11. Earnings per share

	2018	2017
Net profit attributable to owners of the Parent (PLNm) (A)	1,587.4	1,671.8
Weighted average number of shares (million) (B)	184.9	184.9
Earnings per share (PLN) (A/B)	**8.59**	**9.04**

Earnings per share for each reporting period are calculated by dividing net profit for the reporting period by the weighted average number of shares in the reporting period.

Diluted earnings per share are equal to basic earnings per share as there are no instruments with a dilutive effect.

12. Dividends

As at December 31st 2018 and December 31st 2017, Grupa LOTOS S.A. was restricted in its ability to make distributions in the form of dividends. The restrictions followed from the credit facility agreement executed on June 27th 2008 for the financing of the 10+ Programme, whereby dividend payment and amounts are subject to certain conditions, including generation of sufficient free cash and achievement of certain levels of financial ratios.

On June 28th 2018, the General Meeting of Grupa LOTOS S.A. passed a resolution on the allocation of the Company's net profit for 2017. Under the resolution, the 2017 net profit of PLN 1,419.5m was applied towards:

- dividend payment – PLN 184.9m,
- coverage of the 2014 and 2015 net loss – PLN 347.0m,
- increase in statutory reserve funds – PLN 887.6m.

The dividend was paid on September 28th 2018. The dividend per share amounted to PLN 1, pre-tax.

13. Property, plant and equipment and intangible assets

	Note	December 31st 2018	December 31st 2017
Non-current assets of the Downstream segment	**13.1**	**8,894.3**	**8,924.7**
Property, plant and equipment	13.1.1	8,742.4	8,761.5
Intangible assets, including:		151.9	163.2
Goodwill	13.1.2	45.6	45.6
Other intangible assets	13.1.3	106.3	117.6
Non-current assets of the Upstream segment	**13.2**	**3,382.0**	**2,709.0**
Property, plant and equipment		3,044.0	2,404.2
Intangible assets, including:		338.0	304.8
Goodwill		1.1	1.1
Other intangible assets		336.9	303.7
Total property, plant and equipment and intangible assets		**12,276.3**	**11,633.7**
including:			
Property, plant and equipment		11,786.4	11,165.7
Intangible assets		489.9	468.0

13.1 Non-current assets of the Downstream segment

13.1.1 Property, plant and equipment of the Downstream segment

	Note	Land	Buildings, structures	Plant and equipment	Vehicles, other	Property, plant and equipment under construction	Total	
Gross carrying amount Jan 1 2018		**523.7**	**4,608.5**	**5,711.1**	**714.1**	**1,874.4**	**13,431.8**	
Purchase		-	-	-	9.9	348.7	358.6	(1)
Transfer from property, plant and equipment under construction		-	173.1	137.9	16.5	(327.5)	-	
Borrowing costs		-	-	-	-	75.8	75.8	
Leases		-	-	-	72.1	-	72.1	
Sale		(0.6)	(8.7)	(8.3)	(18.8)	(0.1)	(36.5)	
Other		-	(0.7)	2.0	(1.1)	(1.5)	(1.3)	
Gross carrying amount Dec 31 2018		**523.1**	**4,772.2**	**5,842.7**	**792.7**	**1,969.8**	**13,900.5**	
Accumulated depreciation/amortisation Jan 1 2018		**17.8**	**1,785.8**	**2,369.9**	**407.0**	**-**	**4,580.5**	
Depreciation and amortisation		1.6	170.1	254.3	57.6	-	483.6	
Sale		-	(2.9)	(7.2)	(17.1)	-	(27.2)	
Other		-	(0.3)	2.1	1.2	-	3.0	
Accumulated depreciation/amortisation Dec 31 2018		**19.4**	**1,952.7**	**2,619.1**	**448.7**	**-**	**5,039.9**	
Impairment losses Jan 1 2018		**1.5**	**73.6**	**8.9**	**4.7**	**1.1**	**89.8**	
Recognised	9.3	-	29.3	2.1	2.3	-	33.7	(2)
Used/Reversed		-	(5.0)	(0.1)	(0.1)	(0.1)	(5.3)	
Impairment losses Dec 31 2018		**1.5**	**97.9**	**10.9**	**6.9**	**1.0**	**118.2**	
Net carrying amount Dec 31 2018		**502.2**	**2,721.6**	**3,212.7**	**337.1**	**1,968.8**	**8,742.4**	

(1) Capital expenditure included chiefly expenditure of PLN 221.0m on the construction of a delayed coking unit with auxiliary infrastructure (EFRA) and PLN 60.7m on the expansion of the service station chain.

(2) Including an impairment loss of PLN 33.3m on service stations.

(PLNm)

	Land	Buildings, structures	Plant and equipment		Vehicles, other	Property, plant and equipment under construction	Total	
Gross carrying amount Jan 1 2017	**517.4**	**4,562.4**	**5,593.3**		**667.2**	**1,092.0**	**12,432.3**	
Purchase	-	-	-		20.7	999.2	1,019.9	(1)
Transfer from property, plant and equipment under construction	6.3	47.2	150.8		34.6	(238.9)	-	
Borrowing costs	-	-	-		-	37.1	37.1	
Expenditure written off due to project discontinuation	-	-	-		-	(13.3)	(13.3)	
Sale	-	(1.1)	(32.2)	(2)	(5.4)	-	(38.7)	
Other	-	-	(0.8)		(3.0)	(1.7)	(5.5)	
Gross carrying amount Dec 31 2017	**523.7**	**4,608.5**	**5,711.1**		**714.1**	**1,874.4**	**13,431.8**	
Accumulated depreciation Jan 1 2017	**16.1**	**1,609.4**	**2,148.6**		**319.4**	**-**	**4,093.5**	
Depreciation	1.7	177.5	252.7		92.3	-	524.2	
Sale	-	(1.1)	(31.7)	(2)	(5.6)	-	(38.4)	
Other	-	-	0.3		0.9	-	1.2	
Accumulated depreciation/amortisation Dec 31 2017	**17.8**	**1,785.8**	**2,369.9**		**407.0**	**-**	**4,580.5**	
Impairment losses Jan 1 2017	**1.5**	**51.4**	**6.5**		**4.1**	**13.6**	**77.1**	
Recognised	-	23.8	2.6		1.5	0.6	28.5	
Used/Reversed	-	(1.6)	(0.2)		(0.9)	-	(2.7)	
Other	-	-	-		-	(13.1)	(13.1)	
Impairment losses Dec 31 2017	**1.5**	**73.6**	**8.9**		**4.7**	**1.1**	**89.8**	
Net carrying amount Dec 31 2017	**504.4**	**2,749.1**	**3,332.3**		**302.4**	**1,873.3**	**8,761.5**	

(1) Capital expenditure included chiefly expenditure on the construction of a delayed coking unit with auxiliary infrastructure under the EFRA Project (PLN 821.9m), purchase of catalysts (PLN 96.9m) and spare parts (PLN 20.8m), as well as expansion of the service station chain (PLN 32.8m), and construction of a hydrogen recovery unit (PLN 19.5m).

