Starting with the net profit of DB Group before taxes on income and the theoretical taxes on income calculated using a theoretical tax rate of 30.5%, the following reconciles the calculated taxes with the actual taxes on income:

(€ million)	**2019**	2018
Profits before taxes on income	681	1,172
Group tax rate (%)	30.5	30.5
Expected tax expense (-)	**-208**	**-357**
Adjustment of the expected future use of loss carry-forwards and new temporary differences which have arisen and loss carry-forwards	151	-299
Income not subject to tax	33	30
Tax effects related to IAS 12.33	48	55
Expenses not deductible for tax purposes	-27	-16
Differences in tax rates for foreign companies	21	30
Other effects	-19	-73
Taxes on income as reported	**-1**	**-630**
Effective tax rate (%)	0.1	53.8

The reconciliation amount as detailed in IAS 12.33 relates exclusively to additional tax write-downs resulting from the fact that tax-free grants in the IFRS financial statements have been deducted directly from the costs of purchasing the assets. It is not permissible for deferred taxes to be created in relation to these temporary differences.

In the year under review, the other effects included in particular effects attributable to the difference in the assessment bases of different income tax bases, and the reversal of provisions for income tax risks outside Germany.

(12) EARNINGS PER SHARE

Under IAS 33 (Earnings per Share), undiluted earnings per share are calculated by dividing the net profit of DB Group attributable to the shareholders of DB AG by the weighted average number of shares in issue during the year under review. Undiluted earnings per share correspond to diluted earnings per share.

(€ million)	**2019**	2018
Net profit for the year	680	542
thereof due to shareholders of DB AG	662	528
thereof attributable to providers of hybrid capital	5	–
thereof attributable to non-controlling interests	13	14
Number of issued shares as of Dec 31	430,000,000	430,000,000
Earnings per share (€ per share)		
Undiluted	1.54	1.23
Diluted	1.54	1.23

Notes to the balance sheet

(13) PROPERTY, PLANT AND EQUIPMENT

Property, plant and equipment is measured at cost in accordance with IAS 16 (Property, Plant and Equipment). Cost of production comprises individual costs as well as overhead costs which are directly allocatable.

If at least two years are required for manufacturing an asset in order to place it in its intended state in which it is capable of being used or sold, any directly attributable borrowing costs are capitalized as costs of production of the asset. If a direct link cannot be established, the average borrowing cost rate of the year under review is used. Turnover tax incurred in connection with the purchase or production of property, plant and equipment is only capitalized if input tax is not permitted to be deducted.

Subsequent costs are capitalized if the expenses enhance the economic benefit of the property, plant and equipment and if the costs can be reliably measured. On the other hand, all other repairs or maintenance are expensed.

Components of property, plant and equipment which are significant in relation to the total costs of purchase and costs of production are recognized separately and written down over their useful life using the straight-line method.

Investment grants are deducted directly from the cost of purchase or cost of production of the assets for which the grants have been given.

Rights-of-use from leases

In the case of rented and leased assets, if they fall under the scope of IFRS 16, a right-of-use (in accordance with IFRS 16.24) and a lease liability are shown as soon as the asset is available for use to DB Group. Depreciation is recognized using the straight-line method over the economic useful life of the asset or the shorter duration of the lease. This is not applicable for leases for minor-value assets (up to and including € 5,000) and short-term leases with a duration of 12 months or less, the costs of which are recognized on a linear basis in the income statement. Components of lease payments which do not relate to the use of the asset are not included in the measurement of the right-of-use and the lease liability.

Up to December 31, 2018, DB Group applied IAS 17 and classified such leases as finance leases which essentially transferred the opportunities and risks associated with the ownership to the lessee.

Critical assessments and appraisals

With regard to defining the duration of the lease, management takes account of all facts and circumstances which have an influence on the possible exercising of a prolongation option or termination option. This assessment is reviewed regularly.

Leased assets

DB Group classifies every lease either as an operating lease or as a finance lease. A lease is classified as a finance lease if it transfers essentially all risks and opportunities associated with the ownership. If this is not the case, the lease is classified as an operating lease.

Property, plant and equipment (*€ million*)	Land	Commercial, operating and other buildings	Permanent way structures	Track infra-structure, signaling and control equipment	Rolling stock for passenger and freight transport	Technical equipment and machinery	Other operational and office equipment	Advance payments and assets in progress	Total
COST OF PURCHASE AND COST OF PRODUCTION									
As of Jan 1, 2019	4,155	8,113	15,475	17,018	32,938	1,910	5,285	4,015	**88,909**
First-time adoption of IFRS 16	306	2,664	10	2	900	219	29	–	**4,130**
Changes in the scope of consolidation	–	- 2	–	–	–	–	0	–	**- 2**
thereof additions	–	–	–	–	–	–	–	–	**–**
thereof disposals	–	- 2	–	–	–	–	0	–	**- 2**
Additions	90	917	1,052	1,182	2,342	140	562	6,513	**12,798**
Addition borrowing costs	–	–	–	–	–	–	–	40	**40**
Investment grants	0	- 141	- 934	- 1,111	- 73	- 31	- 53	- 5,103	**- 7,446**
Transfers	30	103	99	125	291	27	118	- 817	**- 24**
Changes with no impact on the income statement	–	0	–	–	–	–	0	–	**0**
Disposals	- 80	- 101	- 14	- 254	- 831	- 54	- 345	40	**- 1,639**
Currency translation differences	10	22	2	0	103	9	17	5	**168**
As of Dec 31, 2019	**4,511**	**11,575**	**15,690**	**16,962**	**35,670**	**2,220**	**5,613**	**4,693**	**96,934**
ACCUMULATED DEPRECIATION									
As of Jan 1, 2019	- 670	- 3,679	- 5,433	- 12,712	- 20,816	- 1,312	- 3,524	- 6	**- 48,152**
Changes in the scope of consolidation	–	2	–	–	- 26	–	0	–	**- 24**
thereof additions	–	–	–	–	- 26	–	–	–	**- 26**
thereof disposals	–	2	–	–	–	–	0	–	**2**
Depreciation	- 36	- 787	- 206	- 352	- 1,537	- 137	- 449	–	**- 3,504**
Impairments	–	0	- 1	0	- 3	0	0	0	**- 4**
Recoveries in value	–	0	–	27	0	0	0	–	**27**
Transfers	- 15	15	- 1	0	4	0	14	- 5	**12**
Disposals	22	41	9	240	718	49	295	2	**1,376**
Currency translation differences	- 3	- 5	- 2	0	- 48	- 4	- 12	0	**- 74**
As of Dec 31, 2019	**- 702**	**- 4,413**	**- 5,634**	**- 12,797**	**- 21,708**	**- 1,404**	**- 3,676**	**- 9**	**- 50,343**
Carrying amount as of Dec 31, 2019	**3,809**	**7,162**	**10,056**	**4,165**	**13,962**	**816**	**1,937**	**4,684**	**46,591**
Carrying amount as of Dec 31, 2018	3,485	4,434	10,042	4,306	12,122	598	1,761	4,009	**40,757**

Property, plant and equipment *(€ million)*	Land	Commercial, operating and other buildings	Permanent way structures	Track infra-structure, signaling and control equipment	Rolling stock for passenger and freight transport	Technical equipment and machinery	Other operational and office equipment	Advance payments and assets under construction	**Total**
COST OF PURCHASE AND COST OF PRODUCTION									
As of Jan 1, 2018	4,150	7,707	15,210	16,921	31,317	1,842	5,107	4,108	**86,362**
Changes in the scope of consolidation	3	30	–	–	112	1	1	0	**147**
thereof additions	3	30	–	–	112	1	1	0	**147**
thereof disposals	–	–	–	–	–	–	0	–	**0**
Additions	51	326	767	1,168	1,868	114	447	6,138	**10,879**
Addition borrowing costs	–	–	–	–	–	–	–	39	**39**
Investment grants	0	- 87	- 640	- 1,012	- 16	- 24	- 53	- 5,335	**- 7,167**
Transfers	8	226	160	135	220	56	157	- 961	**1**
Changes with no impact on the income statement	–	0	–	–	–	–	0	–	**0**
Disposals	- 55	- 79	- 22	- 194	- 529	- 76	- 369	26	**- 1,298**
Currency translation differences	- 2	- 10	0	0	- 34	- 3	- 5	0	**- 54**
As of Dec 31, 2018	**4,155**	**8,113**	**15,475**	**17,018**	**32,938**	**1,910**	**5,285**	**4,015**	**88,909**
ACCUMULATED DEPRECIATION									
As of Jan 1, 2018	- 681	- 3,489	- 5,253	- 12,583	- 20,049	- 1,295	- 3,399	- 5	**- 46,754**
Changes in the scope of consolidation	–	- 14	–	–	- 36	- 1	0	–	**- 51**
thereof additions	–	- 14	–	–	- 36	- 1	0	–	**- 51**
thereof disposals	–	–	–	–	–	–	0	–	**0**
Depreciation	- 8	- 245	- 193	- 353	- 1,224	- 97	- 398	0	**- 2,518**
Impairments	- 1	- 2	0	- 1	- 3	- 1	- 2	–	**- 10**
Recoveries in value	–	0	–	45	5	1	0	–	**51**
Transfers	1	4	0	1	28	9	- 42	- 1	**0**
Disposals	19	60	13	178	444	71	314	0	**1,099**
Currency translation differences	0	7	0	1	19	1	3	0	**31**
As of Dec 31, 2018	**- 670**	**- 3,679**	**- 5,433**	**- 12,712**	**- 20,816**	**- 1,312**	**- 3,524**	**- 6**	**- 48,152**
Carrying amount as of Dec 31, 2018	**3,485**	**4,434**	**10,042**	**4,306**	**12,122**	**598**	**1,761**	**4,009**	**40,757**
Carrying amount as of Dec 31, 2017	3,469	4,218	9,957	4,338	11,268	547	1,708	4,103	**39,608**

The additions to the borrowing costs contained an average borrowing cost rate of 2.28% (previous year: 2.54%).

The impairments of € 4 million (previous year: € 10 million) mainly related to rolling stock for passenger and freight transport.

Recoveries in value of € 27 million (previous year: € 51 million) mainly related to track infrastructure, signaling and control equipment of DB Netz AG.

In the year under review, the carrying amount disposals for assets under construction included carrying amount disposals of € 52 million (previous year: € 27 million). These were attributable to the repayment of investment grants which had been received in previous years and deducted from assets.

As of December 31, 2019, restrictions to rights of disposal in relation to property, plant and equipment existed to the extent of € 38 million (as of December 31, 2018: € 39 million) mainly at S.I.A. Società Italiana Autoservizi S.P.A., Brescia/Italy and S.A.B. Autoservizi S.R.L., Bergamo/Italy.

Rights-of-use from leases (IFRS 16)

Rental activities of DB Group mainly relate to real estate. Compared with a solution involving purchasing of such assets, leasing provides much greater flexibility and results in lower amounts of capital being tied up. DB Group simultaneously participates in positive market developments by way of regularly agreeing prolongation options. In addition, DB Group rents rolling stock particularly if the economic useful life considerably exceeds the duration of the service agreement for which the rolling stock is intended.

The property, plant and equipment contains rights-of-use from leases which are shown separately in the following overview:

As of Dec 31, 2019 (*€ million*)	Rights of use for							
	Land	Commercial, operating and other buildings	Permanent way structures	Track infrastructure, signaling and control equipment	Rolling stock for passenger and freight transport	Technical equipment and machinery	Other operational and office equipment	Total
Additions	44	578	0	2	487	24	18	**1,153**
Accumulated depreciation	- 28	- 587	- 3	- 1	- 267	- 35	- 16	**- 937**
Carrying amount	338	3,086	7	3	1,154	206	30	**4,824**

Further details of leasing-related liabilities, expenses and other financial obligations are set out in the **NOTES (6) 199 FF., (7) 201, (9) 202, (28) 215 FF. AND (35) 235 F.,** as well as the **NOTES TO THE STATEMENT OF CASH FLOWS 228.**

Rented assets

The rental activities of DB Group related mainly to premises in stations as well as the leasing of excess locomotive and rail car capacities. Agreements are normally not made with regard to assuring any residual values.

Subletting activities are carried out to a minor extent mainly at DB Schenker. Where appropriate, storage facilities are rented only for the purpose of fulfilling a logistics contract with a specific customer. If these customers take on the economic opportunities and risks with regard to the leased premises, the subletting income is not recognized in the income statement; instead, this is recognized as a sub-financing lease.

