Notes to the Balance Sheet

14 Intangible assets

BASF's **goodwill** is allocated to 23 cash-generating units (2017: 24), which are defined either on the basis of business units or at a higher level.

Annual impairment testing was performed in the fourth quarter on the basis of the cash-generating units. Recoverable amounts were determined in most cases using the value in use. This was based on plans approved by company management and their respective cash flows, generally for the next five years. For the period thereafter, a terminal value was calculated using a forward projection from the last detailed planning year as a perpetual annuity. Planning is based on experience, current performance and management's best possible estimates on the future development of individual parameters, such as raw materials prices and profit margins. Oil and gas prices are also among the main input parameters that provide the basis for the forecast of cash flows in the current financial plans. Market assumptions regarding, for example, economic development and market growth are included based on external macroeconomic and industry-specific sources.

The required discounting of cash flows for impairment testing is calculated using the weighted average cost of capital rate after tax, which is determined using the capital asset pricing model. It comprises a risk-free rate, a market risk premium, and a spread for credit risk based on the respective industry-specific peer group. The calculation also takes into account capital structure and the beta factor of the respective peer group as well as the average tax rate of each cash-generating unit. Impairment tests of the units were conducted assuming a weighted average cost of capital rate after taxes of between 5.83% and 6.90% (2017: between 5.69% and 8.2%). This corresponds to a weighted average cost of capital rate before taxes of between 7.0% and 8.5% (2017: between 7.13% and 11.31%).

After determining the recoverable amount for the cash-generating units, it was established that reasonable possible deviations from the key assumptions would not lead to the carrying amounts of 22 units exceeding their respective recoverable amounts. This is not the case for goodwill for the Pigments unit in the Dispersions & Pigments division.

In 2018, the recoverable amount for Pigments exceeded the carrying amount by €192 million. The weighted average cost of capital rate after taxes used for impairment testing was 5.84% (2017: 6.05%). The recoverable amount would equal the unit's carrying amount if the weighted average cost of capital rate increased by 0.74 percentage points (2017: by 0.04 percentage points) or if income from operations of the last detailed planning year – as the basis for the terminal value – were 14.39% lower (2017: 0.81% lower).

Goodwill of cash-generating units

Million €

	2018		2017	
Cash-generating unit	**Goodwill**	**Growth rate[1]**	**Goodwill**	**Growth rate[1]**
Agricultural Solutions division	3,236	2.0%	1,929	2.0%
Catalysts division (excluding battery materials)	1,298	2.0%	1,285	2.0%
Construction Chemicals division	753	2.0%	732	2.0%
Personal Care Ingredients in the Care Chemicals division	518	2.0%	499	2.0%
Pigments in the Dispersions & Pigments division	403	1.5%	389	1.5%
Surface Treatment in the Coatings division	1,500	2.0%	1,490	2.0%
Exploration & Production[2]	–	–	1,504	–
Other cash-generating units	1,503	0.0–2.0%	1,525	0.0–2.0%
Goodwill as of December 31	**9,211**		**9,353**	

1 Growth rates used in impairment tests to determine terminal values in accordance with IAS 36
2 Reclassification of goodwill from oil and gas business to the disposal group minus €1,572 million

Development of intangible assets 2018

Million €

	Distribution, supply and similar rights	Product rights, licenses and trademarks	Know-how, patents and production technologies	Internally generated intangible assets	Other rights and values[1]	Goodwill	Total
Cost							
As of January 1, 2018	4,722	1,150	1,879	116	411	9,477	17,755
Changes in the scope of consolidation	–	–	–	–	–	–	–
Additions	1	35	36	36	47	–	155
Additions from acquisitions	364	1,054	2,725	–	136	1,261	5,540
Disposals	(174)	(8)	(73)	(1)	(32)	(6)	(294)
Transfers	2	–	(29)	1	21	–	(5)
Transfers to disposal groups	(862)	(413)	(15)	–	(35)	(1,722)	(3,047)
Currency effects	(15)	21	52	–	5	201	264
As of December 31, 2018	4,038	1,839	4,575	152	553	9,211	20,368
Accumulated amortization							
As of January 1, 2018	2,301	479	954	81	222	124	4,161
Changes in the scope of consolidation	–	–	–	–	–	–	–
Additions	279	49	168	14	85	–	595
Disposals	(173)	(5)	(72)	(1)	(26)	–	(277)
Transfers	–	–	–	0	(1)	–	(1)
Transfers to disposal groups	(370)	(151)	(13)	–	(26)	(128)	(688)
Currency effects	6	4	9	–	1	4	24
As of December 31, 2018	2,043	376	1,046	94	255	0	3,814
Net carrying amount as of December 31, 2018	**1,995**	**1,463**	**3,529**	**58**	**298**	**9,211**	**16,554**

1 Including licenses to such rights and values

In addition to goodwill, **intangible assets** include acquired and internally generated intangible assets. Intangible assets include rights of the Oil & Gas segment, which are amortized using the unit of production method, until the date of reclassification to the disposal group.

Additions refer primarily to software licenses purchased or internally developed software applications. Additions also include concessions for the search and production of oil and gas in Brazil.

Additions from acquisitions amounted to €5,540 million in 2018. Key acquisitions, the acquisition of significant parts of Bayer's seed and non-selective herbicide businesses and vegetable seed business, as well as the acquisition of Toda America LLC's battery materials business led to a €1,257 million increase in **goodwill**. A further addition to goodwill amounting to €4 million arose from a retroactive purchase price payment for the acquisition in 2017 of GRUPO Thermotek based in Monterrey, Mexico. Further additions to intangible assets in connection with the key acquisitions mentioned above amounted to €4,279 million. These related predominantly to know-how, patents and production technologies in the amount of €2,725 million; product rights, licenses and trademarks in the amount of €1,054 million, as well as distribution, supply and similar rights in the amount of €364 million.

Disposals of intangible assets amounting to €294 million were largely attributable to the derecognition of fully amortized assets. The sale of shares in the Aguada Pichana Este concession in Argentina and the divestiture of the production site for styrene butadiene-based paper dispersions in Pischelsdorf, Austria led to a €6 million disposal of goodwill.

Transfers to disposal groups related mainly to the reclassification of intangible assets from the oil and gas business as of September 30, 2018 and, to a lesser extent, from the paper and water chemicals business to the disposal groups.

In 2018, additions to **accumulated amortization** contained impairments of €4 million. This mainly pertained to impairments of non-strategic know-how, patents and production technologies in the Functional Materials & Solutions segment and, to a lesser extent, to the amortization of unused software licenses and discontinued IT projects. Reversals of impairments of €2 million included in additions to accumulated amortization had a countereffect. These related primarily to distribution rights in the Functional Materials & Solutions segment and to a higher valuation of emissions rights due to increased fair market values. Until September 30, 2018, they also included amortization of rights belonging to the Oil & Gas segment in the amount of €29 million, which were amortized in accordance with the unit of production method.

Development of intangible assets 2017

Million €

	Distribution, supply and similar rights	Product rights, licenses and trademarks	Know-how, patents and production technologies	Internally generated intangible assets	Other rights and values[1]	Goodwill	Total
Cost							
As of January 1, 2017	5,051	1,339	1,958	92	435	10,214	19,089
Changes in the scope of consolidation	1	–	–	–	–	–	1
Additions	3	19	20	25	34	–	101
Additions from acquisitions	10	47	56	–	25	97	235
Disposals	(40)	(20)	(53)	(1)	(79)	(28)	(221)
Transfers	14	(178)	(24)	–	13	–	(175)
Currency effects	(317)	(57)	(78)	–	(17)	(806)	(1,275)
As of December 31, 2017	4,722	1,150	1,879	116	411	9,477	17,755
Accumulated amortization							
As of January 1, 2017	2,168	435	882	72	229	141	3,927
Changes in the scope of consolidation	–	–	–	–	–	–	–
Additions	298	70	166	10	72	–	616
Disposals	(35)	(17)	(53)	(1)	(72)	–	(178)
Transfers	–	–	–	–	–	–	–
Currency effects	(130)	(9)	(41)	–	(7)	(17)	(204)
As of December 31, 2017	2,301	479	954	81	222	124	4,161
Net carrying amount as of December 31, 2017	**2,421**	**671**	**925**	**35**	**189**	**9,353**	**13,594**

1 Including licenses to such rights and values

In addition to goodwill, acquired and internally generated intangible assets, **intangible assets** included rights belonging to the Oil & Gas segment in 2017, which were amortized in accordance with the unit of production method. As of December 31, 2017, their acquisition costs amounted to €962 million and accumulated amortization to €312 million; amortization in 2017 amounted to €41 million.

Additions from acquisitions amounted to €235 million in 2017. Goodwill rose by €79 million as a result of the following key acquisitions: Rolic AG headquartered in Allschwil, Switzerland; GRUPO Thermotek headquartered in Monterrey, Mexico; Henkel group's western European construction chemicals business; and ZedX Inc. in Bellefonte, Pennsylvania. A further addition to **goodwill** amounting to €18 million arose primarily from a retroactive purchase price payment for the acquisition of Chemetall in the previous year.

Further additions to intangible assets in connection with these transactions amounted to €138 million. These related predominantly to product rights, licenses and trademarks as well as know-how, patents and production technologies.

Concessions for oil and gas production included in **product rights, licenses and trademarks** had a net carrying amount of €234 million in 2017. These authorize the holder to search for and produce oil and gas in specific areas. At the end of the term of a concession, the rights are returned.

Disposals of intangible assets amounting to €221 million were largely attributable to the derecognition of fully amortized software as well as the sale of the production site for electrolytes in Suzhou, China, the sale of the bleaching clay and mineral adsorbents businesses, and the transfer of the global leather chemicals business to the Stahl group. Goodwill of €28 million was derecognized in connection with this.

Transfers largely concerned the confirmed oil and gas deposits in the Maria field in Norway to property, plant and equipment. Non-confirmed deposits in connection with acquired concessions are reported as intangible assets under product rights, licenses and trademarks.

In 2017, **accumulated amortization** included impairments of €67 million. This mainly pertained to impairments of non-strategic know-how, patents and production technologies in the Functional Materials & Solutions segment and exploration potential for oil and gas production in Norway. This was offset by reversals of impairments totaling €7 million. These related primarily to distribution rights in the Functional Materials & Solutions segment.

15 Property, plant and equipment

Machinery and technical equipment contained oil and gas deposits, including related wells, production facilities and further infrastructure, which were depreciated according to the unit of production method. The following table presents the development of property, plant and equipment including these assets until the oil and gas business was transferred to the disposal group.