(2) Including disposal of spent catalysts at Grupa LOTOS S.A. – PLN (19.0m).

Impairment losses on service stations

In 2018, LOTOS Paliwa Sp. z o.o. recognised an impairment loss on service station assets totalling PLN 33.3m; see Note 9.3 (2017: PLN 26.2m; see Note 9.4). The recoverable amount of property, plant and equipment related to the service station network was determined based on the value in use of each station, calculated with the discounted cash flow method. Future cash flows were calculated based on five-year cash-flow projections, prepared using budget projections for 2019 (in 2017 for 2018) and the cash inflow and outflow plan for subsequent years, based on the development strategy until 2020. The residual value for the discounted cash flows was calculated using the growing perpetuity formula. LOTOS Paliwa Sp. z o.o.'s net weighted average cost of capital (WACC) based on the company's financing structure was assumed at 7.69% (2017: 8.01%).

Calculation of the value in use of cash-generating units is most sensitive to the following variables:

- gross margin, which depends on average values of unit margins in the period preceding the budget period (a 1.0% average year-on-year margin decrease was assumed),
- a discount rate which reflects the expected rate of return on assets at a specific risk level (the rate is calculated in accordance with the WACC and CAPM methodologies and is based on such amounts as the median of 10-year treasury bond quotations, market risk premium (MRP), country risk premium (CRP), and the market structure of financing,
- volumes based on fuel consumption growth rate (a 1.2% increase was assumed),
- market share in the budget period (a stable market share was assumed),
- the growth rate used to estimate cash flows outside the budget period (0.0%).

13.1.2 Goodwill of the downstream segment

Goodwill is allocated to cash-generating units, as presented in the table below:

	December 31st 2018	December 31st 2017
Goodwill arising on the acquisition of an organised part of business by LOTOS Paliwa Sp. z o.o.:		
- wholesale of LPG	10.0	10.0
- service stations chains (ESSO, Slovnaft Polska)	33.7	33.7
Total	**43.7**	**43.7**
Goodwill arising on acquisition of other entities	1.9	1.9
Total goodwill	**45.6**	**45.6**

As at December 31st 2018 and as at December 31st 2017, impairment tests of individual cash-generating units to which goodwill was allocated did not reveal any impairment indicators.

The Group determines the recoverable amount of cash-generating units based on their respective values in use, calculated on the basis of a five-year cash flow projection. The residual value for the discounted cash flows was calculated using the growing perpetuity formula. The discount rate adopted for the calculation reflects net WACC of 7.69% (2017: 8.01%). It was assumed that the rate of cash flows after the forecast period will be constant.

The most material factors affecting the estimated values in use of cash-generating units were gross margin, discount rate, volumes forecast, projected market shares in the budget period and estimated growth rate beyond the forecast period.

The Group believes that no reasonably probable change in the key parameters identified above would result in goodwill impairment.

13.1.3 Other intangible assets of the downstream segment

	Patents, trademarks and licences	Other	Intangible assets under development	Total
Gross carrying amount Jan 1 2018	**206.9**	**37.4**	**10.4**	**254.7**
Purchase	-	0.3	8.9	9.2
Transfer from intangible assets under development	6.1	0.8	(6.9)	-
Other	(0.3)	(6.7)	0.2	(6.8)
Gross carrying amount Dec 31 2018	**212.7**	**31.8**	**12.6**	**257.1**
Accumulated depreciation/amortisation Jan 1 2018	**120.8**	**16.3**	**-**	**137.1**
Depreciation and amortisation	12.6	1.3	-	13.9
Other	(0.2)	-	-	(0.2)
Accumulated depreciation/amortisation Dec 31 2018	**133.2**	**17.6**	**-**	**150.8**
Impairment losses Jan 1 2018	**-**	**-**	**-**	**-**
Recognised	-	-	-	-
Used/Reversed	-	-	-	-
Impairment losses Dec 31 2018	**-**	**-**	**-**	**-**
Net carrying amount Dec 31 2018	**79.5**	**14.2**	**12.6**	**106.3**
Gross carrying amount Jan 1 2017	**205.3**	**37.1**	**17.3**	**259.7**
Purchase	-	0.1	7.2	7.3
Transfer from intangible assets under development	3.5	0.5	(4.0)	-
Expenditure written off due to project discontinuation	-	-	(9.0) [1]	(9.0)
Other	(1.9)	(0.3)	(1.1)	(3.3)
Gross carrying amount Dec 31 2017	**206.9**	**37.4**	**10.4**	**254.7**
Accumulated depreciation/amortisation Jan 1 2017	**111.3**	**15.0**	**-**	**126.3**
Amortisation	11.4	1.4	-	12.8
Other	(1.9)	(0.1)	-	(2.0)
Accumulated depreciation/amortisation Dec 31 2017	**120.8**	**16.3**	**-**	**137.1**
Impairment losses Jan 1 2017	**-**	**-**	**9.0**	**9.0**
Recognised	-	-	-	-
Used/Reversed	-	-	(9.0) [1]	(9.0)
Impairment losses Dec 31 2017	**-**	**-**	**-**	**-**
Net carrying amount Dec 31 2017	**86.1**	**21.1**	**10.4**	**117.6**

[1] Refining units (no effect on net profit or loss).

Intangible assets of the downstream segment include licences relating to technological processes, including licences for technologies used in the refinery, licences for fuel production, storage and trading, software licences, patents, trademarks and acquired CO_2 emission allowances.

