

FINANCIAL STATEMENTS



*December 31, 2018, 2017 and 2016
with report of independent registered
public accounting firm*

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Report of Independent Registered Public Accounting Firm

To the Shareholders and Board of Directors
Petróleo Brasileiro S.A. - Petrobras
Rio de Janeiro – RJ

Opinions on the Consolidated Financial Statements and Internal Control Over Financial Reporting

We have audited the accompanying consolidated statement of financial position of Petróleo Brasileiro S.A. – Petrobras and subsidiaries (“the Company”) as of December 31, 2018 and 2017, the related consolidated statements of income, comprehensive income, changes in equity and cash flows for each of the years in the two-year period ended December 31, 2018, and the related notes (collectively, the “consolidated financial statements”). We also have audited the Company’s internal control over financial reporting as of December 31, 2018, based on criteria established in *Internal Control - Integrated Framework (2013)* issued by the Committee of Sponsoring Organizations of the Treadway Commission.

In our opinion, the consolidated financial statements referred to above present fairly, in all material respects, the financial position of the Company as of December 31, 2018 and 2017, and the results of its operations and its cash flows for each of the years in the two-year period ended December 31, 2018, in conformity with International Financial Reporting Standards as issued by the International Accounting Standards Board. Also in our opinion, the Company maintained, in all material respects, effective internal control over financial reporting as of December 31, 2018, based on criteria established in *Internal Control - Integrated Framework (2013)* issued by the Committee of Sponsoring Organizations of the Treadway Commission.

***Basis for Opinion***

The Company's management is responsible for these consolidated financial statements, for maintaining effective internal control over financial reporting, and for its assessment of the effectiveness of internal control over financial reporting, included in the accompanying Management's Report on Internal Control over Financial Reporting. Our responsibility is to express an opinion on the Company's consolidated financial statements and an opinion on the Company's internal control over financial reporting based on our audits. We are a public accounting firm registered with the Public Company Accounting Oversight Board (United States) ("PCAOB") and are required to be independent with respect to the Company in accordance with the U.S. federal securities laws and the applicable rules and regulations of the Securities and Exchange Commission and the PCAOB.

We conducted our audits in accordance with the standards of the PCAOB. Those standards require that we plan and perform the audits to obtain reasonable assurance about whether the consolidated financial statements are free of material misstatement, whether due to error or fraud, and whether effective internal control over financial reporting was maintained in all material respects.

Our audits of the consolidated financial statements included performing procedures to assess the risks of material misstatement of the consolidated financial statements, whether due to error or fraud, and performing procedures that respond to those risks. Such procedures included examining, on a test basis, evidence regarding the amounts and disclosures in the consolidated financial statements. Our audit also included evaluating the accounting principles used and significant estimates made by management, as well as evaluating the overall presentation of the consolidated financial statements. Our audit of internal control over financial reporting included obtaining an understanding of internal control over financial reporting, assessing the risk that a material weakness exists, and testing and evaluating the design and operating effectiveness of internal control based on the assessed risk. Our audits also included performing such other procedures as we considered necessary in the circumstances. We believe that our audits provide a reasonable basis for our opinions.

Definition and Limitations of Internal Control Over Financial Reporting

A company's internal control over financial reporting is a process designed to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles. A company's internal control over financial reporting includes those policies and procedures that (1) pertain to the maintenance of records that, in reasonable detail, accurately and fairly reflect the transactions and dispositions of the assets of the company; (2) provide reasonable assurance that transactions are recorded as necessary to permit preparation of financial statements in accordance with generally accepted accounting principles, and that receipts and expenditures of the company are being made only in accordance with authorizations of management and directors of the company; and (3) provide reasonable assurance regarding prevention or timely detection of unauthorized acquisition, use, or disposition of the company's assets that could have a material effect on the financial statements.

Because of its inherent limitations, internal control over financial reporting may not prevent or detect misstatements. Also, projections of any evaluation of effectiveness to future periods are subject to the risk that controls may become inadequate because of changes in conditions, or that the degree of compliance with the policies or procedures may deteriorate.

/s/ KPMG Auditores Independentes

We have served as the Company's auditor since 2017.

KPMG Auditores Independentes
Rio de Janeiro, February 27, 2019

KPMG Auditores Independentes, uma sociedade simples brasileira e firma-membro da rede KPMG de firmas-membro independentes e afiliadas à KPMG International Cooperative ("KPMG International"), uma entidade suíça.

KPMG Auditores Independentes, a Brazilian entity and a member firm of the KPMG network of independent member firms affiliated with KPMG International Cooperative ("KPMG International"), a Swiss entity.



Report of Independent Registered Public Accounting Firm

To the Shareholders and Board of Directors of
Petróleo Brasileiro S.A. - Petrobras

In our opinion, the accompanying consolidated statements of income, comprehensive income, shareholders' equity and cash flows for the year ended December 31, 2016 present fairly, in all material respects, the results of operations and cash flows of Petróleo Brasileiro S.A. – Petrobras and its subsidiaries (the “Company”) for the year ended December 31, 2016, in conformity with International Financial Reporting Standards as issued by the International Accounting Standards Board. These financial statements are the responsibility of the Company’s management. Our responsibility is to express an opinion on these financial statements based on our audit. We conducted our audit of these financial statements in accordance with the standards of the Public Company Accounting Oversight Board (United States). Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the financial statements are free of material misstatement. An audit includes examining, on a test basis, evidence supporting the amounts and disclosures in the financial statements, assessing the accounting principles used and significant estimates made by management, and evaluating the overall financial statement presentation. We believe that our audit provides a reasonable basis for our opinion.

As discussed in Note 3 to the financial statements, in 2014, the Company wrote off US\$ 2,527 million of overpayments on the acquisition of property plant and equipment incorrectly capitalized according to testimony obtained from Brazilian criminal investigations.

/s/ PricewaterhouseCoopers
Auditores Independentes

Rio de Janeiro, Brazil
April 26, 2017

Management Report on Internal Control over Financial Reporting

Our management is responsible for establishing and maintaining adequate internal control over financial reporting and for assessing the effectiveness of internal control over financial reporting.

Our internal control over financial reporting is a process designed by, or under the supervision of, our Chief Executive Officer and our Chief Financial Officer, and effected by our board of directors, management and other employees, and is designed to provide reasonable assurance regarding the reliability of financial reporting and of the preparation of our consolidated financial statements for external purposes, in accordance with IFRS, as issued by the IASB.

Due to its inherent limitations, internal control over financial reporting may not prevent or detect misstatements. Also, projections of any evaluation of effectiveness of internal control over financial reporting to future periods are subject to the risk that controls may become inadequate because of changes in conditions, or that the degree of compliance with our policies or procedures may deteriorate.

Our management has assessed the effectiveness of our internal control over financial reporting as of December 31, 2018, based upon the criteria established in Internal Controls - Integrated Framework (2013), issued by the Committee of Sponsoring Organizations of Treadway Commission (COSO). Based on this assessment and criteria, our management has concluded that our internal control over financial reporting was effective as of December 31, 2018.

Audit of the Effectiveness of Internal Control over Financial Reporting

Our independent registered public accounting firm, KPMG Auditores Independentes, has audited the effectiveness of our internal control over financial reporting, as stated in their report as of December 31, 2018, which is included herein.

Roberto Castello Branco
Chief Executive Officer

Rafael Salvador Grisolia
Chief Financial Officer

Petróleo Brasileiro S.A. – Petrobras

Consolidated Statement of Financial Position

December 31, 2018 and 2017

(Expressed in millions of US Dollars, unless otherwise indicated)



Assets	Note	12.31.2018	12.31.2017	Liabilities	Note	12.31.2018	12.31.2017
Current assets				Current liabilities			
Cash and cash equivalents	7.1	13,899	22,519	Trade payables	16	6,327	5,767
Marketable securities	7.2	1,083	1,885	Finance debt	17.1	3,667	7,001
Trade and other receivables	8.1	5,746	4,972	Finance lease obligations	18.1	23	25
Inventories	9	8,987	8,489	Income taxes payable	21.1	211	299
Recoverable income taxes	21.1	739	479	Other taxes payable	21.1	3,556	4,548
Other recoverable taxes	21.1	1,296	1,958	Dividends payable	24.6	1,109	-
Escrow account - Class action agreement	31.4	1,881	-	Short-term benefits	22	1,658	1,309
Others		1,485	1,511	Pension and medical benefits	23	810	844
		35,116	41,813	Provisions for legal proceedings	31.1	3,482	2,256
Assets classified as held for sale	10.2	1,946	5,318	Agreement with US Authorities	3.3	783	-
		37,062	47,131	Others		2,442	2,508
						24,068	24,557
				Liabilities related to assets classified as held for sale	10.2	983	391
						25,051	24,948
Non-current assets				Non-current liabilities			
Long-term receivables				Finance debt	17.1	80,508	102,045
Trade and other receivables	8.1	5,492	5,175	Finance lease obligations	18.1	162	204
Marketable securities	7.2	53	64	Income taxes payable	21.1	552	671
Judicial deposits	31.2	6,711	5,582	Deferred income taxes	21.6	654	1,196
Deferred income taxes	21.6	2,680	3,438	Pension and medical benefits	23	21,940	20,986
Other tax assets	21.1	3,540	3,075	Provisions for legal proceedings	31.1	3,923	4,770
Advances to suppliers		666	1,032	Provision for decommissioning costs	20	15,133	14,143
Others		2,917	3,084	Others		970	901
		22,059	21,450			123,842	144,916
				Total liabilities		148,893	169,864
				Equity			
Investments	11	2,759	3,795	Share capital (net of share issuance costs)	24.1	107,101	107,101
Property, plant and equipment	12	157,383	176,650	Capital reserve and transactions		1,067	1,067
Intangible assets	13	2,805	2,340	Profit reserves		58,161	53,056
		185,006	204,235	Accumulated other comprehensive (deficit)	24.5	(94,785)	(81,422)
				Attributable to the shareholders of Petrobras		71,544	79,802
				Non-controlling interests		1,631	1,700
						73,175	81,502
Total assets		222,068	251,366	Total liabilities and equity		222,068	251,366

The notes form an integral part of these financial statements.

Petróleo Brasileiro S.A. – Petrobras

Consolidated Statement of Income

December 31, 2018, 2017 and 2016

(Expressed in millions of US Dollars, unless otherwise indicated)



	Note	2018	2017	2016
Sales revenues	25	95,584	88,827	81,405
Cost of sales		(61,517)	(60,147)	(55,417)
Gross profit		34,067	28,680	25,988
Income (expenses)				
Selling expenses		(4,631)	(4,538)	(3,963)
General and administrative expenses		(2,455)	(2,918)	(3,319)
Exploration costs	15	(524)	(800)	(1,761)
Research and development expenses		(642)	(572)	(523)
Other taxes		(752)	(1,843)	(714)
Impairment of assets		(2,005)	(1,191)	(6,193)
Other income and expenses	26	(5,626)	(5,599)	(5,207)
		(16,635)	(17,461)	(21,680)
Income before finance income (expense), results in equity-accounted investments and income taxes		17,432	11,219	4,308
Finance income		3,155	1,047	1,053
Finance expenses		(5,790)	(7,395)	(6,958)
Foreign exchange gains (losses) and inflation indexation charges		(3,222)	(3,547)	(1,850)
Net finance income (expense)	28	(5,857)	(9,895)	(7,755)
Results in equity-accounted investments	11	523	673	(218)
Net income before income taxes		12,098	1,997	(3,665)
Income taxes	21.10	(4,684)	(1,828)	(684)
Net income for the year		7,414	169	(4,349)
Non-controlling interests		241	260	489
Net income attributable to shareholders of Petrobras		7,173	(91)	(4,838)
Basic and diluted earnings per weighted-average of common and preferred share - in U.S. dollars	24.7	0.55	(0.01)	(0.37)

The notes form an integral part of these financial statements.

Petróleo Brasileiro S.A. – Petrobras

Consolidated Statement of Comprehensive Income

December 31, 2018, 2017 and 2016

(Expressed in millions of US Dollars, unless otherwise indicated)



	2018	2017	2016
Net income (loss) for the year	7,414	169	(4,349)
Items that will not be reclassified to the statement of income:			
Actuarial gains (losses) on post-employment defined benefit plans	(3,130)	1,908	(5,296)
Deferred income tax	(119)	(273)	1,058
	(3,249)	1,635	(4,238)
Share of other comprehensive income (losses) in equity-accounted investments	-	(1)	(3)
Unrealized gains (losses) on equity instruments measured at fair value through other comprehensive income (IFRS 9)			
Recognized in equity	(5)	-	-
Deferred income tax	2	-	-
	(3)	-	-
Items that may be reclassified subsequently to the statement of income:			
Unrealized gains (losses) on equity instruments measured at fair value through other comprehensive income (IAS 39)			
Recognized in equity	-	15	-
Deferred income tax	-	(4)	-
	-	11	-
Unrealized gains (losses) on cash flow hedge - highly probable future exports			
Recognized in equity	(8,950)	(543)	10,779
Reclassified to the statement of income	3,315	3,154	2,841
Deferred income tax	1,916	(887)	(4,629)
	(3,719)	1,724	8,991
Unrealized gains (losses) on cash flow hedge - others			
Recognized in equity	-	(5)	8
Cumulative translation adjustments (*)			
Recognized in equity	(6,409)	(851)	9,529
Reclassified to the statement of income	-	37	1,457
	(6,409)	(814)	10,986
Share of other comprehensive income in equity-accounted investments			
Recognized in equity	(135)	134	344
Reclassified to the statement of income	-	22	-
	(135)	156	344
Total other comprehensive income:	(13,515)	2,706	16,088
Total comprehensive income (loss)	(6,101)	2,875	11,739
Non-controlling interests	65	291	503
Comprehensive income attributable to shareholders of Petrobras	(6,166)	2,584	11,236

(*) It includes a US\$ 236 loss (a US\$ 49 loss in 2017 and a US\$ 413 gain in 2016), of cumulative translation adjustments in associates and joint ventures.

The notes form an integral part of these financial statements.

Petróleo Brasileiro S.A. – Petrobras

Consolidated Statement of Cash Flows

December 31, 2018, 2017 and 2016

(Expressed in millions of US Dollars, unless otherwise indicated)



	2018	2017	2016
Cash flows from Operating activities			
Net income for the year	7,414	169	(4,349)
Adjustments for:			
Pension and medical benefits (actuarial expense)	2,140	2,726	2,304
Results in equity-accounted investments	(523)	(673)	218
Depreciation, depletion and amortization	12,028	13,307	13,965
Impairment of assets (reversal)	2,005	1,191	6,193
Allowance (reversals) for credit loss on trade and others receivables	102	708	1,131
Exploratory expenditures write-offs	87	279	1,281
(Gains)/losses on disposals/write-offs of assets	(419)	(1,498)	(293)
Foreign exchange, indexation and finance charges	7,306	9,602	7,962
Deferred income taxes, net	764	467	(913)
Revision and unwinding of discount on the provision for decommissioning costs	31	425	(836)
Reclassification of cumulative translation adjustment and other comprehensive income	-	59	1,457
Inventory write-down to net realizable value	420	66	343
Gain on remeasurement of investment retained with loss of control	-	(217)	-
Provision for the class action agreement	-	3,449	-
Decrease (Increase) in assets			
Trade and other receivables, net	(1,191)	(978)	(39)
Inventories	(1,994)	(336)	(518)
Judicial deposits	(2,044)	(1,671)	(986)
Escrow account - Class action agreement	(2,019)		
Other assets	453	(223)	(319)
Increase (Decrease) in liabilities			
Trade payables	804	(62)	(1,060)
Other taxes payable	2,261	2,952	1,047
Pension and medical benefits	(1,056)	(919)	(766)
Provisions for legal proceedings	1,419	316	691
Short-term benefits	569	(896)	668
Other liabilities	369	(332)	(695)
Income taxes paid	(2,573)	(799)	(372)
Net cash provided by operating activities	26,353	27,112	26,114
Cash flows from Investing activities			
Acquisition of PP&E and intangibles assets	(12,021)	(13,639)	(14,085)
Investments in investees	(44)	(75)	(125)
Proceeds from disposal of assets - Divestment	5,791	3,091	2,205
Divestment (Investment) in marketable securities	704	(861)	229
Dividends received	808	452	473
Net cash used in investing activities	(4,762)	(11,032)	(11,303)
Cash flows from Financing activities			
Investments by non-controlling interest	115	19	29
Proceeds from financing	10,950	27,075	18,897
Repayment of principal	(34,063)	(36,095)	(30,660)
Repayment of interest	(5,791)	(6,981)	(7,308)
Dividends paid to Shareholders of Petrobras	(625)		
Dividends paid to non-controlling interests	(179)	(167)	(72)
Proceeds from sale of interest without loss of control	-	1,511	-
Net cash used in financing activities	(29,593)	(14,638)	(19,114)
Effect of exchange rate changes on cash and cash equivalents	(618)	(128)	450
Net increase (decrease) in cash and cash equivalents	(8,620)	1,314	(3,853)
Cash and cash equivalents at the beginning of the year	22,519	21,205	25,058
Cash and cash equivalents at the end of the year	13,899	22,519	21,205

The notes form an integral part of these financial statements.