The assets which in certain cases are determined on the basis of retrospective calculations and completed surveys and which are leased by way of operating leases have the following residual carrying amounts:

Rented assets classified as operating leases (*€ million*)	Properties	Mobile assets
Cost of purchase and cost of production	1,408	6,504
Accumulated depreciation	- 447	- 4,790
Carrying amount as of Dec 31, 2019	**961**	**1,714**
Cost of purchase and cost of production	1,470	6,092
Accumulated depreciation	- 459	- 4,616
Carrying amount as of Dec 31, 2018	**1,011**	**1,476**

The residual carrying amounts and the accumulated depreciation of the mobile assets (mainly rolling stock) have increased considerably, particularly at DB Cargo. The process of renting the assets is expected to generate rental and leasing inflows in future years as shown in the following overview:

Expected rental and leasing income (nominal values) (*€ million*)	Residual maturity							
	Up to 1 year	1 to 2 years	2 to 3 years	3 to 4 years	4 to 5 years	More than 5 years	Total more than 1 year	Total
AS OF DEC 31, 2019								
Minimum lease payments	361	197	158	145	127	619	**1,246**	**1,607**
AS OF DEC 31, 2018								
Minimum lease payments	374	206	170	147	133	671	**1,327**	**1,701**

(14) INTANGIBLE ASSETS

Purchased intangible assets are shown with their cost of purchase in accordance with IAS 38 (Intangible Assets). Intangible assets manufactured in-house are recognized with their cost of production, and consist mainly of software.

Costs of production comprise mainly costs for material and services, wage and salary costs as well as relevant overhead costs.

Intangible assets (excluding goodwill and the Arriva brand) are subsequently valued at cost of purchase or cost of production less depreciation and impairments plus any reversals of previous impairments.

Intangible assets *(€ million)*	Capitalized development costs – products in use		Capitalized development costs – products under development		Purchased intangible assets		Goodwill		Intangible assets with indefinite useful life		Advance payments		**Total**	
	2019	2018	**2019**	2018	**2019**	2018	**2019**	2018	**2019**	2018	**2019**	2018	**2019**	**2018**
COST OF PURCHASE AND COST OF PRODUCTION														
As of Jan 1	277	175	296	186	2,426	2,455	3,025	3,026	5	5	0	0	**6,029**	**5,847**
Changes in the scope of consolidation	–	–	–	–	12	89	12	1	–	–	–	–	**24**	**90**
thereof additions	–	–	–	–	12	89	12	1	–	–	–	–	**24**	**90**
thereof disposals	–	–	–	–	–	–	–	–	–	–	–	–	**–**	**–**
Additions	53	59	211	230	31	37	–	–	–	–	0	–	**295**	**326**
Investment grants	0	–	–	-41	-1	-1	–	–	–	–	–	–	**-1**	**-42**
Transfers	231	45	-52	-71	-155	25	–	0	–	–	–	–	**24**	**-1**
Changes with no impact on the income statement	–	–	–	–	1	0	–	–	–	–	–	–	**1**	**0**
Disposals	–	-1	-7	-8	-76	-170	–	-2	–	–	0	0	**-83**	**-181**
Currency translation differences	3	-1	-1	0	17	-9	69	0	–	–	0	–	**88**	**-10**
As of Dec 31	**564**	**277**	**447**	**296**	**2,255**	**2,426**	**3,106**	**3,025**	**5**	**5**	**0**	**0**	**6,377**	**6,029**
ACCUMULATED DEPRECIATION														
As of Jan 1	-67	-40	-5	-2	-1,746	-1,719	-481	-487	0	0	–	–	**-2,299**	**-2,248**
Changes in the scope of consolidation	–	–	–	–	–	0	–	–	–	–	–	–	**–**	**0**
thereof additions	–	–	–	–	–	0	–	–	–	–	–	–	**–**	**0**
thereof disposals	–	–	–	–	–	–	–	–	–	–	–	–	**–**	**–**
Depreciation	-34	-22	–	–	-150	-174	–	–	–	–	–	–	**-184**	**-196**
Impairments	–	-5	–	-5	-6	-4	–	-1	–	–	–	–	**-6**	**-15**
Recoveries in value	–	–	–	–	0	–	–	–	–	–	–	–	**0**	**–**
Transfers	-76	–	–	2	64	-1	–	–	–	–	–	–	**-12**	**1**
Disposals	–	0	4	–	37	147	–	3	–	–	–	–	**41**	**150**
Currency translation differences	-1	0	–	–	-17	5	-5	4	–	–	–	–	**-23**	**9**
As of Dec 31	**-178**	**-67**	**-1**	**-5**	**-1,818**	**-1,746**	**-486**	**-481**	**0**	**0**	**–**	**–**	**-2,483**	**-2,299**
Carrying amount as of Dec 31	**386**	**210**	**446**	**291**	**437**	**680**	**2,620**	**2,544**	**5**	**5**	**0**	**0**	**3,894**	**3,730**
Carrying amount as of Dec 31 of previous year	210	135	291	184	680	736	2,544	2,539	5	5	0	0	3,730	3,599

The acquired intangible assets mainly comprise software (about € 162 million carrying amount), franchises and rights (about € 89 million carrying amount) and acquired customer and franchise contracts (about € 165 million carrying amount).

There are no other legal, regulatory, contractual, competition-related, economic or other factors which limit the useful life of the acquired Arriva brand (carrying amount € 33 million).

Impairments of about € 5 million (previous year: € 14 million) have been recognized mainly at Arriva Rail North Limited, Sunderland/Great Britain.

Segment reporting shows the allocation of reported goodwill to the various segments.

(15) INVESTMENTS ACCOUNTED FOR USING THE EQUITY METHOD

Shares in associated companies and joint ventures are accounted for using the equity method in accordance with IAS 28. The carrying amount, based on DB Group's costs of purchase at the time of the purchase, is updated according to DB Group share of changes in equity position of the company accounted for using the equity method.

The shares in the investments accounted for using the equity method have developed as follows:

(€ million)	**2019**	2018
As of Jan 1	486	500
Additions	16	0
Disposals	0	-26
Share of DB Group in profits	-12	12
Capital increase	11	0
Dividends received	-14	-11
Reclassifications	0	0
Currency translation differences	13	11
Other valuation	1	0
As of Dec 31	**501**	**486**

The figure shown in the balance sheet as of December 31, 2019 is mainly attributable to the shares held in the associated companies EUROFIMA European Company for the Financing of Railroad Rolling Stock (EUROFIMA), Basel/Switzerland and Barraqueiro SGPS SA, Lisbon/Portugal. The shares in EUROFIMA are subject to restrictions in terms of being sold; new shareholders must be railway administration entities which additionally require a guarantee of their respective country guaranteeing their obligations. The additions mainly relate to GHT Mobility GmbH, Berlin.

(16) DEFERRED TAX ASSETS

Deferred taxes are calculated in accordance with IAS 12 (Income Taxes).

The theoretical income tax rate for corporations for domestic companies used as the basis for calculating deferred taxes is 30.5%. The income tax rate comprises the corporation tax rate plus solidarity surcharge and an average trade tax rate. Foreign subsidiaries use their relevant local tax rates for calculating deferred taxes.

A deferred tax asset is recognized in accordance with IAS 12.24 or IAS 12.34 if, after corresponding deferred tax liabilities have been deducted, it is likely that adequate taxable income is available. The long-term planning with additional estimates is used for the domestic companies as the basis of this process. The international companies use medium-term planning as the basis. Deferred tax assets relating to income which can be generated after the long-term period are not recognized, on the grounds that they cannot be reliably determined.

Deferred taxes are established on the basis of the tax rates which can be expected for the period in which the deferred tax is realized on the basis of existing laws or laws which have in essence been adopted.

Critical assessments and appraisals

The calculation of deferred tax assets is based on the medium- and long-term planning. If the sum of net profits planned were to decline by 10% in conjunction with otherwise unchanged tax parameters, deferred tax assets would have to be reduced by € 96 million (previous year: € 93 million).

Deferred tax assets are broken down as follows:

As of Dec 31 (*€ million*)	2019	2018
Deferred tax assets in respect of temporary differences	481	506
Deferred tax assets in respect of losses carried forward	765	526
Total	**1,246**	**1,032**

No deferred tax assets have been created in relation to the following losses carried forward and temporary differences:

As of Dec 31 (*€ million*)	2019	2018
Tax loss carry-forwards for which no deferred tax asset has been created	14,425	14,440
Temporary differences for which no deferred tax asset has been created	5,166	4,622
Temporary differences which are not permitted to be recognized in accordance with IAS 12.24b in conjunction with 12.33	2,116	2,273
Total	**21,707**	**21,335**

The losses carried forward are mainly attributable to the tax law treatment of Federal Government grants paid in the past to DB AG in accordance with section 21 (5) and section 22 (1) Deutsche Bahn Foundation Act (Deutsche Bahn Gründungsgesetz; DBGrG) as a contribution.

On the basis of current law, the domestic losses carried forward are fully allowable in accordance with current legislation (in terms of the actual amount and justification).

The temporary differences which are not permitted to be recognized in accordance with IAS 12.33 relate exclusively to additional tax depreciation from previously received tax-free investment grants.

The following deferred tax assets and deferred tax liabilities shown in the balance sheet were due to statement and valuation differences for the individual balance sheet items and tax losses carried forward:

	Deferred tax assets		Deferred tax liabilities	
As of Dec 31 (*€ million*)	2019	2018	2019	2018
NON-CURRENT ASSETS				
Property, plant and equipment	89	119	179	150
Intangible assets	0	3	37	43
Shares in companies accounted for using the equity method	0	1	0	1
Other financial assets	0	5	5	0
CURRENT ASSETS				
Inventories	3	3	1	1
Trade receivables	9	8	4	1
Derivative financial instruments	1	0	5	0
Other financial assets	2	5	7	9
NON-CURRENT LIABILITIES				
Financial debt	3	38	4	2
Other liabilities	59	61	0	4
Derivative financial instruments	17	4	0	0
Pension obligations	272	207	3	3
Other provisions	103	109	41	0
Deferred items	0	0	5	0
CURRENT LIABILITIES				
Financial debt	0	6	0	1
Trade accounts payable	0	0	1	0
Other liabilities	49	39	9	46
Other provisions	29	30	17	23
Losses carried forward	765	526	0	0
Total	**1,401**	**1,164**	**318**	**284**
Netting [1]	-155	-132	-155	-132
Amount stated in the balance sheet	**1,246**	**1,032**	**163**	**152**

[1] To the extent permitted by IAS 12 (Income Taxes).

Tax assets and liabilities are netted if they exist in relation to the same tax authority, if they are of identical maturity and if they relate to the same tax subject.

Of the deferred tax assets of € 1,401 million (as of December 31, 2018: € 1,164 million), a figure of € 93 million (as of December 31, 2018: € 91 million) will probably be realized in the course of the next 12 months. Of the deferred tax liabilities of € 318 million (as of December 31, 2018: € 284 million), a figure of € 44 million (as of December 31, 2018: € 83 million) will probably be realized in the course of the next 12 months.

Deferred tax assets of € 166 million (as of December 31, 2018: € 110 million) shown directly in equity and deferred tax liabilities of € 15 million (as of December 31, 2018: € 0 million) are included in the deferred taxes shown in the balance sheet.

(17) OTHER INVESTMENTS AND SECURITIES

Other investments are shown with their fair value.

Long- or short-term securities are recognized with their market values as of the balance sheet date – where such values exist. Changes in fair value are recognized with no impact on the income statement in the reserve attributable to the marking-to-market of securities.

Other investments and securities have developed as follows:

	Other investments		Securities		Total	
(€ million)	2019	2018	2019	2018	2019	2018
As of Jan 1	44	38	2	3	**46**	**41**
Currency translation differences	0	0	0	0	**0**	**0**
Changes in scope of consolidation	–	-1	–	–	**–**	**-1**
Additions	3	15	–	0	**3**	**15**
Disposals through sale	0	0	–	–	**0**	**0**
Other disposals	–	0	–	–	**–**	**0**
Fair value changes	0	–	1	-1	**1**	**-1**
Reclassifications	-5	-8	–	–	**-5**	**-8**
Total	–	0	–	–	**–**	**0**
As of Dec 31	**42**	**44**	**3**	**2**	**45**	**46**
thereof at cost/cost of purchase	–	–	0	0	**0**	**0**
thereof fair value (recognized directly in equity)	31	28	3	2	**34**	**30**
thereof fair value (recognized in the income statement)	11	16	–	–	**11**	**16**
Non-current share	42	44	2	1	**44**	**45**
Current share	–	–	1	1	**1**	**1**

(18) INVENTORIES

All costs which are directly related to the procurement process are capitalized as the costs of purchase of the inventories. The average method is used as the basis for establishing the cost of purchase of fungible and homogeneous raw materials, consumables and supplies. The costs of production comprise the individual costs and also the directly attributable overheads; borrowing costs and idle costs are not capitalized, and instead are recognized as expense in the period in which they are incurred.

As of the balance sheet date, inventories are measured with the lower of cost or net realizable value.

Inventories are broken down as follows:

As of Dec 31 *(€ million)*	2019	2018
Raw materials, consumables and supplies	1,592	1,383
Unfinished products, unfinished services	117	159
Finished products and goods	105	102
Advance payments	41	41
Impairments	-335	-316
Total	**1,520**	**1,369**

(19) RECEIVABLES AND OTHER ASSETS

In general, receivables and other financial assets are measured at amortized cost of purchase. Finance lease receivables, advance payments made and plan assets in accordance with IAS 19 (Employee Benefits) are not allocated to any category of IFRS 9. With regard to the measurement categories according to IFRS 9, please refer to the section "ADDITIONAL DISCLOSURES RELATING TO THE FINANCIAL INSTRUMENTS" 234 F.