Development of property, plant and equipment 2018

Million €

	Land, land rights and buildings	Machinery and technical equipment	Of which depreciation according to the unit of production method	Miscellaneous equipment and fixtures	Construction in progress	Total
Cost						
As of January 1, 2018	11,169	50,558	7,940	4,387	4,799	70,913
Changes in the scope of consolidation	77	5	–	2	1	85
Additions	192	679	109	216	2,528	3,615
Additions from acquisitions	650	634	–	64	77	1,425
Disposals	(71)	(407)	–	(171)	(52)	(701)
Transfers	300	1,159	–	190	(1,657)	(8)
Transfers to disposal groups	(245)	(10,899)	(8,170)	(108)	(1,883)	(13,135)
Currency effects	84	602	121	36	92	814
As of December 31, 2018	12,156	42,331	–	4,616	3,905	63,008
Accumulated depreciation						
As of January 1, 2018	6,065	36,110	4,329	3,264	216	45,655
Changes in the scope of consolidation	4	–	–	2	–	6
Additions	354	2,409	498	358	34	3,155
Disposals	(45)	(372)	–	(164)	(52)	(633)
Transfers	(3)	(7)	–	–	–	(10)
Transfers to disposal groups	(81)	(6,118)	(4,923)	(87)	(196)	(6,482)
Currency effects	48	458	96	27	4	537
As of December 31, 2018	6,342	32,480	–	3,400	6	42,228
Net carrying amount as of December 31, 2018	**5,814**	**9,851**	**–**	**1,216**	**3,899**	**20,780**

Additions to property, plant and equipment arising from investment projects amounted to €3,615 million in 2018. Investments were made at the following sites in particular: Ludwigshafen, Germany; Antwerp, Belgium; Shanghai, China; Geismar, Louisiana; and Freeport, Texas. Material investments included the acetylene plant currently under construction as well as plants for the production of catalysts in Ludwigshafen, Germany. In addition, additions included renovations to the steam cracker and the construction of a new propane tank in Antwerp, Belgium. Other investments included the construction of oil and gas facilities and wells in Europe and South America.

Government grants for funding investment measures reduced asset additions by €26 million.

Acquisitions led to an increase in property, plant and equipment in the amount of €1,425 million, primarily from the acquisition of significant parts of Bayer's seed and non-selective herbicide businesses and its vegetable seed business.

In 2018, impairments of €52 million and reversals of impairments of €1 million were included in **accumulated depreciation**. The impairments were primarily attributable to construction in progress resulting from discontinued investment projects in North America.

Disposals of property, plant and equipment included the sale of production plants for oleochemical surfactants in Mexico and the production site for styrene butadiene-based paper dispersions in Pischelsdorf, Austria.

For more information on divestitures, see Note 2.4 from page 205 onward

Transfers related mainly to the reclassification of operation-ready assets from construction in progress to other asset categories.

Currency effects raised property, plant and equipment by €277 million and resulted mainly from the appreciation of the U.S. dollar against the euro.

Development of property, plant and equipment 2017

Million €

	Land, land rights and buildings	Machinery and technical equipment	Of which depreciation according to the unit of production method	Miscellaneous equipment and fixtures	Construction in progress	Total
Cost						
As of January 1, 2017	11,257	49,893	7,180	4,437	5,989	71,576
Changes in the scope of consolidation	–	14	–	–	1	15
Additions	171	1,292	450	272	2,285	4,020
Additions from acquisitions	–	7	–	1	–	8
Disposals	(131)	(825)	(17)	(280)	(36)	(1,272)
Transfers	367	2,635	890	128	(2,945)	185
Currency effects	(495)	(2,458)	(563)	(171)	(495)	(3,619)
As of December 31, 2017	11,169	50,558	7,940	4,387	4,799	70,913
Accumulated depreciation						
As of January 1, 2017	5,969	35,655	3,711	3,308	231	45,163
Changes in the scope of consolidation	–	14	–	–	–	14
Additions	385	2,878	931	335	(12)	3,586
Disposals	(95)	(761)	(3)	(266)	(32)	(1,154)
Transfers	–	(50)	–	(1)	53	2
Currency effects	(194)	(1,626)	(310)	(112)	(24)	(1,956)
As of December 31, 2017	6,065	36,110	4,329	3,264	216	45,655
Net carrying amount as of December 31, 2017	**5,104**	**14,448**	**3,611**	**1,123**	**4,583**	**25,258**

Additions to property, plant and equipment arising from investment projects amounted to €4,020 million in 2017. Material investments refer to the acetylene plant currently under construction as well as plants for the production of catalysts in Ludwigshafen, Germany. Additions also included the construction of an aroma ingredients complex in Kuantan, Malaysia, and the modification of production plants for plasticizers in Pasadena, Texas, which have already partly started up. Material investments were also made for the construction of oil and gas facilities and wells in Europe and South America. Furthermore, investments were made at the following sites in particular: Ludwigshafen, Germany; Antwerp, Belgium; Shanghai, China; Freeport, Texas; Geismar, Louisiana; and Port Arthur, Texas.

Government grants for funding investment measures reduced asset additions by €9 million.

Acquisitions led to an increase in property, plant and equipment in the amount of €8 million, primarily from the acquisition of GRUPO Thermotek in Monterrey, Mexico.

In 2017, impairments of €262 million were included in **accumulated depreciation**. These pertained largely to machinery and technical equipment and resulted primarily from the full impairment of a production plant in the Chemicals segment due to overcapacities. The recoverable amount equaled value in use, and the weighted average cost of capital rate before taxes was 10.27%.

Depreciation also included impairments in the former Oil & Gas segment, which were more than offset by reversals of impairments in the same segment. These primarily concerned construction in progress. Overall, reversals of impairments in additions to accumulated depreciation amounted to €182 million.

Disposals of property, plant and equipment were largely attributable to the sale of the bleaching clay and mineral absorbents businesses; the production site for electrolytes in Suzhou, China; the inorganic specialties business; and the leather chemicals business.

For more information on divestitures, see Note 2.4 from page 205 onward

Transfers pertained mainly to the transfer of confirmed oil and gas deposits in the Maria field in Norway from intangible assets to machinery and technical equipment.

Currency effects reduced property, plant and equipment by €1,663 million and arose mainly from the depreciation of the U.S. dollar against the euro.

16 Investments accounted for using the equity method and other financial assets

Additions included capital increases amounting to €55 million in 2018. In 2017, additions were mainly attributable to the combination of the global leather chemicals business with the Stahl group. In this connection, BASF received a 16.6% share in Stahl Lux 2 S.A., Luxembourg.

In addition to the net income of investments accounted for using the equity method, dividend distributions and other comprehensive income of the companies, transfers included €2,552 million from the reclassification of investments accounted for using the equity method to assets of the disposal group for the oil and gas business. For one investment in the Chemicals segment accounted for using the equity method, the carrying amount was impaired by €7 million in 2018.

For a detailed overview of income from companies accounted for using the equity method, see Note 9 on page 221

Investments accounted for using the equity method

Million €

	2018	2017
As of January 1	4,715	4,647
Changes in the scope of consolidation	–	(50)
Additions	55	223
Disposals	(10)	(82)
Transfers[1]	(2,571)	120
Currency effects	14	(143)
Net carrying amount as of December 31	**2,203**	**4,715**

1 This item includes effects from the discontinued oil and gas business in the amount of €99 million in 2018 (2017: €248 million).

Other financial assets

Million €

	Dec. 31, 2018	Dec. 31, 2017
Other shareholdings	453	482
Long-term securities	117	124
Other financial assets	**570**	**606**

17 Inventories

Inventories

Million €	Dec. 31, 2018	Dec. 31, 2017
Raw materials and factory supplies	3,541	3,255
Work in progress, finished goods and merchandise	8,507	6,979
Advance payments and services in progress	118	69
Inventories	**12,166**	**10,303**

Work in progress, finished goods and merchandise are combined into one item due to production conditions in the chemical industry. Services in progress mainly relate to services not invoiced as of the balance sheet date.

Cost of sales included inventories recognized as an expense amounting to €31,285 million in 2018, and €29,941 million in 2017.

Write-downs on inventory was recognized in the amount of €73 million in 2018 and reversals of write-downs in the amount of €18 million in 2017.

Of total **inventories**, €1,120 million was measured at net realizable value in 2018 and €863 million in 2017.

18 Receivables and miscellaneous assets

Other receivables and miscellaneous assets

Million €	December 31, 2018		December 31, 2017	
	Noncurrent	Current	Noncurrent	Current
Loans and interest receivables	224	271	782	245
Derivatives with positive fair values	121	224	91	321
Receivables from finance leases	23	2	25	4
Insurance compensation receivables	0	0	0	41
Receivables from bank acceptance drafts	–	163	–	389
Miscellaneous	243	267	111	329
Other receivables and assets that qualify as financial instruments	**611**	**927**	**1,009**	**1,329**
Prepaid expenses	57	251	54	249
Defined benefit assets	63	–	70	–
Tax refund claims	107	891	125	787
Employee receivables	0	16	–	8
Precious metal trading items	–	780	–	746
Miscellaneous	48	274	74	375
Other receivables and assets that do not qualify as financial instruments	**275**	**2,212**	**323**	**2,165**
Other receivables and miscellaneous assets	**886**	**3,139**	**1,332**	**3,494**

The decrease in noncurrent **loans and interest receivables** was predominantly due to the reclassification of a loan in the amount of €325 million from Wintershall Nederland Transport and Trading B.V., Rijswijk, Netherlands, to Nord Stream 2 AG, and a loan in the amount of €140 million from W & G Transport Holding GmbH, Kassel, Germany, to W & G Infrastruktur Finanzierungs-GmbH, Kassel, Germany, to the assets of the disposal groups. In addition to the above loans, this item included, in particular, loans and interest receivables from BASF Ireland Ltd., Cork, Ireland, to finance the business expansion of Asian companies, and receivables in favor of BASF SE from BASF Pensionskasse VVaG.

The increase in noncurrent **derivatives with positive fair values** primarily affected the market valuation of combined interest rate and currency swaps. The change in current derivatives with positive fair market values was largely attributable to the lower fair values of precious metal and foreign currency derivatives.

As of January 1, 2018, **receivables from bank acceptance drafts** are no longer reported under trade accounts receivable, but under other operating receivables, since the remaining credit risks are toward the issuing bank and no longer the customer. Receivables from bank acceptance drafts fell by €226 million in 2018. They totaled €389 million in 2017. This amount was reclassified from trade accounts receivable to other receivables and miscellaneous assets in the Balance Sheet as of December 31, 2017.

Bank acceptance drafts are used as an alternative form of payment in China. They can be held until maturity, discounted by a bank and provided to suppliers as an endorsement in exchange for goods or services before maturity. Depending on the specific agreement, the major risks and opportunities either remain with BASF or are assumed by the counterparty. Only when the counterparty assumes the default risk is the receivable derecognized. If BASF discounts a bank acceptance draft with recourse, a liability toward the credit institution granting the discount is recognized in the amount of the payment received and held to maturity; if BASF endorses the bank acceptance draft to a supplier with recourse, neither receivables from bank acceptance drafts nor trade payables are derecognized. Bank acceptance drafts were endorsed in the amount of €8 million and not derecognized as of December 31, 2018.