13.2 Non-current assets of the Upstream segment

	Note	December 31st 2018	December 31st 2017
Oil and gas exploration and evaluation assets	**13.2.1**	**313.4**	**256.9**
Property, plant and equipment		62.0	52.2
Intangible assets		251.4	204.7
Oil and gas development and production assets	**13.2.2**	**2,731.3**	**2,103.4**
Property, plant and equipment		2,646.3	2,018.0
Intangible assets		85.0	85.4
Other non-current assets of the upstream segment	**13.2.3**	**337.3**	**348.7**
Property, plant and equipment		335.7	334.0
Intangible assets		1.6	14.7
Total non-current assets of the upstream segment		**3,382.0**	**2,709.0**
including:			
Property, plant and equipment		3,044.0	2,404.2
Intangible assets		338.0	304.8

(PLNm)

13.2.1 Oil and gas exploration and evaluation assets

	Note	Property, plant and equipment classified as exploration and evaluation assets	Intangible assets classified as exploration and evaluation assets			Total
		Poland	Poland	Norway	Lithuania	
Gross carrying amount Jan 1 2018		**187.8**	**13.7**	**217.3**	**10.0**	**428.8**
Purchase		10.2	-	30.9	-	41.1
Exchange differences on translating foreign operations		-	-	3.3	0.3	3.6
Reclassification of intangible assets		-	-	13.7	-	13.7
Expenditure written off due to project discontinuation		24.1 [(1)]	-	-	-	24.1
Gross carrying amount Dec 31 2018		**222.1**	**13.7**	**265.2**	**10.3**	**511.3**
Accumulated depreciation/amortisation Jan 1 2018		**-**	**9.4**	**-**	**-**	**9.4**
Depreciation and amortisation		-	0.9	-	-	0.9
Accumulated depreciation/amortisation Dec 31 2018		**-**	**10.3**	**-**	**-**	**10.3**
Impairment losses Jan 1 2018		**135.6**	**-**	**16.9**	**10.0**	**162.5**
Recognised	9.3	0.4	-	-	-	0.4
Exchange differences on translating foreign operations		-	-	0.3	0.3	0.6
Expenditure written off due to project discontinuation		24.1 [(1)]	-	-	-	24.1
Impairment losses Dec 31 2018		**160.1**	**-**	**17.2**	**10.3**	**187.6**
Net carrying amount Dec 31 2018		**62.0**	**3.4**	**248.0**	**-**	**313.4**

[(1)] Expenditure on exploration and evaluation work in the Kamień Pomorski area (with no effect on result).

(PLNm)

	Note	Property, plant and equipment classified as exploration and evaluation assets	Intangible assets classified as exploration and evaluation assets			Total
		Poland	Poland	Norway	Lithuania	
Gross carrying amount Jan 1 2017		**167.6**	**9.3**	**429.7**	**10.6**	**617.2**
Purchase		20.2	4.4	32.8	-	57.4
Exchange differences on translating foreign operations		-	-	(44.4)	(0.6)	(45.0)
Reclassification to development assets		-	-	(200.8) (2)	-	(200.8)
Gross carrying amount Dec 31 2017		**187.8**	**13.7**	**217.3**	**10.0**	**428.8**
Accumulated depreciation/amortisation Jan 1 2017		**-**	**8.9**	**-**	**-**	**8.9**
Depreciation and amortisation		-	0.5	-	-	0.5
Accumulated depreciation/amortisation Dec 31 2017		**-**	**9.4**	**-**	**-**	**9.4**
Impairment losses Jan 1 2017		**111.9**	**-**	**89.1**	**10.6**	**211.6**
Recognised	9.4	23.7 (1)	-	-	-	23.7
Exchange differences on translating foreign operations		-	-	(7.3)	(0.6)	(7.9)
Reclassification to development assets		-	-	(64.9) (2)	-	(64.9)
Impairment losses Dec 31 2017		**135.6**	**-**	**16.9**	**10.0**	**162.5**
Net carrying amount Dec 31 2017		**52.2**	**4.3**	**200.4**	**-**	**256.9**

(1) Expenditure on exploration and evaluation work in the Kamień Pomorski area (PLN 23.7m).
(2) Utgard (formerly Alfa Sentral) licences forming part of the acquired Sleipner assets in Norway.

Property, plant and equipment are classified as exploration and evaluation assets until the technical feasibility and commercial viability of extracting the discovered resources are demonstrated.

Impairment of assets of the Sleipner gas field in Norway

As at December 31st 2018 and December 31st 2017, the Group tested the Utgard (previously Alfa Sentral) field at a pre-development stage for impairment. The test was performed based on the following assumptions, equivalent to those adopted for development and production assets:

- the cash flow projection period was assumed to equal the assets' planned life,
- the discount rate was assumed to equal the weighted average cost, at 7.02% (2017: 8.17%) after taxation with the 78% marginal tax rate (applicable in Norway),
- production and sales volumes, capital expenditure, operating expenses and field decommissioning costs were assumed as projected by the field operator.

The following assumptions were adopted for the estimates as part of the impairment test as at December 31st 2018:

- for crude oil in USD/bbl (per barrel):
  - 2019–2022 – prices in line with the price assumptions of available market scenarios,
  - 2023 and beyond − prices remaining stable in the long term on par with the 2022 level, adjusted for inflation.

- for natural gas in p/th (pence/thermal units):
  - 2019–2022 – prices in line with the price assumptions of available market scenarios,
  - 2023 and beyond − prices remaining stable in the long term on par with the 2022 level, adjusted for inflation.

The following assumptions were adopted for the estimates as part of the impairment test as at December 31st 2017:

- for crude oil in USD/bbl (per barrel):
  - 2018–2022 – prices in line with the price assumptions of available market scenarios,
  - 2023 and beyond − prices remaining stable in the long term on par with the 2022 level, adjusted for inflation.

- for natural gas in p/th (pence/thermal units):
  - 2018–2022 – prices in line with the price assumptions of available market scenarios,
  - 2023 and beyond − prices remaining stable in the long term on par with the 2022 level, adjusted for inflation.

In connection with risks inherent in the field development phase (such as geological, technical, schedule and operational risks), the Group adopted, in accordance with IAS 36 *Impairment of Assets,* a conservative approach to calculating the recoverable amount of the Utgard project. The risks identified at this phase of the project were quantified in a simplified way as a 20% discount to base prices of crude oil.