Receivables for which there are substantial objective indications of an impairment are adjusted appropriately. Portfolio-based allowances are recognized in relation to groups of assets also on the basis of historical default rates. In DB Group, the maturities of the receivables and default risks are monitored constantly.

Some transport contracts include a handing over obligation specifying that the deployed assets owned by DB Group have to be handed over at the end of the contract. Other transport contracts include that the deployed assets have to be leased from the contracting organization or a capital service guarantee to be provided by the contracting organization for leasing from independent financial service providers. In accordance with IFRIC 12 (Service Concession Arrangements), the corresponding capital expenditures are capitalized as receivables from transport concession arrangements with the guaranteed residual values at the end of the contract being separated. The receivables are redeemed out of the concession fees, which means that not all of the concession fees result in revenues. The residual value receivables are disclosed at their present value under the financing receivables.

Critical assessments and appraisals

The impairment of doubtful receivables to a considerable extent comprises assessments and appraisals of individual receivables which are based on the creditworthiness of the particular customer, current economic developments as well as an analysis of historical bad debts at the portfolio level. If the impairment is derived on the basis of historical default rates at the portfolio level, any decline in the overall volume of receivables results in a corresponding reduction of such provisions (and vice versa).

The receivables and other assets are broken down as follows:

(€ million)	Trade receivables	Financial receivables and earmarked cash at banks	Receivables from transport concessions	Advance payments	Other assets	Total
AS OF DEC 31, 2019						
Gross value	5,062	413	352	290	1,746	**7,863**
Impairments	-145	-9	0	–	-46	**-200**
Net value	**4,917**	**404**	**352**	**290**	**1,700**	**7,663**
thereof due to related parties	37	9	–	0	476	**522**
AS OF DEC 31, 2018						
Gross value	5,128	184	163	282	1,638	**7,395**
Impairments	-142	-10	0	–	-31	**-183**
Net value	**4,986**	**174**	**163**	**282**	**1,607**	**7,212**
thereof due to related parties	34	12	–	0	384	**430**

DB Group concluded factoring agreements with a bank; according to the terms of this agreement, the bank is obliged to purchase on a revolving basis current trade receivables in certain companies of the DB Schenker segment up to a maximum volume of € 701 million. Criteria for defining the receivables include the following: legal enforceability, the invoice falling due within 180 days of the invoice date, as well as the fact that the debtor is not an intra-Group debtor. The agreement has been concluded for an indefinite period of time. DB Group will continue to be responsible for sales ledger accounting and the dunning system on behalf of the bank until further notice. The risks relating to the receivables which are sold and which are relevant for the risk assessment are the credit risk and the risk of late payment. The purchase price is equivalent to the nominal amount. DB Group bears bad debt related to credit risks from the various tranches as well as late-payment risks up to a maximum amount of € 159 million. The other bad debts related to the credit risk are borne by the bank. Virtually none of the opportunities and risks associated with the receivables have been transferred or retained (breakdown of major risks between DB Group and bank). For some of the receivables, the right of disposal over the receivables which have been sold has been transferred to the bank as the bank has the actual ability to sell on the receivables. These receivables have been completely derecognized. As of December 31, 2019, outstanding receivables with a volume of € 685 million had been sold; of this figure, an amount of € 260 million had been entirely derecognized and an amount of € 425 million had been derecognized to the extent of the transferred risk. Purchase price payments received by the bank increased the cash flow from operating activities.

The financial receivables include residual values of € 156 million (as of December 31, 2018: € 62 million) agreed with the public transport authorities for transport contracts. These residual value receivables mainly relate to rolling stock which are sold for a fixed price at the end of the transport contract to the public transport authority or to a third party designated by the public transport authority. The financial receivables mainly show receivables from subleases of € 106 million (as of December 31, 2018: € 26 million receivables from finance leases). The increase was mainly attributable to the first-time adoption of IFRS 16. In addition, the receivables from financing for the first time included earmarked funds (€ 46 million) which can be used only for contributions for certain retirement benefit schemes.

The other assets disclose for the first time contract fulfillment costs of € 21 million (as of December 31, 2018: € 22 million).

The impairments for the financial instruments classified in accordance with IFRS 7 have developed as follows:

(€ million)	Trade receivables	Financial receivables and earmarked cash at banks	Receivables from transport concessions	Other assets	Total
As of Jan 1, 2019	-142	-10	–	-31	**-183**
Additions	-28	–	0	-20	**-48**
Reversals	20	–	–	4	**24**
Amounts used	5	0	–	1	**6**
Changes in the scope of consolidation	0	–	–	0	**0**
Currency translation differences	0	1	–	0	**1**
As of Dec 31, 2019	**-145**	**-9**	**0**	**-46**	**-200**
As of Jan 1, 2018	-181	-6	–	-59	**-246**
Change in method IFRS 9	24	–	–	–	**24**
Additions	-26	-4	0	-3	**-33**
Reversals	24	–	–	11	**35**
Amounts used	17	0	–	20	**37**
Changes in the scope of consolidation	0	0	–	0	**0**
Currency translation differences	0	0	–	0	**0**
As of Dec 31, 2018	**-142**	**-10**	**-**	**-31**	**-183**

Receivables for which there are substantial objective indications of an impairment are adjusted appropriately. For equivalent receivables (portfolios of receivables) which cannot be identified individually as impaired, risk provisioning is also created for anticipated credit losses. Any impairments which are recognized are shown as deductions from the financial assets. Previous impairments are reversed if the reasons for the original impairments are no longer applicable.

Expenses increased to € 51 million in the year under review for the complete derecognition of receivables and other assets (previous year: € 49 million).

Income of € 4 million was reported for amounts received in relation to previously derecognized receivables and other assets (previous year: € 16 million).

For trade receivables, DB Group uses the simplified approach according to IFRS 9 in order to measure the expected loan losses. Accordingly, for all trade receivables, the loan losses expected over the life of the receivables are used for this purpose. For measuring the expected loan losses, trade receivables are pooled on the basis of common credit risk features. The expected loan losses are determined on a collective basis using impairment matrices. These are determined on the basis of the individual segments within DB Group. The expected loan losses amounted to € 22 million as of December 31, 2019 (as of December 31, 2018: € 23 million).

As of Dec 31, 2019 (*€ million*)	Net carrying amount	Expected loss rate (%)	Risk provisioning	thereof risk provisioning for past due receivables	thereof risk provisioning for receivables not past due
Trade receivables	4,917	0.45	22	13	9

For financial receivables as well as other financial receivables, the expected impairment requirement for major items was determined in relation to specific receivables. Risk provisioning totaling € 5 million was created for this purpose as of December 31, 2019 (as of December 31, 2018: € 6 million).

The following overview shows the maturity structure of the receivables for the financial instruments classified in accordance with IFRS 7 and the advanced payments which have been made:

	Residual maturity							
(*€ million*)	Up to 1 year	1 to 2 years	2 to 3 years	3 to 4 years	4 to 5 years	More than 5 years	Total more than 1 year	Total
AS OF DEC 31, 2019								
Trade receivables	4,871	16	13	9	4	4	**46**	**4,917**
Financial receivables and earmarked cash at banks	152	26	31	13	8	174	**252**	**404**
Receivables from transport concessions	37	31	30	29	29	196	**315**	**352**
Advance payments	235	55	–	–	–	–	**55**	**290**
Other assets	1,612	22	8	22	1	35	**88**	**1,700**
Total	**6,907**	**150**	**82**	**73**	**42**	**409**	**756**	**7,663**
thereof non-financial assets	530	64	7	1	1	34	**107**	**637**
AS OF DEC 31, 2018								
Trade receivables	4,962	15	8	1	0	0	**24**	**4,986**
Financial receivables and earmarked cash at banks	98	3	1	1	1	70	**76**	**174**
Receivables from transport concessions	16	10	10	10	10	107	**147**	**163**
Advance payments	230	52	–	–	–	–	**52**	**282**
Other assets	1,526	27	3	15	6	30	**81**	**1,607**
Total	**6,832**	**107**	**22**	**27**	**17**	**207**	**380**	**7,212**
thereof non-financial assets	549	64	2	5	0	13	**84**	**633**

The trade receivables were virtually unchanged compared with the previous year. Increases at DB Regional, Subsidiaries/Other and DB Netze Stations almost fully compensated for the decline at DB Schenker and DB Netze Energy.

The current other assets also comprised the customs receivables of the DB Schenker segment. The increase in the other assets mainly related to the DB Netze Track segment.

As a result of the large number of customers in the various operating segments, there is no evidence of any concentration of credit risks with trade receivables.

The fair values of the balance sheet items receivables and other assets, trade receivables as well as other receivables and assets essentially correspond to the carrying amounts.

The maximum default risk is essentially equivalent to the carrying amount in each case. No collateral is normally held.

As of the balance sheet date, there are no indications that debtors of the receivables which are neither impaired nor overdue will not meet their payment obligations.

(20) INCOME TAX RECEIVABLES

The income tax receivables relate to advance payments which have been made as well as allowable withholding taxes.

(21) DERIVATIVE FINANCIAL INSTRUMENTS

Upon conclusion of a contract, derivative financial instruments are generally classified as hedging instruments for hedging the cash flows from contractual obligations or anticipated transactions (cash flow hedge).

Cash flow hedges

Cash flow hedges are used to provide protection against fluctuations in the cash flows of financial assets or liabilities or anticipated transactions. When future cash flows are hedged, the hedging instruments are also recognized with their fair value. Changes in value are initially recognized in shareholders' equity with no impact on the income statement, and are only recognized in the income statement at the point at which the corresponding losses or *profits from the underlying have an impact on the income statement or the transactions expire. Any ineffectiveness is recognized in the income statement in accordance with IFRS 9.*

Derivative financial instruments which do not satisfy the requirements for recognizing hedges in accordance with IFRS 9

If hedges which in economic terms are used for interest, currency or price hedging do not satisfy the requirements of IFRS 9 for being recognized as a hedge, the changes in value are immediately recognized in the income statement.

Calculation of the fair value

The fair value of financial instruments which are traded in an active market is derived from the market price applicable on the balance sheet date. Common valuation methods such as option price or present-value models are used for determining the fair value of financial instruments which are not traded in an active market. If valuation-relevant parameters are not directly observable on the market, forecasts are used based on comparable financial instruments which are traded in an active market; these forecasts are then adjusted by premiums or discounts on the basis of historical data. The mean value of bid and offer rates are used. Trades for which no premium has been paid have a fair value of zero upon conclusion. DB AG operates with long-dated financial derivatives on a hedged basis, and does not perform any credit risk adjustment for the present value for hedged transactions. For considerations of materiality, no credit risk adjustment is used for short-term derivatives. If credit risk adjustment is used, the relevant discounts are derived from the credit default swap (CDS) figures observable on the market.

All derivatives used in DB Group are measured using common methods such as option price or present value models, because their fair values are not traded on an active market. No parameters from non-observable markets are used for measurement purposes.

The volume of hedges which have been taken out is shown in the following overview of nominal values:

As of Dec 31 (€ million)	Nominal value of hedging instrument 2019	2018	Residual maturity up to 1 year 2019	2018	Residual maturity more than 1 year 2019	2018
INTEREST-BASED CONTRACTS						
Interest swaps	84	92	0	0	84	92
	84	**92**	**0**	**0**	**84**	**92**
CURRENCY-BASED CONTRACTS						
Currency swaps	1,149	796	1,149	796	0	0
Currency forwards	2,408	1,683	2,335	1,636	73	48
Cross-currency swaps	6,836	6,061	1,063	248	5,773	5,813
	10,393	**8,540**	**4,547**	**2,680**	**5,846**	**5,861**

As of Dec 31 (1,000 t)	Volume 2019	2018	Residual maturity up to 1 year 2019	2018	Residual maturity more than 1 year 2019	2018
OTHER CONTRACTS						
Diesel	849	962	66	126	783	836
Hard coal	3,384	4,116	1,322	1,284	2,062	2,832

The volume of interest swaps declined as of December 31, 2019. No new transactions were carried out. The changes in holdings of currency swaps and forwards vary in line with the corresponding hedging requirements of the subsidiaries. In the year under review, the nominal value of the cross-currency swaps increased by € 775 million, because the year under review saw the issue of foreign currency senior bonds whose cash flows were swapped into euros.

The volume of diesel hedges declined by 0.1 million t to 0.8 million t. The volume of hard coal hedging declined by about 0.7 million t as of December 31, 2019 to 3.4 million t, as the volume of expiring hedges exceeded the new hedges.