Prepaid expenses in 2018 mainly included prepayments of €22 million related to operating activities compared with €62 million in 2017, as well as €83 million in prepayments for insurance in 2018 compared with €50 million in 2017. Prepayments for license costs decreased from €42 million in 2017 to €38 million in 2018.

The increase in current **tax refund claims** is largely attributable to the rise in open income tax receivables.

Precious metal trading items primarily comprise physical items and precious metal accounts as well as long positions in precious metals, which are largely hedged through sales or derivatives.

Expected losses on trade accounts receivable at BASF are calculated on the basis of internal or external customer ratings and the associated probability of default since January 1, 2018.

The following table presents the gross values and credit risks for trade accounts receivable as of December 31, 2018.

Accounts receivable, trade

Million €

Creditworthiness as of December 31, 2018	Equivalence to external rating[1]	Gross carrying amounts
High/medium credit rating	from AAA to BBB–	6,553
Low credit rating	from BB– to D	4,465

1 Standard & Poor's rating

BASF monitors the credit risk associated with counterparties with which receivables are held in the form of financial instruments. In accordance with IFRS 9, impairments for expected credit lossses on receivables are recognized based on this.

Because, pursuant to IAS 39, impairments were only recognized when objective indications for an impairment were present, initial application of IFRS 9 resulted in total additional impairments on trade accounts receivable, loan receivables and other receivables of of €34 million.

For more information in the effects of implementation of IFRS 9, see Note 1.2 from page 183 onward

Valuation allowances for receivables (financial instruments) 2018

Million €

	As of January 1, 2018	Additions	Reversals	Reclassification between stages	Translation effect	Reclassification to assets of disposal groups	As of December 31, 2018
Accounts receivable, trade	**377**	**128**	**117**	**(1)**	**(21)**	**(13)**	**353**
of which stage 2	52	45	44	(4)	(4)	(3)	42
stage 3	325	83	73	3	(17)	(10)	311
Other receivables	**88**	**11**	**9**	**0**	**0**	**(63)**	**27**
of which stage 1	6	3	4	0	0	(2)	3
stage 2	1	1	2	0	0	0	0
stage 3	81	7	3	0	0	(61)	24
Total	**465**	**139**	**126**	**(1)**	**(21)**	**(76)**	**380**

Valuation allowances for receivables 2017

Million €

	As of January 1, 2017	Additions	Reversals	Additions not recognized in income	Reversals not recognized in income	As of December 31, 2017
Accounts receivable, trade	370	80	38	12	75	349
Other receivables	118	10	6	–	10	112
Total	**488**	**90**	**44**	**12**	**85**	**461**

At BASF, a comprehensive, global credit insurance program covers **accounts receivable, trade**. Under a global excess of loss policy, future bad debts are insured for essentially all BASF Group companies excluding joint ventures. The program has no impact on the calculation of impairments in accordance with IFRS 9. No compensation claims were incurred in either 2018 or 2017.

Payment terms are generally agreed upon individually with customers and, as a rule, are within 90 days. In 2018, valuation allowances of €128 million were recognized for trade accounts receivable, and of €117 million were reversed. In the previous year, valuation allowances of €92 million were recognized for trade accounts receivable, and of €113 million were reversed.

In 2018, valuation allowances of €11 million were recognized for **other receivables** representing financial instruments, and of €9 million were reversed. In the previous year, valuation allowances of €10 million were recognized for all other receivables, and of €6 million were reversed.

The addition and reversal of value allowances included impairments of €2 million due to a change in valuation parameters and €4 million due to foreign currency fluctuations.

Aging analysis of accounts receivable, trade

Million €

	December 31, 2017	
	Gross value	Valuation allowances
Not yet due	10,065	35
Past due less than 30 days	522	1
Past due between 30 and 89 days	115	6
Past due more than 90 days	448	307
Total	**11,150**	**349**

The gross values for receivables from bank acceptance drafts as of December 31, 2017 were removed from the aging analysis of trade accounts receivable.

Prior to adoption of IFRS 9, impairments to trade accounts receivable were calculated using amounts past due, among other things.

19 Capital, reserves and retained earnings

Authorized capital

BASF SE has only issued fully paid-up registered shares with no par value. There are no preferential voting rights or other restrictions. BASF SE does not hold any treasury shares.

The Annual Shareholders' Meeting of May 2, 2014, authorized the Board of Executive Directors, with the approval of the Supervisory Board, to increase subscribed capital by issuing new registered shares up to a total of €500 million against cash or contributions in kind until May 1, 2019. The Board of Executive Directors is authorized, with the approval of the Supervisory Board, to exclude shareholders' statutory subscription rights in the cases specified in the authorizing resolution. To date, this option has not been exercised and no new shares have been issued.

Conditional capital

By way of a resolution of the Annual Shareholders' Meeting of May 12, 2017, the Board of Executive Directors was authorized, with the approval of the Supervisory Board, to issue, on a one-off basis or in portions on more than one occasion, bearer or registered convertible bonds and/or bonds with warrants, or combinations of these instruments, with or without maturity limitations up to a nominal value of €10 billion until May 11, 2022. The notional interest in the share capital attributable to the BASF shares to be issued in connection with the debt instruments issued under this authorization may not exceed 10% of the share capital.

In this connection, the share capital was increased conditionally by up to €117,565,184 by issuing a maximum of 91,847,800 new registered BASF shares. The conditional capital increase will only be carried out to the extent to which holders of convertible bonds, or warrants attached to bonds with warrants issued, exercise their conversion or option rights. This authorization has not been exercised to date.

Authorization of share buybacks

By way of a resolution of the Annual Shareholders' Meeting of May 12, 2017, the Board of Executive Directors was authorized to buy back shares until May 11, 2022, in accordance with section 71(1) no. 8 of the German Stock Corporation Act (AktG). The buyback cannot exceed 10% of the company's share capital at the time the resolution was passed and can take place via the stock exchange, a public purchase offer addressed to all shareholders, or a public invitation to the shareholders to submit sales offers. This authorization has not been exercised to date.

Reserves and retained earnings

Capital reserves include effects from BASF's share program, premiums from capital increases and consideration for warrants and negative goodwill from the capital consolidation resulting from acquisitions of subsidiaries in exchange for the issue of BASF SE shares at par value.

Reserves and retained earnings

Million €	December 31, 2018	December 31, 2017
Legal reserves	767	678
Other retained earnings	35,932	34,148
Retained earnings	**36,699**	**34,826**

Transfers from **other retained earnings** increased **legal reserves** by €81 million in 2018 (2017: €53 million).

The acquisition of shares in companies that BASF already controls or that are included in the Consolidated Financial Statements as a joint arrangement is treated as a transaction between shareholders, as long as this does not lead to a change in the consolidation method. There were no transactions of this type in 2018, as in the previous year.

Payment of dividends

In accordance with the resolution of the Annual Shareholders' Meeting on May 4, 2018, BASF SE paid a dividend of €3.10 per share from the retained profit of the 2017 fiscal year. With 918,478,694 qualifying shares, this represented total dividends of €2,847,283,951.40. The remaining €282,560,220.29 in retained profits was recorded under retained earnings.

20 Other comprehensive income

Unrealized gains/losses from currency translation

Translation adjustments decreased by €139 million year on year. The change arose primarily from the appreciation of the U.S. dollar relative to the euro. This was offset in particular by the development of the Russian ruble.

Cash flow hedges

Hedging future cash flows at Nord Stream AG, Zug, Switzerland, which is accounted for using the equity method, led to a decrease of €11 million in 2018 and a decrease of €17 million in 2017.

For more information on cash flow hedge accounting, see Note 27.4 from page 258 onward

Remeasurement of defined benefit plans

Other comprehensive income fell €980 million before taxes in 2018 and rose €1,073 million before taxes in 2017 due to changes in the value of plan assets.

For more information on the remeasurement of defined benefit plans, see Note 22 from page 240 onward

21 Noncontrolling interests

Noncontrolling interests

		December 31, 2018		December 31, 2017	
		Equity interest		Equity interest	
Group company	Partner	%	Million €	%	Million €
WIGA Transport Beteiligungs-GmbH & Co. KG, W & G Transport Holding GmbH[1], OPAL Gastransport GmbH & Co. KG[1]	Gazprom Germania GmbH, Berlin, Germany	49.98[1]	141	49.98[1]	71
BASF India Ltd., Mumbai, India	free float	26.67	42	26.67	39
BASF PETRONAS Chemicals Sdn. Bhd., Shah Alam, Malaysia	PETRONAS Chemicals Group Berhad, Kuala Lumpur, Malaysia	40.00	193	40.00	198
BASF TOTAL Petrochemicals LLC, Port Arthur, Texas	Total Petrochemicals & Refining USA, Inc., Houston, Texas	40.00	302	40.00	243
Shanghai BASF Polyurethane Company Ltd., Shanghai, China	Shanghai Hua Yi (Group) Company, Shanghai, China, and SINOPEC Assets Management Corporation, Bejing, China	30.00	178	30.00	199
BASF TODA Battery Materials, LLC, Tokyo, Japan	TODA KOGYO CORP., Hiroshima, Japan	34.00	35	34.00	26
BASF Shanghai Coatings Co. Ltd., Shanghai, China	Shanghai Huayi Fine Chemical Co., Ltd, Shanghai, China	40.00	59	40.00	57
Other			105		86
Total			**1,055**		**919**

1 Partners' equity interest in W & G Transportation Holding GmbH and OPAL Gastransport GmbH & Co. KG: 50.03%; voting rights and share of earnings: 49.98%

22 Provisions for pensions and similar obligations

In addition to state pension plans, most employees are granted company pension benefits from either defined contribution or defined benefit plans. Benefits generally depend on years of service, contributions or compensation, and take into consideration the legal framework of labor, tax and social security laws of the countries where the companies are located. To limit the risks of changing financial market conditions as well as demographic developments, employees have, for a number of years now, been almost exclusively offered defined contribution plans for future years of service.

The Group Pension Committee monitors the risks of all pension plans of the Group. In this context, it issues guidelines regarding the governance and risk management of pension plans, particularly with regard to the financing of pension commitments and the portfolio structure of existing plan assets. The organization, responsibilities, strategy, implementation and reporting requirements are documented for the units involved.