Remeasurement of the recoverable amount performed as at December 31st 2018 showed no need to recognise an impairment loss on those assets.

Due to significant market volatility, in particular with respect to oil and gas prices, the adopted assumptions may be subject to justifiable changes, and such changes may necessitate a revision of the carrying amounts of the Utgard field's assets in the future. To determine the effect of key factors on the test results, the Group carried out an analysis of sensitivity to a +/-15% change in oil and gas price, +/-15% change in production volumes, +/-15% change in the USD/NOK exchange rate, and +/- 0.5pp change in the discount rate.

Presented below is the estimated level of impairment loss recognition (-) and reversal (+) following changes in the key assumptions:

Factor	Change	Estimated level of impairment loss recognition and reversal (PLNm)	
Crude oil and gas prices	+/- 15%	63.4	-80.8
Production volume	+/- 15%	58.3	59.4
USD/NOK exchange rate	+/- 15%	63.4	63.8
Discount rate	+/- 0.5 pp	-5.3	4.3

13.2.2 Oil and gas development and production assets

		Oil and gas development assets			Oil and gas production assets				Total
	Note	Poland	Norway	Total	Poland	Norway	Lithuania	Total	
Gross carrying amount Jan 1 2018		**-**	**1,650.5**	**1,650.5**	**1,823.9**	**1,407.4**	**626.4**	**3,857.7**	**5,508.2**
Purchase		-	320.5	320.5	128.3	21.7	0.1	150.1	470.6
Exchange differences on translating foreign operations		-	25.8	25.8	-	28.0	19.4	47.4	73.2
Estimated costs of decommissioning of oil and gas extraction facilities		-	-	-	22.0	1.7	1.3	25.0	25.0
Reclassification of refinery and other assets		-	-	-	-	-	(1.5)	(1.5)	(1.5)
Borrowing costs		-	-	-	8.6	-	-	8.6	8.6
Other		-	-	-	(0.4)	-	(0.7)	(1.1)	(1.1)
Gross carrying amount Dec 31 2018		**-**	**1,996.8**	**1,996.8**	**1,982.4**	**1,458.8**	**645.0**	**4,086.2**	**6,083.0**
Accumulated depreciation/amortisation Jan 1 2018		**-**	**-**	**-**	**499.5**	**912.9**	**294.1**	**1,706.5**	**1,706.5**
Depreciation and amortisation		-	-	-	36.3	135.1	13.0	184.4	184.4
Exchange differences on translating foreign operations		-	-	-	-	15.3	9.3	24.6	24.6
Other		-	-	-	-	-	(0.7)	(0.7)	(0.7)
Accumulated depreciation/amortisation Dec 31 2018		**-**	**-**	**-**	**535.8**	**1,063.3**	**315.7**	**1,914.8**	**1,914.8**
Impairment losses Jan 1 2018		**-**	**1,436.2**	**1,436.2**	**-**	**34.9**	**227.2**	**262.1**	**1,698.3**
Recognised	9.3	-	-	-	0.5	48.7 [2]	18.5 [3]	67.7	67.7
Exchange differences on translating foreign operations		-	37.6	37.6	-	(0.5)	6.8	6.3	43.9
Used/Reversed	9.3	-	(349.5) [1]	(349.5)	-	-	(23.5) [4]	(23.5)	(373.0)
Impairment losses Dec 31 2018		**-**	**1,124.3**	**1,124.3**	**0.5**	**83.1**	**229.0**	**312.6**	**1,436.9**
Net carrying amount Dec 31 2018		**-**	**872.5**	**872.5**	**1,446.1**	**312.4**	**100.3**	**1,858.8**	**2,731.3**

[1] YME field
[2] Heimdal assets
[3] Vėžaičiai field
[4] Fields: Girkalai, Nausodis

(PLNm)

		Oil and gas development assets			Oil and gas production assets				Total
	Note	Poland	Norway	Total	Poland	Norway	Lithuania	Total	
Gross carrying amount Jan 1 2017		**-**	**1,592.1**	**1,592.1**	**1,650.4**	**1,603.4**	**659.8**	**3,913.6**	**5,505.7**
Purchase		-	82.0 [(1)]	82.0	154.8 [(2)]	47.7	2.7	205.2	287.2
Exchange differences on translating foreign operations		-	(224.4)	(224.4)	-	(208.1)	(37.8)	(245.9)	(470.3)
Estimated costs of decommissioning of oil and gas extraction facilities		-	-	-	6.6	(35.6)	-	(29.0)	(29.0)
Reclassification of refinery and other assets		-	-	-	0.1	-	-	0.1	0.1
Reclassification of exploration and evaluation assets		-	200.8 [(3)]	200.8	-	-	-	-	200.8
Borrowing costs		-	-	-	12.5	-	-	12.5	12.5
Expenditure written off due to project discontinuation		-	-	-	(0.5)	-	-	(0.5)	(0.5)
Other		-	-	-	-	-	1.7	1.7	1.7
Gross carrying amount Dec 31 2017		**-**	**1,650.5**	**1,650.5**	**1,823.9**	**1,407.4**	**626.4**	**3,857.7**	**5,508.2**
Accumulated depreciation/amortisation Jan 1 2017		-	**-**	**-**	**461.0**	**827.0**	**293.0**	**1,581.0**	**1,581.0**
Depreciation and amortisation		-	-	-	38.4	206.4	18.2	263.0	263.0
Exchange differences on translating foreign operations		-	-	-	-	(120.5)	(17.1)	(137.6)	(137.6)
Reclassification of refinery and other assets		-	-	-	0.1	-	-	0.1	0.1
Accumulated depreciation/amortisation Dec 31 2017		**-**	**-**	**-**	**499.5**	**912.9**	**294.1**	**1,706.5**	**1,706.5**
Impairment losses Jan 1 2017		**-**	**1,579.7**	**1,579.7**	**-**	**40.1**	**206.7**	**246.8**	**1,826.5**
Recognised	9.4	-	-	-	-	-	32.9	32.9	32.9
Exchange differences on translating foreign operations		-	(208.4)	(208.4)	-	(5.2)	(12.4)	(17.6)	(226.0)
Reclassification of exploration and evaluation assets		-	64.9 [(3)]	64.9	-	-	-	-	64.9
Impairment losses Dec 31 2017		**-**	**1,436.2**	**1,436.2**	**-**	**34.9**	**227.2**	**262.1**	**1,698.3**
Net carrying amount Dec 31 2017		**-**	**214.3**	**214.3**	**1,324.4**	**459.6**	**105.1**	**1,889.1**	**2,103.4**

(1) Expenditures on YME (PLN 47.2m) and Sleipner (PLN 34.9m) assets.
(2) Expenditure on the B8 field.
(3) Utgard (formerly Alfa Sentral) licence forming part of the acquired Sleipner assets in Norway.