Petróleo Brasileiro S.A. – Petrobras

Consolidated Statement of Changes in Shareholders' Equity

December 31, 2018, 2017 and 2016

(Expressed in millions of US Dollars, unless otherwise indicated)



	Share capital (net of share issuance costs)		Accumulated other comprehensive income (deficit) and deemed cost					Profit Reserves							Total consolidated equity
	Share Capital	Share issuance costs	Capital reserve, Capital Transactions and Treasury shares	Cumulative translation adjustment	Cash flow hedge - highly probable future exports	Actuarial gains (losses) on defined benefit pension plans	Other comprehensive income (loss) and deemed cost	Legal	Statutory	Tax incentives	Profit retention	Retained earnings	Equity attributable to shareholders of Petrobras	Non-controlling interests	
	107,380	(279)	321	(71,220)	(20,288)	(7,362)	(1,293)	7,919	2,182	720	47,156	-	65,236	819	66,055
Balance at January 1, 2016		107,101	321				(100,163)				57,977	-	65,236	819	66,055
Realization of deemed cost	-	-	-	-	-	-	(4)	-	-	-	-	4	-	-	-
Capital transactions	-	-	307	-	-	-	-	-	-	-	-	-	307	(427)	(120)
Net income	-	-	-	-	-	-	-	-	-	-	-	(4,838)	(4,838)	489	(4,349)
Other comprehensive income	-	-	-	10,972	8,991	(4,238)	349	-	-	-	-	-	16,074	14	16,088
Appropriations:	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Transfer to reserves	-	-	-	-	-	-	-	-	-	-	(4,834)	4,834	-	-	-
Dividends	-	-	-	-	-	-	-	-	-	-	-	-	-	(124)	(124)
	107,380	(279)	628	(60,248)	(11,297)	(11,600)	(948)	7,919	2,182	720	42,322	-	76,779	771	77,550
Balance at December 31, 2016	-	107,101	628	-	-	-	(84,093)	-	-	-	53,143	-	76,779	771	77,550
Realization of deemed cost	-	-	-	-	-	-	(4)	-	-	-	-	4	-	-	-
Capital transactions	-	-	439	-	-	-	-	-	-	-	-	-	439	792	1,231
Net income	-	-	-	-	-	-	-	-	-	-	-	(91)	(91)	260	169
Other comprehensive income	-	-	-	(795)	1,724	1,585	161	-	-	-	-	-	2,675	31	2,706
Appropriations:	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Transfer to reserves	-	-	-	-	-	-	-	-	-	-	(87)	87	-	-	-
Dividends	-	-	-	-	-	-	-	-	-	-	-	-	-	(154)	(154)
	107,380	(279)	1,067	(61,043)	(9,573)	(10,015)	(791)	7,919	2,182	720	42,235	-	79,802	1,700	81,502
Balance at December 31, 2017		107,101	1,067				(81,422)				53,056	-	79,802	1,700	81,502
	107,380	(279)	1,067	(61,043)	(9,573)	(10,015)	(791)	7,919	2,182	720	42,235	0	79,802	1,700	81,502
Balance at December 31, 2017		107,101	1,067				(81,422)				53,056	0	79,802	1,700	81,502
Initial application of IFRS 9	-	-	-	-	-	-	(20)	-	-	-	-	(222)	(242)	(15)	(257)
Balance at January 1, 2018	107,380	(279)	1,067	(61,043)	(9,573)	(10,015)	(811)	7,919	2,182	720	42,235	(222)	79,560	1,685	81,245
Realization of deemed cost	-	-	-	-	-	-	(4)	-	-	-	-	4	-	-	-
Treasury shares	-	-	(2)	-	-	-	-	-	-	-	-	-	(2)	-	(2)
Capital transactions	-	-	2	-	-	-	-	-	-	-	-	-	2	115	117
Net income	-	-	-	-	-	-	-	-	-	-	-	7,173	7,173	241	7,414
Other comprehensive income (loss)	-	-	-	(6,273)	(3,719)	(3,209)	(138)	-	-	-	-	-	(13,339)	(176)	(13,515)
Appropriations:	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Transfer to reserves	-	-	-	-	-	-	-	338	270	203	4,294	(5,105)	-	-	-
Dividends	-	-	-	-	-	-	-	-	-	-	-	(1,850)	(1,850)	(234)	(2,084)
	107,380	(279)	1,067	(67,316)	(13,292)	(13,224)	(953)	8,257	2,452	923	46,529	-	71,544	1,631	73,175
Balance at December 31, 2018		107,101	1,067				(94,785)				58,161	-	71,544	1,631	73,175

The notes form an integral part of these financial statements.

1. The Company and its operations

Petróleo Brasileiro S.A. (Petrobras), hereinafter referred to as “Petrobras” or “Company,” is a partially state-owned enterprise, controlled by the Brazilian Federal Government, of indefinite duration, governed by the terms and conditions under the Brazilian Corporate Law (Law 6,404 of December 15, 1976), Law 13,303 of June 30, 2016 and its Bylaws.

Petrobras' shares are listed on the Brazilian stock exchange (B3) in the Level 2 Corporate Governance special listing segment and, therefore, the Company, its shareholders, its managers and fiscal council members are subject to provisions under its regulation (Level 2 Regulation - *Regulamento de Listagem do Nível 2 de Governança Corporativa da Brasil Bolsa Balcão* – B3). The provisions of the Level 2 Regulation, which are based on high standards of corporate governance, shall prevail over statutory provisions in the event of harm to the rights of public offers investors provided for in the Company's Bylaws, except when otherwise determined by other regulation.

The Company is dedicated to prospecting, drilling, refining, processing, trading and transporting crude oil from producing onshore and offshore oil fields and from shale or other rocks, as well as oil products, natural gas and other liquid hydrocarbons. In addition, Petrobras carries out energy related activities, such as research, development, production, transport, distribution and trading of all forms of energy, as well as other related or similar activities.

Petrobras may perform any of the activities related to its corporate purpose, directly, through its wholly-owned subsidiaries, controlled companies, alone or through joint ventures with third parties, in Brazil or abroad.

The economic activities linked to its business purpose shall be undertaken by the Company in free competition with other companies according to market conditions, in compliance with the other principles and guidelines of Laws no. 9,478/97 and 10,438/02 (oil & gas and electricity sector regulations, respectively). However, Petrobras may have its activities, provided they are in compliance with its corporate purpose, guided by the Brazilian Federal Government to contribute to the public interest that justified its creation, aiming to meet national energy policy objectives when:

I – established by law or regulation, as well as under agreements provisions with a public entity that is competent to establish such obligation, abiding with the broad publicly stated of such instruments; and

II – the cost and revenues thereof have been broken down and disseminated in a transparent manner.

In this case, the Company's Finance Committee and Minority Shareholders Committee, exercising their advisory role to the Board of Directors, shall assess and measure the difference between such market conditions and the operating result or economic return of the transaction, based on technical and economic criteria for investment valuation and specific operating costs and results under the Company's operations. In this case, for every financial year, the Brazilian Federal Government shall compensate the Company.

2. Basis of preparation

2.1. Statement of compliance and authorization of financial statements

The consolidated financial statements have been prepared and are presented in accordance with the International Financial Reporting Standards (IFRS) as issued by the International Accounting Standards Board (IASB).

The consolidated financial statements have been prepared under the historical cost convention, except when otherwise indicated. The summary of significant accounting policies used in the preparation of these financial statements is set out in note 4.

The preparation of the financial statements requires the use of estimates and assumptions which may affect the application of accounting policies and reported amounts of assets, liabilities revenues and expenses. Although our management periodically reviews these assumptions and judgments, the actual results could differ from these estimates. For further information on accounting estimates, see note 5.

The annual consolidated financial statements were approved and authorized for issue by the Company's Board of Directors in a meeting held on February 27, 2019.

2.2. Functional and presentation currency

The functional currency of Petrobras and all of its Brazilian subsidiaries is the Brazilian Real. The functional currency of most of the Petrobras entities that operate outside Brazil is the U.S. dollar.

Petrobras has selected the U.S. dollar as its presentation currency to facilitate a more direct comparison to other oil and gas companies. The financial statements have been translated from the functional currency (Brazilian real) into the presentation currency (U.S. dollar). All assets and liabilities are translated into U.S. dollars at the closing exchange rate at the date of the financial statements; income and expenses, as well as cash flows are translated into U.S. dollars using the average exchange rates prevailing during the period. All exchange differences arising from the translation of the consolidated financial statements from the functional currency into the presentation currency are recognized as cumulative translation adjustments (CTA) within accumulated other comprehensive income in the consolidated statements of changes in shareholders' equity.

Brazilian Real x U.S. Dollar	Quarterly average exchange rate	Period-end exchange rate
Dec 2018	3.81	3.87
Sep 2018	3.95	4.00
Jun 2018	3.61	3.86
Mar 2018	3.24	3.32
Dec 2017	3.25	3.31
Sep 2017	3.16	3.17
Jun 2017	3.22	3.31
Mar 2017	3.15	3.17
Dec 2016	3.29	3.26
Sep 2016	3.25	3.25
Jun 2016	3.51	3.21
Mar 2016	3.91	3.56

2.3. Changes in accounting policies

IFRS 9, IFRS 15 and IFRIC 22 have been effective since January 1, 2018. Accordingly, the Company changed, in 2018, accounting policies related to financial instruments, revenue recognition and transactions that include the receipt or payment of advance consideration in a foreign currency.

2.3.1. IFRS 9 - Financial instruments

IFRS 9 establishes, among others things, new requirements for classification and measurement of financial assets, measurement and recognition of impairment of financial assets, changes in the terms of financial assets and liabilities, hedge accounting and disclosure.

As permitted by IFRS 9, the company did not restate prior periods with respect to classification and measurement (including impairment and modification of financial assets and liabilities) changes. Differences in the carrying amounts of financial assets and financial liabilities resulting from the adoption of IFRS 9 were recognized at January 1, 2018 in retained earnings within equity.

The new hedge accounting requirements were applied prospectively. The cash flow hedge relationships of highly probable future exports designated under IAS 39 were regarded as continuing hedging relationships under IFRS 9, since they also qualify for hedge accounting in accordance with the new standard.

Information on the consolidated impacts at January 1, 2018 is presented below:

Item of Consolidated Statement of Financial Position	Balance at 12.31.2017	Adjustment by initial application of IFRS 9	Note	Balance at 01.01.2018
Current assets				
Trade and other receivables	4,972	(103)	2.3.1 b	4,869
Non-current assets				
Trade and other receivables	5,175	(19)	2.3.1 b	5,156
Deferred income taxes	3,438	122		3,560
Others	3,084	(23)	2.3.1 b	3,061
Current liabilities				
Finance debt	7,001	1	2.3.1 a	7,002
Others	2,508	(7)	2.3.1 a	2,501
Non-current liabilities				
Finance debt	102,045	241	2.3.1 a	102,286
Equity				
Accumulated other comprehensive (deficit)	(81,422)	(20)	2.3.1 c	(81,442)
Retained earnings		(222)		(222)
Non-controlling interests	1,700	(15)		1,685

a) Modification of contractual cash flows

When the contractual cash flows of a financial liability measured at amortized cost are renegotiated or modified and this change is not substantial, its gross carrying amount will reflect the discounted present value of its cash flows under the new terms using the original effective interest rate. The difference between the book value immediately prior to such modification and the new gross carrying amount is recognized as gain or loss in the statement of income.

b) Impairment of financial assets

IFRS 9 replaced the incurred loss model stated in IAS 39 by the expected credit loss model for the recognition of impairment on financial assets measured at amortized cost, including lease receivables, and on financial assets measured at fair value through other comprehensive income.

c) Classification and measurement of financial assets

This new standard established 3 categories in which financial assets are generally classified: Amortized cost, Fair value through other comprehensive income and Fair value through profit or loss. The classification of a financial asset is based on the business model in which assets are managed and on their contractual cash flow characteristics.

The following table presents comparative information of marketable securities between the former classification and measurement in accordance with IAS 39 and the current requirements following the effectiveness of IFRS 9:

Classification according to IAS 39	Carrying amount according to IAS 39 at December 31, 2017			Classification according to IFRS 9	Carrying amount according to IFRS 9 at January 1, 2018		
	In Brazil	Abroad	Total		In Brazil	Abroad	Total

Trading securities	1,067	–	1,067	Fair value through profit or loss	1,276	–	1,276
Available-for-sale securities	153	609	762	Fair value through other comprehensive income	13	609	622
Held-to-maturity securities	120	–	120	Amortised cost	51	–	51
	1,340	609	1,949		1,340	609	1,949

Information about accounting policies, key estimates and judgments related to financial instruments is presented in notes 4 and 5.

2.3.2. Revenue from Contracts with Customers

For the purposes of the transition requirements, the Company applied IFRS 15 retrospectively with the cumulative effect of its application recognized at its effective date within retained earnings. However, the changes arising from the adoption of IFRS 15 only affected the way certain revenues from contracts with customers are disclosed within the statement of income and did not affect net income. Accordingly, there were no impacts within retained earnings (equity).

The following table presents the impacts of adoption of this standard in 2018:

Initial application of IFRS 15					
	2018	Agent	Breakage	Others	Amount without effects of initial application of IFRS 15 - 2018
Sales revenues	95,584	2,560	(273)	(24)	97,847
Cost of sales	(61,517)	(2,560)	20	–	(64,057)
Gross profit	34,067	–	(253)	(24)	33,790
Income and expenses	(16,635)	–	253	24	(16,358)
Income before finance income (expense), results in equity-accounted investments and income taxes	17,432	–	–	–	17,432

The Company acting as an agent

In accordance with accounting policies at December 31, 2017, the Company was regarded as the principal in the sale of biodiesel. Therefore, the revenues from these sales, cost of the products sold and sales expenses were presented separately in the statement of income. However, under the new standard's requirements, the Company acts as an agent because it does not obtain control of goods or services provided by another party before it is transferred to the customer. From January 1, 2018, revenues from these sales have been presented in the statement of income net of their cost of sales and sales expenses.

Non-exercised right income (breakage)

In accordance with accounting policies at December 31, 2017, the Company regarded the income from rights not exercised by customers in certain take or pay and ship or pay contracts as penalties revenue and presented it as other income and expenses in the statement of income. However, according to the new standard's requirements, the Company has accounted for and presented its income from rights not exercised by customers as sales revenues in the statement of income, as from January 1, 2018.

Information about accounting policies related to revenue from contract with customers is presented in note 4.

2.3.3. IFRIC 22 Foreign Currency Transactions and Advance Consideration

Based on the transition provisions of IFRIC 22, the Company has applied the new requirements prospectively from January 1, 2018. IFRIC 22 clarifies that the date of the transaction for the purpose of determining the exchange rate to use on initial recognition of the related asset, expense or income (or part of it) is the date on which an entity initially recognizes the non-monetary asset or non-monetary liability arising from the payment or receipt of advance consideration.

3. The “Lava Jato (Car Wash) Operation” and its effects on the Company

In 2009, the Brazilian Federal Police (*Polícia Federal*) began an investigation known as “Lava Jato” (Car Wash) aimed at criminal organizations engaged in money laundering in several Brazilian states. Beginning in 2014, the Brazilian Federal Prosecutor’s Office focused part of its investigation on irregularities involving Petrobras’s contractors and suppliers and uncovered a broad payment scheme that involved a wide range of participants, including former Petrobras personnel. Based on the information available to Petrobras, the payment scheme involved a group of companies that, between 2004 and April 2012, colluded to obtain contracts with Petrobras, overcharge the Company under those contracts and use the overpayment received under the contracts to fund improper payments to political parties, elected officials or other public officials, individual contractors and suppliers, former Petrobras personnel and other individuals involved in the scheme. Petrobras refers to this scheme as the “payment scheme” and to the companies involved in the scheme as the “cartel members”. The Company did not make any improper payment.

In addition to the payment scheme, the investigations identified specific instances of other contractors and suppliers that overcharged Petrobras and allegedly used the overpayment received from their contracts with the Company to fund improper payments, unrelated to the payment scheme, to certain former Petrobras personnel. Those contractors and suppliers are not cartel members and acted individually. Petrobras refers to these specific cases as the “unrelated payments.”

The amounts paid by Petrobras related to contracts with contractors and suppliers involved in the payment scheme were included in historical costs of its property, plant and equipment. However, the Company believes that, under International Accounting Standard IAS 16 – Property, Plant and Equipment, the portion of the payments made to these companies and used by them to make improper payments, which represents additional charges incurred as a result of the payments scheme, should not have been capitalized. Thus, in the third quarter of 2014, the Company wrote off US\$2,527 of capitalized costs representing amounts that Petrobras overpaid for the acquisition of property, plant and equipment in prior years.

3.1. Approach adopted by the Company to adjust its property, plant and equipment for overpayments

As it was impracticable to identify the periods and amounts of overpayments incurred, the Company developed a methodology to estimate the adjustment incurred in property, plant and equipment in the third quarter of 2014 using the five steps described below:

- (1) Identify contractual counterparties: the Company listed all the companies identified as cartel members, and using that information the Company identified all of the contractors and suppliers that were either so identified or were part of consortia that included entities so identified.
- (2) Identify the period: the Company concluded from testimony that the payment scheme was operating from 2004 through April 2012.
- (3) Identify contracts: the Company identified all contracts entered into with the counterparties identified in step 1 during the period identified in step 2, which included supplemental contracts when the original contract was entered into between 2004 and April 2012. It identified all of the property, plant and equipment related to those contracts.
- (4) Identify payments: the Company calculated the total contract values under the contracts mentioned in step 3.
- (5) Apply a fixed percentage to the amount determined in Step 4: the Company estimated the aggregate overpayment by applying a percentage indicated in depositions (3%) to the total amounts for identified contracts.

For overpayments attributable to non-cartel members, unrelated to the payment scheme, the Company included in the write-off for incorrectly capitalized overpayments the specific amounts of improper payments or percentages of contract values, as described in the testimony, which were used by those suppliers and contractors to fund improper payments.

The Company has continuously monitored the Lava Jato investigation. In preparing the financial statements for the year ended December 31, 2018, the Company has not identified any additional information that would impact the adopted calculation methodology and consequently require additional write-offs.

3.2. The Company's response to the facts uncovered in the investigation

The Company has been closely monitoring the investigations and cooperating fully with the Brazilian Federal Police (*Polícia Federal*), the Brazilian Public Prosecutor's Office (*Ministério Público Federal*), the Federal Auditor's Office (*Tribunal de Contas da União – TCU*) and the General Federal Inspector's Office (*Controladoria Geral da União*) in the investigation of all crimes and irregularities. We have responded to numerous requests for documents and information from these authorities.

We have been formally recognized as a victim of the crimes identified under the Lava Jato investigation by the Brazilian Federal Prosecutor's Office, the lower court hearing the case and also by the Brazilian Supreme Court. As a result, we have entered into 54 criminal proceedings as an assistant to the prosecutor. In addition, we have entered into five criminal proceedings as an interested party. We have also renewed our commitment to continue cooperating with authorities to clarify the issues and report them regularly to our investors and to the public in general.

We do not tolerate corrupt practices and illegal acts perpetuated by any of our employees. Accordingly, since 2015, the Company continued to implement several measures as a response to the facts uncovered in the "Lava Jato" investigation.

In addition, the Company has been taking the necessary procedural steps to seek compensation for damages suffered from the improper payments scheme, including those related to its reputation.

Accordingly, the Company joined 17 public civil suits addressing acts of administrative misconduct filed by the Brazilian Public Prosecutor's Office and the Brazilian Federal Government, including demands for compensation for reputation damages.

To the extent that any of the proceedings resulting from the Lava Jato investigation involve leniency agreements with cartel members or plea agreements with individuals pursuant to which they agree to return funds, the Company may be entitled to receive a portion of such funds. Nevertheless, the Company is unable to reliably estimate further recoverable amounts at this moment. Any recoverable amount will be recognized as income when received or when their economic benefits become virtually certain.

In addition to US\$ 455 recovered from Lava Jato investigation through December 31, 2017 (US\$ 252 in 2017, US\$ 131 in 2016 and US\$ 72 in 2015), new leniency and plea agreements in 2018 entitled the Company to receive funds with respect to compensation for damages in the amount of US\$ 457. This amount was accounted for as other income and expenses. Thus, the total amount recovered from Lava Jato investigation through December 31, 2018 was US\$ 912.