Economic and legal environment of the plans

In some countries – especially in Germany, in the United States, in the United Kingdom and in Switzerland – there are pension obligations subject to government supervision or similar legal restrictions. For example, there are minimum funding requirements to cover pension obligations, which are based on actuarial assumptions that may differ from those pursuant to IAS 19. Furthermore, there are qualitative and quantitative restrictions on allocating plan assets to certain asset categories. This could result in annual fluctuations in employer contributions, financing requirements and the assumption of obligations in favor of the pension funds to comply with regulatory requirements.

The obligations and the plan assets used to fund the obligations are exposed to demographic, legal and economic risks. Economic risks are primarily due to unforeseen developments on commodity and capital markets. They affect, for example, pension adjustments based on the level of inflation in Germany and in the United Kingdom, as well as the impact of discount rates on the amount of the defined benefit obligation. In previous years, measures taken to close plans with defined benefits for future service, especially benefits based on final pay promises and the assumption of healthcare costs for former employees led to a reduction in risk with regard to future benefit levels.

The strategy of the BASF Group with regard to financing pension commitments is aligned with country-specific supervisory and tax regulations.

In some countries, pension benefits were granted for which the employer has a subsidiary liability. Pension benefits in a number of countries include minimum interest guarantees to a limited extent. If the pension fund cannot generate the income needed to provide the minimum guarantee, this must be provided by the employer under the subsidiary liability. To the extent that recourse to the employer is unlikely based on the structure and execution of the pension benefits as well as the asset situation of the pension fund, these plans are treated as defined contribution plans.

Description of the defined benefit plans

The typical plan structure in the individual countries is described in the following. Different arrangements may exist, in particular due to the assumption of plans as part of acquisitions; however, these do not have any material impact on the description of plans in the individual countries.

Germany

For BASF SE and German Group companies, a basic level of benefits is provided by BASF Pensionskasse VVaG, a legally independent plan, which is financed by employer and employee contributions as well as the return on plan assets. BASF SE ensures the necessary contributions to adequately finance the benefits promised by BASF Pensionskasse VVaG. Some of the benefits financed via BASF Pensionskasse VVaG are subject to adjustments that must be borne by its member companies to the extent that these cannot be borne by BASF Pensionskasse VVaG due to the regulations imposed by the German supervisory authority. In 2004, the basic benefit plan was closed for newly hired employees at German BASF companies and replaced by a defined contribution plan. At BASF SE, occupational pension promises that exceed the basic level of benefits are financed under a contractual trust arrangement by BASF Pensionstreuhand e.V.; at German Group companies, these benefits are financed primarily via pension provisions. The benefits are largely based on cash balance plans. Furthermore, employees are given the option of participating in various deferred compensation schemes.

United States

Employees are granted benefits based on defined contribution plans.

Effective 2010, the existing defined benefit plans were closed to further increases in benefits based on future years of service, and benefits earned in the past were frozen. There is no entitlement to pension adjustments to compensate for cost-of-living increases.

The legal and regulatory frameworks governing the plans are based on the U.S. Employee Retirement Income Security Act (ERISA), which requires the plan sponsor to ensure a minimum funding level. Any employer contributions necessary to meet the minimum funding level are based on the results of an actuarial valuation. Furthermore, there are unfunded pension plans that are not subject to ERISA requirements.

Additional similar obligations arise from plans that assume the healthcare costs and life insurance premiums of retired employees and their dependents. Such plans have been closed to new entrants since 2007. In addition, the amount of the benefits for such plans has been frozen.

Switzerland

The employees of the BASF Group in Switzerland receive a company pension, which is financed through a pension fund by employer and employee contributions as well as the return on plan assets. The pension plans are accounted for as defined benefit plans, as the obligatory minimum pension guaranteed by law under the Swiss Pension Fund Act (BVG) is included in the scheme. All benefits vest immediately. According to government regulations, the employer is obligated to make contributions, so that the pension funds are able to grant the minimum benefits guaranteed by law. The pension funds are managed by boards, where employer and employees are equally represented, which steer and monitor the benefit plans and asset allocation.

United Kingdom

Employees are granted benefits based on a defined contribution plan.

The BASF Group also maintains defined benefit plans in the United Kingdom, which have been closed for further increases based on future years of service. Adjustments to compensate for increases in the cost of living until the beginning of retirement are legally required for beneficiaries of defined benefit plans.

The financing of the pension plans is determined by the provisions of the regulatory authority for pensions and the relevant social and labor law requirements. The defined benefit plans are administered by a trust company, whose Board of Trustees, according to the trustee agreement and law, represents the interests of the beneficiaries and ensures that the benefits can be paid in the future. The required funding is determined using technical valuations according to local regulations every three years.

Other countries

For subsidiaries in other countries, defined benefits are covered in some cases by pension provisions, but mainly by external insurance companies or pension funds.

Actuarial assumptions

The valuation of the defined benefit obligation is based on the following key assumptions:

Assumptions used to determine the defined benefit obligation as of December 31

	Germany		United States		Switzerland		United Kingdom	
	2018	2017	2018	2017	2018	2017	2018	2017
Discount rate	1.70	1.90	4.10	3.60	0.90	0.50	2.90	2.60
Projected pension increase	1.50	1.50	–	–	–	–	3.10	3.10

Assumptions used to determine expenses for pension benefits in the respective business year

	Germany		United States		Switzerland		United Kingdom	
	2018	2017	2018	2017	2018	2017	2018	2017
Discount rate	1.90	1.80	3.60	4.00	0.50	0.60	2.60	2.80
Projected pension increase	1.50	1.50	–	–	–	–	3.10	3.10

The assumptions used to ascertain the defined benefit obligation as of December 31 are used in the following year to determine the expenses for pension plans.

A Group-wide, uniform procedure is used to determine the discount rates applied for valuation of material pension obligations of the BASF Group. Accordingly, the discount rates were derived from the yields on corporate bonds in the respective currency zones with an issue volume of more than 100 million units of the respective currency with a minimum rating of "AA–" to "AA+" from at least one of the following three rating agencies: Fitch, Moody's, or Standard & Poor's.

The valuation of the defined benefit obligation is generally performed using the most recent actuarial mortality tables as of December 31 of the respective business year, which in Germany and the United States are derived from the BASF Group population and were last updated in 2015 for the pension obligations in Germany and in 2018 for the pension obligations in the United States.

Actuarial mortality tables (significant countries) as of December 31, 2018

Germany	Heubeck Richttafeln 2005G (modified)
United States	RP-2018 (modified) with MP-2018 generational projection
Switzerland	BVG 2015 generational
United Kingdom	S1PxA (standard actuarial mortality tables for self-administered plans (SAPS))

Sensitivity analysis

A change in the material actuarial assumptions would have the following effects on the defined benefit obligation:

Sensitivity of the defined benefit obligation as of December 31

Million €

	Increase by 0.5 percentage points		Decrease by 0.5 percentage points	
	2018	**2017**	**2018**	**2017**
Discount rate	(1,880)	(1,930)	2,140	2,200
Projected pension increase	1,190	1,240	(1,080)	(1,130)

An alternative valuation of the defined benefit obligation was performed to determine how changes in the underlying assumptions influence the amount of the defined benefit obligation. A linear extrapolation of these amounts based on alternative changes in the assumptions as well as an addition of combined changes in the individual assumptions is not possible.

Explanation of the amounts in the statement of income and balance sheet

Composition of expenses for pension benefits

Million €

	2018	**2017**
Expenses for defined benefit plans	416	402
Expenses for defined contribution plans	314	303
Expenses for pension benefits (recognized in income from operations)	**730**	**705**
Net interest expense from underfunded pension plans and similar obligations	133	175
Net interest income from overfunded pension plans	(2)	(2)
Expenses for pension benefits (recognized in the financial result)	**131**	**173**

The interest on the net defined benefit liability is recognized in the financial result. This is the difference between the interest cost of the defined benefit obligation and the standardized return on plan assets as well as the interest cost for the asset ceiling. The expected contribution payments and benefits paid over the course of the fiscal year are taken into account when determining net interest.

Net interest expense of the respective fiscal year is based on the discount rate and the defined benefit obligation at the beginning of the year.

Development of defined benefit obligation

Million €

	2018	**2017**
Defined benefit obligation as of January 1	26,871	27,603
Current service cost	384	400
Past service cost	32	2
Plan settlements	–	–
Interest cost	553	568
Benefits paid	(1,037)	(1,048)
Employee contributions	47	48
Actuarial gains/losses		
for adjustments relating to financial assumptions	239	1
adjustments relating to demographic assumptions	(163)	(2)
experience adjustments	(139)	(5)
Effects from acquisitions and divestitures	(374)	8
Other changes	1	124
Currency effects	237	(828)
Defined benefit obligation as of December 31	**26,651**	**26,871**

As of December 31, 2018, the weighted average duration of the defined benefit obligation amounted to 15.4 years (previous year: 15.5 years).

Development of plan assets

Million €

	2018	2017
Plan assets as of January 1	20,648	19,460
Standardized return on plan assets	422	393
Deviation between actual and standardized return on plan assets	(1,043)	1,067
Employer contributions	175	1,102
Employee contributions	47	48
Benefits paid	(913)	(919)
Effects from acquisitions and divestitures	(92)	(2)
Past service cost	–	–
Plan settlements	–	–
Other changes	(135)	106
Currency effects	171	(607)
Plan assets as of December 31	**19,280**	**20,648**

The standardized return on plan assets is calculated by multiplying plan assets at the beginning of the year with the discount rate used for existing defined benefit obligations at the beginning of the year, taking into account benefit and contribution payments to be made during the year.

BASF SE disbursed pension payments that are covered by assets of BASF Pensionstreuhand e.V. Reimbursement of these pension payments by BASF Pensionstreuhand e.V. in 2018 is included in other changes in plan assets and relates to the previous year in the amount of €134 million.

The expected employer contributions for 2019 amount to approximately €600 million.

Special contributions were made in 2017 to improve the funding levels of the plans. These primarily related to BASF Pensionstreuhand e.V. (€500 million), BASF Pensionskasse VVaG (€317 million) and the U.S. plans ($143 million).