Impairment testing of assets in the B-8 field in the Baltic Sea

In connection with an update of the project budget and schedule as well as the profile of production from the B-8 field, as at December 31st 2018 (and December 31st 2017) the Group carried out impairment tests for assets related to the field.

Key assumptions underlying computation of the recoverable amount of the tested assets:

- the cash flow projection period was assumed to equal the assets' planned life,
- the discount rate was assumed to equal the weighted average cost, at 8.51% (2017: 10.46%) after taxation with the 19% marginal tax rate,
- production volumes in line with current forecasts considering current geological data,
- sales volumes, capital expenditure, operating expenses and field decommissioning costs were assumed in line with current projections for the B-8 field.

The following price assumptions were adopted for the estimates as part of the impairment test as at December 31st 2018:
- for crude oil in USD/bbl (per barrel of oil equivalent):
  - 2019–2022 – prices in line with the price assumptions of available market scenarios,
  - 2023 and beyond − prices remaining stable in the long term on par with the 2022 level, adjusted for inflation.

The following assumptions were adopted for the estimates as part of the impairment test as at December 31st 2017:
- for crude oil in USD/bbl (per barrel of oil equivalent):
  - 2018–2022 – prices in line with the price assumptions of available market scenarios,
  - 2023 and beyond − prices remaining stable in the long term on par with the 2022 level, adjusted for inflation.

In addition, the project budget and the expenditure incurred were reviewed and no material deviations from the original assumptions were identified. The project was also reviewed to identify redundant elements and no material assets whose cost should be written off from the investment were identified. The B-8 project on the Baltic Sea will be continued. The project is expected to reach the Ready for Operation status no earlier than in the fourth quarter of 2019, with full-scale production from the B-8 field expected to commence no earlier than in the second quarter of 2021.

The impairment tests of the B-8 field assets indicated no need to recognise impairment losses on those assets.

Due to significant market volatility, in particular with respect to crude oil prices, the adopted assumptions may be subject to justifiable changes, and such changes may necessitate a revision of the carrying amounts of the field's assets in the future. Therefore, the Group points to a number of uncertainties as to the recoverable amount of the assets:

- volatility of market prices of crude oil,
- estimates of investment expenditure related to contracts for which no contractor has yet been selected,
- amount of site restoration commitments,
- volatility of the PLN/USD exchange rate,
- discount rates.

To determine the effect of key factors on the test results, the Group carried out an analysis of sensitivity to a +/-15% change in oil and gas prices, +/-15% change in production volumes, +/-15% change in the USD/PLN exchange rate, and +/-0.5pp change in the discount rate.

Changes in the key assumptions have no effect on the absence of estimated impairment losses on the B-8 field assets.

Progress of the YME field development project in Norway

Due to significant delays in the implementation of the YME project, cost overruns, and defects of the MOPU (Mobile Offshore Production Unit) to be used in production operations in the field, in previous years the Group recognised impairment losses on the YME assets until they were fully written off in 2014.

On August 22nd 2016, the YME project partners completed the removal of the defective MOPU from the field. The work was financed with funds raised by the consortium members (the Group has a 20% interest in the project) under an agreement with the supplier of the MOPU.

As part of the YME field development project, on October 27th 2017 the licence partners approved the Plan for Development and Operation. On December 19th 2017, Repsol Norge AS, on behalf of the YME field licence partners, submitted the PDO for approval to the Norwegian Ministry of Petroleum and Energy. In November 2017, Repsol Norge AS, acting as the YME licence and development project operator, signed a contract with Maersk Drilling for delivery of the "Mærsk Inspirer" production and drilling rig, which will serve as a production hub on the Yme field. Commercial production of hydrocarbons from the field is to be launched in 2020. The Group's share in the YME field's recoverable reserves is approximately 12.9m bbl of crude oil.

As at December 31st 2018, the Group tested the YME field (being at a development phase) for impairment. The test was performed based on the following assumptions, equivalent to those adopted for development and production assets:

- the cash flow projection period was assumed to equal the assets' planned life,
- the discount rate was assumed to equal the weighted average cost of capital, at 7.02% after taxation with the 78% marginal tax rate (applicable in Norway),
- production and sales volumes, capital expenditure, operating expenses and field decommissioning costs were assumed as projected by the field operator.

The following assumptions were adopted for the estimates made as part of the impairment test as at December 31st 2018:
- for crude oil in USD/bbl (per barrel):
  - 2019–2022 – prices in line with the price assumptions of available market scenarios,
  - 2023 and beyond − prices remaining stable in the long term on par with the 2022 level, adjusted for inflation.

In connection with risks inherent in the field development phase (such as geological, technical, schedule and operational risks), the Group adopted, in accordance with IAS 36 *Impairment of Assets*, a conservative approach to calculating the recoverable amount of the YME project. The risks identified at this phase of the project were quantified in a simplified way as a 20% discount to base prices of crude oil.

Remeasurement of the recoverable amount performed as at December 31st 2018 showed no need to recognise an impairment loss on the YME field. As a result of the impairment test, the Group recognised a PLN 349.5m reversal of impairment losses recognised in previous years. The reversal of impairment losses results from the advanced stage of the field development project, in line with the new approved plan for development and operation (PDO), and from favourable macroeconomic conditions.

Due to significant market volatility, in particular with respect to oil and gas prices, the adopted assumptions may be subject to justifiable changes, and such changes may necessitate a revision of the carrying amounts of the YME field's assets in the future. To determine the effect of key factors on the test results, the Group carried out an analysis of sensitivity to a +/-15% change in oil and gas prices, +/-15% change in production volumes, +/-15% change in the USD/NOK exchange rate, and +/- 0.5pp change in the discount rate.

