energy Industrial Union

Memberships on other supervisory boards:

- Lausitz Energie Bergbau AG
  (formerly Vattenfall Europe Mining AG)
  (Vice Chairwoman)
- Lausitz Energie Kraftwerk AG
  (formerly Vattenfall Europe Generation AG)

Memberships in comparable supervising bodies of German or foreign corporations:

- MDSE Mitteldeutsche Sanierungs- und Entsorgungsgesellschaft mbH (until August 2016)

Attendance at Supervisory Board and committee meetings: 8 of 8

Michael Schmidt-Kießling
Schwelm, Germany
(born March 24, 1959)

Member of the Supervisory Board effective April 2012

Chairman of the Works Council of the Elberfeld site

Attendance at Supervisory Board meetings: 4 of 5

Dr. Klaus Sturany*
Ascona, Switzerland
(born October 23, 1946)

Member of the Supervisory Board effective April 2007

Member of various supervisory boards

Memberships on other supervisory boards:

- Hannover Rück SE
  (Vice Chairman)

Memberships in comparable supervising bodies of German or foreign corporations:

- Sulzer AG (until April 2016)

Attendance at Supervisory Board and committee meetings: 9 of 9

Heinz Georg Webers
Bergkamen, Germany
(born December 27, 1959)

Member of the Supervisory Board effective July 2015

Chairman of the Bayer European Forum

Chairman of the Works Council of the Bergkamen site

Memberships on other supervisory boards:

- Bayer Pharma AG
  (until January 2017)

Attendance at Supervisory Board meetings: 5 of 5

Prof. Dr. Dr. h.c. Otmar D. Wiestler
Berlin, Germany
(born November 6, 1956)

Member of the Supervisory Board effective October 2014

President of the Helmholtz Association of German Research Centres

Attendance at Supervisory Board and committee meetings: 7 of 7

Prof. Dr. Dr. h.c. mult. Ernst-Ludwig Winnacker
Munich, Germany
(born July 26, 1941)

Member of the Supervisory Board until April 2016

Professor-Emeritus of Ludwig-Maximilians University Munich

Memberships on other supervisory boards:

- Medigene AG (until August 2016)
- Wacker Chemie AG

Attendance at Supervisory Board and committee meetings: 3 of 3

Board of Management

Members of the Board of Management held offices as members of the supervisory board or a comparable supervising body of the corporations listed (as at December 31, 2016):

Werner Baumann
(born October 6, 1962)

Chairman
(effective May 2016)

Member of the Board of Management effective January 1, 2010, appointed until April 30, 2021

- Bayer CropScience AG (Chairman) (until April 2016)
- Bayer Pharma AG (until April 2016)

Liam Condon
(born February 27, 1968)

Member of the Board of Management effective January 1, 2016, appointed until December 31, 2018

Johannes Dietsch
(born January 2, 1962)

Member of the Board of Management effective September 1, 2014, appointed until August 31, 2017

- Bayer Business Services GmbH (Chairman)
- Bayer CropScience AG (Chairman) (May 2016 until February 2017)
- Covestro AG
- Covestro Deutschland AG

Dr. Hartmut Klusik
(born July 30, 1956)

Member of the Board of Management effective January 1, 2016, appointed until December 31, 2018

Labor Director

- Bayer HealthCare AG (Chairman) (until July 2016)
- Bayer Pharma AG (Chairman) (until February 2017)
- Bayer Technology Services GmbH (Chairman) (until July 2016)
- Currenta Geschäftsführungs-GmbH (Chairman)

Kemal Malik
(born September 29, 1962)

Member of the Board of Management effective February 1, 2014, appointed until January 31, 2022

Erica Mann
(born October 11, 1958)

Member of the Board of Management effective January 1, 2016, appointed until December 31, 2018

Dieter Weinand
(born August 16, 1960)

Member of the Board of Management effective January 1, 2016, appointed until December 31, 2018

- Board of Directors of HealthPrize Technologies LLC

Chairman of the Board of Management until April 2016

Dr. Marijn Dekkers
(born September 22, 1957)

- Board of Directors of General Electric Company
- Chairman of Unilever N.V.

Standing committees of the Supervisory Board of Bayer AG (as at December 31, 2016)

Presidial Committee / Mediation Committee
Wenning (Chairman), Achleitner, Reinbold-Knape, Zühlke

Audit Committee
Sturany* (Chairman), Fischer, Löllgen, Plischke, Wenning, Zühlke

Human Resources Committee
Wenning (Chairman), Achleitner, Karaaslan, Kronen

Nominations Committee
Wenning (Chairman), Achleitner

Innovation Committee
Plischke (Chairman), van Broich, Reinbold-Knape, Wenning, Wiestler, Zühlke

* Expert member pursuant to Section 100, Paragraph 5 of the German Stock Corporation Act (AktG)