Development of net defined benefit liability

Million €

	2018	2017
Net defined benefit liability as of January 1	(6,223)	(8,143)
Current service cost	(384)	(400)
Past service cost	(32)	(2)
Interest cost	(553)	(568)
Standardized return on plan assets	422	393
Deviation between actual and standardized return on plan assets	(1,043)	1,067
Actuarial gains/losses of the defined benefit obligation	63	6
Benefits paid by unfunded plans	124	129
Employer contributions	175	1,102
Effects from acquisitions and divestitures	282	(10)
Other changes	(136)	(18)
Currency effects	(66)	221
Net defined benefit liability as of December 31	**(7,371)**	**(6,223)**
of which defined benefit assets	63	70
provisions for pensions and similar obligations	7,434	(6,293)

Regional allocation of defined benefit plans as of December 31

Million €

	Pension obligations		Plan assets		Net defined benefit liability	
	2018	2017	2018	2017	2018	2017
Germany	18,406	18,104	12,621	13,576	(5,785)	(4,528)
United States	3,745	4,053	2,448	2,687	(1,297)	(1,366)
Switzerland	1,953	2,070	1,838	1,889	(115)	(181)
United Kingdom	1,741	1,884	1,733	1,880	(8)	(4)
Other	806	760	640	616	(166)	(144)
Total	**26,651**	**26,871**	**19,280**	**20,648**	**(7,371)**	**(6,223)**

Explanations regarding plan assets

The target asset allocation has been defined by using asset liability studies and is reviewed regularly. Accordingly, plan assets are aligned with the long-term development of the obligations, taking into consideration the risks associated with the specific asset classes and the regulations relating to the investment of plan assets. The existing portfolio structure is based on the target asset allocation. In addition, current market assessments are taken into consideration. In order to mitigate risks and maximize returns, a widely spread global portfolio of individual assets is held.

Liability-driven investment (LDI) techniques, such as hedging the risk of changes in interest rates and inflation, are used in some pension plans, especially for U.K. and U.S. plans.

Structure of plan assets

%	2018	2017
Equities	25	29
Debt instruments	53	52
of which for government debtors	16	16
for other debtors	37	36
Real estate	4	3
Alternative investments	16	15
Cash and cash equivalents	2	1
Total	**100**	**100**

The asset class **debt instruments** comprises promissory notes and debentures (Pfandbriefe) as well as corporate and government bonds. Government bonds primarily relate to bonds from countries with the highest credit ratings, such as the United States, the United Kingdom, Germany and Switzerland. Corporate bonds mainly comprise bonds from creditworthy debtors, although particular high-yield bonds are also held to a limited extent. In connection with the ongoing monitoring of default risk based on a given risk budget and on the observation of the development of the creditworthiness of issuers, the plan asset allocation may be adjusted in the case of a revised market assessment. **Alternative investments** largely comprise investments in private equity, absolute return funds and senior secured loans.

Almost all of the **equities** are priced on active markets. The category **debt instruments** includes promissory notes and debentures (Pfandbriefe) acquired through private placements with a market value in the amount of €394 million as of December 31, 2018, and €575 million as of December 31, 2017. For such securities, especially those held by domestic pension plans, there is no active market. The capital market compensates for this lack of fungibility with yield premiums depending on the maturity. With only a few exceptions, there is no active market for plan assets in **real estate** and **alternative investments**.

Plan assets as of the balance sheet date contained securities issued by BASF Group companies with a market value of €9 million in 2018 and €15 million in 2017. The market value of the properties of legally independent pension funds rented to BASF Group companies amounted to €112 million on December 31, 2018, and €111 million on December 31, 2017.

Since 2010, there has been an agreement between BASF SE and BASF Pensionskasse VVaG on the granting of profit participation capital with a nominal value of €80 million, which is used to strengthen the financing of the BASF Pensionskasse VVaG. In 2017, a number of special endowments were provided to improve the funding levels of the plans. Beyond this, there were no material transactions between the legally independent pension funds and BASF Group companies in 2018 or 2017.

The funding of the plans was as follows:

Current funding situation of the pension plans as of December 31

Million €	2018		2017	
	Defined benefit obligation	Plan assets	Defined benefit obligation	Plan assets
Unfunded pension plans	2,575	–	2,814	–
Funded pension plans	24,076	19,280	24,057	20,648
Total	**26,651**	**19,280**	**26,871**	**20,648**

Defined contribution plans and government pensions

The contributions to defined contribution plans recognized in income from operations amounted to €314 million in 2018 and €303 million in 2017.

Contributions to government pension plans were €634 million in 2018 and €592 million in 2017.

23 Other provisions

Other provisions

Million €

	December 31, 2018		December 31, 2017	
		of which current		of which current
Restoration obligations	86	–	1,296	17
Environmental protection and remediation costs	638	127	600	112
Employee obligations	1,817	1,467	2,173	1,553
Obligations from sales and purchase contracts	1,261	1,253	1,080	1,070
Restructuring measures	121	98	143	119
Litigation, damage claims, warranties and similar obligations	140	85	103	48
Other	1,049	222	1,312	310
Total	**5,112**	**3,252**	**6,707**	**3,229**

Restoration obligations pertain mainly to anticipated costs for dismantling existing plants and buildings. The decrease was due primarily to the reclassification of the oil and gas business to the disposal group.

Provisions for **environmental protection and remediation costs** cover expected costs for rehabilitating contaminated sites, recultivating landfills, removal of environmental contamination at existing production or storage sites and similar measures.

Provisions for **employee obligations** primarily include obligations for the granting of long-service bonuses and anniversary payments, variable compensation including associated social security contributions, as well as provisions for early and phased retirement programs. The decrease was due primarily to releases for the long-term incentive program.

For more information on provisions for the long-term incentive program, see Note 30 from page 263 onward

Provisions for **obligations from sales and purchase contracts** largely comprise obligations arising from rebates granted and other price discounts in the Agricultural Solutions segment, warranties and product liabilities, sales commissions and expected losses on contracts. The increase in provisions resulted from higher accruals for rebate programs.

Provisions for **restructuring measures** include severance payments to departing employees as well as expected costs for site closures, including the costs for demolition and similar measures.

Provisions for **litigation, damage claims, warranties and similar obligations** contain anticipated expenses from lawsuits in which BASF is the defendant party, as well as obligations under damage claims against BASF and fines.

Other largely includes noncurrent tax provisions.

The following table shows the development of other provisions by category. Other changes include reclassifications to disposal groups, changes in the scope of consolidation, acquisitions, divestitures, currency effects and the reclassification of obligations to liabilities when the amount and timing of these obligations become known.

Development of other provisions in 2018

Million €

	January 1, 2018	Additions	Unwinding of discount	Utilization	Releases	Other changes	December 31, 2018
Restoration obligations	1,296	28	20	(17)	(3)	(1,238)	86
Environmental protection and remediation costs	600	100	1	(69)	(11)	17	638
Employee obligations	2,173	1,509	2	(1,521)	(319)	(27)	1,817
Obligations from sales and purchase contracts	1,080	1,055	–	(1,044)	(93)	263	1,261
Restructuring measures	143	35	–	(46)	(15)	4	121
Litigation, damage claims, warranties and similar obligations	103	84	–	(30)	(12)	(5)	140
Other	1,312	243	1	(294)	(160)	(53)	1,049
Total	**6,707**	**3,054**	**24**	**(3,021)**	**(613)**	**(1,039)**	**5,112**

24 Liabilities

Financial indebtedness

Million €

		Currency	Nominal value (million, currency of issue)	Effective interest rate	Carrying amounts based on effective interest method December 31, 2018	Carrying amounts based on effective interest method December 31, 2017
BASF SE						
Commercial Paper		USD	2,922		2,549	–
variable	Bond 2013/2018	EUR	300	variable	–	300
1.5%	Bond 2012/2018	EUR	1,000	1.51%	–	999
1.375%	Bond 2014/2019	EUR	750	1.44%	750	750
variable	Bond 2017/2019	EUR	1,250	variable	1,252	1,261
variable	Bond 2013/2020	EUR	300	variable	300	300
1.875%	Bond 2013/2021	EUR	1,000	1.47%	1,008	1,007
2.5%	Bond 2017/2022	USD	500	2.65%	435	414
1.375%	Bond 2018/2022	GBP	250	1.52%	278	–
2%	Bond 2012/2022	EUR	1,250	1.93%	1,254	1,254
0.925%	Bond 2017/2023	USD	850	0.83%	703	664
0.875%	Bond 2016/2023	GBP	250	1.06%	277	279
2.5%	Bond 2014/2024	EUR	500	2.60%	498	497
1.750%	Bond 2017/2025	GBP	300	1.87%	333	335
0.875%	Bond 2018/2025	EUR	750	0.97%	745	–
3.675%	Bond 2013/2025	NOK	1,450	3.70%	146	147
0.875%	Bond 2017/2027	EUR	1,000	1.04%	986	984
2.670%	Bond 2017/2029	NOK	1,600	2.69%	161	162
1.5%	Bond 2018/2030	EUR	500	1.625%	494	–
1.5%	Bond 2016/2031	EUR	200	1.58%	198	198
0.875%	Bond 2016/2031	EUR	500	1.01%	492	492
2.37%	Bond 2016/2031	HKD	1,300	2.37%	145	139
1.450%	Bond 2017/2032	EUR	300	1.57%	296	296

Continued on next page

Continued from last page

Financial indebtedness

Million €

					Carrying amounts based on effective interest method	
		Currency	Nominal value (million, currency of issue)	Effective interest rate	December 31, 2018	December 31, 2017
3%	Bond 2013/2033	EUR	500	3.15%	492	491
2.875%	Bond 2013/2033	EUR	200	3.09%	198	198
4%	Bond 2018/2033	AUD	160	4.24%	96	–
1.625%	Bond 2017/2037	EUR	750	1.73%	737	736
3.25%	Bond 2013/2043	EUR	200	3.27%	199	199
1.025%	Bond 2018/2048	JPY	10,000	1.03%	79	–
3.89%	U.S. private placement series A 2013/2025	USD	250	3.92%	218	208
4.09%	U.S. private placement series B 2013/2028	USD	700	4.11%	610	582
4.43%	U.S. private placement series C 2013/2034	USD	300	4.45%	261	250
BASF Finance Europe N.V.						
0.0%	Bond 2016/2020	EUR	1,000	0.14%	997	996
3.625%	Bond 2018/2025	USD	200	3.69%	174	–
0.75%	Bond 2016/2026	EUR	500	0.88%	495	494
Ciba Specialty Chemicals Finance Luxembourg S.A.						
4.875%	Bond 2003/2018	EUR	477	4.88%	–	474
Other bonds					**588**	**547**
Bonds and other liabilities to the capital market					**18,444**	**15,653**
Liabilities to credit institutions					2,397	2,379
Financial indebtedness					**20,841**	**18,032**

Breakdown of financial indebtedness by currency

Million €

	December 31, 2018	December 31, 2017
Euro	12,358	13,326
U.S. dollar	6,160	2,922
Pound sterling	888	614
Norwegian krone	306	309
Chinese renminbi	163	127
Hong Kong dollar	145	139
Japanese yen	139	58
Turkish lira	127	65
Australian dollar	99	–
Ukrainian hryvnia	89	63
South African rand	74	73
Brazilian real	54	53
Indian rupee	48	24
Argentinian peso	44	137
Indonesian rupiah	43	43
Kazakhstani tenge	42	37
Other currencies	62	42
Total	**20,841**	**18,032**

Maturities of financial indebtedness

Million €

	December 31, 2018	December 31, 2017
Following year 1	5,509	2,497
Following year 2	1,335	2,052
Following year 3	1,178	1,845
Following year 4	2,105	1,140
Following year 5	1,155	1,781
Following year 6 and maturities beyond this year	9,559	8,717
Total	**20,841**	**18,032**

Other bonds

Other bonds consist primarily of industrial revenue and pollution control bonds issued by the BASF Corporation group that were used to finance investments in the United States. Both the weighted average interest rate of these bonds and their weighted effective interest rate amounted to 3.0% in 2018 and 3.1% in 2017. The average residual term amounted to 168 months as of December 31, 2018 (December 31, 2017: 183 months).