On November 28, 2018, Petrobras' Board of Directors approved the termination of the Special Committee, created in December 2014 to serve as an independent reporting line to the Board with respect to investigations carried out by the firms Trench, Rossi e Watanabe Advogados and Gibson, Dunn & Crutcher LLP. The Board also approved the termination the activities carried out by such independent firms. Since then, relevant departments of the Company have undertaken these duties.

3.3. Investigations involving the Company

3.3.1. U.S. Securities and Exchange Commission and Department of Justice inquiries

Petrobras is not a target of the Lava Jato investigation and is formally recognized as a victim of the improper payments scheme by the Brazilian Authorities.

On November 21, 2014, Petrobras received a subpoena from the U.S. Securities and Exchange Commission (SEC) requesting certain documents and information about the Company with respect to, among other things, the Lava Jato investigation and any allegations regarding a violation of the U.S. Foreign Corrupt Practices Act. The U.S. Department of Justice (DoJ) conducted a similar inquiry and the Company cooperated with both investigations working with independent Brazilian and U.S. law firms that were hired to conduct an independent internal investigation.

On September 27, 2018, the Company settled the open matters with the DoJ and the SEC investigation which encompassed the company's internal controls, books and records, and financial statements from 2003 to 2012.

These agreements fully resolve the inquiries carried out by these authorities. Following this agreement, the Company paid US\$ 85 to the DOJ and will pay the same amount to the SEC in 2019. Additionally, the agreements also credit a remittance of US\$ 683 million to the Brazilian authorities which Petrobras deposited on January 30, 2019 into a special fund for investments in Brazil, in accordance with the Commitment Assumption Agreement executed with the Brazilian Federal Prosecutor's Office. (*Ministério Público Federal-MPF*). The Company fully recognized the effects of these settlements as other income and expenses in the third quarter of 2018.

This resolution meets the best interest of the Company and its shareholders, and eliminates uncertainties, risks, burdens and costs of potential litigations in the United States.

3.3.2. Order of civil inquiry - Brazilian Public Prosecutor's Office

On December 15, 2015, the State of São Paulo Public Prosecutor's Office issued the Order of Civil Inquiry 01/2015, establishing a civil proceeding to investigate the existence of potential damages caused by Petrobras to investors in the Brazilian stock market. The Brazilian Attorney General's Office (*Procuradoria Geral da República*) assessed this civil proceeding and determined that the São Paulo Public Prosecutor's Office has no authority over this matter, which must be presided over by the Brazilian Public Prosecutor's Office. The Company has provided all relevant information required by the authorities.

3.4. Legal proceedings involving the Company

Note 31 provides information about class actions and other material legal proceedings.

4. Summary of significant accounting policies

4.1. Basis of consolidation

The consolidated financial statements include the financial information of Petrobras and the entities it controls (subsidiaries), joint operations and consolidated structured entities.

Control is achieved when Petrobras: i) has power over the investee; ii) is exposed, or has rights, to variable returns from involvement with the investee; and iii) has the ability to use its power to affect its returns.

Subsidiaries are consolidated from the date on which control is obtained until the date that such control no longer exists, by using accounting policies consistent with those adopted by Petrobras. Note 11 sets out the consolidated entities and other direct investees.

Investments structured through a separate vehicle are conceived so that the voting rights, or similar rights, are not the dominant factor to determine who controls the entity. At December 31, 2018, Petrobras controls and consolidates the following structured entities: Charter Development LLC - CDC (U.S.A., E&P); Companhia de Desenvolvimento e Modernização de Plantas Industriais - CDMPI (Brazil, RT&M) and, Fundo de Investimento em Direitos Creditórios Não-padronizados do Sistema Petrobras (Brazil, Corporate).

The consolidation procedures involve combining assets, liabilities, income and expenses, according to their function and eliminating all intragroup balances and transactions, including unrealized profits arising from intragroup transactions.

4.2. Reportable segments

The information related to the Company's operating segments is prepared based on available financial information directly attributable to each segment, or items that can be allocated to each segment on a reasonable basis. This information is presented by business activity, as used by the Company's Board of Executive Officers (Chief Operating Decision Maker – CODM) on the decision-making process of resource allocation and performance evaluation.

The measurement of segment results includes transactions carried out with third parties, including associates and joint ventures, as well as transactions between operating segments. Transfers between operating segments are recognized at internal transfer prices derived from methodologies that take into account market parameters and are eliminated only to provide reconciliations to the consolidated financial statements.

The Company's operating segments comprises the following business areas:

Exploration and Production (E&P): this segment covers the activities of exploration, development and production of crude oil, NGL (natural gas liquid) and natural gas in Brazil and abroad, for the primary purpose of supplying its domestic refineries. The E&P segment also operates through partnerships with other companies and includes holding interest in foreign entities operating in this segment.

As an integrated energy company with a focus on oil and gas, intersegment sales revenue refers mainly to oil transfers to the Refining, Transportation and Marketing segment, aiming to supply the Company's refineries and meet the domestic demand for oil products. These transactions are measured by internal transfer prices based on international oil prices and their respective exchange rate impacts, taking into account the specific characteristics of the transferred oil stream.

In addition, the E&P segment revenues include transfers of natural gas to the natural gas processing plants within Gas and Power segment. These transactions are measured at internal transfer prices based on the international prices of this commodity.

Revenue from sales to third parties mainly reflects the oil and natural gas operations carried out by subsidiaries abroad, as well as services rendered under exploration and production operations.

Refining, Transportation and Marketing (RT&M): this segment covers the refining, logistics, transport and trading of crude oil and oil products activities in Brazil and abroad, as well as exports of ethanol. This segment also includes the petrochemical operations, such as extraction and processing of shale and holding interests in petrochemical companies in Brazil.

This segment carries out the acquisition of crude oil from the E&P segment, imports oil for refinery slate, and acquires oil products in international markets taking advantage of the existing price differentials between the cost of processing domestic oil and that of importing oil products.

Intersegment revenues primarily reflect the sale of derivatives for the distribution segment at market prices and the operations for the Gas and Power and E&P segments at internal transfer price.

Revenues from sales to third parties primarily reflect the trading of oil products in Brazil and the export and trade of oil and oil products by foreign subsidiaries.

Gas and Power: this segment covers the activities of logistic and trading of natural gas and electricity, transportation and trading of LNG (liquefied natural gas), generation and electricity by means of thermoelectric power plants, as well as holding interests in transporters and distributors of natural gas in Brazil and abroad. It also includes fertilizer operations.

Intersegment revenues primarily reflect the transfers of natural gas processed, liquefied petroleum gas (LPG) and NGL to RT&M. These transactions are measured at internal transfer prices.

Revenues from sales to third parties primarily reflect natural gas processed to distributors, as well as generation and trading of electricity.

Biofuels: this segment covers the activities of production of biodiesel and its co-products, as well as the ethanol-related activities through interest in entities producing and trading ethanol, sugar and surplus electric power generated from sugarcane bagasse.

Distribution: this segment covers the activities of Petrobras Distribuidora S.A, which sells oil products, including gasoline and diesel, ethanol and vehicle natural gas in Brazil. This segment also includes distribution of oil products operations abroad (South America).

Revenues from sales to third parties primarily reflect sales of oil products in Brazil.

The **corporate segment** comprises the items that cannot be attributed to the other segments, notably those related to corporate financial management, corporate overhead and other expenses, including actuarial expenses related to the pension and medical benefits for retired employees and their dependents.

4.3. Financial instruments

A financial instrument is a contract that gives rise to a financial asset of one entity and a financial liability or equity instrument of another entity.

4.3.1. Financial asset

a) Initial recognition and measurement

A financial asset is initially recognized when the entity becomes party to the contractual provisions of the instrument. Except for the trade receivables that do not contain a significant financing component, financial assets are initially measured at their fair value and, if not classified as measured at fair value through profit or loss, transaction costs that are directly attributable to the acquisition or issue of the financial asset add or reduce the amount of initial recognition.

b) Classification and subsequent measurement

Based on the business model in which assets are managed and on their contractual cash flow characteristics, financial assets are generally classified as follows:

- Amortized cost: when the contractual terms of the financial asset give rise on specified dates to cash flows that are solely payments of principal and interest on the principal amount outstanding, and the business model's objective is to hold financial assets in order to collect contractual cash flows;
- Fair value through other comprehensive income: i) when the contractual terms of a debt instrument give rise on specified dates to cash flows that are solely payments of principal and interest on the principal amount outstanding and the business model's objective is to collect contractual cash flows and sell financial assets; and ii) equity instruments not held for trading purposes for which the Company has made an irrevocable election in their initial recognition to present changes in fair value in other comprehensive income rather than within profit or loss; and
- Fair value through profit or loss: if the financial asset does not meet the criteria for the two aforementioned categories. Derivative financial instruments are generally classified in this category.

c) Impairment of financial assets

An allowance for expected credit losses is recognized on a financial asset that is measured at amortized cost, including lease receivables, and on financial assets measured at fair value through other comprehensive income.

The Company measures expected credit losses for short-term trade receivables using a provision matrix based on historical observed default rates adjusted by current and forward-looking information when applicable and available without undue cost or effort.

The Company measures the allowance for expected credit losses of other financial assets based on their 12-month expected credit losses unless their credit risk has increased significantly since their initial recognition, in which case the allowance for expected credit losses is based on their lifetime expected credit losses.

Significant increase in credit risk since initial recognition

When determining whether there has been a significant increase in credit risk, the Company compares the risk of default on initial recognition and at the reporting date by using certain indicators, such as the actual or expected change in the financial instrument's external credit rating and information on payment delays.

Regardless of the assessment of significant increase in credit risk, a delinquency period of 30 days past due triggers the definition of significant increase in credit risk on a financial asset, unless otherwise demonstrated by reasonable and supportable information.

The Company assumes that the credit risk on a financial instrument has not increased significantly since initial recognition if the financial instrument is considered to have low credit risk at the reporting date. Low credit risk is determined based on external credit ratings or internal methodologies.

Definition of default

The Company assumes that a default occurs whenever the counterparty does not comply with the legal obligation to pay its debts when due or, depending on the financial instrument, when it is at least 90 days past due.

Measurement of expected credit losses

The measurement of credit loss comprises the difference between all contractual cash flows that are due to the Company and all the cash flows that the Company expects to receive, discounted at the original effective interest rate weighted by the probability of default.

4.3.2. Financial liabilities**a) Initial recognition and measurement**

A financial liability is recognized when the entity becomes party to the contractual provisions of the instrument and initially measured at fair value. If it is not classified as fair value through profit or loss, transaction costs that are directly attributable to the acquisition or issue of the financial liability add or reduce the amount of its initial measurement.

b) Classification and subsequent measurement

Financial liabilities are classified as subsequently measured at amortized cost, except for certain financial liabilities, including those classified as fair value through profit or loss.

Loans and finance debt are measured at amortized cost using the effective interest method.

When the contractual cash flows of a financial liability measured at amortized cost are renegotiated or modified and this change is not substantial, its gross carrying amount will reflect the discounted present value of its cash flows under the new terms using the original effective interest rate. The difference between the book value immediately prior to such modification and the new gross carrying amount is recognized as gain or loss in statement of income.

Derivative financial instruments are subsequently measured at fair value through profit or loss, except when designated as hedging instruments.

4.3.3. Cash flow hedge accounting

At inception of the hedge relationship, the Company documents its objective and strategy, including identification of the hedging instrument, the hedged item, the nature of the hedged risk and evaluation of hedge effectiveness requirements. The hedge relationship meets all of the hedge effectiveness requirements when:

- An economic relationship exists between the hedged item and the hedging instrument;
- The effect of credit risk does not dominate the value changes that result from the economic relationship; and
- The hedge ratio is the same as that resulting from the quantity of the hedged item that the Company actually hedges and the quantity of the hedging instrument that the Company uses to hedge that quantity of hedged item.

The Company applies cash flow hedge accounting for certain transactions. Hedging relationships qualify for cash flow hedges when they involve the hedging of exposure to variability in cash flows that is attributable to a particular risk associated with a recognized asset or liability or a highly probable forecasted transaction that may impact the statement of income.

Gains or losses relating to the effective portion of such hedges are recognized in other comprehensive income and reclassified to the statement of income in finance income (expense) in the periods when the hedged item affects the statement of income. The gains or losses relating to the ineffective portion are immediately recognized in finance income (expense).

When the hedging instrument expires or is settled in advance or no longer meets the criteria for hedge accounting, the cumulative gain or loss on the hedging instrument that has been recognized in other comprehensive income is recorded separately in equity until the forecast transaction occurs. When the forecast transaction is no longer expected to occur, the cumulative gain or loss on the hedging instrument that has been recognized in other comprehensive income is immediately reclassified from equity to the statement of income.

In addition, when a financial instrument designated as a hedging instrument expires or is settled, the Company may replace it with another financial instrument in a manner such that the hedge relationship continues to occur. Likewise, whenever a hedged transaction effectively occurs, its financial instrument previously designated as a hedging instrument may be designated for a new hedge relationship.

4.4. Inventories

Inventories are determined by the weighted average cost method and mainly comprise crude oil, intermediate products and oil products, as well as natural gas, LNG, fertilizers and biofuels, adjusted to the net realizable value when it is lower than its carrying amount.

Net realizable value is the estimated selling price of inventory in the ordinary course of business, less estimated cost of completion and estimated expenses to complete its sale.

Crude oil and LNG inventories can be traded or used for production of oil products and/or electricity generation, respectively.

Intermediate products are those product streams that have been through at least one of the refining processes, but still need further treatment, processing or converting to be available for sale.

Biofuels mainly include ethanol and biodiesel inventories.

Materials, supplies and others mainly comprise production supplies and operating materials used in the operations of the Company, stated at the average purchase cost, not exceeding replacement cost.

4.5. Investments in other companies

An associate is an entity over which the Company has significant influence. Significant influence is the power to participate in the financial and operating policy decisions of the investee but not the ability to exercise control or joint control over those policies. The definition of control is set out in note 4.1.

A joint arrangement is an arrangement over which two or more parties have joint control (pursuant to contractual provisions). A joint arrangement is classified either as a joint operation or as a joint venture depending on the rights and obligations of the parties to the arrangement.

In a joint operation, the parties have rights to the assets and obligations for the liabilities related to the arrangement, while in a joint venture the parties have rights to the net assets of the arrangement. Some of the Company's activities in the E&P segment are conducted through joint operations.

Profit or loss, assets and liabilities related to joint ventures and associates are accounted for by the equity method. In a joint operation the Company recognizes the amount of its assets, liabilities and related income and expenses.

Accounting policies of joint ventures and associates have been adjusted, where necessary, to ensure consistency with the policies adopted by Petrobras. Distributions received from an investee reduce the carrying amount of the investment.

4.6. Business combinations and goodwill

A business combination is a transaction in which the acquirer obtains control of another business, regardless its legal form. Acquisitions of businesses are accounted for using the acquisition method when control is obtained. Combinations of entities under common control are accounted for at cost. The acquisition method requires that the identifiable assets acquired and the liabilities assumed be measured at the acquisition-date fair value, with limited exceptions.

Goodwill is measured as the excess of the aggregate amount of: (i) the consideration transferred; (ii) the amount of any non-controlling interest in the acquiree; and (iii) in a business combination achieved in stages, the fair value of the acquirer's previously held equity interest in the acquiree at the acquisition-date; over the net of the amounts of the identifiable assets acquired and the liabilities assumed. When this aggregate amount is lower than the net of the amounts of the identifiable assets acquired and the liabilities assumed, a gain on a bargain purchase is recognized in the statement of income.

Changes in ownership interest in subsidiaries that do not result in loss of control of the subsidiary are equity transactions. Any excess of the amounts paid/received, including directly attributable costs, over the carrying value of the ownership interest acquired/disposed of is recognized in shareholders' equity as changes in interest in subsidiaries.

4.7. Oil and Gas exploration and development expenditures

The costs incurred in connection with the exploration, appraisal and development of crude oil and natural gas production are accounted for using the successful efforts method of accounting, as set out below:

- Geological and geophysical costs related to exploration and appraisal activities incurred until economic and technical feasibility can be demonstrated are expensed.
- Amounts paid for obtaining concessions for exploration of crude oil and natural gas (capitalized acquisition costs) are initially capitalized as intangible assets and are transferred to property, plant and equipment once the technical and commercial feasibility can be demonstrated.
- Costs directly attributable to exploratory wells, including their equipment and installations, pending determination of proved reserves are capitalized within property, plant and equipment. In some cases, exploratory wells have discovered oil and gas reserves, but at the moment the drilling is completed they are not yet able to be classified as proved. In such cases, the expenses continue to be capitalized if the well has found a sufficient quantity of reserves to justify its completion as a producing well and progress on assessing the reserves and the economic and operating viability of the project is under way. An internal commission of technical executives of the Company reviews these conditions monthly for each well, by analysis of geoscience and engineering data, existing economic conditions, operating methods and government regulations. For additional information on proved reserves estimates, see note 5.1.

- Costs related to exploratory wells drilled in areas of unproved reserves are charged to expense when determined to be dry or uneconomic by the aforementioned internal commission.
- Costs related to the construction, installation and completion of infrastructure facilities, such as drilling of development wells, construction of platforms and natural gas processing units, construction of equipment and facilities for the extraction, handling, storing, processing or treating crude oil and natural gas, pipelines, storage facilities, waste disposal facilities and other related costs incurred in connection with the development of proved reserve areas are capitalized within property, plant and equipment.

4.8. Property, plant and equipment

Property, plant and equipment are measured at the cost to acquire or construct, including all costs necessary to bring the asset to working condition for its intended use and the estimated cost of dismantling and removing the asset and restoring the site, reduced by accumulated depreciation and impairment losses.

A condition for continuing to operate certain items of property, plant and equipment, such as industrial plants, offshore plants and vessels is the performance of regular major inspections and maintenance. Those expenditures are capitalized if a maintenance campaign is expected to occur, at least, 12 months later. Otherwise, they are expensed when incurred. The capitalized costs are depreciated over the period through the next major maintenance date.

Spare parts are capitalized when they are expected to be used during more than one period and can only be used in connection with an item of property, plant and equipment. These are depreciated over the useful life of the item of property, plant and equipment to which they relate.

Borrowing costs directly attributable to the acquisition or construction of qualifying assets are capitalized as part of the costs of these assets. General borrowing costs are capitalized based on the Company's weighted average cost of borrowings outstanding applied over the balance of assets under construction. In general, the Company suspends capitalization of borrowing to the extent investments in a qualifying asset hibernates during a period greater than one year or whenever the asset is prepared for its intended use.

Assets directly associated to oil and gas production of a contract area without useful life lower than the estimated length of reserves depletion, such as signature bonuses, are depreciated or amortized based on the unit-of-production method.

The unit-of-production method of depreciation (amortization) is computed based on a unit of production basis (monthly production) over the proved developed oil and gas reserves, except for signature bonuses for which unit of production method takes into account the monthly production over the total proved oil and gas reserves on a field-by-field basis.