The following table shows the average hedging prices / hedging rates for the main derivative hedging instruments of DB Group (per currency):

(Currency)	Hedging price per 1,000 t: Diesel	Hedging price per 1,000 t: Hard coal	Hedging rate: Cross-currency swaps (CCS)	Hedging rate: Interest rate swaps (IRS)	Hedging rate: Currency swaps	Hedging rate: Currency forward
EUR	517.01	63.40	–	0.04	–	–
USD	–	–	1.12	–	1.03	1.13
GBP	386.31	–	0.87	–	0.89	0.86
CHF	–	–	1.20	–	–	1.09
JPY	–	–	114.80	–	–	120.79
AUD	–	–	1.53	–	–	1.62
HKD	–	–	–	–	–	8.71
NOK	–	–	8.81	–	10.11	10.12
SEK	–	–	9.34	–	–	10.50
DKK	–	–	7.46	–	–	7.47
SGD	–	–	1.59	–	1.51	1.51
NZD	–	–	1.65	–	–	1.72
PLN	2,195.37	–	4.26	–	–	4.31
CZK	12,767.08	–	26.10	–	–	25.48
HUF	–	–	300.20	–	–	334.14
RON	–	–	4.51	–	–	4.79
HRK	–	–	7.44	–	–	7.45
CNY	–	–	–	–	–	7.88
ILS	–	–	–	–	–	3.94
SAR	–	–	4.29	–	–	4.17
AED	–	–	–	–	4.16	4.06
QAR	–	–	–	–	–	4.19

All derivative financial instruments are marked-to-market on the reporting date. The following overview shows the structure of the item stated in the balance sheet depending on the type of underlying hedge:

As of Dec 31 (*€ million*)	Assets 2019	Assets 2018	Liabilities 2019	Liabilities 2018
INTEREST-BASED CONTRACTS				
Interest swaps	–	–	5	9
Interest forwards	0	0	–	–
	0	**0**	**5**	**9**
CURRENCY-BASED CONTRACTS				
Currency swaps	1	1	16	5
Currency forwards	10	4	9	6
Other currency derivatives	0	0	0	0
Cross-currency swaps	265	202	280	326
thereof effects from currency hedges	294	199	173	222
	276	**207**	**305**	**337**
OTHER CONTRACTS				
Energy price derivatives	39	56	56	45
	39	**56**	**56**	**45**
Total	**315**	**263**	**366**	**391**
Non-current portion	181	216	287	372
Interest-based contracts	–	–	5	9
Currency-based contracts	146	168	248	326
Other contracts	35	48	34	37
Current position	134	47	79	19

Cash flow hedges

In order to minimize the interest rate and exchange rate risk, foreign currency issues as well as intra-Group foreign currency loans are in principle translated into euros, and floating-rate financial liabilities are generally converted into fixed-income financial liabilities. Energy price hedging was intended to reduce price fluctuations attributable to energy sourcing.

The negative valuation of the interest rate swaps is still due to a continuous decline in the level of interest rates since the transactions were concluded. The development in the value of the cross-currency swaps is mainly attributable to the weakening of the euro against the Swiss franc and the Australian dollar; this was to some extent mitigated by the lower level of interest rates in the Eurozone.

The negative market value of the energy price derivatives reflects the development on the underlying raw materials markets.

The market values of the cash flow hedges are shown as follows under assets and liabilities:

As of Dec 31 (*€ million*)	Assets 2019	Assets 2018	Liabilities 2019	Liabilities 2018
INTEREST-BASED CONTRACTS				
Interest swaps	–	–	5	9
	–	**–**	**5**	**9**
CURRENCY-BASED CONTRACTS				
Currency swaps	1	1	16	5
Cross-currency swaps	265	202	250	291
	266	**203**	**266**	**296**
OTHER CONTRACTS				
Energy price derivatives	39	56	56	45
Miscellaneous / other derivatives	–	–	0	0
	39	**56**	**56**	**45**
Total	**305**	**259**	**327**	**350**
Non-current portion	180	215	257	337
Interest-based contracts	–	–	5	9
Currency-based contracts	145	167	218	291
Other contracts	35	48	34	37
Current position	125	44	70	13

Cash flow hedges are not classified under any category of IFRS 9.

The hedged cash flows of the underlyings will probably materialize, and have an impact on the income statement, in the years 2019 to 2039 (interest payments and payments of principal) or in the years 2019 to 2025 (payments for energy).

Details for hedges and underlyings in accordance with IFRS 9

(*€ million*)	2019 Changes in hedges and underlyings	2019 thereof ineffective (with impact on income statement)	As of Dec 31, 2019 Hedging reserve cash flow hedges	2018 Changes in hedges and underlyings	2018 thereof ineffective (with impact on income statement)	As of Dec 31, 2018 Hedging reserve cash flow hedges
INTEREST-BASED CONTRACTS						
Interest swaps	+ 4	–	- 3	+ 2	–	- 6
CURRENCY-BASED CONTRACTS						
Currency swaps	- 11	–	+ 5	- 2	–	+ 1
Cross-currency swaps	+ 104	+ 3	- 135	+ 62	–	- 112
OTHER CONTRACTS						
Energy price hedges	- 27	–	- 22	+ 11	–	+ 4

In the case of interest and cross-currency hedges, the effectiveness of the hedge is assessed using the critical terms match method. This method is used because the major valuation parameters of the underlying and hedges are identical. Ineffectiveness is measured as of every balance sheet date by means of the hypothetical derivative method. In this method, the development in value of the hedge which is actually taken out is compared with the development in value of a theoretical hedge in which all valuation-relevant parameters are identical to those of the underlying. In the case of energy price derivatives, the effectiveness of the hedge is assessed using the linear regression. The ineffectiveness is calculated using the dollar-offset method. Under this method, the changes in the market values of the underlying are compared with the changes in the market value of the hedging instrument. The resultant quotient determines the inefficiency.

As in the previous year, the inefficiencies of cash flow hedges of the energy price derivatives recognized in the income statement were of minor significance.

Non-hedge derivatives

Currency forwards taken out to hedge operations are normally classified as non-hedge derivatives.

The market values of the non-hedge derivatives are shown under assets and liabilities as follows:

	Assets		Liabilities	
As of Dec 31 *(€ million)*	**2019**	2018	**2019**	2018
INTEREST-BASED CONTRACTS				
Interest forwards	–	–	–	–
	–	**–**	**–**	**–**
CURRENCY-BASED CONTRACTS				
Currency forwards	10	4	9	6
Other currency derivatives	0	0	0	0
Cross-currency swaps	–	–	30	35
	10	**4**	**39**	**41**
OTHER CONTRACTS				
Energy price derivatives	0	0	–	–
	0	**0**	**–**	**–**
Total	**10**	**4**	**39**	**41**
Non-current portion	1	1	30	35
Currency-based contracts	1	1	30	35
Current position	9	3	9	6

The cross-currency swaps are based on a redesignation of hedges as a result of the transfer of transactions between banks. The conditions including the cash flows of the derivatives were unchanged and the economic hedge is thus still in place. The decline was attributable to the reversal of the redesignated amounts in line with the residual maturities of the swaps.

The non-hedge derivatives are classified under the category held-for-trading of IFRS 9.

The financial instruments recognized at fair value are classified under valuation level 2 and to a lesser extent under valuation level 1.

	2019				2018			
As of Dec 31 *(€ million)*	**Level 1**	**Level 2**	**Level 3**	**Total**	Level 1	Level 2	Level 3	**Total**
ASSETS								
Financial assets (securities at fair value)	3	–	–	**3**	2	–	–	**2**
Derivatives – non-hedging	–	10	–	**10**	–	4	–	**4**
Derivatives – hedging	–	305	–	**305**	–	259	–	**259**
Total	**3**	**315**	**–**	**318**	**2**	**263**	**–**	**265**
LIABILITIES								
Derivatives – non-hedging	–	39	–	**39**	–	41	–	**41**
Derivatives – hedging	–	327	–	**327**	–	350	–	**350**
Total	**–**	**366**	**–**	**366**	**–**	**391**	**–**	**391**

There have been no reclassifications between the valuation levels in the year under review.

For establishing the fair values of the derivative financial instruments, contractually agreed or most probable cash flows are discounted using the appropriate market interest rate, whereby due consideration is given to the credit risk by means of credit spreads. No credit risk mark-downs have been recognized in the case of secured exposures. The credit risk resulting from the derivative portfolio is treated on a net basis. Credit support annexes, which are subject to daily security settlement with a threshold value of € 0, were concluded to minimize the credit risk of long-term interest and cross-currency transactions.

(22) CASH AND CASH EQUIVALENTS

This item comprises cash in hand and checks, deposits at banks which are due on sight, as well as cash and cash equivalents. Cash at banks comprises overnight money as well as time deposits (including repurchase agreements (repos)) due within three months.

Cash and cash equivalents are recognized with their nominal value (at amortized cost).

Cash and cash equivalents are broken down as follows:

As of Dec 31 *(€ million)*	**2019**	2018
Cash in hand and cash at banks	3,992	3,543
Cash equivalents	1	1
Total	**3,993**	**3,544**
Effective interest rate on short-term bank deposits (%)	- 0.23	- 0.20
Average term of short-term bank deposits (months)	0.8	0.4

The interest rates for short-term bank deposits were in a range of between – 0.55 % and 0.17 % (previous year: – 0.60 % to 0.19 %) and relate to euro-denominated investments. The terms of the investments are between one day and three months.

With regard to cash and cash equivalents, please refer to section NOTES TO THE STATEMENT OF CASH FLOW 228.

(23) HELD-FOR-SALE ASSETS

Under IFRS 5, non-current assets are classified as available-for-sale non-current assets if their carrying amount is to be realized by way of sale and not by way of continued use. This can be an individual asset, a disposal group or part of a company. Non-current available-for-sale assets are stated with the lower of carrying amount or market value less costs which will be incurred.

As of December 31, 2019, no available-for-sale assets were shown in the balance sheet. The figure stated as of December 31, 2018 related to the shares in GHT Mobility GmbH, Berlin, which in the year under review were reclassified to shares in companies recognized at equity.

(24) SUBSCRIBED CAPITAL

The share capital of DB AG is € 2,150 million. It consists of 430,000,000 no-par-value bearer shares. All shares are held by the Federal Republic of Germany.

(25) RESERVES

a) Capital reserves

Capital reserves comprise reserves which have not been part of earnings.

b) Reserve resulting from valuation with no impact on profit or loss

RESERVE FOR CURRENCY TRANSLATION DIFFERENCES

The currency translation differences resulting from the method of functional currency (IAS 21) are shown separately as part of consolidated shareholders' equity.

RESERVE FOR MARKET VALUATION OF SECURITIES

The reserve includes the changes in the market value of financial instruments to be recognized directly in equity. The reserve has to be reversed to the income statement or eliminated when a financial instrument is sold, became due or was reclassified.

RESERVE ATTRIBUTABLE TO THE MARKET VALUATION OF CASH FLOW HEDGES

The development in the reserve is shown in the following:

(€ million)	2019	2018
As of Jan 1	-106	-121
Change in market value	64	90
Reclassifications		
Financial result	-110	-59
Net interest income	2	3
Cost of materials	2	-18
Changes in deferred taxes	-1	-1
As of Dec 31	**-149**	**-106**

RESERVE FOR THE REVALUATION OF PENSIONS

The effects resulting from the revaluation of defined benefit plans in accordance with IAS 19 (Employee Benefits) are recognized directly in equity.

OTHER CHANGES IN THE RESERVES

This item mainly shows amounts resulting from transactions in relation to reductions or increases in non-controlling interests between the shareholders of DB AG and the non-controlling interests.

(26) RETAINED EARNINGS

The generated shareholders' equity comprises the entire net profits generated since January 1, 1994 less the goodwill offset under HGB up to December 31, 2002 as well as the dividends paid to the shareholder.

This item also shows the impact on shareholders' equity attributable to the first-time adoption of IFRS if they are not included in the reserves attributable to valuation with no impact on the income statement.

(27) NON-CONTROLLING INTERESTS AND HYBRID CAPITAL

Non-controlling interests comprise the share of third parties in the net assets of consolidated subsidiaries. Third-party interests in the currency reserve amount to € –8 million (as of December 31, 2018: € –8 million).

In October 2019, Deutsche Bahn Finance GmbH (DB Finance) issued two junior hybrid bonds with a total volume of € 2 billion. The hybrid bonds have undated durations with an initial termination right for the issuer after 5.5 years (coupon: 0.95 %) and ten years (coupon: 1.6 %) respectively; the issue proceeds amounted to € 997 million and € 995 million respectively. The two hybrid bonds do not have a repayment obligation and do not have a termination right for the holder. In addition, any retained interest payments only have to be made when a dividend is paid. According to IAS 32 (Financial Instruments), the hybrid bonds have to be classified entirely as equity as there is no regular repayment obligation of the hybrid bonds, nor is there any termination right of the bond holders. Interest payments to be made to the bond holders (less the taxes on income) are recognized directly in equity.

(28) FINANCIAL DEBT

Liabilities are normally recognized in accordance with IFRS 9 with their nominal amount, which corresponds to the fair value at the point at which the liability is initially recognized and the amortized costs of purchase up to the date at which the liability is settled. Financial debt and other non-current liabilities, when initially recognized, are stated with the amount which corresponds to the fair value of the received assets, where appropriate less transaction costs. Subsequently, they are stated using amortized costs of purchase using the effective interest method. The differences between the amount paid out less transaction costs and the amount repaid are recognized in the income statement over the life of the liability.

Interest-free loans which are related to infrastructure capital expenditures are recognized with the present value of the amounts to be repaid, and are adjusted to their nominal repayment amount over their life. The difference between the nominal amount of the loan and the present value is recognized as an interest benefit under deferred items. The income from pro rata reversal of these accruals is shown as other operating income.