Liabilities to credit institutions

Liabilities to credit institutions stayed at the previous year's level. The weighted average interest rate on loans amounted to 5.6% in 2018 compared with 4.1% in 2017.

Unused credit lines

BASF SE had committed and unused credit lines with variable interest rates amounting to €6,000 million both as of December 31, 2018, and as of December 31, 2017.

Other liabilities

Million €

	December 31, 2018		December 31, 2017	
	Noncurrent	Current	Noncurrent	Current
Derivatives with negative fair values	230	308	290	274
Liabilities from finance leases	91	43	99	25
Loan and interest liabilities	75	387	283	212
Advances received on orders[1]	–	903	–	564
Miscellaneous liabilities	41	565	94	1,289
Other liabilities that qualify as financial instruments	**437**	**2,206**	**766**	**2,364**
Liabilities related to social security	58	85	67	77
Employee liabilities	28	262	28	253
Liabilities from precious metal trading positions	–	34	–	17
Contract liabilities	155	31	–	–
Deferred income	23	35	197	78
Miscellaneous liabilities	4	345	37	275
Other liabilities that do not qualify as financial instruments	**268**	**792**	**329**	**700**
Other liabilities	**705**	**2,998**	**1,095**	**3,064**

1 Advances received on orders were reported as other liabilities, which do not represent financial instruments, in the previous year.

Other liabilities

The decrease in non-current **loan and interest liabilities** and in current **miscellaneous liabilities** resulted primarily from the reclassification to the disposal group for the oil and gas business. **Advances received on orders** increased due mainly to first-time incorporation of the seed business acquired from Bayer. **Contract liabilities,** which were reported for the first time with the adoption of IFRS 15 in 2018, include mainly customer payments entitling them to access to licenses over an agreed period of time. The majority of existing contracts have terms of six years. Of the contract liabilities reported as of December 31, 2018, €31 million are expected to be recognized as revenue in 2019.

For more information on financial risks and derivative instruments, see Note 27 from page 251 onward

For more information on liabilities arising from leasing contracts, see Note 28 from page 259 onward

Secured liabilities

Million €

	December 31, 2018	December 31, 2017
Liabilities to credit institutions	18	22
Accounts payable, trade	6	6
Other liabilities	166	169
Secured liabilities	**190**	**197**

Liabilities to credit institutions were secured primarily with registered land charges. **Other liabilities** include collateral for derivative instruments with negative fair values. As in the previous year, there were no secured contingent liabilities in 2018.

25 Other financial obligations

The figures listed below are stated at nominal value:

Other financial obligations

Million €

	December 31, 2018	December 31, 2017
Bills of exchange	7	9
Guarantees	75	11
Warranties	50	49
Collateral granted on behalf of third-party liabilities	1	1
Initiated investment projects	7,094	4,109
of which purchase commitments	1,249	1,045
for the purchase of intangible assets	19	16
Payment and loan commitments and other financial obligations	68	19

BASF provides unlimited guarantees, particularly to the Danish government as well as the state-owned company Nordsøfonden, as a precondition for the exploration for and production of hydrocarbons in the Danish concession area by the joint venture Wintershall Noordzee B.V., Rijswijk, Netherlands, which is allocated to the disposal group. BASF's 100% contingent liability under these guarantees is partially countered by the joint venture partner's 50% guarantees in favor of BASF. Drawing on these guarantees was not foreseeable as of December 31, 2018.

Assets used under long-term leases

Assets used under long-term leases primarily concerned buildings, vehicles and transportation equipment.

For more information on liabilities arising from leasing contracts, see Note 28 from page 259 onward

Obligations arising from long-term leases (excluding finance leases)

Million €

2019	403
2020	272
2021	197
2022	140
2023	111
2024 and maturities beyond this year	359
Total	**1,482**

As of December 31, 2018, the companies allocated to the disposal group accounted for €144 million.

Obligations arising from purchase contracts

Obligations arising from purchase contracts resulted primarily from long-term purchase obligations for raw materials. Firm purchase obligations as of December 31, 2018, were as follows:

Obligations arising from purchase contracts

Million €

2019	8,393
2020	5,412
2021	4,424
2022	3,937
2023	2,891
2024 and maturities beyond this year	5,023
Total	**30,080**

As of December 31, 2018, the companies allocated to the disposal group accounted for €5,406 million.

Further possible obligations arising from agreements existing as of December 31, 2018 are shown under Note 2.4, Acquisitions and divestitures.

26 Risks from litigation and claims

BASF Corporation has potential liability under the Comprehensive Response, Compensation and Liability Act of 1980, as amended, and related state laws for investigation and cleanup at certain sites. The Lower Passaic River Study Area (LPRSA) is one such site comprising the lower 17 miles of the Passaic River in New Jersey. BASF Corporation and more than 60 other companies (collectively, the Lower Passaic River Study Area Cooperating Parties Group or CPG) agreed to complete a remedial investigation/feasibility study (RI/FS) of the LPRSA. In 2016, the United States Environmental Protection Agency (USEPA) selected a final remedy for the lower eight miles of the LPRSA. In late 2018, USEPA indicated being amenable to the CPG's approach for remediation work in the upper portion of the LPRSA. Completion of the RI/FS and an agreement with USEPA on a targeted approach for the upper portion of the LPRSA may occur in late 2019.

Between November 2014 and March 2015, a putative class action lawsuit and several additional lawsuits were filed in the United States District Court for the Southern District of New York against BASF Metals Limited (BML), based in the United Kingdom, along with other defendants, alleging violations of antitrust and commodities laws stemming from the price discovery process for platinum and palladium. The lawsuits were consolidated, and a Second Consolidated Amended Class Action Complaint was eventually filed in July 2015. This Complaint also names as a defendant, among others, BASF Corporation. On September 21, 2015, the defendants filed a Joint Motion to Dismiss the Second Consolidated Amended Class Action Complaint, and BML and BASF Corporation filed individual motions to dismiss. On March 28, 2017, the Court dismissed the Second Consolidated Amended Class Action Complaint against BASF Corporation and BML on jurisdictional grounds. On May 15, 2017, the plaintiffs filed an amended Complaint that renews allegations against defendants and BML, while BASF Corporation is not named as a defendant. The defendants filed a renewed Joint Motion to Dismiss, and BML filed a renewed

Motion to Dismiss. In 2018, no further developments in this proceeding occurred. A pro se complaint filed in September 2015 was dismissed by the U.S. District Court on October 19, 2017. The plaintiff filed an appeal to the U.S. Court of Appeals on November 19, 2017. An oral argument took place on October 18, 2018, and the Court's decision is still outstanding.

Furthermore, BASF SE and its affiliated companies are defendants in or parties to a variety of judicial, arbitrational and/or regulatory proceedings on a recurring basis. To our current knowledge, none of these proceedings will have a material effect on the economic situation of BASF.

27 Supplementary information on financial instruments

27.1 Financial risks

Market risks

Foreign currency risks: Changes in exchange rates could lead to losses in the value of financial instruments and adverse changes in future cash flows from planned transactions. Foreign currency risks from financial instruments result from the translation at the closing rate of financial receivables, loans, securities, cash and financial liabilities into the functional currency of the respective Group company. Foreign currency contracts in various currencies are used to hedge foreign exchange risks from nonderivative financial instruments and planned transactions.

The foreign currency risk exposure corresponds to the net amount of the nominal volume of the primary and the derivative financial instruments that are exposed to currency risks. In addition, planned purchase and sales transactions of the respective following year are included if they fall under the currency risk management system. Long and short positions in the same currency are offset against each other.

The sensitivity analysis is conducted by simulating a 10% appreciation of the respective functional currency against the other currencies. The effect on BASF's income before income taxes would have been minus €373 million as of December 31, 2018, and minus €252 million as of December 31, 2017. The effect from the items designated under hedge accounting would have increased shareholders' equity before income taxes by €33 million as of December 31, 2018 (2017: increase of €46 million). This only refers to transactions in U.S. dollars. The foreign currency risk exposure amounted to €3,185 million as of December 31, 2018, and €1,976 million as of December 31, 2017.

Exposure and sensitivity by currency

Million €

	December 31, 2018		December 31, 2017	
	Exposure	Sensitivity	Exposure	Sensitivity
USD	2,119	(236)	1,410	(143)
Other	1,066	(104)	566	(63)
Total	**3,185**	**(340)**	**1,976**	**(206)**

Due to the use of options to hedge currency risks, the sensitivity analysis is not a linear function of the assumed changes in exchange rates.

Interest rate risks: Interest rate risks arise from changes in prevailing market interest rates, which can lead to changes in the fair value of fixed-rate instruments and in interest payments for variable-rate instruments. Interest rate swaps and combined interest rate and currency derivatives are used to hedge these risks. These risks are relevant to BASF's financing activities but are not of material significance for BASF's operating activities.

The variable interest risk exposure, which also includes fixed rate bonds maturing in the following year, amounted to minus €4.802 million as of December 31, 2018 (2017: minus €986 million). An increase in all relevant interest rates by one percentage point would have lowered income before income taxes by €43 million as of December 31, 2018, and raised income before income taxes by €4 million as of December 31, 2017. The effect from the items designated under hedge accounting would have increased shareholders' equity before income taxes by €5 million as of December 31, 2018 (2017: increase of €9 million).