Assets related to oil and gas production with useful lives shorter than the life of the field; floating platforms and other assets unrelated to oil and gas production are depreciated on a straight-line basis over their useful lives, which are reviewed annually. Note 12.2 provides further information on the estimated useful life by class of assets. Lands are not depreciated.

4.9. Intangible assets

Intangible assets are measured at the acquisition cost, less accumulated amortization and impairment losses and comprise rights and concessions, including the signature bonus paid for concessions and production sharing agreements for exploration and production of oil and natural gas (capitalized acquisition costs), public service concessions, trademarks, patents, software and goodwill.

Internally-generated intangible assets are not capitalized and are expensed as incurred, except for development costs that meet the recognition criteria related to the completion and use of assets, probable future economic benefits, and others.

Signature bonuses paid for obtaining concessions for exploration of crude oil and natural gas are initially capitalized within intangible assets and are transferred to property, plant and equipment when the technical and commercial feasibility can be demonstrated. They are not amortized before their transference to property, plant and equipment. Intangible assets with a finite useful life, other than amounts paid for obtaining concessions for exploration of oil and natural gas of producing properties, are amortized over the useful life of the asset on a straight-line basis. In the event of a signature bonus encompassing an area in which exploration activities occur in different locations, a portion of the signature bonus is transferred to property, plant and equipment whenever the technical and commercial feasibility can be demonstrated for a specific location, based on the ratio between the oil in place at this location and total reservoir volume of the area.

Intangible assets with an indefinite useful life are not amortized but are tested annually for impairment. Their useful lives are reviewed annually.

4.10. Impairment of property, plant and equipment and intangible assets

Property, plant and equipment and intangible assets with definitive lives are tested for impairment when there is an indication that the carrying amount may not be recoverable. Assets are assessed for impairment at the smallest identifiable group that generates largely independent cash inflows from other assets or groups of assets (the cash-generating unit - CGU). Note 5.3 presents detailed information about the Company's CGUs.

Assets related to development and production of oil and gas assets (fields or group of fields) that have indefinite useful lives, such as goodwill, are tested for impairment annually, irrespective of whether there is any indication of impairment.

The impairment test is performed through the comparison of the carrying amount of an individual asset or a cash-generating unit (CGU) with its recoverable amount. Whenever the recoverable amount is less than the carrying amount, an impairment loss is recognized to reduce the carrying amount to the recoverable amount. The recoverable amount of an asset or a cash-generating unit is the higher of its fair value less costs of disposal and its value in use. Considering the existing synergies between the Company's assets and businesses, as well as the expectation of the use of its assets for their remaining useful lives, value in use is generally used by the Company for impairment testing purposes. When specifically indicated, the Company assesses differences between its assumptions and assumptions that would be used by market participants in the determination of the fair value of an asset or CGU.

Value in use is estimated based on the present value of the risk-adjusted (for specific risks) future cash flows expected to arise from the continuing use of an asset or cash-generating unit, discounted at a pre-tax discount rate. This rate is obtained from the Company's post-tax weighted average cost of capital (WACC). Cash flow projections are mainly based on the following assumptions: foreign exchange rates and prices based on the Company's most recent business and management plan and strategic plan; production curves associated with existing projects in the Company's portfolio, operating costs reflecting current market conditions, and investments required for carrying out the projects.

Reversal of previously recognized impairment losses is permitted for assets other than goodwill.

4.11. Impairment of associates and joint ventures (equity-accounted investments)

The Company assesses its investments in associates and joint ventures (equity-accounted investments) for impairment whenever there is an indication that their carrying amounts may not be recoverable.

When performing impairment testing of an equity-accounted investment, goodwill, if it exists, is also considered part of the carrying amount to be compared to the recoverable amount.

Except when specifically indicated, value in use is generally used by the Company for impairment testing purposes in proportion to the Company's interests in the present value of future cash flow projections via dividends and other distributions.

Reversals of previously recognized impairment losses are permitted.

4.12. Leases

Leases that transfer substantially all the risks and rewards incidental to ownership of the leased item are recognized as finance leases.

For finance leases, when the Company is the lessee, assets and liabilities are recognized at the lower of the fair value of the underlying asset or the present value of the minimum lease payments, both determined at the inception of the lease.

Capitalized lease assets are depreciated on a systematic basis consistent with the depreciation policy the Company adopts for property, plant and equipment that are owned. Where there is no reasonable certainty that the Company will obtain ownership by the end of the lease term, capitalized lease assets are depreciated over the shorter of the lease term or the estimated useful life of the asset.

When the Company is the lessor, a receivable is recognized at the amount of the net investment in the lease.

If a lease does not transfer substantially all the risks and rewards incidental to ownership of the leased item, it is classified as an operating lease. Operating leases are recognized as expenses over the period of the lease.

Contingent rents are recognized as expenses when incurred.

As discussed in note 6.1, the IFRS 16 provisions have governed the accounting treatment for leases from January 1, 2019.

4.13. Assets classified as held for sale

Non-current assets, disposal groups and liabilities directly associated with those assets are classified as held for sale if their carrying amounts will, principally, be recovered through the sale transaction rather than through continuing use.

The condition for classification as held for sale is met only when the sale is approved by the Company's Board of Directors and the asset or disposal group is available for immediate sale in its present condition and there is the expectation that the sale will occur within 12 months after its classification as held for sale. However, an extended period required to complete a sale does not preclude an asset (or disposal group) from being classified as held for sale if the delay is caused by events or circumstances beyond the Company's control and there is sufficient evidence that the Company remains committed to its plan to sell the assets (or disposal groups).

Assets (or disposal groups) classified as held for sale and the associated liabilities are measured at the lower of their carrying amount and fair value less costs to sell. Assets and liabilities are presented separately in the statement of financial position.

4.14. Decommissioning costs

Decommissioning costs are future obligations to perform environmental restoration, dismantle and remove a facility when the Company terminates its operations due to the exhaustion of the area or economic feasibility.

When a future legal obligation exists and can be reliably measured, costs related to the abandonment and dismantling of areas are recognized as part of the cost of an asset (with a corresponding liability) based on the present value of the expected future cash outflows, discounted at a rate reflecting market assessments in terms of time value of money and liability specific risk.

Unwinding of the discount on the corresponding liability is recognized as a finance expense, when incurred. Decommissioning costs estimates are revised annually, at least.

4.15. Provisions, contingent assets and contingent liabilities

Provisions are recognized when there is a present obligation that arises from past events and for which it is probable that an outflow of resources embodying economic benefits will be required to settle the obligation, which must be reasonably estimable.

Contingent assets and liabilities are not recognized. Contingent liabilities are disclosed whenever the likelihood of loss is considered possible, including those for which the amount outflow of resources is not reasonably estimable. Contingent assets are disclosed whenever an inflow of economic benefits is probable. However, when such inflow is virtually certain, the related asset is not a contingent asset and it is recognized.

4.16. Income taxes

Income tax expense for the period includes current and deferred taxes. They are recognized in the statement of income of the period, except when the tax arises from a transaction or event which is recognized directly in equity.

a) Current income taxes

Current income taxes are computed based on taxable profit for the year, determined in accordance with the rules established by the taxation authorities, using tax rates that have been enacted or substantively enacted at the end of the reporting period.

Current income taxes are offset when they relate to income taxes levied on the same taxable entity and by the same tax authority, when there is a legal right and the entity has the intention to set off current tax assets and current tax liabilities, simultaneously.

b) Deferred income taxes

Deferred income taxes are recognized on temporary differences between the tax base of an asset or liability and its carrying amount. They are measured at the tax rates that are expected to apply to the period when the asset is realized or the liability is settled, based on tax rates (and tax laws) that have been enacted or substantively enacted by the end of the reporting period.

Deferred tax assets are generally recognized for all deductible temporary differences and carryforward of unused tax losses or credits to the extent that it is probable that taxable profit will be available against which those deductible temporary differences can be utilized. When there are insufficient taxable temporary differences relating to the same taxation authority and the same taxable entity, a deferred tax is recognized to the extent that it is probable that the entity will have sufficient taxable profit in future periods, based on projections approved by management and supported by the Company's Business and Management Plan.

Deferred tax assets and deferred tax liabilities are offset when they relate to income taxes levied on the same taxable entity, when a legally enforceable right to set off current tax assets and current tax liabilities exists and when the deferred tax assets and deferred tax liabilities relate to taxes levied by the same tax authority on the same taxable entity.

4.17. Employee benefits (Post-Employment)

Actuarial commitments related to post-employment defined benefit plans and health-care plans are recognized as liabilities in the statement of financial position based on actuarial calculations which are revised annually by an independent qualified actuary (updating for material changes in actuarial assumptions and estimates of expected future benefits), using the projected unit credit method, net of the fair value of plan assets, when applicable, from which the obligations are to be directly settled. Under the projected credit unit method, each period of service gives rise to an additional unit of benefit entitlement and each unit is measured separately to determine the final obligation. Actuarial assumptions include demographic assumptions, financial assumptions, medical costs estimates, historical data related to benefits paid and employee contributions.

Service cost are accounted for within results and comprises: (i) current service cost, which is the increase in the present value of the defined benefit obligation resulting from employee service in the current period; (ii) past service cost, which is the change in the present value of the defined benefit obligation for employee service in prior periods, resulting from a plan amendment (the introduction, modification, or withdrawal of a defined benefit plan) or a curtailment (a significant reduction by the entity in the number of employees covered by a plan); and (iii) any gain or loss on settlement.

Net interest on the net defined benefit liability (asset) is the change during the period in the net defined benefit liability (asset) that arises from the passage of time. Such interest is accounted for in results.

Remeasurement of the net defined benefit liability (asset) is recognized in shareholders' equity, in other comprehensive income, and comprises: (i) actuarial gains and losses and; (ii) the return on plan assets, excluding amounts included in net interest on the net defined benefit liability (asset).

The Company also contributes amounts to defined contribution plans, that are expensed when incurred and are computed based on a percentage of salaries.

4.18. Share capital and distributions to shareholders

Share capital comprises common shares and preferred shares. Incremental costs directly attributable to the issue of new shares (share issuance costs) are presented (net of tax) in shareholders' equity as a deduction from the proceeds.

To the extent the Company proposes distributions to shareholders, such dividends and interest on capital are determined in accordance with the limits defined in the Brazilian Corporation Law and in the Company's bylaws.

Interest on capital is a form of dividend distribution, which is deductible for tax purposes in Brazil to the entity distributing interest on capital. Tax benefits from the deduction of interest on capital are recognized in the statement of income.

4.19. Other comprehensive income

Other comprehensive income includes: i) changes in fair value of financial assets classified as subsequently measured at fair value through other comprehensive income; ii) effective portion of cash flow hedge; iii) remeasurement of defined benefit plans; and iv) cumulative translation adjustment.

4.20. Government grants

A government grant is recognized when there is reasonable assurance that the grant will be received and the Company will comply with the conditions attached to the grant.

4.21. Revenue from contracts with customers

The main contracts with customers involve oil exports and the sale of oil products, natural gas, biofuels and electricity in the domestic market. The Company evaluates contracts with customers that will be subject to revenue recognition and identifies the distinct goods and services promised in each of them.

Performance obligations are promises to transfer to the customer goods or services (or a bundle of goods or services) that are distinct, or series of distinct goods or services that are substantially the same and that have the same pattern of transfer to the customer.

Revenues are measured based on the amount of consideration to which an entity expects to be entitled in exchange for transferring promised goods or services to a customer, excluding amounts collected on behalf of third parties. Transaction prices are based on contractually stated prices, reflecting the Company's pricing methodologies and policies based on market parameters.

When transferring a good, that is, when the customer obtains its control, the company satisfies the performance obligation and recognizes the respective revenue, which usually occurs at a point in time upon delivery.

5. Critical accounting policies: key estimates and judgments

The preparation of the consolidated financial information requires the use of estimates and judgments for certain transactions and their impacts on assets, liabilities, income and expenses. The assumptions are based on past transactions and other relevant information and are periodically reviewed by management, although the actual results could differ from these estimates.

Information about those areas that require significant judgment or involve a higher degree of complexity in the application of the accounting policies and that could materially affect the Company's financial condition and results of operations is set out as follows.

5.1. Oil and gas reserves

Oil and gas reserves are estimated based on economic, geological and engineering information, such as well logs, pressure data and drilling fluid sample data and are used as the basis for calculating unit-of-production depreciation, depletion and amortization rates, impairment testing, decommissioning costs estimates and for projections of high probable future exports subject to cash flow hedge.

These estimates require the application of judgment and are reviewed at least annually based on a re-evaluation of already available geological, reservoir or production data and new geological, reservoir or production data, as well as changes in prices and costs that are used in the estimation of reserves. Revisions can also result from significant changes in the Company's development strategy or in the production capacity.

The Company determines its oil and gas reserves both pursuant to the U.S. Securities and Exchange Commission - SEC and the ANP/SPE (Brazilian Agency of Petroleum, Natural Gas and Biofuels / Society of Petroleum Engineers) criteria. The main differences between the two criteria are: selling price of crude oil (ANP/SPE establishes the use of the Company's forecasted price, while SEC determines the use of an average price considering each first day of the last 12 months); concession period (ANP permission for the use of reserve quantities after the concession period). Additionally, pursuant to the SEC criteria, only proved reserves are determined, while proved and unproved reserves are determined pursuant to the ANP/SPE criteria.

According to the definitions prescribed by the SEC, proved oil and gas reserves are those quantities of oil and gas which, by analysis of geoscientific and engineering data, can be estimated with reasonable certainty to be economically producible from a given date forward, from known reservoirs and under existing economic conditions, operating methods, and government regulation. Proved reserves are subdivided into developed and undeveloped reserves.

Proved developed oil and gas reserves are those that can be expected to be recovered through: (i) existing wells with existing equipment and operating methods; (ii) extraction technology installed and operational at the time of the reserves estimate, extracting oil and gas in other ways than using wells.

Although the Company is reasonably certain that proved reserves will be produced, the timing and amount recovered can be affected by a number of factors including completion of development projects, reservoir performance, regulatory aspects and significant changes in long-term oil and gas price levels.

Detailed information on reserves is presented as unaudited supplementary information.

a) Impacts of oil and gas reserves on depreciation, depletion and amortization

Depreciation, depletion and amortization are measured based on estimates of reserves prepared by the Company's technicians in a manner consistent with SEC definitions. Reviews to the Company's proved developed and undeveloped reserves impact prospectively the amounts of depreciation, depletion and amortization recognized in the statement of income and the carrying amounts of oil and gas properties assets.

Therefore, considering all other variables being constant, a decrease in estimated proved reserves would increase, prospectively, depreciation, depletion and amortization expense, while an increase in reserves would reduce depreciation, depletion and amortization.

Notes 4.8 and 12 provide more detailed information on depreciation, amortization and depletion.

b) Impacts of oil and gas reserves on impairment testing

The Company assesses the recoverability of the carrying amounts of oil and gas exploration and development assets annually, regardless of any absence of impairment indication. The measurement of their value in use is based on proved and probable reserves pursuant to the ANP/SPE definitions.

c) Impacts of oil and gas reserves on decommissioning costs estimates

The timing of abandonment and dismantling areas is based on the length of reserves depletion, in accordance with ANP/SPE definitions. Therefore, the review of the timing of reserves depletion may impact the provision for decommissioning cost estimates.

d) Impacts of oil and gas reserves on highly probable future exports subject to cash flow hedge accounting

The Company estimates highly probable future exports in accordance with future exports forecasted in the scope of its Business and Management Plan - BMP and its Strategic Plan projections, which are driven by proved and probable reserves estimates. Changes in such estimates may impact future exports forecasts and, consequently, hedge relationship designations may also be impacted. For example, whenever future exports for which a hedging relationship has been designated are no longer considered as highly probable, the Company revokes this designation and the cumulative foreign exchange gains or losses recognized in other comprehensive income remain in shareholders' equity until the forecast exports occur. Additionally, if the future exports are also no longer expected to occur, the cumulative foreign exchange recognized in other comprehensive income is immediately reclassified from shareholders' equity to the statement of income.

5.2. Main assumptions for impairment testing

Impairment testing involves uncertainties mainly related to its key assumptions: average Brent prices and Brazilian real/U.S. dollar average exchange rate. These assumptions are relevant to virtually all of the Company's operating segments and a significant number of interdependent variables are derived from these key assumptions and there is a high degree of complexity in their application in determining value in use for impairment tests.

The markets for crude oil and natural gas have a history of significant price volatility and although prices can drop precipitously, industry prices over the long term tends to continue being driven by market supply and demand fundamentals.

Projections relating to the key assumptions are derived from the Business and Management Plan for the first five years and consistent with the Strategic Plan for the following years. These assumptions are consistent with market evidence, such as independent macro-economic forecasts, industry commentators and experts. Back testing analysis and feedback process in order to continually improve forecast techniques are also performed.

The Company's oil price forecast model is based on a nonlinear relationship between variables reflecting market supply and demand fundamentals. This model also takes into account other relevant factors, such as historical idle capacity, industry costs, oil and gas production forecasted by specialized firms, the relationship between the oil price and the U.S. dollar exchange rate, as well as the impact of OPEC on the oil market.

The Real/U.S. dollar exchange rate projections are based on econometric models that take into account long-term assumptions involving observable inputs, such as country risk, commodity prices, interest rates and the value of the U.S. Dollar relative to a basket of foreign currencies (U.S. Dollar Index – USDIX).

Changes in the economic environment may result in changing assumptions and, consequently, the recognition of impairment charges on certain assets or CGUs. For example, the Brent price directly impacts the Company's sales revenue and refining margins, while the Brazilian real/U.S. dollar exchange rate mainly impacts our capital and operating expenditures.

Changes in the economic and political environment may also result in higher country risk projections that would increase discount rates for impairment testing.

In addition, changes in reserve volumes, production curve expectations and lifting costs could trigger the need for impairment assessment, as well as capital expenditure decisions, which are also affected by the Company's plan to reduce its leverage, may result in postponement or termination of projects, reducing their economic feasibility.

The recoverable amount of certain assets may not substantially exceed their carrying amounts and, therefore, it is reasonably possible that outcomes in future periods that are different from the current assumptions may result in the recognition of additional impairment charges on these assets, as described in note 14.1.2.