Liabilities from leases for which a right-of-use has to be recognized in accordance with IFRS 16 are shown as liabilities at the beginning of the contract duration with the lower of fair value and the present value of the following lease payments: fixed payments less payments of the lessor which are received, variable payments based on an index, expected payments for residual value guarantees, the purchase price for probably exercised purchase options, probable compensation payments in the event of early termination. The measurement of the lease liability also includes lease payments in relation to adequately certain utilization of prolongation options. The leasing installments are broken down into an interest component and a repayment component. The interest component of the leasing installment is recognized in the income statement. The interest rate which is *used corresponds to the implied interest rate of the lease or, if this is not known, the maturity-related marginal borrowing rate. Liabilities arising from leases are not classified under any category of IFRS 9.*

Some transport contracts comprise the leasing particularly of rail vehicles from transport authorities or from independent financial service providers, whereby the latter receive a capital service guarantee, a redeployment guarantee or similar from the transport authority. The present value of these payment obligations is shown under the financing liabilities from transport concessions.

The financial debt comprises all interest-bearing liabilities including the interest-free loans stated with their present values. The maturity structure of financial debt is as follows:

	Residual maturity							
(*€ million*)	**Up to 1 year**	**1 to 2 years**	**2 to 3 years**	**3 to 4 years**	**4 to 5 years**	**More than 5 years**	**Total more than 1 year**	**Total**
AS OF DEC 31, 2019								
Interest-free loans	159	147	140	133	128	–	**548**	**707**
Senior bonds	2,176	1,802	1,568	1,933	1,529	11,958	**18,790**	**20,966**
Commercial paper	890	–	–	–	–	–	**–**	**890**
Bank borrowings	221	3	401	0	0	1	**405**	**626**
EUROFIMA loan	–	200	–	–	–	–	**200**	**200**
Leasing liabilities	1,053	871	630	541	425	1,495	**3,962**	**5,015**
Financing liabilities from transport concessions	13	12	13	13	13	13	**64**	**77**
Other financial liabilities	204	1	0	6	0	1	**8**	**212**
Total	**4,716**	**3,036**	**2,752**	**2,626**	**2,095**	**13,468**	**23,977**	**28,693**
thereof due to related companies	167	348	140	133	128	0	**749**	**916**
AS OF DEC 31, 2018								
Interest-free loans	174	153	140	134	128	122	**677**	**851**
Senior bonds	1,958	2,137	1,804	1,544	1,916	11,353	**18,754**	**20,712**
Commercial paper	–	–	–	–	–	–	**–**	**–**
Bank borrowings	240	4	1	400	0	1	**406**	**646**
EUROFIMA loan	–	–	200	–	–	–	**200**	**200**
Finance lease liabilities	44	43	59	36	41	339	**518**	**562**
Financing liabilities from transport concessions	6	6	6	7	7	13	**39**	**45**
Other financial liabilities	196	24	1	0	6	1	**32**	**228**
Total	**2,618**	**2,367**	**2,211**	**2,121**	**2,098**	**11,829**	**20,626**	**23,244**
thereof due to related companies	186	153	341	134	128	122	**878**	**1,064**

The following fair values are summarized compared with the carrying amounts:

	2019		2018	
As of Dec 31 (*€ million*)	**Carrying amount**	**Fair value**	Carrying amount	Fair value
Interest-free loans	707	784	851	955
Senior bonds	20,966	22,498	20,712	21,722
Commercial paper	890	890	–	–
Bank borrowings	626	627	646	647
EUROFIMA loan	200	216	200	223
Leasing liabilities [1)]	5,015	5,408	562	712
Finance liabilities from transport concessions	77	78	45	47
Other financial liabilities	212	213	228	229
Total	**28,693**	**30,714**	**23,244**	**24,535**

[1)] Previous year: Finance lease liabilities.

The differences between the carrying amounts and the fair values of the financial debt are due to the usually changed market interest rates for financial debt with a comparable risk profile. In view of the short maturities involved and also in view of the fact that interest charged is closely linked to market rates, there are no significant differences between the carrying amounts and the fair values of other financial liabilities.

Interest-free loans are attributable almost exclusively to financing provided by the Federal Government for capital expenditures in expanding and replacing track infrastructure. This is based on the responsibility for the transport needs of the public which is anchored in section 87e (4) of the Basic Law (Grundgesetz; GG) and specified in the Federal Rail Infrastructure Extension Act (Bundesschienenwegeausbaugesetz; BSWAG).

The arrangements for repaying the loans are detailed in individual and collective financing agreements. In general, the loans are repaid in equal annual installments, which are based on the corresponding annual depreciation applicable for the financed assets.

Interest-free loans have developed as follows:

(*€ million*)	**2019**	2018
As of Jan 1	851	1,014
Redemption	–178	–204
Compounding	34	41
As of Dec 31	**707**	**851**

The issued senior bonds consist of the following transactions:

Senior bonds as of Dec 31 (*€ million*)	Issue volume	Issue currency	Residual maturity (years)	Effective interest rate (%)	**2019** Carrying amount	**2019** Fair value	2018 Carrying amount	2018 Fair value
UNLISTED SENIOR BONDS								
DB Finance	1,044	AUD, JPY, EUR	4.7 - 12.8		953	1,070	931	994
Total					**953**	**1,070**	**931**	**994**
LISTED SENIOR BONDS OF DB FINANCE								
Bond 2007 - 2019	600	EUR	0.0	5.110	–	–	600	617
Bond 2009 - 2019	1,000	EUR	0.0	4.923	–	–	1,000	1,009
Bond 2009 - 2021	600	EUR	1.7	4.445	599	647	599	669
Bond 2010 - 2020	500	EUR	0.4	3.572	499	508	500	526
Bond 2010 - 2025	500	EUR	5.5	3.870	497	602	497	597
Bond 2010 - 2020	410	JPY	0.8	1.150	386	389	374	381
Bond 2010 - 2022	500	EUR	2.8	3.464	499	551	498	562
Bond 2010 - 2020	567	CHF	0.4	1.924	690	698	664	686
Bond 2011 - 2021	700	EUR	1.4	3.797	700	740	699	765
Bond 2012 - 2022	496	GBP	2.5	2.821	469	490	446	468
Bond 2012 - 2023	400	EUR	3.1	2.116	399	425	398	431
Bond 2012 - 2024	83	CHF	4.1	1.586	92	99	88	96
Bond 2012 - 2024	500	EUR	4.2	3.119	498	562	497	567
Bond 2012 - 2072	75	GBP	52.9	4.524	70	118	67	105
Bond 2013 - 2028	50	EUR	8.1	2.707	50	59	50	58
Bond 2013 - 2025	202	NOK	5.2	4.017	152	163	151	166
Bond 2013 - 2023	386	CHF	3.6	1.425	437	466	421	452
Bond 2013 - 2026	497	GBP	6.6	3.351	493	555	468	518
Bond 2013 - 2023	500	EUR	3.7	2.578	499	546	498	553
Bond 2013 - 2020	300	EUR	0.8	1.899	300	305	299	311
Bond 2013 - 2019	186	USD	0.0	FRN	–	–	218	218
Bond 2014 - 2024	59	AUD	4.1	5.395	56	63	55	61
Bond 2014 - 2021	142	SEK	1.1	2.940	120	123	122	128
Bond 2014 - 2021	40	SEK	1.1	FRN	33	34	34	34
Bond 2014 - 2019	73	SGD	0.0	2.338	–	–	80	80
Bond 2014 - 2024	246	CHF	4.7	1.522	276	302	266	290
Bond 2014 - 2029	500	EUR	9.2	2.886	494	608	494	581
Bond 2014 - 2020	300	EUR	0.6	FRN	300	301	300	301
Bond 2014 - 2022	300	EUR	2.7	FRN	300	302	300	302
Bond 2014 - 2022	300	EUR	2.1	FRN	300	302	300	302
Bond 2015 - 2023	600	EUR	3.8	FRN	599	606	599	605
Bond 2015 - 2025	600	EUR	5.8	1.391	595	639	595	628
Bond 2015 - 2030	366	NOK	10.8	2.760	344	346	341	344
Bond 2015 - 2025	115	AUD	5.8	3.864	112	123	110	117
Bond 2015 - 2030	650	EUR	10.8	1.707	645	727	644	678
Bond 2015 - 2025	161	CHF	5.9	0.143	161	165	155	155
Bond 2016 - 2026	500	EUR	6.2	0.880	496	518	496	503
Bond 2016 - 2031	750	EUR	11.5	0.964	743	776	742	709
Bond 2016 - 2021	350	EUR	1.5	0.040	350	351	350	350
Bond 2016 - 2028	500	EUR	8.7	0.765	494	518	493	487
Bond 2016 - 2024	41	HKD	4.2	2.100	40	39	39	37
Bond 2017 - 2032	79	NOK	12.1	2.514	71	69	70	68
Bond 2017 - 2032	500	EUR	12.9	1.541	497	552	497	504
Bond 2017 - 2025	341	GBP	5.5	1.437	351	355	334	328
Bond 2017 - 2032	55	SEK	12.6	2.226	51	54	52	51
Bond 2017 - 2030	261	CHF	10.9	0.463	276	288	266	262
Bond 2017 - 2024	300	EUR	4.9	FRN	302	302	303	301
Bond 2018 - 2027	1,000	EUR	8.0	1.086	994	1,065	993	1,013
Bond 2018 - 2033	750	EUR	13.6	1.680	745	842	745	765
Bond 2018 - 2028	346	CHF	8.6	0.470	370	386	356	359
Bond 2018 - 2031	500	EUR	11.2	1.508	493	547	493	505
Bond 2018 - 2043	125	EUR	23.9	1.867	125	144	125	125
Bond 2019 - 2028	1,000	EUR	9.0	1.235	991	1,076	–	–
Bond 2019 - 2026	340	GBP	6.1	1.944	351	364	–	–
Bond 2019 - 2034	103	NOK	14.1	2.732	101	101	–	–
Bond 2019 - 2029	310	CHF	9.5	0.135	322	325	–	–
Bond 2019 - 2034	133	CHF	14.5	0.516	138	143	–	–
Bond 2019 - 2039	47	SEK	19.4	2.025	48	49	–	–
Total					**20,013**	**21,428**	**19,781**	**20,728**
Senior bonds, total amount					**20,966**	**22,498**	**20,712**	**21,722**

The year under review saw the scheduled repayment of the following with a total value of € 1,913 million: three fixed-interest listed senior bonds of DB Finance for € 600 million, € 1,000 million and SGD 125 million (€ 73 million), one variable-interest listed senior bond for USD 250 million (€ 186 million) as well as one fixed-interest unlisted senior bond for JPY 7,500 million (€ 54 million).

In the year under review, DB Finance issued seven senior bonds with a total value of € 2,004 million. These comprise six fixed-interest listed senior bonds for GBP 300 million (€ 340 million), NOK 1,000 million (€ 103 million), CHF 350 million (€ 310 million), CHF 150 million (€ 133 million) and SEK 500 million (€ 47 million) as well as one fixed-interest unlisted senior bond for AUD 115 million (€ 71 million).

Commercial paper issues are carried out within the framework of short-term liquidity management. Commercial paper with a volume of € 890 million was outstanding as of December 31, 2019 (as of December 31, 2018: none). This was broken down as follows:

Commercial paper as of Dec 31 *(€ million)*	Issue volume	Issue currency	Residual maturity (days)	Nominal interest rate (%)	**2019** Carrying amount	**2019** Fair value	2018 Carrying amount	2018 Fair value
ISSUES								
Commercial paper of Oct 2, 2019	178	USD	10	2.200	178	178	–	–
Commercial paper of Oct 2, 2019	178	USD	6	2.200	178	178	–	–
Commercial paper of Nov 8, 2019	134	USD	13	1.954	134	134	–	–
Commercial paper of Nov 8, 2019	134	USD	13	1.950	134	134	–	–
Commercial paper of Nov 28, 2019	88	USD	9	2.075	88	88	–	–
Commercial paper of Nov 28, 2019	178	USD	6	2.130	178	178	–	–
Total	**890**				**890**	**890**	**–**	**–**

Bank borrowings are detailed in the following table:

Bank borrowings as of Dec 31 *(€ million)*	Currency	Residual maturity (years)	Nominal interest rate (%)	**2019** Carrying amount	**2019** Fair value	2018 Carrying amount	2018 Fair value
Bank loan 2002 - 2022	EUR	3.7	FRN	200	200	200	200
Bank loan 2003 - 2022	EUR	3.7	FRN	200	200	200	200
Other				226	227	246	247
Total				**626**	**627**	**646**	**647**

The other bank borrowings declined as a result of repayments, despite an increase in the short-term securities (as of December 31, 2019: € 176 million; as of December 31, 2018: € 114 million) resulting from hedges within the framework of derivative transactions.

Liabilities are not secured in DB Group.

As of December 31, 2019, guaranteed credit facilities with a total volume of € 4,753 million (as of December 31, 2018: € 4,561 million) were available to DB Group. Of this figure, € 2,080 million (as of December 31, 2018: € 2,080 million) was attributable to back-up lines for the € 2.0 billion commercial paper program of DB AG. None of these back-up lines had been drawn down as of December 31, 2019. Global credit facilities totaling € 2,673 million (as of December 31, 2018: € 2,481 million) are used for working capital and surety for payment financing of subsidiaries with worldwide operations, primarily in the segments DB Schenker and DB Arriva.