Presented below is the estimated level of impairment loss reversal following changes in the key assumptions:

Factor	Change	Estimated level of impairment loss reversal (PLNm)	
Crude oil and gas prices	+/- 15%	675.8	114.5
Production volume	+/- 15%	611.8	178.5
USD/NOK exchange rate	+/- 15%	611.8	178.5
Discount rate	+/- 0.5 pp	363.4	429.1

Impairment testing of the production assets of the offshore gas and condensate production facility in the Heimdal field and of the Sleipner gas field in Norway

As at December 31st 2018 and as at December 31st 2017, the Group tested for impairment the production assets of each centre generating cash flows from the producing Heimdal fields (Atla, Vale, Skirne, Heimdal) and Sleipner field. The tests revealed the need to recognise impairment losses on Vale (PLN 22.6m) and Heimdal (PLN 26.1m) fields.

As part of impairment testing of the Norwegian production assets, their recoverable amount was determined at their value in use estimated using the discounted future cash flows method.

Key assumptions underlying computation of the recoverable amount of the tested assets:

- the cash flow projection period was assumed to equal the asset's planned life,
- the discount rate was assumed to equal the weighted average cost, at 7.02% (2017: 8.17%) after taxation with the 78% marginal tax rate (applicable in Norway),
- production and sales volumes, capital expenditure, operating expenses and field decommissioning costs were assumed as projected by the field operators.

The following price assumptions were adopted for the purposes of the impairment tests as at December 31st 2018:
- for crude oil in USD/bbl (per barrel):
    - 2019–2022 – prices in line with the price assumptions of available market scenarios,
    - 2023 and beyond − prices remaining stable in the long term on par with the 2022 level, adjusted for inflation;
- for natural gas in USD/boe (per barrel of oil equivalent):
    - 2019–2022 − prices in line with the price assumptions of available market scenarios, and in 2023 and beyond − prices remaining stable in the long term on par with the 2022 level, adjusted for inflation.

The following assumptions were adopted for the estimates as part of the impairment tests as at December 31st 2017:
- for crude oil in USD/bbl (per barrel):
    - 2018–2022 – prices in line with the price assumptions for available market scenarios,
    - 2023 and beyond − prices remaining stable in the long term on par with the 2022 level, adjusted for inflation;
- for natural gas in USD/boe (per barrel of oil equivalent):
    - 2018–2022 − prices in line with the price assumptions of available market scenarios, and in 2023 and beyond − prices remaining stable in the long term on par with the 2019 level, adjusted for inflation.

Due to significant market volatility, in particular with respect to oil and gas prices, the adopted assumptions may be subject to justifiable changes, and such changes may necessitate a revision of the carrying amounts of the LOTOS E&P Norge's assets in the future.

To determine the effect of key factors on the test results, the Group carried out an analysis of sensitivity to a +/-15% change in oil and gas prices, +/-15% change in production volumes, +/-15% change in the USD/NOK exchange rate, and +/-0.5pp change in the discount rate .

Presented below is the estimated level of recognition (-) and reversal (+) of impairment losses on Heimdal and Sleipner assets following changes in the key assumptions:

Factor	Change	Estimated level of impairment loss recognition and reversal (PLNm)	
Crude oil and gas prices	+/- 15%	43.1	- 58.3
Production volume	+/- 15%	43.5	- 57.8
USD/NOK exchange rate	+/- 15%	43.3	- 58.1
Discount rate	+/- 0.5 pp	-52.5	48.8

Impairment testing of onshore oil and gas extraction facilities in Lithuania

As a result of impairment tests performed for the resources and production infrastructure in Lithuania, as at December 31st 2018 the Group recognised an impairment loss of PLN 18.5m on investment associated with the Vėžaičiai licence. The Group also reversed previous years' impairment losses on production assets related to the Girkaliai field (PLN 10.2m) and the Nausodis field (PLN 13.3m) (see Note 9.3). As at December 31st 2017, the Group recognised an impairment loss of PLN 30.1m on investment associated with the Vėžaičiai licence, and impairment losses of PLN 2.7m and PLN 0.1m, respectively, on production assets associated with the Girkaliai and Ližiai fields (see Note 9.4).

The Group determines the recoverable amount of the tested assets as their value in use measured using the discounted future cash flows method.

Key assumptions underlying computation of the recoverable amount of the tested assets in Lithuania:

- the cash flow projection period was assumed to equal the asset's planned life,
- the discount rate was assumed to equal the weighted average cost, at 7.68% (2017: 9.62%),
- production volumes were assumed to be in line with a competent person report prepared by Miller & Lents based on the most recent available geological information,
- capital expenditure was assumed to match the projected production volumes.

The following crude oil price assumptions (USD/bbl) were adopted for the purposes of the estimates made in 2018:

- 2019–2022 – prices in line with the price assumptions of available market scenarios,
- 2023 and beyond − prices remaining stable in the long term on par with the 2022 level, adjusted for inflation.

Crude oil price assumptions (USD/bbl) adopted for the purposes of the estimates as at December 31st 2017:

- 2018–2022 – prices in line with the price assumptions of available market scenarios,
- 2023 and beyond − prices remaining stable in the long term on par with the 2022 level, adjusted for inflation.

Due to significant market volatility, in particular with respect to crude oil prices, the adopted assumptions may be subject to justifiable changes, and such changes may necessitate a revision of the carrying amounts of the assets in the future.

To determine the effect of key factors on the test results, the Group carried out an analysis of sensitivity to a +/-15% change in oil prices, +/-15% change in production volumes, +/-15% change in the USD/EUR exchange rate, and +/-0.5% change in the discount rate.

Presented below is the estimated level of recognition (-) and reversal (+) of impairment losses on the Lithuanian assets reffered to above following changes in the key assumptions:

Factor	Change	Estimated level of impairment loss recognition and reversal (PLNm)	
Crude oil and gas prices	+/- 15%	0.9	-31.8
Production volume	+/- 15%	0.9	-24.1
USD/EUR exchange rate	+/- 15%	0.9	-24.1
Discount rate	+/- 0.5 pp	-0.9	0.3

Assets related to future costs of decommissioning of oil and gas extraction facilities

As part of its development and production assets, the Group discloses assets related to future costs of decommissioning of oil and gas extraction facilities depreciated with the units-of-production method. These assets are recognised along with the recognition and remeasurement of provisions for decommissioning of oil and gas extraction facilities.