5.3. Identifying cash-generating units for impairment testing

Identifying cash-generating units (CGUs) requires management assumptions and judgment, based on the Company's business and management model. Changes in the aggregation of assets into CGUs may occur due to a review of investment, strategic or operational factors, which could result in changes in the interdependencies between those assets and, consequently, alter the aggregation or breakdown of assets into CGUs. Therefore, this change could result in additional impairment charges or reversals. The assumptions set out below have been consistently applied by the Company:

a) Exploration and Production CGUs:

i) Crude oil and natural gas producing properties CGU: comprises exploration and development assets related to crude oil and natural gas fields and groups of fields in Brazil and abroad. In 2018, the following changes in the aggregation of CGUs occurred: (i) Barracuda-Caratinga group (formed by Barracuda and Caratinga fields, which became interdependent due to the redetermination in the Macabu reservoir); (ii) Sapinhoá group (due to the declaration of commerciality of Nordeste, Noroeste and Sudoeste de Sapinhoá fields, which are interdependent with Sapinhoá field); (iii) Tartaruga Verde group (formed by Espadarte, Tartaruga Verde and Sudoeste de Tartaruga Verde fields, which were declared interdependent since both fields share the same reservoir and relevant infrastructure); (iv) North group (Carapeba, Vermelho, Pargo and Garoupinha fields were removed from this CGU and grouped into a single CGU, due to the termination of the production in Garoupinha field, and the sale approval of the three other fields); and (v) Canto do Amaro group (from which the Pajeú field was removed due to its sale approval). Therefore, at December 31, 2018, Exploration and Production CGUs had 138 fields and 43 groups (totaling 184 fields).

The drilling rigs are not part of any grouping of assets and are assessed for impairment separately.

b) Refining, transportation and marketing CGUs:

i) Downstream CGU: comprises refineries and associated assets, terminals and pipelines, as well as logistics assets operated by Transpetro, with a combined and centralized operation of logistical and refining assets in Brazil. These assets are managed with a common goal of achieving efficiency, profitability and strategic value long term on a nationwide basis. They are not operated for the generation of profit by asset/location. The operational planning is made in a centralized manner and these assets are not managed, measured or evaluated by their individual results. The refineries do not have autonomy to choose the oil to be processed, the mix of oil products to produce, the markets in which these products will be traded, which amounts will be exported, which intermediaries will be received and to decide the sales prices of oil products. The operational decisions are analyzed through an integrated model of operational planning for market supply. This model evaluates the solutions to supply the market considering all the options for production, importing, exporting, logistics and inventories seeking a comprehensive optimum of Petrobras and not the profit of each unit. The decision regarding a new investment is not based on the profitability of the project for the asset where it will be installed, but for the Petrobras Group. The model in which the entire planning is based, used in the studies of technical and economic feasibility of new investments in refining, may, in its indications, allocate a lower economic kind of oil to a certain refinery or define a lower economic mix of products to it, or even force it to supply more distant markets (area of influence), leading it to operate with reduced margins if seen individually, in case this is the best for the integrated system as a whole. Pipelines and terminals are an integral part and interdependent portion of the refining assets, required to supply the market.

ii) CGU Comperj – comprises assets under construction of the first refining unit of Petrochemical Complex of Rio de Janeiro. In 2014, the Company decided to postpone this project for an extended period of time;

iii) CGU Second Refining Unit of RNEST – comprises assets under construction of the second refining unit of Abreu e Lima refinery. In 2014, the Company decided to postpone this project for an extended period of time;

iv) Transportation CGU: comprises assets relating to Transpetro's fleet of vessels.

v) PANAMAX CGU: comprises of three Panamax class vessels under construction (EI-512, EI-513 and EI-514) for which the Company decided, in December 2017, to postpone their completion for an extended period of time; thus, these assets are no longer part of Transportation CGU.

vi) Hidrovia CGU: comprises the fleet of vessels of the Hidrovia project (transportation of ethanol along the Tietê River) that are under construction.

vii) SIX CGU: shale processing plant; and

viii) Other operations abroad defined as the smallest group of assets that generates independent cash flows.

c) Gas & Power CGUs:

i) Natural gas CGU: comprises natural gas pipelines, natural gas processing plants, consolidating the purchase, transportation and treatment of natural gas segments, in order to enable the commercialization of natural gas and its liquids (LPG, NGL and ethane). Since 2017, due to the strategic positioning defined in the Business and Management Plan to leave the fertilizer and nitrogen segment, all plants were removed from the CGU and had individual impairment tests. During 2018, the assets related to GASFOR II were excluded from this CGU due to the postponement of the project for an extended period of time, and are assessed for impairment separately;

ii) CGU UFN III: comprises assets under construction of the fertilizer plant Unidade de Fertilizantes e Nitrogenados III (UFN III). This working in progress has been halted since 2014 and the startup of this plant was postponed for an extended period of time.

iii) Power CGU: comprises the thermoelectric power generation plants;

iv) Fafens CGUs: The fertilizer plants Fafen BA and Fafen SE have been assessed for impairment separately since 2017.

v) Other CGUs: operations abroad defined as the smallest group of assets that generates largely independent cash flows.

d) Distribution CGU:

Mainly comprises the distribution assets related to the operations of Petrobras Distribuidora S.A.

e) Biofuels CGUs:

i) Biodiesel CGU: An integrated unit of biodiesel plants defined based on the production planning and operation process, that takes into consideration domestic market conditions, the production capacity of each plant, as well as the results of biofuels auctions and raw materials supply.

ii) Quixadá CGU: comprises the assets of Quixadá Biofuel Plant. In September 2016, it was removed from the Biodiesel CGU following the decision to discontinue its operations.

Investments in associates and joint ventures, including goodwill, are assessed for impairment separately.

Further information on impairment testing is set out in notes 4.10, and 14.

5.4. Pension and other post-retirement benefits

The actuarial obligations and net expenses related to defined benefit pension and health care post-retirement plans are computed based on several financial and demographic assumptions, of which the most significant are:

- Discount rate: comprises the projected future inflation in addition to an equivalent real interest rate that matches the duration of the pension and health care obligations with the future yield curve of long-term Brazilian Government Bonds; and
- Medical costs: comprise the projected growth rates based on per capita health care benefits paid over the last five years, which are used as a basis for projections, converged to the general price inflation index within 30 years.

These and other estimates are reviewed at least annually and may differ materially from actual results due to changing market and financial conditions, as well as actual results of actuarial assumptions.

The sensitivity analysis of discount rates and changes in medical costs as well as additional information about actuarial assumptions are set out in note 22.

5.5. Estimates related to contingencies and legal proceedings

The Company is defendant in arbitrations and in legal and administrative proceedings involving civil, tax, labor and environmental issues arising from the normal course of its business, and makes use of estimates to recognize the amounts and the probability of outflow of resources, based on reports and technical assessments from legal advisors and on the management's assessment.

These estimates are performed individually, or aggregated if there are cases with similar characteristics, primarily considering factors such as assessment of the plaintiff's demands, consistency of the existing evidence, jurisprudence on similar cases and doctrine on the subject. Specifically for actions of outsourced employees, the Company estimates the expected loss based on a statistical procedure, due to the number of actions with similar characteristics.

Arbitral, legal and administrative decisions against the Company, new jurisprudence and changes on the existing evidences can result in changes regarding the probability of outflow of resources and on the estimated amounts, according to the assessment of the legal basis.

Note 31 provides further detailed information about contingencies and legal proceedings.

5.6. Decommissioning costs estimates

The Company has legal and constructive obligations to remove equipment and restore onshore and offshore areas at the end of operations. Its most significant asset removal obligations involve removal and disposal of offshore oil and gas production facilities in Brazil and abroad. Estimates of costs for future environmental cleanup and remediation activities are based on current information about costs and expected plans for remediation.

These estimates require performing complex calculations that involve significant judgment since: i) the obligations are long-term; ii) the contracts and regulations contain subjective definitions of the removal and remediation practices and criteria involved when the events actually occur; and iii) asset removal technologies and costs are constantly changing, along with regulations, environmental, safety and public relations considerations.

The Company is constantly conducting studies to incorporate technologies and procedures to optimize the process of abandonment, considering industry best practices. However, the timing and amounts of future cash flows are subject to significant uncertainty.

Notes 4.14 and 20 provide further detailed information about the decommissioning provisions.

5.7. Deferred income taxes

The recognition of deferred taxes involves significant estimates and judgments by the Company. Deferred tax assets are recognized to the extent that it is probable that taxable profit will be available against which a deductible temporary difference can be utilized or it is probable that the entity will have sufficient taxable profit in future periods. In evaluating whether it will have sufficient taxable profit in future periods to support the recognition of deferred tax assets, the Company uses future projections and estimates based on its Business and Management Plan (BMP), which is approved by the Board of Directors annually. Future taxable profits projections are mainly based on the following assumptions: i) Brent crude oil prices; ii) foreign exchange rates; and iii) the Company's projected net finance expenses (income).

Changes in deferred tax assets and liabilities are presented in note 21.5.

5.8. Cash flow hedge accounting involving the Company's future exports

The Company determines its future exports as "highly probable future exports" based on its Business and Management Plan - BMP and its Strategic Plan. The highly probable future exports are determined by a percentage of projected exports revenue over the mid and long term, taking into account the Company's operational and capital expenditure optimization model, limited to a threshold based on a historical percentage of the oil production that is usually sold abroad. Future exports forecasts are reviewed whenever the Company reviews its BMP and Strategic Plan assumptions. The approach for determining exports as highly probable future exports is reviewed annually, at least.

See note 33.2 for more detailed information about cash flow hedge accounting and a sensitivity analysis of the cash flow hedge involving future exports.

5.9. Write-off – overpayments incorrectly capitalized

As described in note 3, in the third quarter of 2014, the Company developed an estimation methodology and wrote off US\$2,527 of capitalized costs representing the estimated amounts that Petrobras had overpaid for the acquisition of property, plant and equipment.

The Company acknowledges the degree of uncertainty involved in the estimation methodology and continues to monitor the ongoing investigations and the availability of other information concerning the amounts it may have overpaid in the context of the payment scheme. If reliable information becomes available that indicates with sufficient precision that the Company's estimate should be modified, it will evaluate materiality and, if so, adjust.

However, as previously discussed, the Company believes it has used the most appropriate methodology and assumptions to determine the amounts of overpayments incorrectly capitalized and there is no evidence that would indicate the possibility of a material change in the amounts written-off.

5.10. Expected credit losses on financial assets

The Company uses judgment for inputs and assumptions, such as risk of default, the determination of whether or not there has been a significant increase in credit risk and expectation of recovery, that are factored into the estimate of expected credit losses.

6. New standards and interpretations

6.1. New International Financial Reporting Standards not yet adopted

6.1.1. IFRS 16 – Leases

On January 13, 2016, the IASB issued IFRS 16 "Leases", which has been effective since January 1, 2019, superseding the following standards and related interpretations: IAS 17 -Leases; IFRIC 4 - Determining whether an Arrangement contains a Lease; SIC-15 - Operating Leases – Incentives; and SIC-27 - Evaluating the Substance of Transactions Involving the Legal Form of a Lease. IFRS 16 sets out the principles for the recognition, measurement, presentation and disclosure of leases, from the lessees and lessors' perspectives.

Accounting policies

Among the changes arising from IFRS 16, this standard eliminates the classification of leases as either operating leases or finance, providing for a single lessee accounting model in which all leases result in the recognition of a right-of-use asset and a lease liability at the commencement date of the lease.

Following the adoption of IFRS 16, lease payments under operating leases will not be charged to operating results on accrual basis. Instead, depreciation of the right to use a leased asset, as well as the finance expenses and foreign exchange gains or losses over the lease liability will affect the results. Finance expenses may qualify for borrowing costs capitalization in accordance with IAS 23 and foreign exchange gains and losses may be first recognized within equity if designated as hedge instrument, as set out in IFRS 9.

Most of the Company's lease arrangements are denominated in U.S. dollars and foreign exchange gains and losses arising from them may be designated for hedging relationship according to the current cash flow hedge accounting policy involving the Company's future exports.

The Company will elect to apply short-term lease exemption and will recognize payments associated with such leases as expenses over the arrangements terms.

Transition

According to the transition provisions set forth in IFRS 16, the Company will apply this standard retrospectively with the cumulative effect of its initial application recognized at January 1, 2019, without restatement of prior period information, and the following practical expedients were chosen:

- Application of this Standard to contracts that were previously identified as leases (note 18.2);
- Lease liabilities measured at the present value of the remaining lease payments, discounted by the lessee's incremental borrowing rate at the date of initial application;

- Recognition of right-of-use assets at an amount equal to the lease liability, adjusted by the amount of any prepaid or accrued lease payments relating to that lease recognized in the statement of financial position immediately before the date of initial application, excluding initial direct costs.

Key estimates and judgments

The incremental borrowing rates used to determine the present value of the remaining lease payments were determined mainly based on the Company's cost of funding based on yields of bonds issued by the Company, adjusted by terms and currency of the lease arrangements, economic environment of the country where the lessee operates and similar collaterals.

The incremental borrowing rates applicable to the most significant lease arrangements range from 2.47% p.a. to 7% p.a.

Disclosure

The right-of-use assets will be presented as Property, plant and equipment (PP&E), primarily comprising the following underlying assets: drilling rig and other exploration and production equipment, vessels and support vessels, helicopters, lands and buildings. The lease liabilities will be presented as Finance debt.

Accordingly, the Company estimates that its balances of PP&E and Finance debt will increase approximately US\$ 28 billion, due to changes brought up by the recognition, measurement and disclosure provision under IFRS 16 initial application. As the right-of-use assets will be recognized at an amount equal to the lease liability, the change will not affect equity.

In the statement of cash flows, operating lease payments, which are currently presented within Cash flows from operating activities, will be presented as Cash flows from financing activities made up of repayment of principal and interest. However, such change does not affect the Company's cash and cash equivalents balance.

Other significant matters

The changes arising from IFRS 16 adoption will affect, prospectively, the Net Debt/Adjusted EBITDA ratio, a financial measure that is set forth in the Company's Business and Management Plan. The impacts on this metric in 2019 will be provided only for comparative purposes. The Company does not intend to implement changes in its business practice and there was no need to renegotiate covenant clauses in finance debts.

6.1.2. IFRIC 23 – Uncertainty over Income Tax Treatments

In May 2017, the International Accounting Standards Board (Board) issued IFRIC 23, which has been effective since January 1, 2019. This Interpretation clarifies how to apply the recognition and measurement requirements in IAS 12 when there is uncertainty over income tax treatments.

When there is uncertainty over income tax treatments, this Interpretation addresses:

- Whether an entity considers uncertain tax treatments separately;
- The assumptions an entity makes about the examination of tax treatments by taxation authorities;
- How an entity determines taxable profit (tax loss), tax bases, unused tax losses, unused tax credits and tax rates; and
- How an entity considers changes in facts and circumstances.

According to the transition provisions set forth in this interpretation, the Company will apply this interpretation retrospectively with the cumulative effect of its initial application recognized at January 1, 2019 within equity. The Company did not identify any material impact arising from IFRIC 23.

7. Cash and cash equivalents and Marketable securities

Cash and cash equivalents

Cash and cash equivalents comprise cash in hand, term deposits with banks and short-term highly liquid financial investments that are readily convertible to known amounts of cash, are subject to insignificant risk of changes in value and have a maturity of three months or less from the date of acquisition.

	12.31.2018	12.31.2017
Cash at bank and in hand	863	1,570
Short-term financial investments		
- In Brazil		
Brazilian interbank deposit rate investment funds and other short-term deposits	1,875	1,176
Other investment funds	12	17
	1,887	1,193
- Abroad		
Time deposits	3,823	6,237
Automatic investing accounts and interest checking accounts	6,708	11,287
Other financial investments	618	2,232
	11,149	19,756
Total short-term financial investments	13,036	20,949
Total cash and cash equivalents	13,899	22,519

Short-term financial investments in Brazil primarily consist of investments in funds holding Brazilian Federal Government Bonds and related repo investments that mature within three months as of the date of their acquisition. Short-term financial investments abroad comprise time deposits that mature in three months or less from the date of their acquisition, highly-liquid automatic investment accounts, interest checking accounts and other short-term fixed income instruments.

The principal uses of funds in the year ended December 31, 2018 were for debt service obligations (US\$ 39,854), including pre-payment of debts, and acquisition of PP&E and intangibles assets (US\$ 12,021). These funds were principally provided by operating activities (US\$ 26,353), proceeds from financing (US\$ 10,950) and disposal of assets (US\$ 5,791).

Marketable securities

	12.31.2018		01.01.2018		
	In Brazil	Total	In Brazil	Abroad	Total
Fair value through profit or loss	1,083	1,083	1,276	–	1,276
Fair value through other comprehensive income	8	8	13	609	622
Amortised cost	45	45	51	–	51
Total	1,136	1,136	1,340	609	1,949
Current	1,083	1,083	1,276	609	1,885
Non-current	53	53	64	–	64

Marketable securities classified as fair value through profit or loss refer mainly to investments in Brazilian Federal Government Bonds. These financial investments have maturities of more than three months and are mostly classified as current assets due to their maturity or the expectation of their realization in the short term.

The amounts of marketable securities at December 31, 2017 classified by categories in accordance with the former accounting practice (IAS 39) are presented in note 2.3.1.

8. Trade and other receivables

8.1. Trade and other receivables, net

	12.31.2018	12.31.2017
Receivables from contracts with customers		
Third parties	6,614	6,995
Related parties		
Investees (note 19.1)	682	530
Receivables from the electricity sector (note 8.4) (*)	4,400	5,247
Subtotal	11,696	12,772
Other trade receivables		
Third parties		
Receivables from divestments (**)	1,296	872
Finance lease receivables	519	550
Other receivables	1,325	1,647
Related parties		
Diesel subsidy (note 19.1.1)	400	-
Petroleum and alcohol accounts - receivables from Brazilian Government (note 19.1.2)	307	251
Subtotal	3,847	3,320
Total trade receivables	15,543	16,092
Expected credit losses (ECL) - Third parties	(3,390)	(3,686)
Expected credit losses (ECL) - Related parties	(915)	(2,259)
Total trade receivables, net	11,238	10,147
Current	5,746	4,972
Non-current	5,492	5,175

(*) It includes the amount of US\$ 199 at December 31, 2018 (US\$ 233 at December 31, 2017) regarding finance lease receivable from Amazonas Distribuidora de Energia.

(**) It comprises receivable from the divestment of NTS and contingent payments from the sale of interest in Roncador field.

Trade and other receivables were previously classified as loans and receivables in accordance with former IAS 39. As set out in note 2.3.1, following the adoption of IFRS 9, such assets are currently classified as measured at amortised cost, except for certain receivables with final prices linked to changes in commodity price after their transfer of control, which are classified as measured at fair value through profit and loss and amount to US\$ 76 as of December 31, 2018.