The liabilities due to EUROFIMA are detailed in the following:

Liabilities due to EUROFIMA as of Dec 31 *(€ million)*	Currency	Residual maturity (years)	Nominal interest rate (%)	**2019** Carrying amount	**2019** Fair value	2018 Carrying amount	2018 Fair value
Loan 2010 - 2021	EUR	1.8	4.050	200	216	200	223
Total				**200**	**216**	**200**	**223**

No new EUROFIMA loans were raised. The liabilities due to EUROFIMA are secured by way of transfer of ownership of rail material (rolling stock) in view of the statutes of EUROFIMA.

The first-time adoption of IFRS 16 as of January 1, 2019 has resulted in the additional recognition of liabilities from leases. As of December 31, 2018, only liabilities from finance leasing were recognized in accordance with IAS 17.

Obligations from leases (NOTE (13) 203 FF.) are secured by rights of the lessors in relation to the leased assets. The leased assets had a carrying amount of € 4,824 million as of December 31, 2019 (as of December 31, 2018: € 582 million).

The nominal values of the leasing liabilities are broken down as follows:

Leasing liabilities *(€ million)*	Residual maturity: Less than 1 year	1 to 2 years	2 to 3 years	3 to 4 years	4 to 5 years	More than 5 years	Total more than 1 year	Total
AS OF DEC 31, 2019								
Nominal values of lease payments	1,068	955	701	603	472	1,837	**4,568**	**5,636**
AS OF DEC 31, 2018								
Minimum lease payments (nominal)	63	61	75	50	54	497	**737**	**800**
Future interest charges	19	18	16	14	13	158	**219**	**238**
Total	**44**	**43**	**59**	**36**	**41**	**339**	**518**	**562**

The finance liabilities from transport concessions in accordance with IFRIC 12 are detailed in the following:

As of Dec 31 *(€ million)*	Currency	Residual maturity (years)	2019 Carrying amount	2019 Fair value	2018 Carrying amount	2018 Fair value
Locomotives (2016)	EUR	6.0	31	32	36	38
Rail cars (2016)	EUR	6.0	8	8	9	9
Passenger coaches (2019)	EUR	6.0	38	38	–	–
Total			**77**	**78**	**45**	**47**

In order to fulfill the regional rail passenger transport services in the network of Schleswig-Holstein, various locomotives, rail cars and (since 2019) also passenger cars were leased from the responsible transport authority until the end of the service contract in 2025. The finance liabilities from transport concessions are opposed by receivables from transport concessions (NOTE (19) 209 FF.).

The fair values of the long-term financial debt are allocated to the following valuation categories:

As of Dec 31 *(€ million)*	2019 Level 1	2019 Level 2	2019 Level 3	2019 Total	2018 Level 1	2018 Level 2	2018 Level 3	2018 Total
NON-CURRENT FINANCIAL DEBT								
Interest-free loans	–	625	–	**625**	–	781	–	**781**
Senior bonds	1,908	18,389	–	**20,297**	2,642	17,095	–	**19,737**
Commercial paper	–	–	–	**–**	–	–	–	**–**
Bank borrowings	–	406	–	**406**	–	407	–	**407**
EUROFIMA loan	–	216	–	**216**	–	223	–	**223**
Lease liabilities [1)]	–	4,355	–	**4,355**	–	668	–	**668**
Financing liabilities from transport concessions	–	65	–	**65**	–	41	–	**41**
Other financial liabilities	–	9	–	**9**	–	33	–	**33**
Total	**1,908**	**24,065**	**–**	**25,973**	**2,642**	**19,248**	**–**	**21,890**

[1)] Previous year: Finance lease liabilities.

The interest-free loans shown at amortized cost are established by discounting the nominal values of the interest-free loans broken down into maturity buckets using the DB interest curve (market interest curve plus current DB spread; source: Thomson Reuters or Bloomberg) and a term until 2024.

Market prices from an active market, multiplied by the foreign currency rates applicable on the balance sheet date, are used for senior bonds of DB Finance which are classified as level 1. Various sources are used for these prices, including Thomson Reuters and Bloomberg. The senior bonds for which the market activity does not comply with the requirements of an active market have been allocated to level 2. For establishing the market prices of these senior bonds, binding offers were used from various sources, including Thomson Reuters and Bloomberg; these have been verified on the basis of the valuation models using the parameters which are observable on the market, such as interest rate curves and exchange rates.

Theoretical refinancing via senior bonds of DB Finance are assumed for assessing the market value of outstanding EUROFIMA loans. The reference interest rate which is used is established by interpolation of the yields for matching maturities of senior bonds of DB Finance.

The fair value of the leases and also of the financing liabilities from transport concessions is determined by discounting the outstanding lease payments with the corresponding DB interest rate curves, differentiated according to rating classifications of the respective Group company (market rate curve plus current spread per rating category; source: Thomson Reuters and Bloomberg).

(29) OTHER LIABILITIES

Liabilities are normally recognized in accordance with IFRS 9 with their nominal amount, which corresponds to the fair value at the point at which the liability is initially recognized and the amortized costs of purchase up to the date at which the liability is settled, where applicable less transaction costs. Subsequently, non-current liabilities are stated using amortized costs of purchase using the effective interest method. The differences between the amount paid out less transaction costs and the amount repaid are recognized in the income statement over the life of the liability.

The fair values of the balance sheet items other liabilities, trade liabilities and other liabilities essentially correspond to the carrying amounts.

Severance package obligations for agreements agreed as of the balance sheet date are recognized as other liabilities and – if they are not yet included in individual agreements and if they are part of a restructuring obligation in accordance with IAS 37 – are stated as other provisions.

Movements in other liabilities are shown in the following:

	Residual maturity							
(€ million)	Less than 1 year	1 to 2 years	2 to 3 years	3 to 4 years	4 to 5 years	More than 5 years	Total more than 1 year	Total
AS OF DEC 31, 2019								
Trade liabilities including prepayments received	5,789	184	39	6	4	14	**247**	**6,036**
Miscellaneous other liabilities	3,432	2	1	5	4	79	**91**	**3,523**
Total	**9,221**	**186**	**40**	**11**	**8**	**93**	**338**	**9,559**
thereof non-financial liabilities	2,435	2	1	2	2	9	**16**	**2,451**
thereof prepayments received	363	2	1	2	2	9	**16**	**379**
thereof due to related parties	251	1	0	–	–	–	**1**	**252**
AS OF DEC 31, 2018								
Trade liabilities including prepayments received	5,491	116	14	15	9	13	**167**	**5,658**
Miscellaneous other liabilities	3,660	10	7	7	6	61	**91**	**3,751**
Total	**9,151**	**126**	**21**	**22**	**15**	**74**	**258**	**9,409**
thereof non-financial liabilities	2,306	24	2	1	2	11	**40**	**2,346**
thereof prepayments received	219	24	2	1	2	11	**40**	**259**
thereof due to related parties	323	0	0	0	0	0	**0**	**323**

Non-financial liabilities and received prepayments are not classified under any category of IFRS 9.

The miscellaneous other liabilities comprise the following:

As of Dec 31 *(€ million)*	**2019**	2018
PERSONNEL-RELATED LIABILITIES		
Unused holiday entitlements	400	368
Outstanding overtime	273	279
Social security	133	118
Severance payments	20	25
Christmas bonuses	8	8
Holiday pay	25	24
Other personnel obligations	832	889
OTHER TAXES		
Value-added tax	80	97
Payroll and church taxes, solidarity surcharge	166	139
Miscellaneous other taxes	134	140
Interest payable	173	206
Revenue reductions	63	62
Deferred construction grants	237	277
Liabilities due to Railway Crossings Act	1	3
Reconveyance obligations	4	4
Miscellaneous other liabilities	974	1,112
Total	**3,523**	**3,751**

The other personnel obligations also include bonus obligations.

As of December 31, 2019, other liabilities were secured in an amount of € 0 million (as of December 31, 2018: € 0 million).

The miscellaneous other liabilities include existing risks for factoring agreements.

(30) INCOME TAX LIABILITIES

The income tax liabilities as of December 31, 2019 related mainly to obligations to the fiscal authorities in Great Britain, Germany and France.

(31) PENSION OBLIGATIONS

DB Group grants post-employment benefits to its employees in numerous countries. The form of the pension commitments depends on the legal, economic and tax conditions applicable in the particular country.

In DB Group, there are defined benefit as well as defined contribution retirement pension systems. The defined benefit commitments are accounted for in accordance with IAS 19. Major pension obligations exist only in Germany and in Great Britain. For this reason, only these pension obligations are described in greater detail in the following.

Germany

Pension obligations of DB Group in Germany comprise pension obligations for civil servants and also for employees.

After they retire, civil servants assigned to the companies of DB Group receive pensions from the Federal Railway Fund under the Civil Servants Benefits Act (Beamtenversorgungsgesetz).

Only while the assigned civil servants are actively working for DB Group are payments made to the Federal Railway Fund as part of a pro forma settlement in the same way as for newly recruited employees (section 21 (1) DBGrG). This also includes theoretical amounts for contributions to statutory pension insurance schemes as well as theoretical costs in accordance with the collective bargaining agreements regarding the additional company pension scheme for employees of DB AG (Tarifverträge über die betriebliche Zusatzversorgung; ZVersTV) and company retirement benefit scheme (Tarifvertrag über die betriebliche Altersversorgung; bAV-TV) of the employees of DB AG. The payments made to the Federal Railway Fund for retirement pensions of civil servants are defined contribution retirement schemes.

The pension obligations with regard to employees mainly relate to the following:

a) Employees who were employed by DB AG before the company was established (January 1, 1994) enjoy supplementary benefits in view of their former membership of the public sector. The employees are entitled to benefits from this additional pension insurance from Deutsche Rentenversicherung Knappschaft-Bahn-See (KBS). As an official authority, KBS has not only assumed responsibility for managing and paying the statutory pension for DB Group employees; it also continues the additional pension insurance for the transferred employees who are beneficiaries.

During the active phase of the employment agreement, a pro forma reimbursement of costs is also provided to the BEV for these employees. When the employee retires, this payment is no longer made to the BEV.

The Federal Railway Fund bears the costs of these additional benefits, less the contribution made by the employees themselves (section 14 (2) DBGrG). Accordingly, DB AG does not set aside any provisions for these public sector benefits.

b) Employees of the former Deutsche Reichsbahn and the employees who have been recruited after January 1, 1994 receive an additional company pension from DB AG within the framework of the ZVersTV. This supplementary company pension is a defined benefit scheme, which is linked to salary and length of service. The current pension benefits are adjusted every year in line with the regulations of the Company Pensions Act (Betriebsrentengesetz). Retirement benefits, invalidity benefits and benefits to surviving dependants are provided in the form of a lifetime pension. No plan assets are created for this scheme.

In addition, the employees in most Group companies receive a monthly contribution to the company retirement benefit scheme in the amount of 2.2% of the employee's monthly standard salary as well as of most of the salary elements paid in the month. The monthly payment is paid into a pension scheme (DEVK-Pensionsfonds). It is not necessary for provisions to be created for this purpose.

c) Various defined benefit pension obligations exist with regard to senior executives in DB Group who were granted a senior executive commitment before January 1, 2007. The extent of the benefits depend on the length of service and the salary of the beneficiary. In general, retirement benefits, invalidity benefits and benefits to surviving dependants are provided in the form of a lifetime pension. Apart from a small number of reinsurance policies, there are no plan assets.

d) Senior executives of DB Group who were granted a senior executive commitment after December 31, 2006, are provided with a retirement benefit scheme in the form of a defined contribution commitment. For this purpose, a benefit module is calculated in each year of service, depending on the salary and age of the beneficiary. These benefits are financed by way of a contractual trust arrangement (CTA), namely Deutsche Bahn Pension Trust e.V. The extent of the benefits depends on the yield of the CTA, whereby a minimum return is guaranteed (guarantees up to and including 2014: 2.25% per annum; guarantees from 2015 onwards: only maintenance of contribution). To avoid longevity risks, the benefits are granted in the form of a five-year installment. The assets of the CTA are classified as plan assets. The pension obligation is covered by the plan assets on the assumption that the CTA produces a corresponding performance, thus minimizing investment risks. There are no legal or regulatory obligations requiring Deutsche Bahn Pension Trust e.V. to make minimum payments into the scheme. The contributions are invested in line with the fundamental assumption that the benefit commitment is guaranteed by a corresponding guarantee element. For each payment relating to the individual beneficiary, an age-related amount is invested in prime zero bonds. The investment amount remaining after the payment has been made into the guarantee element is mainly invested in passively managed European equity and bond funds (or equivalent products) with the aim of optimizing returns.

e) Senior executives are able to participate in a deferred compensation program. This employee-financed form of company pension scheme constitutes a defined benefit obligation.