(PLNm)

	Oil and gas development assets	Oil and gas production assets				Total
	Norway	Poland	Norway	Lithuania	Total	
Gross carrying amount Jan 1 2018	**117.5**	**114.0**	**681.6**	**1.6**	**797.2**	**914.7**
Estimated costs of decommissioning of oil and gas extraction facilities	-	22.0	1.7	1.3	25.0	25.0
Exchange differences on translating foreign operations	2.4	-	13.8	0.1	13.9	16.3
Gross carrying amount Dec 31 2018	**119.9**	**136.0**	**697.1**	**3.0**	**836.1**	**956.0**
Accumulated depreciation/amortisation Jan 1 2018	**-**	**81.3**	**446.8**	**1.5**	**529.6**	**529.6**
Depreciation and amortisation	-	1.5	53.1	-	54.6	54.6
Exchange differences on translating foreign operations	-	-	7.8	-	7.8	7.8
Accumulated depreciation/amortisation Dec 31 2018	**-**	**82.8**	**507.7**	**1.5**	**592.0**	**592.0**
Impairment losses Jan 1 2018	**117.5**	**-**	**28.9**	**-**	**28.9**	**146.4**
Recognised	-	-	36.8 [(1)]	-	36.8	36.8
Exchange differences on translating foreign operations	2.4	-	(0.3)	-	(0.3)	2.1
Impairment losses Dec 31 2018	**119.9**	**-**	**65.4**	**-**	**65.4**	**185.3**
Net carrying amount Dec 31 2018	**-**	**53.2**	**124.0**	**1.5**	**178.7**	**178.7**
Gross carrying amount Jan 1 2017	**134.9**	**107.4**	**821.1**	**1.7**	**930.2**	**1,065.1**
Estimated costs of decommissioning of oil and gas extraction facilities	-	6.6	(35.7)	-	(29.1)	(29.1)
Exchange differences on translating foreign operations	(17.4)	-	(103.8)	(0.1)	(103.9)	(121.3)
Gross carrying amount Dec 31 2017	**117.5**	**114.0**	**681.6**	**1.6**	**797.2**	**914.7**
Accumulated depreciation/amortisation Jan 1 2017	**-**	**80.1**	**405.8**	**1.6**	**487.5**	**487.5**
Depreciation and amortisation	-	1.2	100.0	-	101.2	101.2
Exchange differences on translating foreign operations	-	-	(59.0)	(0.1)	(59.1)	(59.1)
Accumulated depreciation/amortisation Dec 31 2017	**-**	**81.3**	**446.8**	**1.5**	**529.6**	**529.6**
Impairment losses Jan 1 2017	**134.9**	**-**	**33.1**	**-**	**33.1**	**168.0**
Recognised	-	-	-	-	-	-
Exchange differences on translating foreign operations	(17.4)	-	(4.2)	-	(4.2)	(21.6)
Impairment losses Dec 31 2017	**117.5**	**-**	**28.9**	**-**	**28.9**	**146.4**
Net carrying amount Dec 31 2017	**-**	**32.7**	**205.9**	**0.1**	**238.7**	**238.7**

(1) Heimdal assets

13.2.3 Other non-current assets of the upstream segment

	Land	Buildings, structures	Plant and equipment	Vehicles, other	Property, plant and equipment under construction	Intangible assets	Total
Gross carrying amount Jan 1 2018	**11.4**	**53.1**	**68.7**	**499.4**	**13.6**	**37.8**	**684.0**
Purchase	-	-	0.7	0.1	39.4	0.1	40.3
Transfer from property, plant and equipment under construction	-	0.1	8.9	23.4	(32.5)	-	(0.1)
Exchange differences on translating foreign operations	-	-	1.2	11.1	0.2	1.2	13.7
Reclassification to oil and gas exploration and evaluation assets	-	-	-	-	-	(25.0)	(25.0)
Sale	-	-	(6.5)	(0.5)	-	(0.1)	(7.1)
Other	-	-	-	-	(0.2)	-	(0.2)
Gross carrying amount Dec 31 2018	**11.4**	**53.2**	**73.0**	**533.5**	**20.5**	**14.0**	**705.6**
Accumulated depreciation/amortisation Jan 1 2018	**4.5**	**21.8**	**40.6**	**242.8**	**-**	**23.1**	**332.8**
Depreciation and amortisation	0.2	1.8	3.2	34.5	-	0.2	39.9
Exchange differences on translating foreign operations	-	-	0.6	8.9	-	0.5	10.0
Reclassification to oil and gas exploration and evaluation assets	-	-	-	-	-	(11.3)	(11.3)
Sale	-	-	(5.1)	(0.5)	-	(0.1)	(5.7)
Accumulated depreciation/amortisation Dec 31 2018	**4.7**	**23.6**	**39.3**	**285.7**	**-**	**12.4**	**365.7**
Impairment losses Jan 1 2018	**-**	**-**	**0.6**	**1.9**	**-**	**-**	**2.5**
Exchange differences on translating foreign operations	-	-	-	0.1	-	-	0.1
Impairment losses Dec 31 2018	**-**	**-**	**0.6**	**2.0**	**-**	**-**	**2.6**
Net carrying amount Dec 31 2018	**6.7**	**29.6**	**33.1**	**245.8**	**20.5**	**1.6**	**337.3**

(PLNm)