8.2. Aging of trade and other receivables – third parties

	12.31.2018		12.31.2017	
	Trade receivables	Credit losses	Trade receivables	Credit losses
Current	5,863	(360)	5,760	(274)
Overdue:				
1-90 days	484	(54)	596	(73)
91-180 days	35	(12)	52	(36)
181-365 days	48	(20)	83	(47)
More than 365 days	3,325	(2,944)	3,573	(3,256)
Total	9,755	(3,390)	10,064	(3,686)

8.3. Changes in credit losses provision

	Jan-Dec/2018	Jan-Dec/2017
Opening balance	5,945	5,426
Initial application of IFRS 9	122	-
Additions	104	708
Write-offs	(1,253)	(110)
Transfer of assets held for sale	6	-
Cumulative translation adjustment	(619)	(79)

Closing balance	4,305	5,945
Current	1,715	2,068
Non-current	2,590	3,877

In 2018, write-offs in the balance of expected credit losses primarily reflects the effects related to the agreements signed with companies from electricity sector, as described in note 8.4.

In 2017, besides the losses on receivables from electricity sector amounting to US\$ 210, additions also reflected impairments over lease receivables, as a result of the termination, in the third quarter of 2017, of a finance lease agreement relating to the Vitória 10,000 drilling rig, in the amount of US\$ 278.

8.4. Trade receivables – electricity sector (isolated electricity system in the northern region of Brazil)

Receivables from electricity sector	Receivables outside the scope of DAAs*	DAA 2014	DAA 2018	Finance lease	Others	Total
Receivables	2,381	3,107	-	233	4	5,725
ECL	(2,187)	(332)	-	-	(4)	(2,523)
Balance at December 31, 2017	194	2,775	-	233	-	3,202
Sales	1,226	-	-	-	-	1,226
Amounts received	(757)	(374)	(532)	(39)	(3)	(1,705)
Interest	38	161	22	40	-	261
Derecognition of receivables	(1,240)	-	-	(1)	-	(1,241)
Agreements in 2018	-	127	1,291	-	-	1,418
(Additions)/reversals of ECL	(508)	291	-	-	3	(214)
Derecognition of receivables - ECL	1,240	-	-	-	-	1,240
CTA	(27)	(425)	(43)	(34)	-	(529)
Balance at December 31, 2018	166	2,555	738	199	-	3,658
Receivables	1,348	2,560	739	199	1	4,847
ECL	(1,182)	(5)	(1)	-	(1)	(1,189)
Balance at December 31, 2018	166	2,555	738	199	-	3,658

* Debt acknowledgement agreements.

	Receivables	ECL	Total
Related parties - Eletrobras Group			
Amazonas Energia - AME	3,747	(913)	2,834
Eletrobras	653	(2)	651
Total	4,400	(915)	3,485
Third parties			
Cia de Gás do Amazonas - CIGÁS	156	(2)	154
Cia de Eletricidade do Amapá - CEA	228	(228)	-
Others	63	(44)	19
Total	447	(274)	173
Balance at December 31, 2018	4,847	(1,189)	3,658
Balance at December 31, 2017	5,725	(2,523)	3,202

The Company supplies fuel oil, natural gas, and other products to power distributors controlled by Eletrobras and to independent power producers (*Produtores Independentes de Energia – PIE*) that operate in the isolated electricity system in the northern region of Brazil. This isolated system comprises electricity generation and distribution systems not totally connected to the Brazilian National Interconnected Power Grid (*Sistema Interligado Nacional*).

Due to operational, regulatory and administrative factors, the costs of the isolated electricity system is substantially covered by the Fuel Consumption Account (*Conta de Consumo de Combustível* – CCC), a fund regulated and overseen by the Brazilian National Electricity Agency (*Agência Nacional de Energia Elétrica* - ANEEL), that receives funds from the Brazilian Energy Development Account (*Conta de Desenvolvimento Energético* - CDE). The CDE is a fund created by the Brazilian Federal Government to promote power development in Brazil and its transfers of funds to CCC are based on fees paid by all of concessionaires of electricity distribution and transmission in Brazil. However, regulatory and administrative issues have impacted funds flows from CCC to the companies operating in the isolated system since 2013, which also affected the payments of distributors controlled by Eletrobras for products supplied by the Company.

As a result, on December 31, 2014, the Company (Petrobras parent company and its subsidiary BR Distribuidora) entered into debt acknowledgement agreements (DAAs 2014) concerning the balance of its receivables as of November 30, 2014 with distributors controlled by Eletrobras, to be settled in 120 monthly installments updated by the Selic interest rate (Brazilian short-term interest rate). The balance of DAAs 2014 was 89% collateralized by payables from the CDE to the CCC and, despite some periodic delays, these payments have continued. At December 31, 2017, the amounts of DAAs 2014 totaled US\$ 3,107.

The Company continued to sell its products to the isolated electricity system but took several measures to safeguard its interests arising from sales after the signing of the DAAs 2014, including judicial collection of all overdue receivables, as well as suspension of fuel supply on credit. Thus, the allowance for credit losses on receivables from electricity sector amounted to US\$ 2,523 at December 31, 2017, primarily reflecting the historical defaults of companies operating in the isolated electricity system in the northern region of Brazil relating to receivables not under DAAs 2014.

At the end of 2017, following the inclusion of the power distributors controlled by Eletrobras within the Investments Partnership Program (*Programa de Parcerias de Investimentos* – PPI), a Brazilian Federal program that foresees new infrastructure investments and privatizations, along with the process of privatization of the distributors controlled by Eletrobras, the Company intensified negotiations with the Eletrobras group aiming at reaching an agreement that would resolve disputes and mitigate future defaults.

Accordingly, both parties reached an agreement on April 30, 2018 in which the structure and indexation of collateralization under the DAAs 2014 was recomposed and new debt acknowledgement agreements comprising a portion of receivables under judicial disputes were signed (DAAs 2018). In addition, the parties also entered into debt assumption agreements in which Eletrobras would assume a significant portion of overdue receivables in case of the privatization of power distributors.

Following improvements in Eletrobras credit risk, the new collateralization structure under DAAs 2014 provides for replacement of original collateral by guaranties provided by Eletrobras (54%), collateral based on credits from Brazilian Treasury (34%) and new payables from the CDE (12%). However, the collateralization based on credits from Brazilian Treasury owned by Eletrobras Distributors, expected to be effective by the end of June 2018, did not occur as the Provisional Measure 814/2017 lost its effectiveness since June 1, 2018 and the Bill 10,332/18, the terms of which would reestablish the previous condition for such collateralization, was rejected by the Brazilian Senate in October 2018.

The DAAs 2018 comprise receivables from sales of fuel oil and natural gas, which had been past due since December 2014 and under judicial collection. These agreements outline the settlement of US\$ 459 and US\$ 1,293 (gross nominal values), related to Petrobras parent company and its subsidiary BR Distribuidora, respectively, in 36 monthly instalments bearing interest at 124.75% of the Brazilian interbank deposit rate (CDI). However, their recognition and measurement take into account the conditions attached to their guarantees, which in the case of BR Distribuidora are substantially dependent on the privatization of distributors of Eletrobras group and, with respect to Petrobras parent company, an unsuccessful privatization process would not lead to the cancellation of surety provided by Eletrobras.

On December 3, 2018, the parties entered into a new agreement under which:

- The collateral of DAAs 2014 based on credits from Brazilian Treasury was replaced by surety provided by Eletrobras;
- Some contracts were renegotiated in order to fulfill certain conditions necessary for the privatization of the distributors;
- Past due receivables until October 31, 2018 amounting to US\$ 150 were rescheduled under the same terms of the agreement of April 2018; and
- Creation of an escrow account in order to ensure the collection of future gas sales.

Based on the agreements reached in 2018, along with the conclusion of the privatization process of distributors of Eletrobras group (Ceron, Boa Vista Energia e Eletroacre) the Company recognized US\$ 1,418 as finance income in 2018 primarily reflecting receivables under the DAAs 2018, which had been under judicial collection, recognized at their fair value due to the material changes in their contractual terms.

In 2018, the Company recognized credit losses amounting to US\$ 214 (US\$ 210 in 2017) primarily reflecting overdue receivables outside the scope of DAAs (US\$ 508), notably from sale of gas for which collections are outstanding, partially offset by the replacement of collaterals of DAAs 2014 and debts assumed by Eletrobras following the privatization of its distributors (US\$ 291).

Moreover, the Company has monitored the progress of AME privatization process, which is conditioned to certain conditions precedent, notably the effective transfer of its control, as well as additional investments and collaterals. According to the progress of this process, the Company's assessment of credit risk over these receivables was not significantly affected at December 31, 2018.

9. Inventories

	12.31.2018	12.31.2017
Crude oil	4,150	3,647
Oil products	2,758	2,814
Intermediate products	610	613
Natural gas and LNG (*)	122	67
Biofuels	150	173
Fertilizers	78	25
Total products	7,868	7,339
Materials, supplies and others	1,119	1,150
Total	8,987	8,489

(*) Liquefied Natural Gas

In the year ended December 31, 2018, the Company recognized as cost of sales US\$ 420 reducing inventories to net realizable value (US\$ 66 as of year ended December 31, 2017) primarily due to changes in international prices of crude oil and oil products.

At December 31, 2018, the Company had pledged crude oil and oil products volumes as collateral for the Terms of Financial Commitment (TFC) signed by Petrobras and Petros in 2008, in the amount of US\$ 4,496 (US\$ 4,067 as of December 31, 2017), as set out in note 23.1.

10. Disposal of assets and other changes in organizational structure

The Company has an active partnership and divestment portfolio, which takes into account opportunities for disposal of non-strategic assets in several areas in which it operates. The partnerships provide for the sharing and development of new technologies, strengthening corporate governance, and sharing future risks and investments. The divestment and partnership portfolio is dynamic, since the development of transactions also depends on conditions beyond the control of the Company. The divestment projects and strategic partnerships follow the procedures aligned with the guidelines of the Brazilian Federal Auditor's Office (*Tribunal de Contas da União – TCU*) and the current legislation.

In 2018, partnerships and divestments resulted in US\$ 6 billion cash inflows to the Company, which, along with other initiatives included in the Company's Business and Management Plan, enable the Company to reduce and improve its indebtedness and debt profile.

On October 3, 2018, the 1st Federal Court of the state of Sergipe, by means of a preliminary injunction relating to a public action, ordered Petrobras and ANP to suspend the sale process of oil fields located in the state of Bahia (Buracica and Miranga groups and related facilities) alleging absence of a proper bidding process, that would result in impending damage to the public treasury. On October 24, 2018, the Federal Regional Court of the 5th Region rejected the request for suspension of the effects of the preliminary ruling previously presented by the Federal Government.

On December 19, 2018, an injunction was issued against the Company before the Brazilian Federal Supreme Court, later suspended on January 11, 2019 by the president of this Court, until court assessment on this injunction. Thus, the Company is able to resume the publication of any opportunities related to new E&P divestment projects, following the normal course of its business.

The competitive process for the divestment of the wholly-owned subsidiary Transportadora Associada de Gás S.A. (TAG) was previously suspended by decision of the Federal Regional Court of the 5th Region, but the Superior Court of Justice reversed this decision on January 15, 2019. Therefore, on January 17, 2019, Petrobras resumed the process for the disposal of 90% of TAG, for 100% of Araucária Nitrogenados S.A., as well as for forming partnerships in refining business.

Moreover, the Brazilian Federal Attorney-General's Office (AGU) stated that Petrobras meets the requirements on this divestment process, since it has legislative authorization to dispose of its subsidiaries and complies with applicable regulation for divestment of assets by state-owned companies, relating to corporate governance, transparency and market best practices.

10.1. Disposal of assets

Second installment of the exploratory block BM-S-8 sale

On July 28, 2016 the Board of Directors of Petrobras approved the disposal of the Company's 66% interest in the exploratory block BM – S-8 to Statoil Brasil Óleo e Gás Ltda, which includes the Carcará area located in the pre-salt of Santos Basin, for the amount of US\$ 2.5 billion.

The first installment of US \$ 1.25 billion, corresponding to 50% of the transaction value, was received on November 22, 2016, and the remaining amount relates to two contingent payments.

The production sharing agreement with respect to the Norte de Carcará area, entered into by the Brazilian Federal Government, Statoil, Petrogal and Exxon, was made official on February 2, 2018 through the Brazilian Federal Register (official gazette). This fact completed the conditions precedent for the second payment of the exploratory block BM-S-8. Accordingly, the Company received US\$ 300 on March 21, 2018 and accounted for it within other income and expenses.

The third installment of this sale, in the amount of US\$ 950, is still pending of certain future events related to the signing of a unitization agreement and will be recognized if and when these events occur.

Disposal of Liquigás

On November 17, 2016 the Company's Board of Directors approved the disposal of its wholly-owned subsidiary Liquigás Distribuidora S.A, a group entity from the RT&M business segment (Refining, Transportation and Marketing), to Companhia Ultragaz S.A., a subsidiary of Ultrapar Participações S.A. In January 2017, this sale was approved at Ultrapar's and Petrobras' Shareholders' Meetings for the amount of US\$ 828.

On February 28, 2018, the Brazilian Antitrust Regulator (CADE) ruled on this matter and disallowed this sale. The sales and purchase agreement was subject to a termination clause providing for compensation to the Company in case of such decision. Accordingly, the Company received US\$ 88 on March 13, 2018 and the related assets and liabilities are no longer classified as held for sale.

Strategic alliance with Total

On December 21, 2016, the Company entered into a master agreement with Total, in connection with the Strategic Alliance established in the Memorandum of Understanding signed on October 24, 2016. Accordingly, certain E&P assets were classified as held for sale at December 31, 2016 due to the share of interests established in this agreement, as described below:

- Transfer of the Company's 22.5% stake in the concession area named as lara, comprising Sururu, Berbigão and West of Atapu fields, which are subject to unitization agreements with Entorno de lara (an area under the Assignment Agreement in which the Company holds 100% stake and is located in the Block BM-S-11). The Company will continue to operate the block;
- Transfer of the Company's 35% stake in the concession area of Lapa field, located in the Block BM-S-9. Total will also become the operator and the Company will retain a 10% interest in this area; and
- Transfer of the Company's 50% interests in Termobahia S.A, including the power plants Celso Furtado and Rômulo Almeida. In 2016, the Company recognized an impairment loss on this transaction in the amount of US\$ 47.

On February 28, 2017, the Company and Total signed purchase and sale agreements with respect to the aforementioned assets. Total will pay to the Company the amount of US\$ 1,675 in cash for assets and services, subject to price adjustments. In addition, a long-term line of credit in the amount of US\$ 400 will be provided by Total, which may be used to fund the Company's investments in the lara fields.

The aforementioned agreements supplement the ones already executed on December 21, 2016, such as: (i) the Company's preemptive right to purchase a 20% interest in block 2 of the Perdido Foldbelt area, in the Mexican sector of the Gulf of Mexico, (ii) the joint exploration studies in the exploratory areas of Equatorial Margin and in Santos Basin; and (iii) the Technological partnership agreement in the areas of digital petrophysics, geological processing and subsea production systems.

On January 12, 2018, Petrobras and Total closed the aforementioned transfers of interests of lara and Lapa fields, after performing all conditions precedent to this transaction.

This transaction totaled US\$ 1.95 billion, including price adjustments, but not including the long-term line of credit. Accordingly, the Company recognized US\$ 689 as other income and expenses in the first quarter of 2018.

On December 21, 2018, Petrobras and Total entered into the following agreements:

- Petrobras exercised its put option, as provided in the contract signed in January 2018, transferring its remaining 10% stake in Lapa field to Total, in block BM-S-9. This transaction is still subject to some conditions precedent; and
- Investment agreement for the creation of a joint venture, with the participation of 49% of Petrobras and 51% of Total Eren S.A. (an associate of Total), with the objective of developing onshore projects in solar and wind energy in Brazil. This agreement has legally binding obligations, where both companies are committed to prepare the required documentation to establish the joint venture, aiming at developing a portfolio of projects of up to 500MW of installed capacity over a 5-year horizon.

The negotiations relating to the power plants deal are ongoing and the assets and liabilities thereof remained classified as held for sale at December 31, 2018.

Disposal of Suape and Citepe petrochemical plants

On December 28, 2016, the Company's Board of Directors approved the disposal of the interests in the wholly-owned subsidiaries Companhia Petroquímica de Pernambuco (PetroquímicaSuape) and Companhia Integrada Têxtil de Pernambuco (Citepe), both from the RT&M business segment, to Grupo Petrotekem S.A. de C.V. and to Dak Americas Exterior, S.L., both subsidiaries of Alpek, S.A.B. de C.V., which is a company from Grupo Alfa S.A.B. de C.V. (a Mexican public company), for the amount of US\$ 385, to be disbursed at the transaction closing and subject to adjustments relating to working capital, net debt and recoverable taxes.

This transaction was approved at Petrobras' Shareholders' Meeting on March 27, 2017.

On February 7, 2018, the CADE approved this transaction provided the execution of an Agreement on Concentration of Control (*Acordo de Controle de Concentração – ACC*).

On April 30, 2018, this transaction was completed with the payment of US\$ 435 after the fulfillment of all conditions precedent and adjustments established in the purchase and sale agreement, except for the final price adjustment, whose calculation is based on the audited financial statements of these companies.

Thereby, reversals of impairment in the amount of US\$ 86 were accounted for in the second and third quarters of 2018.

Sale of Azulão field

On November 22, 2017, the Company entered into an agreement with Parnaíba Gás Natural S.A., a subsidiary of Eneva S.A, concerning the assignment of its entire participation in the Azulão Field (Concession BA-3), located in the state of Amazonas, in the amount of US\$ 55.

This transaction was concluded on April 30, 2018 upon fulfillment of the conditions precedent, adjustments set forth in the agreement and payment of US\$ 57 to the Company, resulting in a US\$ 45 gain accounted for as other income and expenses.

Strategic alliance with Equinor ASA (formerly Statoil)

On December 18, 2017, the Company entered into agreements with the Norwegian company Equinor relating to the assets of the strategic partnership, in continuity with the Heads of Agreement ("HoA") signed and disclosed on September 29, 2017. The main signed contracts are:

- (i) Strategic Alliance Agreement ("SAA") - agreement describing all documents related to the strategic partnership, covering all negotiated initiatives;
- (ii) Sale and Purchase Agreement ("SPA") - sale of 25% of Petrobras' interest in the Roncador field to Equinor.
- (iii) Strategic Technical Alliance Agreement ("STAA") - strategic agreement for technical cooperation aiming at maximizing the value of the asset and focusing on increasing the recoverable oil volume (recovery factor), including the extension of the useful life of the field; and
- (iv) Gas Term Sheet - Equinor may hire a certain processing capacity of natural gas at the Cabiúnas Terminal (TECAB) for the development of the BM-C-33 area, where the companies already are partners and Equinor is the operator.

The strategic alliance, among other goals, aims at applying the Equinor's expertise in mature fields in the North Sea towards increasing the recovery factor of Roncador field. Accordingly, the parties signed the STAA for technical cooperation and the joint development of projects.

The SPA has a total amount of US\$ 2.9 billion, made up of US\$ 118 paid at the signature date of the agreement, contingent payments relating to investments in projects to increase the recovery factor of the field, limited to US\$ 550, and the remaining amount will be paid at the transaction closing.