Great Britain

a) The company pension scheme of DB Cargo (UK) Holdings Limited is essentially a defined benefit pension scheme (linked to salary and length of service) within the British Railway Pension Scheme. The plan assets are managed by an independent trustee. The process of collating the data of members in the plan for the purpose of compliance with legal requirements in relation to the members of the plan is generally carried out every three years. As of the intermediate valuation dates, the obligations in the plan are measured on the basis of the correspondingly updated data. The pension scheme is based on final salary, and lifetime pensions are provided as benefits. The pension obligations are essentially covered by plan assets. Capital is invested by the trustee of the plan assets following liaison with DB Group.

b) At DB Arriva, there are mainly defined benefit retirement benefit commitments. Important defined benefit plans (related to salary and length of service) relate to employees of DB Arriva within the Railway Pension Scheme in Great Britain. These are sections other than the DB Cargo UK scheme within the Railway Pension Scheme. The costs of the pension schemes are shared between the employer and the employee in the ratio 60:40 and accordingly recognized in the balance sheet. The pension schemes are *based on final salary, and lifetime pensions are provided as benefits. The corresponding pension obligations are to a large extent covered by fund assets. Capital is invested by the trustee of the plan assets following liaison with DB Group.*

Some companies pay contributions within the framework of a franchise agreement to the British Railway Pension Scheme for employees employed for the duration of the agreement (franchise period). The obligations to these employees as well as the plan assets are completely disclosed after deduction of the element financed by the employees (40%). Within the framework of recognizing the effect of franchise agreements, the present value of the contributions payable for the duration of the franchise agreements for reducing a scheme deficit remains as a net liability recognized in the balance sheet. The current contributions to the benefit scheme are shown as personnel expenses.

In addition, individual companies of DB Arriva also issued defined contribution retirement benefit commitments to their employees. Under such arrangements, the employer does not enter into any obligations apart from paying contributions to an external benefit scheme. The extent of the future pension benefits depends exclusively on the amount of contributions paid to the external benefit scheme, including the income generated by investing these contributions.

In addition, some contributions have also been paid to social pension funds within the context of statutory regulations (government schemes).

Critical assessments and appraisals

In the case of the defined benefit pension obligations in Germany and abroad, the actuarial risks are borne by DB Group. Actuarial methods have been used for measuring defined benefit pension commitments as well as benefit commitments which are similar to pensions and the resultant expenses and income. The valuations are based on actuarial assumptions. There are the following actuarial risks which are considered to be typical for companies with defined benefit schemes.

- *Interest risk: The discount factors which are used reflect the interest rates (giving due consideration to the duration of the underlying obligation) which are achieved on the balance sheet date for high-quality fixed-income senior bonds with a corresponding term. A change in the discount rate results in a change in the present value of the total obligation (DBO).*
- *Inflation risk: Part of the pension obligations, particularly as a result of adjustments to current pensions, is linked to the development of inflation.*
- *Longevity risk: A longevity risk may occur in the form of extended periods in which pensions are paid out as a result of an increase in life expectancy in future.*
- *Investment risk: In the case of externally financed pension plans, the values of the corresponding plan assets or the refund claims are based on the market values as of the balance sheet date. The capital investment is exposed to numerous risks, which may have an impact on the present value recognized for the plan assets. In the case of pension schemes with an obligation to pay into the scheme, the amount of future contributions may be affected by the investment risk.*

Key assumptions for expenses and income attributable to pension commitments and benefit commitments similar to pensions are to some extent based on current market conditions. Expenses and income relating to pension commitments and benefit commitments similar to pensions may change as a result of changes to these underlying key assumptions.

The figures stated for pension provisions in the balance sheet are detailed in the following:

	Germany		Europe (excluding Germany)		Rest of world		**Total**	
As of Dec 31 *(€ million)*	**2019**	2018	**2019**	2018	**2019**	2018	**2019**	**2018**
Funded obligations	368	307	7,652	6,262	70	57	**8,090**	**6,626**
Unfunded obligations	4,303	3,691	345	309	11	9	**4,659**	**4,009**
Total obligations	**4,671**	**3,998**	**7,997**	**6,571**	**81**	**66**	**12,749**	**10,635**
Fair value of plan assets	-273	-225	-5,722	-4,505	-39	-36	**-6,034**	**-4,766**
Effects due to cost sharing	–	–	-554	-422	–	–	**-554**	**-422**
Effects due to franchise agreements	–	–	-831	-625	–	–	**-831**	**-625**
Amount not recognized as an asset as a result of the restriction of IAS 19.58	–	–	0	0	–	–	**0**	**0**
Assets recognized in the balance sheet as pension assets	–	–	24	1	–	–	**24**	**1**
Net obligations recognized in the balance sheet	**4,398**	**3,773**	**914**	**1,020**	**42**	**30**	**5,354**	**4,823**

The total pension commitment has developed as follows:

	Germany		Europe (excluding Germany)		Rest of world		Total	
(€ million)	2019	2018	2019	2018	2019	2018	2019	2018
Obligations as of Jan 1	3,998	3,276	6,571	7,201	66	61	**10,635**	**10,538**
Service cost, excluding employee contributions	143	110	75	70	4	3	**222**	**183**
Employee contributions	2	2	43	45	0	0	**45**	**47**
Interest expense	67	78	129	126	1	1	**197**	**205**
Payments	-83	-81	-184	-232	-4	-4	**-271**	**-317**
thereof pensions	-83	-80	-184	-203	-4	-4	**-271**	**-287**
thereof for settlements	0	-1	–	-29	–	–	**–**	**-30**
Past service costs and profits or losses from settlements	0	9	22	-2	0	0	**22**	**7**
Transfers	2	3	0	-636	–	–	**2**	**-633**
Changes in scope of consolidation	–	–	–	–	–	–	**–**	**–**
Actuarial gains (-) or losses (+)	542	601	993	50	10	6	**1,545**	**657**
Revaluations based on experience	15	-14	116	262	0	0	**131**	**248**
Due to change in demographic assumptions	2	28	-75	3	0	0	**-73**	**31**
Due to change in financial assumptions	525	587	952	-215	10	6	**1,487**	**378**
Effects from changes in exchange rates	–	–	348	-51	4	-1	**352**	**-52**
Obligations as of Dec 31	**4,671**	**3,998**	**7,997**	**6,571**	**81**	**66**	**12,749**	**10,635**

The figures shown in the previous year under transfers in the preceding and following tables mainly relate to the termination of the Arriva Trains Wales franchise.

The development of the plan assets is detailed in the following:

	Germany		Europe (excluding Germany)		Rest of world		Total	
(€ million)	2019	2018	2019	2018	2019	2018	2019	2018
Fair value of plan assets as of Jan 1	225	200	4,505	5,060	36	38	**4,766**	**5,298**
Employer contributions	27	22	521	103	2	1	**550**	**126**
Employee contributions	1	2	43	44	0	0	**44**	**46**
Expected return from plan assets	4	5	105	107	1	1	**110**	**113**
Payments	-6	-5	-172	-218	-4	-4	**-182**	**-227**
thereof pensions	-6	-5	-172	-189	-4	-4	**-182**	**-198**
thereof payments for settlements	–	–	–	-29	–	–	**–**	**-29**
Transfers	–	0	–	-387	–	–	**–**	**-387**
Revaluation	22	1	469	-162	2	1	**493**	**-160**
Administrative costs: costs of pension assurance	–	–	-9	-10	0	0	**-9**	**-10**
Effects from changes in exchange rates	–	–	260	-32	2	-1	**262**	**-33**
Fair value of plan assets as of Dec 31	**273**	**225**	**5,722**	**4,505**	**39**	**36**	**6,034**	**4,766**

In the year under review, the employer contributions contain one-off contributions of € 391 million to the plan assets of certain benefit schemes of DB Arriva in Great Britain.

The reported plan assets are broken down as follows:

	Germany		Europe (excluding Germany)		Rest of world		Total	
As of Dec 31 *(€ million)*	2019	2018	2019	2018	2019	2018	2019	2018
Stocks and other securities	9	7	3,370	3,047	14	13	**3,393**	**3,067**
thereof with market price listing	9	7	3,370	3,047	14	13	**3,393**	**3,067**
Interest-bearing securities	159	138	1,310	802	22	18	**1,491**	**958**
thereof with market price listing	159	138	1,310	802	22	18	**1,491**	**958**
Reinsurance	76	79	179	73	–	–	**255**	**152**
thereof with market price listing	76	79	117	16	–	–	**193**	**95**
thereof without market price listing	–	–	62	57	–	–	**62**	**57**
Private equity	–	–	313	329	–	–	**313**	**329**
thereof without market price listing	–	–	313	329	–	–	**313**	**329**
Investments in infrastructure	–	–	162	152	–	–	**162**	**152**
thereof with market price listing	–	–	162	116	–	–	**162**	**116**
thereof without market price listing	–	–	–	36	–	–	**–**	**36**
Cash and other assets	29	1	388	102	3	5	**420**	**108**
thereof with market price listing	29	1	311	66	2	3	**342**	**70**
thereof without market price listing	–	–	77	36	1	2	**78**	**38**
	273	**225**	**5,722**	**4,505**	**39**	**36**	**6,034**	**4,766**
thereof assets classified as pension assets	0	0	-24	-1	–	0	**-24**	**-1**
	273	**225**	**5,698**	**4,504**	**39**	**36**	**6,010**	**4,765**

Changes in the net pension provisions are detailed in the following:

	Germany		Europe (excluding Germany)		Rest of world		**Total**	
(€ million)	**2019**	2018	**2019**	2018	**2019**	2018	**2019**	**2018**
Provision as of Jan 1	3,773	3,076	1,020	841	30	23	**4,823**	**3,940**
Pension expenses	207	192	130	98	4	4	**341**	**294**
thereof service cost	144	110	75	71	4	3	**223**	**184**
thereof interest income and interest expenses	63	73	24	19	0	1	**87**	**93**
thereof administrative expenses	–	–	9	10	0	0	**9**	**10**
thereof past service costs and profits or losses from settlements	0	9	22	-2	0	0	**22**	**7**
Employer contributions	-27	-22	-520	-102	-2	-2	**-549**	**-126**
Payments	-77	-76	-12	-14	0	0	**-89**	**-90**
thereof pensions	-77	-75	-12	-14	0	0	**-89**	**-89**
thereof for settlements	0	-1	–	–	–	–	**0**	**-1**
Transfers	2	3	0	0	–	–	**2**	**3**
Changes in scope of consolidation	–	–	–	–	–	–	**–**	**–**
Revaluation	520	600	247	213	8	5	**775**	**818**
Revaluations based on experience	15	-14	65	198	0	0	**80**	**184**
Due to change in demographic assumptions	2	29	-47	15	0	0	**-45**	**44**
Due to change in financial assumptions	524	587	590	-149	10	6	**1,124**	**444**
Difference between actual income and theoretical income from plan assets	-21	-2	-361	149	-2	-1	**-384**	**146**
Effects from changes in exchange rates	–	–	26	-11	2	0	**28**	**-11**
Change in recognized assets	–	–	23	-5	–	–	**23**	**-5**
Provisions as of December 31	**4,398**	**3,773**	**914**	**1,020**	**42**	**30**	**5,354**	**4,823**

The effects of cost splitting and franchise agreements increased by € 277 million as of December 31, 2019 as a result of revaluations (as of December 31, 2018: increase of € 1 million). The interest expense and expected income from the plan assets were recorded under net interest income.

All other items were recognized under personnel expenses.

The actuarial parameters used for assessing the value of most of the pension provision are set out in the following:

(%)	**2019**	2018
INTEREST RATE		
Germany and abroad (excluding Great Britain)	1.10	1.70
Great Britain	1.90	2.80
EXPECTED RATE OF SALARY INCREASES		
Germany and abroad (excluding Great Britain)	3.10	3.10
Great Britain	3.10	4.00
EXPECTED RATE OF PENSION INCREASE (DEPENDENT ON STAFF GROUP)		
Germany and abroad (excluding Great Britain)	2.00	2.00
Great Britain	2.10	2.30

The 2018 G mortality tables of Professor Dr. Klaus Heubeck have been used without changes for valuing the pension obligations for the German Group companies. Country- or benefit-scheme-specific mortality tables have been used for valuing the pension obligations of the other Group companies.

Sensitivities and additional information:

As of Dec 31 *(€ million)*	**2019**	2018
Total obligation for an interest rate increased by 1 percentage point	10,427	8,774
Total obligation for an interest rate reduced by 1 percentage point	15,853	13,030
Total obligation with salary growth increased by 0.5%	12,996	10,807
Total obligation for pensions increased by 0.5%	13,622	11,318
Total obligation for life expectancy increased by 1 year	13,189	10,964
Total obligations	12,749	10,635
thereof active beneficiaries	6,905	5,688
thereof former employees	1,934	1,587
thereof pensioners	3,910	3,360
Payments into plan assets expected for next year	126	117
Direct pension payments for next year	108	104
Duration of benefit obligation (years)	21.2	20.1

The sensitivity figures have been established using the method which was used for calculating the extent of the obligation. One assumption was modified while the other assumptions were retained, which means that interdependencies between the individual assumptions were disregarded.