Carrying amount of nonderivative interest-bearing financial instruments

Million €

	December 31, 2018		December 31, 2017	
	Fixed interest rate	Variable interest rate	Fixed interest rate	Variable interest rate
Loans	179	311	569	439
Securities	90	372	88	87
Financial indebtedness	15,597	5,244	14,703	3,329

Nominal and fair values of interest rate swaps and combined interest rate and currency swaps

Million €

	December 31, 2018		December 31, 2017	
	Nominal value	Fair value	Nominal value	Fair value
Interest rate swaps	**300**	**(7)**	**600**	**(13)**
of which payer swaps	300	(7)	600	(13)
Combined interest rate and currency swaps	**4,183**	**(103)**	**3,337**	**(175)**
of which fixed rate	4,183	(103)	3,337	(175)

Commodity price risks: Some of BASF's divisions are exposed to strong fluctuations in raw materials prices. These result primarily from raw materials (for example naphtha, propylene, benzene, lauric oils, cyclohexane, methanol, natural gas, butadiene, LPG condensate and ammonia) as well as from precious metals. BASF takes the following measures to reduce price risks associated with the purchase of raw materials:

– BASF uses commodity derivatives to hedge risks from the volatility of raw materials prices. These are primarily options and swaps on crude oil, oil products and natural gas.
– In the discontinued business, margin risks arise in volatile markets when purchase and sales contracts are priced differently. Corresponding oil and gas derivatives are used to hedge these risks.
– The Catalysts division enters into both short-term and long-term purchase contracts with precious metal producers. It also buys precious metals on spot markets from various business partners. The price risk from precious metals purchased to be sold on to third parties, or for use in the production of catalysts, is hedged using derivative instruments. This is mainly performed using forward contracts, which are settled by either entering into offsetting contracts or by delivering the precious metals.
– In the Agricultural Solutions division, the sales prices of products are sometimes pegged to the price of certain agricultural commodities. To hedge the resulting risks, derivatives on agricultural commodities are concluded.

In addition, BASF holds limited unhedged precious metal and oil product positions, which can also include derivatives, for trading on its own account. The value of these positions is exposed to market price volatility and is subject to constant monitoring.

In connection with carbon emissions trading, various types of carbon certificates are purchased and sold using forward contracts. The goal of these transactions is to benefit from market price differences. These deals are settled by physical delivery. There were no deals outstanding as of December 31, 2018, or as of December 31, 2017.

By holding commodity derivatives and precious metal trading positions, BASF is exposed to price risks. The valuation of commodity derivatives and precious metal trading positions at fair value means that adverse changes in market prices could negatively affect the earnings and equity of BASF.

BASF performs value-at-risk analyses for all commodity derivatives and precious metals trading positions. Using the value-at-risk analysis, we continually quantify market risk and forecast the maximum possible loss within a given confidence interval over a defined period. The value-at-risk calculation is based on a confidence interval of 95% and a holding period of one day. The value-at-risk calculation for precious metals is based on a confidence interval of 99%. BASF uses the variance-covariance approach.

BASF uses value at risk in conjunction with other risk management tools. Besides value at risk, BASF sets volume-based limits as well as exposure and stop-loss limits.

Exposure to commodity derivatives

Million €

	December 31, 2018		December 31, 2017	
	Exposure	Value at Risk	Exposure	Value at Risk
Crude oil, oil products and natural gas	(12)	8	90	1
Precious metals	112	1	36	2
Emission certificates	–	–	–	–
Agricultural commodities	50	1	0	0
Total	**150**	**10**	**126**	**3**

The exposure corresponds to the net amount of all long and short positions of the respective commodity category.

For more information on financial risks and BASF's risk management, see the Report on Opportunities and Risks in the Management's Report from page 123 onward

Default and credit risk

Default and credit risks arise when customers and debtors do not fulfill their contractual obligations. BASF regularly analyzes the creditworthiness of the counterparties and grants credit limits on the basis of this analysis. Due to the global activities and diversified customer structure of the BASF Group, there is no significant concentration of default risk. The carrying amount of all receivables, loans and interest-bearing securities plus the nominal value of financial obligations stemming from contingent liabilities not to be recognized represents the maximum default risk for BASF.

For more information on credit risks, see Note 18 from page 235 onward

Liquidity risks

BASF promptly recognizes any risks from cash flow fluctuations as part of liquidity planning. BASF has ready access to sufficient liquid funds from the ongoing commercial paper program and confirmed lines of credit from banks.

27.2 Maturity analysis

The interest and principal payments as well as other payments for derivative financial instruments are relevant for the presentation of the maturities of the contractual cash flows from financial liabilities. Future cash flows are not discounted here.

Derivatives are included using their net cash flows, provided they have negative fair values and therefore represent a liability. Derivatives with positive fair values are assets and are therefore not taken into account.

Trade accounts payable are generally interest-free and due within one year. As a result, the carrying amount of trade accounts payable equals the sum of future cash flows.

Maturities of contractual cash flows from financial liabilities as of December 31, 2018

Million €

	Bonds and other liabilities to the capital market	Liabilities to credit institutions	Liabilities resulting from derivative financial instruments	Miscellaneous liabilities	Total
2019	4,860	902	138	669	6,569
2020	1,557	18	22	50	1,647
2021	1,249	181	22	30	1,482
2022	2,195	139	41	25	2,400
2023	1,207	175	65	23	1,470
2024 and thereafter	9,922	979	111	33	11,045
Total	**20,990**	**2,394**	**399**	**830**	**24,613**

Maturities of contractual cash flows from financial liabilities as of December 31, 2017

Million €

	Bonds and other liabilities to the capital market	Liabilities to credit institutions	Liabilities resulting from derivative financial instruments	Miscellaneous liabilities	Total
2018	2,097	698	180	1,578	4,553
2019	2,237	34	70	80	2,421
2020	1,527	541	8	82	2,158
2021	1,219	132	–	46	1,397
2022	1,865	113	50	38	2,066
2023 and thereafter	9,234	861	225	278	10,598
Total	**18,179**	**2,379**	**533**	**2,102**	**23,193**

27.3 Classes and categories of financial instruments

For trade accounts receivable, other receivables and miscellaneous assets, cash and cash equivalents, as well as trade accounts payable and other liabilities, the carrying amount approximates the fair value.

The fair value of financial indebtedness is determined on the basis of interbank interest rates. The difference between carrying amounts and fair values results primarily from changes in market interest rates.

Carrying amounts and fair values of financial instruments as of December 31, 2018

Million €

	Carrying amount	Total carrying amount within scope of application of IFRS 7	Valuation category in accordance with IFRS 9[2]	Fair value	of which fair value level 1[3]	of which fair value level 2[4]	of which fair value level 3[5]
Shareholdings[1]	453	453	FVTPL	34	22	12	–
Receivables from finance leases	25	25	n/a	25	–	–	–
Accounts receivable, trade	10,665	10,665	AC	10,665	–	–	–
Accounts receivable, trade	–	–	FVTPL	–	–	–	–
Derivatives – no hedge accounting	252	252	FVTPL	252	1	251	–
Derivatives – hedge accounting	93	93	n/a	93	1	92	–
Other receivables and miscellaneous assets[6]	3,570	1,083	AC	1,083	–	–	–
Other receivables and miscellaneous assets[6]	85	85	FVTPL	85	–	85	–
Securities	13	13	AC	13	–	–	–
Securities	4	4	FVTOCI	4	4	–	–
Securities	445	445	FVTPL	445	445	–	–
Cash equivalents	63	63	FVTPL	63	63	–	–
Cash and cash equivalents	2,237	2,237	AC	2,237	2,237	–	–
Total assets	**17,905**	**15,418**		**14,999**	**2,773**	**440**	**–**
Bonds	15,895	15,895	AC	16,351	–	16,351	–
Commercial papers	2,549	2,549	AC	2,549	–	–	–
Liabilities to credit institutions	2,397	2,397	AC	2,397	–	–	–
Liabilities from finance leases	134	134	n/a	134	–	–	–
Accounts payable, trade	5,122	5,122	AC	5,122	–	–	–
Derivatives – no hedge accounting	531	531	FVTPL	531	6	525	–
Derivatives – hedge accounting	7	7	n/a	7	–	7	–
Other liabilities[6]	3,031	1,971	AC	1,971	–	–	–
Total liabilities	**29,666**	**28,606**		**29,062**	**6**	**16,883**	**–**

1 In general, only significant shareholdings are measured at fair value. All insignificant shareholdings are measured at cost. Fair value level 1 is applied to publicly listed shareholdings. Level 2 is applied to shareholdings for which valuation is based on parameters observable in the market to the greatest extent possible. These may be adjusted to reflect valuation-relevant characteristics of the respective shareholding in the fair value.
2 AC: amortized cost; FVTOCI: fair value through other comprehensive income; FVTPL: fair value through profit or loss; a more detailed description of the categories can be found in Note 1.2 from page 183 onward.
3 Fair value was determined based on quoted, unadjusted prices on active markets.
4 Fair value was determined based on parameters for which directly or indirectly quoted prices on active markets were available.
5 Fair value was determined based on parameters for which there was no observable market data.
6 Does not include separately shown derivatives or receivables and liabilities from finance leases. If miscellaneous receivables are valued at fair value through profit or loss, their valuation is generally based on parameters observable on the market. These are adjusted to reflect valuation-relevant characteristics of the respective assets in the fair value.

Carrying amounts and fair values of financial instruments as of December 31, 2017

Million €

	Carrying amount	Total carrying amount within scope of application of IFRS 7	Valuation category in accordance with IAS 39[2]	Fair Value	of which which fair value level 1[3]	of which which fair value level 2[4]	of which fair value level 3[5]
Shareholdings[1]	482	482	Afs	–	–	–	–
Receivables from finance leases	29	29	n/a	29	–	–	–
Accounts receivable, trade	11,190	11,190	LaR	11,190	–	–	–
Derivatives – no hedge accounting	340	340	aFVtPL	340	14	326	–
Derivatives – hedge accounting	72	72	n/a	72	–	72	–
Other receivables and miscellaneous assets[6]	3,996	1,508	LaR	1,508	–	–	–
Securities	175	175	Afs	175	175	–	–
Securities	1	1	Htm	–	–	–	–
Cash and cash equivalents	6,495	6,495	LaR	6,495	6,495	–	–
Total assets	**22,780**	**20,292**		**19,809**	**6,684**	**398**	**–**
Bonds	15,653	15,653	AmC	16,406	–	16,406	–
Commercial papers	–	–	AmC	–	–	–	–
Liabilities to credit institutions	2,379	2,379	AmC	2,379	–	–	–
Liabilities from finance leases	124	124	n/a	124	–	–	–
Accounts payable, trade	4,971	4,971	AmC	4,971	–	–	–
Derivatives – no hedge accounting	551	551	aFVtPL	551	36	515	–
Derivatives – hedge accounting	13	13	n/a	13	–	13	–
Other liabilities[6]	3,471	2,442	AmC	2,442	–	–	–
Total liabilities	**27,162**	**26,133**		**26,886**	**36**	**16,934**	**–**

1 The difference between carrying amount and fair value results from shareholdings measured at cost, for which the fair value could not be reliably determined (2017: €482 million).
2 Afs: available for sale; LaR: loans and receivables; aFVtPL: at fair value through profit or loss; AmC: amortized cost; Htm: held to maturity; a more detailed description of the categories can be found in Note 1.2 from page 183 onward.
3 Fair value was determined based on quoted, unadjusted prices on active markets.
4 Fair value was determined based on parameters for which directly or indirectly quoted prices on active markets were available.
5 Fair value was determined based on parameters for which there was no observable market data.
6 Not including separately shown derivatives as well as receivables and liabilities from finance leases. Payments received for orders were reported as other liabilities that do not represent financial instruments in the BASF 2017 report. These liabilities were then added to financial instruments.