At December 31, 2017, a US\$ 405 loss was recognized on this transaction, as its sale price was lower than carrying amount.

On June 14, 2018, this transaction was completed upon receipt of US\$ 2 billion, including price adjustments at its closing amounting to US\$ 14, in addition to the US\$ 118 received as an advance on the signing date. Additionally, Equinor will make payments, limited to US\$ 550, to the extent investments in projects for improvement of the recovery factor occur. The present value of such payments was recognized as account receivables in the amount of US\$ 386, net of the aforementioned advance.

Following the closing of this transaction, the Company recognized US\$ 222 as an additional loss within other income and expenses as a result of price adjustment under the SPA.

All the conditions precedent to the closing were fulfilled, including approval by the ANP and CADE, as well as the negotiation of contracts for the use of production facilities and of the purchase of associated gas by Petrobras. The final price adjustment of this transaction will occur in up to 180 business days after the closing.

Sale of distributors in Paraguay

On June 26, 2018 the Board of Directors approved the sale to Copetrol Group of its entire interest held through its wholly-owned subsidiary Petrobras International Braspetro B.V. (PIB BV) in Petrobras Paraguay Distribución Limited (PPDL UK), Petrobras Paraguay Operaciones y Logística SRL (PPOL) and Petrobras Paraguay Gas SRL (PPG).

The proceeds estimated from this sale is US\$ 384, of which US\$ 49 was deposited in an escrow account at the signing date, and the remaining amount will be disbursed to the Company when the transaction closes, including US\$ 55 related to cash balance of these companies. The sale amount is still subject to adjustments due to changes in working capital until the conclusion of the transaction.

The corresponding assets and liabilities of this transaction are classified as held for sale as of December 31, 2018 as the conclusion of the transaction is still subject to approval procedures according to the Paraguay regulation.

Joint venture in Gulf of Mexico

In October 2018, the Company, through its wholly-owned subsidiary Petrobras America Inc. (PAI), entered into an agreement with Murphy Exploration & Production Company – USA ("Murphy"), a wholly-owned subsidiary of Murphy Oil Corporation, in order to establish a joint venture (MP Gulf of Mexico, LLC) consisting of their producing properties of oil and gas activities in the Gulf of Mexico.

On November 30, 2018, the operation was completed with the creation of a joint venture with 80% of Murphy and 20% of PAI, with the contribution of all oil and gas producing assets located in the Gulf of Mexico, of both companies. The transaction was concluded with Murphy's following the payment of US\$ 795 to PAI, after price adjustments provided for in the contract, corresponding to the difference between the value of assets used as contribution by both parties at the transaction closing. The agreement also set forth payments of up to US\$ 150 to be made until 2025, and investments of up to US\$ 50 to be carried out by Murphy, linked to PAI production development costs in the St. Malo field. These remaining payments were measured at their present value, amounting to US\$ 158, and were accounted for as receivables.

An impairment loss in the amount of US\$ 715 was accounted for in the statement of income, of which US\$ 264 relates to the last quarter of 2018 (see note 14).

Sale of Petrobras Oil & Gas B.V. (PO&GBV)

On October 31, 2018, the wholly owned subsidiary Petrobras International Braspetro BV (PIBBV) entered into an agreement to sale its 50% interest in PO&GBV to Petrovida Holding B.V, a company formed in partnership by Vitol Investment Partnership II Ltd, Africa Oil Corp and Delonex Energy Ltd.

PO&GBV is a joint venture in the Netherlands formed by PIBBV (50%) and BTG Pactual E&P B.V. (50%), consisting of assets located in Nigeria. It has 8% interest in the Agbami producing field, and 16% interest in Akpo producing field and Egina developing field (final stage). PO&GBV does not operate any of these fields.

The transaction will involve a total amount of up to US\$ 1,530, with a cash payment of US\$ 1,407, subject to adjustments until the closing of the transaction, and a deferred payment of up to US\$ 123 (nominal value), to be settled as soon as the Agbami field redetermination process is implemented.

This transaction is subject to customary conditions precedent, such as approvals by relevant Nigerian authorities. Therefore, the investment in PO&GBV is classified as held for sale as of December 31, 2018, and an impairment reversal in the amount of US\$ 45 was accounted for within equity-accounted investments.

Sale of onshore producing fields

On December 27, 2018, the Company's Board of Directors approved the sale of its total interest in 34 onshore producing fields, located in Potiguar basin, in the state of Rio Grande do Norte, to 3R Petroleum company, in the amount of US\$ 453.

Accordingly, the related assets and liabilities were reclassified as held for sale and reversals of impairments previously recognized on these assets were accounted for at December 31, 2018, as described in note 14.2.

Sale of interest in three offshore producing fields in Campos basin

On November 28, 2018, the Company's Board of Directors approved the sale of interest in Pargo, Carapeba and Vermelho fields (the Northeast group of fields), located in shallow waters on the coast of the state of Rio de Janeiro, to Perenco company. The transaction value amounts to US\$ 370, of which 20% (US\$ 74) paid at the contract signature, and the remaining balance will be paid at the transaction closing, subject to price adjustments.

The transaction closing is subject to the fulfillment of conditions precedent determined by the contract, such as approval by the ANP and the grant, by the Brazilian Institute of the Environment and Renewable Natural Resources (*Instituto Brasileiro do Meio Ambiente e dos Recursos Naturais Renováveis* - IBAMA), of the required environmental licenses to Perenco, which will be the operator of the fields. Therefore, the related assets and liabilities are classified as held for sale as of December 31, 2018.

10.2. Assets classified as held for sale

The major classes of assets and liabilities classified as held for sale are shown in the following table:

					12.31.2018	12.31.2017
	E&P	Distribution	Gas & Power	Others	Total	Total
Assets classified as held for sale						
Cash and Cash Equivalents	-	40	-	-	40	8
Trade receivables	-	39	-	-	39	117
Inventories	-	47	-	-	47	128
Investments (*)	973	-	-	-	973	5
Property, plant and equipment	593	70	81	1	745	4,751
Others	-	102	-	-	102	309
Total	1,566	298	81	1	1,946	5,318
Liabilities on assets classified as held for sale						
Trade Payables	-	1	-	-	1	102
Provision for decommissioning costs	932	-	-	-	932	170
Others	-	50	-	-	50	119
Total	932	51	-	-	983	391

(*) The amount of US\$ 973 refers to the divestment in PO&GBV.

As of December 31, 2018, the amounts refer to assets and liabilities classified as held for sale following the approvals of sale of interests in Rômulo Almeida and Celso Furtado thermoelectric power generation plants; PPD UK, PPOL and PPG (distribution operation in Paraguay); the remaining interest in PO&GBV (correspondent to 50%); the remaining 10% interest in Lapa field; the three fields in Campos basin; and the 34 onshore fields in Potiguar basin.

At December 31, 2017, the amounts also comprise assets and liabilities pertaining to Liqueigás, Suape and Citepe petrochemical plants, the concession areas named as Iara and Lapa, the entire interest in Azulão field and 25% interest in Roncador field.

10.3. Other changes in organizational structure

Sale and merger of Nova Fronteira Bioenergia

On December 15, 2016, the Company's wholly-owned subsidiary PBIO (biofuels business segment) entered into an agreement with the São Martinho group to merge PBIO's interests in Nova Fronteira Bioenergia S.A. (49%) into São Martinho.

On February 23, 2017, São Martinho granted to PBIO additional 24 million of its common shares, corresponding to 6.593% of its total capital. These shares were accounted for as available-for-sale securities.

On February 16, 2018, following the approval by its Extraordinary General Shareholder's Meeting, PBIO disposed of, through a public auction held in the Brazilian stock exchange (B3), these 24 million of shares, at the share price of US\$ 5.72 dollars. The settlement of the transaction occurred on February 21, 2018, finalizing the complete disposal of PBIO's interests in São Martinho's capital.

10.4. Cash flows from sales of interest with loss of control

In 2018 and 2017, the Company disposed of its interest in certain subsidiaries over which control was lost. The following table summarizes cash flows arising from losing control in subsidiaries:

	Cash received	Cash in subsidiary before losing control	Net Proceeds
Suape and Citepe petrochemical plants (note 10.1)	435	(14)	421
Total in 2018	435	(14)	421
NTS	2,481	(88)	2,393
Petrobras Chile Distribución	470	(104)	366
Total in 2017	2,951	(192)	2,759

Disposal of interest in Nova Transportadora do Sudeste (NTS)

On April 4, 2017, the sale of a 90% interest in Nova Transportadora do Sudeste – NTS, a group entity from the gas and power business segment, to Brookfield Infrastructure Partners (BIP) and its affiliates, through a Private Equity Investment Fund (FIP), was completed in the amount of US\$ 5.08 billion, and the Company recognized a gain in the amount of US\$ 2,169 accounted for as other income and expenses.

Disposal of distribution assets in Chile

This transaction was concluded on January 4, 2017 and the net proceeds from this sale were US\$ 470 was paid by Southern Cross Group at the transaction closing. Accordingly, the Company recognized a gain of US\$ 0.8 as other income and expenses. In addition, a US\$ 79 loss was reclassified from shareholders' equity to other income and expenses within the income statement, reflecting the reclassification of cumulative translation adjustments resulting from the depreciation of the Chilean Peso against the U.S Dollar from the time of the acquisition of this investment to its disposal.

11. Investments

11.1. Information on direct subsidiaries, joint arrangements and associates

	Main business segment	% Petrobras' ownership	% Petrobras' voting rights	Share-holders' equity (deficit)	Net income (loss) for the year	Country
Subsidiaries						
Petrobras Netherlands B.V. - PNBV (i)	E&P	100.00	100.00	29,529	2,489	Netherlands
Petrobras Distribuidora S.A. - BR	Distribution	71.25	71.25	2,500	874	Brazil
Petrobras International Braspetro - PIB BV (i)	Several (ii)	100.00	100.00	7,197	(2,022)	Netherlands
Petrobras Transporte S.A. - Transpetro	RT&M	100.00	100.00	886	(221)	Brazil
Petrobras Logística de Exploração e Produção S.A. - PB-LOG	E&P	100.00	100.00	944	240	Brazil
Transportadora Associada de Gás S.A. - TAG	Gas & Power	100.00	100.00	3,468	678	Brazil
Petrobras Gás S.A. - Gaspetro	Gas & Power	51.00	51.00	519	74	Brazil
Petrobras Biocombustível S.A.	Biofuels	100.00	100.00	430	49	Brazil
Petrobras Logística de Gás - Logigás	Gas & Power	100.00	100.00	186	92	Brazil
Liquigás Distribuidora S.A.	RT&M	100.00	100.00	257	40	Brazil
Araucária Nitrogenados S.A.	Gas & Power	100.00	100.00	23	(90)	Brazil
Termomacacé Ltda.	Gas & Power	100.00	100.00	68	20	Brazil
Braspetro Oil Services Company - Brasoil (i)	Corporate	100.00	100.00	108	2	Cayman Islands
Breitener Energética S.A.	Gas & Power	93.66	93.66	201	34	Brazil
Termobahia S.A.	Gas & Power	98.85	98.85	149	4	Brazil
Baixada Santista Energia S.A.	Gas & Power	100.00	100.00	77	3	Brazil
Petrobras Comercializadora de Energia Ltda. - PBEN	Gas & Power	100.00	100.00	23	2	Brazil
Fundo de Investimento Imobiliário RB Logística - FII	E&P	99.20	99.20	13	(26)	Brazil
Petrobras Negócios Eletrônicos S.A. - E-Petro	Corporate	100.00	100.00	10	2	Brazil
Termomacacé Comercializadora de Energia Ltda	Gas & Power	100.00	100.00	3	-	Brazil
5283 Participações Ltda.	Corporate	100.00	100.00	1	-	Brazil
Joint operations						
Fábrica Carioca de Catalizadores S.A. - FCC	RT&M	50.00	50.00	65	17	Brazil
Ibiriterno S.A.	Gas & Power	50.00	50.00	41	10	Brazil
Joint ventures						
Logum Logística S.A.	RT&M	30.00	30.00	270	(31)	Brazil
Cia Energética Manauara S.A.	Gas & Power	40.00	40.00	54	31	Brazil
Petrocoque S.A. Indústria e Comércio	RT&M	50.00	50.00	63	28	Brazil
Refinaria de Petróleo Riograndense S.A.	RT&M	33.20	33.20	(21)	2	Brazil
Brasympe Energia S.A.	Gas & Power	20.00	20.00	23	1	Brazil
Brentech Energia S.A.	Gas & Power	30.00	30.00	25	3	Brazil
Metanol do Nordeste S.A. - Metanor	RT&M	34.54	34.54	8	1	Brazil
Eólica Mangue Seco 1 - Geradora e Comercializadora de Energia Elétrica S.A.	Gas & Power	49.00	49.00	10	1	Brazil
Eólica Mangue Seco 2 - Geradora e Comercializadora de Energia Elétrica S.A.	Gas & Power	51.00	51.00	10	-	Brazil
Eólica Mangue Seco 3 - Geradora e Comercializadora de Energia Elétrica S.A.	Gas & Power	49.00	49.00	11	1	Brazil
Eólica Mangue Seco 4 - Geradora e Comercializadora de Energia Elétrica S.A.	Gas & Power	49.00	49.00	11	1	Brazil
Companhia de Coque Calcinado de Petróleo S.A. - Coquepar	RT&M	45.00	45.00	(1)	5	Brazil
Participações em Complexos Bioenergéticos S.A. - PCBIOS	Biofuels	50.00	50.00	-	-	Brazil
Associates						
Sete Brasil Participações S.A. (iii)	E&P	5.00	5.00	(5,937)	(40)	Brazil
Fundo de Investimento em Participações de Sondas - FIP Sondas	E&P	4.59	4.59	-	-	Brazil
Braskem S.A. (iv)	RT&M	36.20	47.03	1,851	806	Brazil
UEG Araucária Ltda.	Gas & Power	20.00	20.00	94	(23)	Brazil
Deten Química S.A.	RT&M	27.88	27.88	113	23	Brazil
Energética SUAPE II	Gas & Power	20.00	20.00	93	35	Brazil
Termoelétrica Potiguar S.A. - TEPE	Gas & Power	20.00	20.00	49	22	Brazil
Nitroclor Ltda.	RT&M	38.80	38.80	-	-	Brazil
Bioenergética Britarumã S.A.	Gas & Power	30.00	30.00	-	-	Brazil
Nova Transportadora do Sudeste - NTS	Gas & Power	10.00	10.00	828	529	Brazil

(i) Companies abroad with financial statements prepared in foreign currencies.

(ii) Cover segments abroad in E&P, RTM, Gas & Power and Distribution segments.

(iii) Despite the negative amount of net assets, allowance for losses was not recognized as the Company's obligations with Sete Brasil are limited to the investments made in this associate.

(iv) Equity and net income at September 30, 2018, most current public information.

The main investees of PNBV are: Tupi BV (65%), Guará BV (45%), Agri Development BV (90%), Libra (40%), Papa Terra BV (62.5%), Roncador BV (75%), Iara BV (42.5%) and Lapa BV (10%). They are dedicated to construction and lease of equipment and platforms for Brazilian E&P consortia and are incorporated under the law of the Netherlands. PNBV's interests in these entities comprise the voting rights.

The main investees of PIB BV are the wholly-owned subsidiaries Petrobras Global Trading B.V. – PGT, Petrobras Global Finance B.V. – PGF; Petrobras America Inc. – PAI. PGT is incorporated under the law of The Netherlands and is dedicated to the trade of oil, oil products, biofuels and LNG (liquefied natural gas), as well as to the funding of its activities in light of Petrobras Group. PGF also is incorporated under the law of The Netherlands and is the finance subsidiary of Petrobras Group, raising funds through bonds issued in the international market. PAI is incorporated under the law of United States and is dedicated to E&P (MP Gulf of Mexico, LLC) and refining activities (Pasadena).

Gaspetro holds interests in several natural gas distributors in Brazil that carry out, by means of concessions, public service of distribution of piped natural gas.

11.2. Investments in associates and joint ventures

	Balance at 12.31.2017	Investments	Transfer to assets held for sale	Restructuring, capital decrease and others	Results in equity- accounted investments	CTA	OCI	Dividends	Balance at 12.31.2018
Joint Ventures									
Petrobras Oil & Gas B.V. - PO&G	1,410	-	(1,207)	-	66	(15)	-	(254)	-
MP Gulf of Mexico, LLC (*)	-	8	-	604	9	1	-	-	622
State-controlled natural gas distributors	345	-	-	-	75	(53)	-	(59)	308
Compañía Mega S.A. - MEGA	49	-	-	-	2	36	-	(9)	78
Petrochemical joint ventures	29	-	-	(1)	16	(4)	-	(6)	34
Other joint ventures	104	28	-	18	11	(17)	-	(16)	128
Associates									
Nova Transportadora do Sudeste	331	-	-	(18)	53	(49)	-	(54)	263
Petrochemical associates	1,461	-	-	-	288	(129)	(135)	(217)	1,268
Other associates	48	8	-	(11)	4	(6)	-	(1)	42
Other investments	18	-	-	(1)	(1)	-	-	-	16
Total	3,795	44	(1,207)	591	523	(236)	(135)	(616)	2,759

(*) As set out note 10.1.

11.3. Investments in non- consolidated listed companies

	Thousand-share lot		Type	Quoted stock exchange prices (US\$ per share)		Market value	
	12.31.2018	12.31.2017		12.31.2018	12.31.2017	12.31.2018	12.31.2017
Associate							
Braskem S.A.	212,427	212,427	Common	11.75	13.15	2,495	2,794
Braskem S.A.	75,762	75,762	Preferred A	12.23	12.96	926	982
						3,421	3,776

The market value of these shares does not necessarily reflect the realizable value upon sale of a large block of shares.

On June 15, 2018, the Company was informed by Odebrecht S.A that it had initiated negotiations with LyondellBasell for a potential transaction involving the transfer of Odebrecht's entire interest in Braskem. This transaction is subject, among other conditions, to due diligence, negotiation of definitive agreements and all necessary approvals. There is no binding obligation between the parties to assure the conclusion of the transaction.

Depending on the outcome of this transaction, the Company will assess the terms and conditions of LyondellBasell's offer in the context of exercising its tag-along right as set forth in Braskem S.A. Shareholder's Agreement.

According to an amendment to Braskem S.A. Shareholder's Agreement on September 25, 2018, preferred shares owned by the Company became also subject to tag-along rights as already set forth for the ordinary shares.

Information on the main estimates used in the cash flow projections to determine the value in use of Braskem is set out in Note 14.