(32) OTHER PROVISIONS

Other provisions are set aside if there is a legal or constructive obligation resulting from a past event which is more than 50% likely to result in an outflow of resources and if the extent of the obligation can be reliably estimated (IAS 37 – Provisions, Contingent Liabilities and Contingent Assets).

Non-current provisions are discounted using market interest rates. Environmental protection provisions for the rehabilitation of existing ecological legacy issues are discounted on the basis of real interest rates, which are adjusted to reflect the risk and the period until fulfillment. The difference between the nominal value of the expected outflows and the present value recognized for the environmental protection provisions of DB AG for transferred liabilities for the elimination of legacy issues from the time previous to the foundation of DB AG is stated under deferred items, and represents the interest benefit resulting from the longer-term release of the provision. The cumulative interest expense attributable to other provisions is recognized in financial result. Provisions for potential losses are measured as the lower of the amount of the expected costs for fulfilling the agreement and the expected costs for terminating the agreement.

Critical assessments and appraisals

The process of determining all types of provisions is associated with estimates regarding the extent and/or timing of obligations.

The environmental protection provisions relate primarily to the obligation of DB AG to remedy the ecological burdens which arose before January 1, 1994 on the land of the former Deutsche Bundesbahn and the former Deutsche Reichsbahn. Ecological burdens are defined as contamination of soil and groundwater which requires rehabilitation and which pose risks, considerable disadvantages or considerable problems for private individuals or society at large. The legal basis for defining rehabilitation obligations are summarized in the soil and water laws of the Federal Government and the Federal states. The process of dealing with ecological burdens also comprises necessary rehabilitation measures for existing sewers, in order to avoid soil and groundwater contamination caused by leaks from the sewer system, as well as measures for shutting down old landfill sites.

The provision has been calculated on the basis of a discounting method using the present value, where rehabilitation measures are probable, the rehabilitation costs can be reliably estimated and no future benefit is expected to be derived from these measures.

The estimation of future rehabilitation costs is subject to various factors. Major drivers in this respect can be the application of innovative rehabilitation measures, changes in legal conditions and also the development in market prices for disposing of legacy issues. In order to make a realistic assessment of the rehabilitation costs in individual cases, the working programs have included adjustments to cost estimates as a result of greater knowledge and official agreements in the successive processing stages.

For the valuation of provisions as of the balance sheet date, the investigation and rehabilitation obligations which are currently known have been used as the basis for estimating the expected costs in relation to the current price level. The provision is discounted on the basis of expected cash outflows, using a risk-adjusted rate of 0.73% (previous year: 0.74%).

Provisions for potential losses of pending transactions are created if a loss is probable and can be reliably estimated. In view of the uncertainty associated with this assessment, the actual losses may differ from the original estimates and may thus also differ from the amount of the provision. In DB Group, such uncertainty results particularly from the estimates of future income from transport contracts, the associated material- and personnel-related expenses as well as any penalty payments. Changes in the estimates of these potential losses from pending transactions may have a considerable impact on the future results of operations.

Movements in other provisions are shown in the following:

	Personnel-related provisions		Revenue reductions		Provisions for pending losses		Decommissioning provisions		Environmental protection provisions		Other provisions		**Total**	
(€ million)	**2019**	2018	**2019**	2018	**2019**	2018	**2019**	2018	**2019**	2018	**2019**	2018	**2019**	**2018**
As of Jan 1	998	1,094	1,298	1,166	396	191	326	349	1,010	1,064	1,040	1,253	**5,068**	**5,117**
Currency translation differences	1	0	0	0	12	-2	0	0	0	0	3	-2	**16**	**-4**
Changes in scope of consolidation	–	0	–	0	–	0	–	–	–	–	–	0	**–**	**0**
thereof additions	–	0	–	–	–	–	–	–	–	–	–	0	**–**	**0**
thereof disposals	–	0	–	0	–	0	–	–	–	–	–	0	**–**	**0**
Amounts used	-284	-290	-331	-223	-165	-78	-6	-41	-48	-51	-206	-240	**-1,040**	**-923**
Reversals	-58	-89	-123	-138	-64	-39	0	0	0	0	-129	-256	**-374**	**-522**
Reclassifications	-2	-5	–	1	1	0	–	–	2	–	-14	-2	**-13**	**-6**
Additions	279	287	512	492	223	324	31	1	0	0	352	285	**1,397**	**1,389**
Compounding and discounting	7	1	–	–	2	0	17	17	7	-3	11	2	**44**	**17**
As of Dec 31	**941**	**998**	**1,356**	**1,298**	**405**	**396**	**368**	**326**	**971**	**1,010**	**1,057**	**1,040**	**5,098**	**5,068**

The following table breaks down the other provisions into current and non-current amounts, and also details their estimated residual maturity:

	Residual maturity							
(€ million)	Up to 1 year	1 to 2 years	2 to 3 years	3 to 4 years	4 to 5 years	More than 5 years	Total more than 1 year	Total
AS OF DEC 31, 2019								
Personnel-related provisions	363	156	104	66	52	200	**578**	**941**
Revenue reductions	1,356	–	–	–	–	–	**–**	**1,356**
Provisions for pending losses	296	30	23	19	16	21	**109**	**405**
Decommissioning provisions	29	23	19	19	19	259	**339**	**368**
Environmental protection provisions	57	55	56	55	55	693	**914**	**971**
Miscellaneous other provisions	751	37	28	25	25	191	**306**	**1,057**
Total	**2,852**	**301**	**230**	**184**	**167**	**1,364**	**2,246**	**5,098**
AS OF DEC 31, 2018								
Personnel-related provisions	402	162	112	69	52	201	**596**	**998**
Revenue reductions	1,298	–	–	–	–	–	**–**	**1,298**
Provisions for pending losses	260	37	29	26	21	23	**136**	**396**
Decommissioning provisions	24	22	18	18	18	226	**302**	**326**
Environmental protection provisions	57	52	54	54	54	739	**953**	**1,010**
Miscellaneous other provisions	781	62	27	21	23	126	**259**	**1,040**
Total	**2,822**	**335**	**240**	**188**	**168**	**1,315**	**2,246**	**5,068**

Personnel-related provisions

Benefits arising on the occasion of the termination of employment agreements (severance packages) become payable if an employee is released from his/her duties under the terms of an early-retirement or semi-retirement scheme before reaching normal pensionable age (which would not involve any reduction of retirement benefits) or if an employee voluntarily terminates his/her employment contract in return for a severance package. Severance payments are recognized if there is a demonstrable obligation either to terminate the employment agreements of current employees in accordance with a detailed formal plan which cannot be reversed or to pay severance payments if the employment contract is voluntarily terminated by employees within the framework of employment contract termination agreements.

Severance package obligations for agreements agreed as of the balance sheet date are recognized as other liabilities and – if they are not yet included in individual agreements and if they are part of a restructuring obligation in accordance with IAS 37 – are stated as other provisions.

Semi-retirement agreements are based on the so-called block model. The top-up amounts paid in addition to salary by DB Group during the semi-retirement period as well as additional contributions to the statutory pension insurance scheme are collected in installments up to the end of the active phase of the semi-retirement period and are recognized as provisions in accordance with IAS 19. The compensation backlog (plus the employer's contributions to social insurance) for the additional work performed during the employment phase is also shown with the present pro rata value as another non-current employee benefit.

If certain conditions are satisfied, DB Group offers its employees the opportunity to reduce their working hours to a level below their regular working hours (special semi-retirement arrangement). In these cases, the number of working hours is reduced to 81% of the reference or regular working hours, whereby the employees' remuneration is topped up to 90%. Payments into the company pension scheme are granted on the basis of 100% of the reference or regular working hours.

The personnel-related provisions were structured as follows:

As of Dec 31 (€ million)	2019	2018
Contractual personnel obligations	485	525
Early retirement and semi-retirement obligations	207	228
Service anniversary provisions	121	116
Other	128	129
Total	**941**	**998**

The personnel-related provisions include obligations arising from employment agreements which result from the entitlement of many employees under labor law and the willingness of DB AG not to terminate employment contracts for operational reasons. In such cases, DB Group will incur losses in the form of personnel expenses which will have to be borne until the employment contract is terminated or the employee is placed with another company; no reciprocal benefit will be provided in return for these costs (obligation surpluses relating to employment agreements). The contractual personnel obligations also include restructuring provisions.

A figure of about € 396 million was allocated to the provision for obligation surpluses from employment agreements as of December 31, 2019; this item accounted for a considerable percentage of the personnel provisions in DB Group (as of December 31, 2018: € 402 million). This provision recognizes the personnel-related obligations of DB AG for the employment guarantee included in the collective bargaining agreement designed to address demographic change (Demografietarifvertrag; DemografieTV).

In the DB Schenker segment, there were personnel-related restructuring provisions of € 53 million as of December 31, 2019 (as of December 31, 2018: € 83 million) mainly for the global restructuring program Boost designed to boost profitability.

The provisions set aside to cover semi-retirement and early retirement obligations cover the obligations arising from collective bargaining agreements, and have mostly been calculated on the basis of actuarial reports. In the regulations of the DemografieTV, this includes an amount of € 79 million (as of December 31, 2018: € 88 million) for the entitlement of employees with many years of service and also many years of shift working to enjoy special semi-retirement benefits.

Revenue reductions
The items disclosed under revenue reductions include cuts in connection with concession fees.

Provisions for pending losses
The provisions for pending losses mainly relate to transport contracts in which obligation surpluses build up over the life of the contracts. The additions relate mainly to Arriva Rail North and DB Regional.

Decommissioning provisions
The decommissioning provisions refer to the company's pro rata decommissioning obligation in relation to a joint power generation plant.

Provisions for environmental protection
Of the figure stated for environmental protection provisions, € 962 million (as of December 31, 2018: € 1,003 million) relate to remedial action obligations of DB AG. In order to take account of the remedial action obligations recognized in the environmental protection provisions, DB AG has set up various programs, including the following programs:

- the 4-stage soil decontamination program
- the 3-stage sewerage network program
- the 2-stage landfill shut-down program

The structured processing ensures that the procedure for recognizing, assessing the risk and taking appropriate remedial action is consistent with all legal requirements and optimized in terms of costs.

In the 4-stage soil decontamination program, existing soil and/or groundwater contamination is localized via the stages "historic exploration," "orienting investigation" and "detail investigation," and is assessed on the basis of the relevant statutory testing criteria. If any negative change in soil conditions or ecological burdens is identified, implementation of the necessary remedial action is planned by the steps feasibility study, model planning and approval planning. The process of carrying out the remedial action is supported by a binding remedial action plan or a public-sector agreement with defined remedial action objectives. Stage 1 "historic exploration" has been completed.

The 3-stage sewerage network program aims to remedy any contamination of soil and/or groundwater resulting from leaks. The program also involves a plan to optimize the existing sewerage network to ensure that it is capable of meeting future requirements and to ensure that the need to take remedial action can be limited to this future network. The network which is not necessary for operation will be decommissioned. The sewerage program will be carried out via the stage 1 "recording," stage 2 "inspection" and stage 3 "remedial action/decommissioning." Legal requirements are set out in the Water Resources Accounting Act (Wasserhaushaltsgesetz; WHG), the Water Acts of the Federal states and the own control regulations.

The 2-stage program "shut-down of landfill sites" systematically records all legacy landfill sites operated by DB Group (stage 1). The requirements resulting from the Recycling Accounting Act (Kreislaufwirtschaftsgesetz; KrWG) and the Landfill Site Regulation (Deponieverordnung; DepV) are used as the basis for planning and implementing the processes of decommissioning and recultivating the areas (stage 2a) and the subsequent maintenance (stage 2b).

Other provisions
The other provisions comprise provisions for litigation risks, claims for damages as well as decommissioning and demolition obligations, real estate risks, guarantee and warranty obligations, insurance and project risks, third-party obligations for maintenance and other tax risks as well as numerous other issues which individually are of minor significance.

(33) DEFERRED ITEMS

DB Group receives various public-sector grants, which are provided in relation to specific assets or on the basis of a specific performance. The grants are recognized in the balance sheet as soon as it is certain that they will be provided and as soon as the conditions necessary for receiving the grants have been satisfied. The grants related to assets, and in particular investment grants, are deducted directly from the assets for which the grants have been received. The interest benefit (difference between nominal value and present value) of interest-free loans is deferred on the basis of the contractual grant conditions. The income from pro rata reversal of these accruals is shown as other operating income.

The deferred items contain the following:

As of Dec 31 *(€ million)*	**2019**	2018
Deferred Federal grants	414	569
Deferred revenues	784	775
Other	280	304
Total	**1,478**	**1,648**
Non-current portion	455	627
Current portion	1,023	1,021

The deferred Federal grants comprise mainly the interest benefit (difference between the nominal value and present value) attributable to the interest-free loans; this has developed as follows during the year under review:

(€ million)	**2019**	2018
As of Jan 1	355	499
Reversals	-144	-144
As of Dec 31	**211**	**355**

Of the figure shown for reversals in the year under review, € 59 million (previous year: € 59 million) is attributable to the annual reversal of deferred items. The remainder is attributable to the release of amortized deferrals relating to premature one-off repayments at the present value in 1999, 2004 and in 2011.

Deferred revenues constitute that part of compensation which is attributable to the period after the balance sheet date.