	Land	Buildings, structures	Plant and equipment	Vehicles, other	Property, plant and equipment under construction	Intangible assets	Total
Gross carrying amount Jan 1 2017	**11.4**	**53.1**	**69.1**	**560.4**	**15.3**	**31.1**	**740.4**
Purchase	-	-	0.5	0.1	12.5	9.9	23.0
Transfer from property, plant and equipment under construction	-	-	0.3	13.6	(13.9)	-	-
Exchange differences on translating foreign operations	-	-	(2.0)	(30.5)	(0.2)	(3.2)	(35.9)
Reclassification to production assets	-	-	-	(0.1)	-	-	(0.1)
Sale	-	-	(0.1)	(44.1)	(0.1)	-	(44.3)
Other	-	-	0.9	-	-	-	0.9
Gross carrying amount Dec 31 2017	**11.4**	**53.1**	**68.7**	**499.4**	**13.6**	**37.8**	**684.0**
Accumulated depreciation/amortisation Jan 1 2017	**4.2**	**20.0**	**39.1**	**272.8**	**-**	**21.6**	**357.7**
Depreciation and amortisation	0.3	1.8	3.1	35.4	-	3.2	43.8
Exchange differences on translating foreign operations	-	-	(1.5)	(25.9)	-	(1.7)	(29.1)
Reclassification to production assets	-	-	-	(0.1)	-	-	(0.1)
Sale	-	-	(0.1)	(39.7)	-	-	(39.8)
Other	-	-	-	0.3	-	-	0.3
Accumulated depreciation/amortisation Dec 31 2017	**4.5**	**21.8**	**40.6**	**242.8**	**-**	**23.1**	**332.8**
Impairment losses Jan 1 2017	**-**	**-**	**0.6**	**5.1**	**0.1**	**-**	**5.8**
Recognised	-	-	-	0.8	-	-	0.8
Exchange differences on translating foreign operations	-	-	-	(0.5)	-	-	(0.5)
Used/Reversed	-	-	-	(3.5)	(0.1)	-	(3.6)
Impairment losses Dec 31 2017	**-**	**-**	**0.6**	**1.9**	**-**	**-**	**2.5**
Net carrying amount Dec 31 2017	**6.9**	**31.3**	**27.5**	**254.7**	**13.6**	**14.7**	**348.7**

Other property, plant and equipment and intangible assets of the upstream segment include ships and a multi-purpose mobile drilling rig.

13.3 Other information on property, plant and equipment and intangible assets

	Property, plant and equipment used under finance lease	
	December 31st 2018	December 31st 2017
Gross carrying amount	389.0	323.1
Accumulated depreciation	173.0	141.5
Net carrying amount	216.0	181.6

The Group uses finance leases to finance primarily rolling stock assets (downstream segment); see also Note 22.4.

Allocation of depreciation	2018	2017
Cost of sales	611.2	716.6
Distribution costs	73.2	77.8
Administrative expenses	28.5	37.1
Change in products and adjustments to cost of sales	9.8	12.8
Total	**722.7**	**844.3**

In 2018, the Group capitalised finance costs of PLN 84.6m as property, plant and equipment under construction and intangible assets under development (2017: PLN 49.8m); see Notes 13.1.1 and 13.1.3. As at December 31st 2018, finance costs capitalised as property, plant and equipment under construction, intangible assets under development, and property, plant and equipment related to oil and gas production totalled PLN 140.8m (December 31st 2017: PLN 57.5m).

As at December 31st 2018, property, plant and equipment as well as intangible assets serving as collateral for the Group's liabilities totalled PLN 8,611.0m (December 31st 2017: PLN 8.569.6m).

As at December 31st 2018, the Group's future contractual commitments related to purchases of property, plant and equipment and intangible assets, undisclosed in the statement of financial position, totalled PLN 383.4m (December 31st 2017: PLN 395.0m). As at December 31st 2018, the contracted expenditure was related, among others, to the EFRA Project, the B-8 field development, the hydrogen recovery unit (HRU), upgrade of the unit for solvent-based removal of paraffins, as well as modernisation of locomotives.

14. Equity-accounted joint ventures

The Group holds interests in equity-accounted joint ventures, which include:

- Joint venture agreement between Grupa LOTOS S.A. and BP Europe SE on joint operations related to supply of aviation fuel through LOTOS - Air BP Polska Sp. z o.o.
- Agreement on cooperation between LOTOS Petrobaltic S.A. and CalEnergy Resources Poland Sp. z o.o. with respect to development and production of gas and condensate reserves from the B-4 and B-6 fields in the Baltic Sea, performed through special purpose vehicles Baltic Gas spółka z ograniczoną odpowiedzialnością i wspólnicy sp.k. and Baltic Gas Sp. z o.o. (general partner).
- Joint venture set up for the purpose of oil exploration and production operations in Lithuania, operated in the form of UAB Minijos Nafta.

	Registered office	Business profile	Group's ownership interest		Carrying amount (PLNm)	
			December 31st 2018	December 31st 2017	December 31st 2018	December 31st 2017
Downstream segment						
LOTOS-Air BP Polska Sp. z o.o.	Gdańsk	Sale of aviation fuel and logistics services	50.00%	50.00%	25.0	23.2
Upstream segment						
Baltic Gas Sp. z o.o.	Gdańsk	Oil and gas production (support activities for oil and gas production)	49.99%	49.99%	-	-
Baltic Gas spółka z ograniczoną odpowiedzialnością i wspólnicy sp.k. (1)	Gdańsk	Crude oil and gas production	45.04%	44.78%	92.2	83.3
UAB Minijos Nafta	Lithuania, Gargždai	Crude oil exploration and production	49.99%	49.99%	-	-
Total					**117.2**	**106.5**

(1) The ownership interests as at December 31st 2018 were determined based on the value of contributions made by individual partners relative to the sum of all contributions:

- Baltic Gas Sp. z o.o. (general partner) 0.001% (December 31st 2017: 0.001%),
- LOTOS Upstream Sp. z o.o. (limited partner) 44.049% (December 31st 2017: LOTOS Petrobaltic S.A.: 44.786%),
- CalEnergy Resources Poland Sp. z o.o. ("CalEnergy") (limited partner) 54.951% (December 31st 2017: 55.214%).

The Group's indirect ownership interest in Baltic Gas spółka z ograniczoną odpowiedzialnością i wspólnicy sp. k. (jointly-controlled entity) is 45.04% (December 31st 2017: 44.78%).

In 2018, CalEnergy Resources Poland Sp. z o.o. and LOTOS Upstream Sp. z o.o made the agreed cash contributions to Baltic Gas spółka z ograniczoną odpowiedzialnością i wspólnicy sp. k. of PLN 8.1m and PLN 7.6m, respectively, which changed the Group's ownership interest in the company. The expenditure on cash contributions made by LOTOS Upstream Sp. z o.o was disclosed by the Group in the consolidated statement of cash flows under Cash contributions − equity-accounted joint ventures.

As at December 31st 2018, LOTOS Upstream Sp. z o.o.'s outstanding liabilities under the contributions made to Baltic Gas spółka z ograniczoną odpowiedzialnością i wspólnicy sp. k. amounted to PLN 1.7m.