Offsetting of financial assets and financial liabilities as of December 31, 2018

Million €

	Offset amounts			Amounts that cannot be offset		
	Gross amount	Amount offset	Net amount	Due to global netting agreements	Relating to financial collateral	Potential net amount
Derivatives with positive fair values	264	(20)	244	(163)	(48)	33
Derivatives with negative fair values	483	(20)	463	(163)	(150)	150

Offsetting of financial assets and financial liabilities as of December 31, 2017

Million €

	Offset amounts			Amounts that cannot be offset		
	Gross amount	Amount offset	Net amount	Due to global netting agreements	Relating to financial collateral	Potential net amount
Derivatives with positive fair values	376	(39)	337	(55)	(10)	272
Derivatives with negative fair values	(373)	(39)	(412)	(55)	(139)	(606)

The table "Offsetting of financial assets and financial liabilities" shows the extent to which financial assets and financial liabilities were offset in the balance sheet, as well as potential effects from the offsetting of instruments subject to a legally enforceable global netting agreement (primarily in the form of an ISDA agreement) or similar agreement. For positive fair values of combined interest rate and currency swaps, the respective counterparties provided cash collaterals in an amount comparable to the outstanding fair values.

Deviations from the derivatives with positive fair values and derivatives with negative fair values reported in other receivables and other liabilities at the end of 2018 and 2017 arose from derivatives not subject to any netting agreements as well as from embedded derivatives and are therefore not included in the table above.

Net gains and losses from financial instruments comprise the results of valuations, the amortization of discounts, the recognition and reversal of impairments, results from the translation of foreign currencies as well as interest, dividends and all other effects on the earnings resulting from financial instruments. The line item financial instruments at fair value through profit or loss contains only gains and losses from instruments that are not designated as hedging instruments in acordance with IFRS 9.

The gains and losses from the valuation of securities recognized in equity are shown in development of income and expense recognized in equity attributable to shareholders of BASF SE on page 177

Net gains and losses from financial instruments 2018

Million €

	Total
Financial assets measured at amortized cost	33
of which interest result	58
Financial assets at fair value through profit or loss	(45)
of which interest result	57
Financial assets at fair value through other comprehensive income	(4)
of which interest result	4
Financial liabilities measured at amortized cost	(599)
of which interest result	(450)

Net gains and losses from financial instruments 2017

Million €

	Total
Loans and receivables	(311)
of which interest result	90
Available-for-sale financial assets	(24)
of which interest result	2
Financial liabilities measured at amortized cost	249
of which interest result	(359)
Financial instruments at fair value through profit or loss	(396)

27.4 Derivative instruments and hedge accounting

The use of derivative instruments

BASF is exposed to foreign currency, interest rate and commodity price risks during the normal course of business. These risks are hedged using derivative instruments as necessary in accordance with a centrally determined strategy. Hedging is only employed for existing items from the product business, cash investments and financing as well as for planned sales, raw material purchases and capital measures. The risks from the hedged items and the derivatives are constantly monitored. Where derivatives have a positive market value, BASF is exposed to credit risks from derivative transactions in the event of nonperformance of the other party. To minimize the default risk on derivatives with positive market values, transactions are exclusively conducted with creditworthy banks and partners and are subject to predefined credit limits.

To ensure effective risk management, risk positions are centralized at BASF SE and certain Group companies. The contracting and execution of derivative financial instruments for hedging purposes are conducted according to internal guidelines, and subject to strict control mechanisms.

The fair values of derivative financial instruments are calculated using valuation models that use input parameters observable on the market. Exceptions to this are some commodity derivatives, whose valuation is based directly on market prices.

Fair value of derivative instruments

Million €

	December 31, 2018	December 31, 2017
Foreign currency forward contracts	(57)	65
Foreign currency options	13	37
Foreign currency derivatives	**(44)**	**102**
of which designated hedging instruments as defined by IFRS 9 (hedge accounting)	11	34
Interest rate swaps	(7)	(13)
of which designated hedging instruments as defined by IFRS 9 (hedge accounting)	(7)	(13)
Combined interest rate and currency swaps	(103)	(175)
of which designated hedging instruments as defined by IFRS 9 (hedge accounting)	80	38
Interest derivatives	**(110)**	**(188)**
Commodity derivatives	**(39)**	**(66)**
of which designated hedging instruments as defined by IFRS 9 (hedge accounting)	1	1
Derivative financial instruments	**(193)**	**(152)**

Cash flow hedge accounting

BASF is exposed to price risks in the context of procuring naphtha. Some of the planned purchases of naphtha are hedged using swaps and options on oil and oil products. The main contractual elements of these options correspond to the characteristics of the hedged item. These hedges are not presented using cash flow hedge accounting in BASF's 2018 or 2017 financial statements.

Cash flow hedge accounting continues to be used to a minor extent for natural gas purchases exposed to commodity price risks, meaning that gains and losses from hedging instruments are initially recognized in equity. Commodity price-based options serve as hedging instruments, for which contract terms are adjusted to reflect the risks of the hedged item. Gains and losses from hedging instruments are included in cost of sales in the fiscal year in which the hedged item is recognized in profit or loss.

The planned transactions and their effect on earnings occur in the year following the balance sheet date. In 2018, effective changes in the fair value of hedging instruments of €5 million (2017: €200,000) were recognized in the equity of the shareholders of BASF SE. In 2018, effective changes in the fair value of hedging instruments of €4 million were derecognized from the equity attributable to shareholders of BASF SE and recognized in other operating income (2017: €300,000). Ineffective parts required to be accounted for did not arise. In 2017, minus €100,000 was recognized as the ineffective part of value changes of the hedging instruments in other operating expenses. The change in the options' time value is separately recognized in equity and recognized in profit or loss in the year during which the hedged items matured. In 2018, a decrease in fair value of minus €2 million was recognized in equity attributable to shareholders of BASF SE, and €1 million was derecognized, increasing equity.

BASF is exposed to foreign currency risks due to planned sales in U.S. dollars. To some extent, cash flow hedge accounting is applied using currency options. The hedging rate is $1.1563 per euro. The impact on earnings from the hedged transactions will occur in 2019. In 2018, the effective change in the values of the hedges was €8 million (2017: €71 million), which was recognized in the equity of the shareholders of BASF SE. A total of €31 million (2017: €44 million) was derecognized accordingly from the equity attributable to shareholders of BASF SE and was recognized in income from foreign currency and hedging transactions. The hedges were entirely effective. The decrease in the options' time value component arising in the amount of €33 million in 2018 was recognized separately in equity as the cost of hedging and resulted in a reduction in equity. The reclassification of the accumulated changes in the time value of options to profit or loss due to the maturity of hedged items had a countering effect in the amount of €36 million.

The interest rate risk of the variable-rate bonds issued by BASF SE in 2013 was hedged using interest rate swaps, which converted the bonds into fixed-interest rate bonds with a rate of 1.45%. The key terms of the interest rate swap contracts used as hedging instruments largely correspond to the contractual elements of the hedged item. The bond and the interest rate swaps were designated in a hedging relationship. The effective changes in the fair value recognized in BASF SE shareholders' equity amounted to €4 million in 2018 (2017: €6 million). Ineffective parts required to be accounted for did not arise.

Furthermore, BASF SE's fixed-rate U.S. private placement of $1.25 billion, issued in 2013, was converted to euros using cross-currency swaps, because the private placement exposes BASF to a currency risk. The hedging interest rate was 4.13%; and the hedging foreign exchange rate was $1.3589 per euro. This hedge was designated as a cash flow hedge. Recognition of ineffective portions in profit or loss was not required. In 2018, changes in fair value of €42 million were recognized in shareholders' equity (2017: minus €125 million). In 2018, €49 million was derecognized from other comprehensive income and recorded as income in the financial result (2017: expense of €144 million in financial result).

28 Leases

Leased assets

Property, plant and equipment include assets that are considered to be economically owned through a finance lease. They primarily concern the following items:

Leased assets

Million €

	December 31, 2018		December 31, 2017	
	Acquisition cost	Net carrying amount	Acquisition cost	Net carrying amount
Land, land rights and buildings	91	74	22	9
Machinery and technical equipment	127	50	118	43
Miscellaneous equipment and fixtures	111	46	113	44
Total	**329**	**170**	**253**	**96**

The increase in leased assets is due primarily from the additions related to the acquisition of significant parts of Bayer's seed and non-selective herbicide businesses and its vegetable seed business.

Liabilities from finance leases

Million €

	December 31, 2018			December 31, 2017		
	Minimum lease payments	Interest portion	Leasing liability	Minimum lease payments	Interest portion	Leasing liability
Following year 1	47	4	43	32	5	27
Following year 2	28	3	25	37	5	32
Following year 3	24	3	21	22	4	18
Following year 4	17	2	15	19	3	16
Following year 5	8	1	7	12	2	10
More than 5 years	28	5	23	26	5	21
Total	**152**	**18**	**134**	**148**	**24**	**124**

In the current business year and in the previous year, no additional lease payments exceeding minimum lease payments were recognized in the income statement due to contractual conditions for finance leases. In 2018 and in the previous year, leasing liabilities were not offset by any future minimum lease payments from subleases.

In addition, BASF is a lessee under operating lease contracts. The resulting lease commitments totaled €1,482 million in 2018 (2017: €1,410 million) and will become due in the following years:

Future minimum payments from operating lease contracts

Million €

	Nominal value of future minimum lease payments	
	Dec. 31, 2018	Dec. 31, 2017
Less than 1 year	403	362
1–5 years	720	728
More than 5 years	359	320
Total	**1,482**	**1,410**

Future minimum payments from operating lease contracts included €144 million for companies in the oil and gas disposal group as of December 31, 2018.

Future minimum lease payments from subleasing contracts based on existing agreements amounted to €10 million in 2018 (2017: €10 million).

In 2018, minimum lease payments of €494 million (2017: €407 million) were included in income from operations. In 2018, conditional lease payments of €1 million (2017: €1 million) were also included in income from operations. Furthermore, sublease payments of €4 million (2017: €3 million) were included in income from operations in 2018.

BASF as lessor

BASF acts as a lessor for finance leases to a minor extent only. Receivables on finance leases were €25 million in 2018 (2017: €29 million).

In 2018, claims arising from operating leases amounted to €166 million (2017: €93 million).

Future minimum lease payments to BASF from operating lease contracts

Million €

	Nominal value of future minimum lease payments	
	Dec. 31, 2018	Dec. 31, 2017
Less than 1 year	30	19
1–5 years	75	50
More than 5 years	61	24
Total	**166**	**93**