11.4. Non-controlling interest

The total amount of non-controlling interest at December 31, 2018 is US\$ 1,631 (US\$ 1,700 in 2017) primarily comprising US\$ 719 of Petrobras Distribuidora (US\$ 792 in 2017), US\$ 255 of Gaspetro (US\$ 289 in 2017), US\$ 65 of Transportadora Brasileira Gasoduto Brasil-Bolívia – TBG (US\$ 76 in 2017), and US\$ 206 refer to Consolidated Structured Entities (US\$ 284 in 2017).

Condensed financial information is set out as follows:

	Gaspetro		Consolidated Structured entities		TBG		BR Distribuidora	
	2018	2017	2018	2017	2018	2017	2018	2017
Current assets	79	80	826	728	174	140	3,304	3,235
Long-term receivables	58	74	781	1,106	1	1	1,609	2,042
Investments	360	406	–	–	–	–	9	11
Property, plant and equipment	1	1	–	–	463	594	1,496	1,758
Other non-current assets	76	89	–	–	2	2	123	137
	574	650	1,607	1,834	640	737	6,541	7,183
Current liabilities	26	24	75	226	173	248	1,177	1,334
Non-current liabilities	29	36	1,326	1,322	334	335	2,864	3,181
Shareholders' equity	519	590	206	286	133	154	2,500	2,668
	574	650	1,607	1,834	640	737	6,541	7,183
Sales revenues	114	111	–	–	425	462	26,753	26,483
Net income	74	75	(142)	106	160	265	874	330
Increase (decrease) in cash and cash equivalents	(7)	15	128	57	7	204	704	(49)

Petrobras Distribuidora (BR) is a company that operates in distribution, transportation, trade and industrialization of oil products and other fuels. It is controlled by Petrobras parent company, which holds a 71.25% interest.

Gaspetro, a Petrobras' subsidiary, holds interests in several state distributors of natural gas in Brazil. The Company holds 51% of interests in this indirect subsidiary.

TBG is an indirect subsidiary which operates in natural gas transmission activities mainly through Bolivia-Brazil Gas Pipeline. The Company holds 51% of interests in this indirect subsidiary.

Structured entities include Charter Development LLC – CDC, dedicated to construct, acquire and charter FPSOs, and Companhia de Desenvolvimento e Modernização de Plantas Industriais – CDMPI, which is dedicated to coking and hydrotreating of coke naptha from Henrique Lage refinery (REVAP).

11.5. Summarized information on joint ventures and associates

The Company invests in joint ventures and associates in Brazil and abroad, whose activities are related to petrochemical companies, gas distributors, biofuels, thermoelectric power plants, refineries and other activities. Condensed financial information is set out below:

Petróleo Brasileiro S.A. – Petrobras

Notes to the financial statements - unaudited

(Expressed in millions of US Dollars, unless otherwise indicated)



	2018				2017			
	Joint ventures		Associates		Joint ventures		Associates	
	In Brazil	MP Gulf of Mexico, LLC	Other companies abroad	Other companies in Brazil	In Brazil	PO&G ^(*)	Other companies abroad	Other companies in Brazil
Current assets	1,162	151	158	6,314	938	625	72	5,729
Non-current assets	520	–	10	1,388	502	71	1	1,454
Property, plant and equipment	866	3,643	45	12,932	897	3,706	8	9,342
Other non-current assets	633	–	1	863	725	–	–	980
	3,181	3,794	214	21,497	3,062	4,402	81	17,505
Current liabilities	1,163	86	72	6,159	1,005	276	29	5,973
Non-current liabilities	673	599	23	17,566	639	2,197	1	16,172
Shareholders' equity	1,354	2,487	79	(2,168)	1,418	1,929	51	(4,390)
Non-controlling interest	(9)	622	40	(60)	–	–	–	(250)
	3,181	3,794	214	21,497	3,062	4,402	81	17,505
Sales revenues	3,975	92	136	18,954	3,208	557	145	15,790
Net Income (loss) for the year	92	48	17	1,888	160	272	26	1,338
Ownership interest - %	20 to 83%	20%	34 to 50%	5 to 49%	20 to 83%	50%	34 to 50%	5 to 49%

^(*) In the fourth quarter of 2018, PO&G's assets and liabilities were classified as held for sale, as set out in note 10.

12. Property, plant and equipment

12.1. By class of assets

	Land, buildings and improvement	Equipment and other assets (*)	Assets under construction (**)	Exploration and development costs (oil and gas producing properties) (***)	Total
Balance at January 1, 2017	6,982	78,724	38,569	51,195	175,470
Additions	2	1,167	11,031	31	12,231
Additions to / review of estimates of decommissioning costs	-	-	-	4,503	4,503
Capitalized borrowing costs	-	-	1,972	-	1,972
Write-offs	(14)	(6)	(545)	(35)	(600)
Transfers (****)	316	3,296	(7,631)	3,079	(940)
Depreciation, amortization and depletion	(437)	(7,320)	-	(5,366)	(13,123)
Impairment recognition	(145)	(937)	(568)	(892)	(2,542)
Impairment reversal	52	831	165	692	1,740
Cumulative translation adjustment	(91)	(753)	(472)	(745)	(2,061)
Balance at December 31, 2017	6,665	75,002	42,521	52,462	176,650
Cost	9,914	128,603	42,521	86,491	267,529
Accumulated depreciation, amortization and depletion	(3,249)	(53,601)	-	(34,029)	(90,879)
Balance at December 31, 2017	6,665	75,002	42,521	52,462	176,650
Additions	4	1,751	8,707	6	10,468
Additions to / review of estimates of decommissioning costs	-	-	-	4,778	4,778
Capitalized borrowing costs	-	-	1,810	-	1,810
Write-offs	(61)	(16)	(327)	(27)	(431)
Transfers (****)	(93)	13,720	(18,667)	4,086	(954)
Depreciation, amortization and depletion	(359)	(6,529)	-	(5,028)	(11,916)
Impairment recognition	-	(742)	(250)	(1,686)	(2,678)
Impairment reversal	-	309	23	226	558
Cumulative translation adjustment	(946)	(7,467)	(4,891)	(7,598)	(20,902)
Balance at December 31, 2018	5,210	76,028	28,926	47,219	157,383
Cost	7,829	128,711	28,926	77,141	242,607
Accumulated depreciation, amortization and depletion	(2,619)	(52,683)	-	(29,922)	(85,224)
Balance at December 31, 2018	5,210	76,028	28,926	47,219	157,383
Weighted average useful life in years	40 (25 to 50) (except land)	20 (3 to 31)		Units of production method	

(*) It is composed of platforms, refineries, thermoelectric power plants, natural gas processing plants, pipelines, rights of use and other operating, storage and production plants, also including exploration and production assets depreciated based on the units of production method.

(**) See note 30 for assets under construction by business area.

(***) It is composed of exploration and production assets related to wells, abandonment and dismantling of areas, signature bonuses associated to proved reserves and other costs directly associated to the exploration and production of oil and gas.

(****) It includes transfers to/from assets held for sale.

For the year ended December 31, 2018, additions to property, plant and equipment primarily relate to the development of oil and gas production in the pre-salt area, where four main new production systems started operating: FPSOs P-74 and P-75, located in the Búzios field; FPSO P-69, located in the Lula field; and FPSO Campos dos Goytacazes, located in the Tartaruga Verde field. In addition, the Company completed the first stage of production tests in the Mero field, the first field in the production sharing regime to start operating in Brazil, whose declaration of commerciality took place in 2017 (note 13.3).

In 2017, important platforms started operating in 2017, such as the FPSOs Libra Pioneer, in Mero field, and P-66, in South of Lula field, as well as the interconnection of new wells to FPSOs Cidade de Saquarema, Cidade de Maricá and Cidade de Itaguaí, in pre-salt fields of Santos basin.

At December 31, 2018, property, plant and equipment include assets under finance leases of US\$ 96 (US\$ 118 as of December 31, 2017).

12.2. Estimated useful life

Estimated useful life	Buildings and improvements, equipment and other assets		
	Cost	Accumulated depreciation	Balance at 2018
5 years or less	3,850	(2,914)	936
6 - 10 years	10,038	(6,272)	3,766
11 - 15 years	3,299	(1,515)	1,784
16 - 20 years	34,267	(13,473)	20,794
21 - 25 years	21,462	(4,733)	16,729
25 - 30 years	13,942	(4,001)	9,941
30 years or more	23,323	(6,843)	16,480
Units of production method	26,059	(15,551)	10,508
Total	136,240	(55,302)	80,938
Buildings and improvements	7,529	(2,619)	4,910
Equipment and other assets	128,711	(52,683)	76,028

12.3. Unitization Agreements

A unitization agreement occurs when a reservoir extends across two or more license or contract areas. In this case, parties pool their individual interests in return for an interest in the overall unit and determine their new equity interest in the single producing unit.

Events that occurred prior to the individualization of production may lead to the need for compensation between the parties. These events include the monetization of production and the realization of expenses of different natures. An amount to be reimbursed by the Company will be recognized as a liability when it derives from a contractual obligation or, when the outflow of funds is deemed probable and the amount can be reliably estimated. An amount to be reimbursed to Company will be recognized as an asset only when there is a contractual right to reimbursement or when it is practically certain.

In 2018, Petrobras entered into Production Individualization Agreements (*Acordos de Individualização da Produção* - AIPs) with Pré-Sal Petróleo S.A. (PPSA) and its partners (Shell, Petrogal and Total) in certain E&P consortiums, submitting these agreements to ANP's approval. These agreements provide for the equalization of expenses and production volumes relating to Sapinhoá, Lula, Tartaruga Verde, Sururu and Berbigão fields.

Therefore, in the last quarter of 2018, a US\$ 275 loss was accounted for within other income and expenses, and property, plant and equipment was written down by US\$ 62.

The table below presents the effects of the agreements:

	12.31.2018
Equalization payables (*)	279
Indexation charges	2
Write-offs	(62)
Payments made	(100)
Cumulative translation adjustments	(2)
Remaining payables	118

(*) It was accounted for within other income and expenses as set out note 26.

On December 21, 2018, the Company, Shell and Repsol reimbursed PPSA for the unitization of Sapinhoá field. The Company is the operator of this field and the amount disbursed with respect to its interest was US\$ 100, according to the Agreement of Equalization of Expenses and Volumes.

12.4. Concession for exploration of oil and natural gas - Assignment Agreement (“Cessão Onerosa”)

Petrobras and the Brazilian Federal Government entered into the Assignment Agreement in 2010, which grants the Company the right to carry out prospecting and drilling activities for oil, natural gas and other liquid hydrocarbons located in the pre-salt area, subject to a maximum production of five billion barrels of oil equivalent. The agreement has a term of forty years and is renewable for a further five years subject to certain conditions. As of December 31, 2018, the Company's property, plant and equipment include the amount of US\$ 19,306 related to the Assignment Agreement (US\$ 22,614 as of December 31, 2017).

Petrobras has already declared commerciality in fields of all six blocks under this agreement: Franco (Búzios), Florim (Itapu), Nordeste de Tupi (Sépia), Entorno de Iara (Norte de Berbigão, Sul de Berbigão, Norte de Sururu, Sul de Sururu, Atapu), Sul de Guará (Sul de Sapinhoá) and Sul de Tupi (Sul de Lula).

The agreement establishes that its review procedures will commence immediately after the declaration of commerciality for each area and must be based on reports by independent experts engaged by Petrobras and the ANP.

If the review of the Assignment Agreement determines that the value of acquired rights is greater than the amount initially paid, the Company may be required to pay the difference to the Brazilian Federal Government, or may proportionally reduce the total volume of barrels acquired. If the review determines that the value of the acquired rights is lower than initially paid by the Company, the Brazilian Federal Government will reimburse the Company for the difference by delivering cash or bonds or equivalent means of payment, subject to budgetary regulations.

The formal review procedures for each block are based on costs incurred over the exploration phase, and estimated costs and production for the development period. The review of the Assignment Agreement may result in renegotiation of: (i) the amount of the agreement; (ii) the total volume (in barrels of oil) to be produced; (iii) the term of the agreement; and (iv) the minimum percentages of local content.

The information gathered made possible the identification of volumes exceeding five million barrels of oil equivalent.

In November 2017, the Company set up an internal commission responsible for the negotiation with the Brazilian Federal Government, composed of representatives of the Chief Exploration and Production Officer and the Chief Financial Officer.

In January 2018, the Brazilian Federal Government established, through the Interministerial Ordinance No. 15/2018, the Interministerial Commission responsible for negotiating and concluding the terms of this review.

The negotiations are ongoing and have taken into account appraisals by independent experts engaged by both parties and their respective reports. On September 14, 2018, the Brazilian Energy Policy Council (*Conselho Nacional de Política Energética – CNPE*) enacted Resolution 12/2018 recommending the Brazilian Ministry of Mines and Energy (*Ministério de Minas e Energia – MME*) to send a draft of an amendment to the agreement to the Brazilian Federal Auditor's Office (*Tribunal de Contas da União – TCU*) in order to make an assessment of its terms. Accordingly, this draft was sent to TCU and to the Company and the negotiations toward the end of the review will progress after TCU assessment.

The draft under review by the TCU consolidates one of several scenarios that have been discussed between the commissions. This scenario, after assessment of the TCU and approval by the parties, may result in a credit in favor of the Company. Due to the features of the review, any credit in favor of the Company will be only confirmed following an amendment to the agreement that results in a contractual right and would support the recognition of an account receivable.

The identification of the volume exceeding five million barrels of oil equivalent provides an opportunity for both parties to reach an agreement in case of compensation to the Company arising from the review. The Brazilian Energy Policy Council also recommended that the Brazilian Ministry of Mines and Energy, by means of Resolution 12/2018, send drafts of the public auction and the agreement for the bidding rounds of the exceeding volume under production-sharing regime. Aiming to support an eventual negotiation where this compensation would be paid through the right over exceeding volume, the Company completed its assessment based on reports issued by the independent experts it has engaged.

This review process of the Assignment Agreement has been monitored by the Minority Shareholders Committee, which is composed of two board members elected by the minority shareholders and by a third independent member with knowledge in technical-financial analysis of investment projects. This Committee provides support to the board's decisions through opinions about related matters.

12.5. Oil and Gas fields operated by Petrobras returned to ANP

In 2018, the following oil and gas fields were returned to ANP: Japiim, Camarão Norte, part of Espadarte and part of Sibite. These fields were returned to ANP mainly due to their economic unfeasibility and, as a consequence, the Company wrote off the amount of US\$ 0.1 in addition to impairments recognized in prior years.

In 2017, the Mosquito, Siri and Saíra oil and gas fields were returned to ANP also due to economic unfeasibility. However, due to impairment losses recorded for these assets in prior years, these write-offs amounted to US\$ 0.1.

In 2016 the Tiziu, Japuaçu, Rio Joanes, part of Golfinho and part of Tambuatá oil and gas fields were returned to ANP following their uneconomic feasibility and, as a consequence, the Company wrote off the amount of US\$ 4 in addition to impairments recognized in prior years.

13. Intangible assets

13.1. By class of assets

	Rights and Concessions	Software		Goodwill	Total
		Acquired	Developed in-house		
Balance at January 1, 2017	2,678	68	306	220	3,272
Addition	935	16	61	-	1,012
Capitalized borrowing costs	-	-	4	-	4
Write-offs	(81)	-	(2)	-	(83)
Transfers	(1,656)	2	-	-	(1,654)
Amortization	(20)	(29)	(101)	-	(150)
Impairment recognition	(33)	-	-	-	(33)
Cumulative translation adjustment	(22)	-	(4)	(2)	(28)
Balance at December 31, 2017	1,801	57	264	218	2,340
Cost	2,006	496	1,225	218	3,945
Accumulated amortization	(205)	(439)	(961)	-	(1,605)
Balance at December 31, 2017	1,801	57	264	218	2,340
Addition	841	35	50	-	926
Capitalized borrowing costs	-	-	4	-	4
Write-offs	(15)	-	-	-	(15)
Transfers	(42)	6	-	14	(22)
Amortization	(14)	(23)	(75)	-	(112)
Cumulative translation adjustment	(241)	(8)	(38)	(29)	(316)
Balance at December 31, 2018	2,330	67	205	203	2,805
Cost	2,549	487	1,105	203	4,344
Accumulated amortization	(219)	(420)	(900)	-	(1,539)
Balance at December 31, 2018	2,330	67	205	203	2,805
Estimated useful life in years	(*)	5	5	Indefinite	

(*) Mainly composed of assets with indefinite useful lives, which are reviewed annually to determine whether events and circumstances continue to support an indefinite useful life assessment.

On March 29, 2018, the Company acquired seven offshore blocks in the fifteenth round of bids under the concession regime. The Company will be the operator in two blocks located in Campos basin, which were acquired in partnership with Exxon and Equinor. Another two blocks within Campos basin were acquired in partnership with Exxon and Qatar Petroleum and will be operated by ExxonMobil. The other three blocks are located in Potiguar basin, of which two were acquired in partnership with Shell and will be operated by the Company, and one was totally acquired by Company. The total amount of the signature bonus paid by the Company in August 2018 was US\$ 559.

In 2018, the Company paid US\$ 271 as signature bonus related to the production sharing contract, as set out in note 13.3.

At December 31, 2018, no impairment was identified on goodwill.

13.2. Exploration rights returned to the Brazilian Agency of Petroleum, Natural Gas and Biofuels - Agência Nacional de Petróleo, Gás Natural e Biocombustíveis (ANP)

Exploration areas returned to the ANP in 2018, totaling US\$ 6 (US\$ 3 in 2017) are set out below:

Area	Exploratory phase	
	Exclusive	Partnership
Sergipe-Alagoas basin	5	-
Espirito Santo basin	2	-
Barreirinhas basin	1	-

13.3. Exploration rights - production sharing contract

Following the first pre-salt public auction held in October, 2013, the Libra consortium, composed of Petrobras, Shell, Total, CNPC, CNOOC and the Pré-Sal Petróleo S.A. (PPSA) as the manager of the agreement, entered into a production sharing contract with the Federal Government on December 2, 2013. The signature bonus (acquisition cost) of US\$ 6,589 was paid by the consortium. The Company paid US\$ 2,636 relating to its share of the acquisition cost paid by the consortium, initially recognized in its intangible assets as Rights and Concessions.

On November 30, 2017, ANP was informed about the declaration of commerciality of the Northwest area of Libra, confirming the potential of the area and its economic viability. In total, twelve wells have been drilled in Libra block, of which nine in the Northwest area. Following the declaration of commerciality, the Northwest area of Libra is now named Mero field (Campo de Mero). The results confirmed oil reservoirs at thickness of up to 410 meters with high porosity and permeability. The production tests confirmed the high productivity and oil quality of these reservoirs. Following this declaration of commerciality, US\$ 1,614 was transferred to property, plant and equipment with respect to a portion of the signature bonus relating to the Northwest area of Libra.

The Ministry of Mines and Energy granted to the consortium an extension of the exploration phase by 27 months to the Central and Southeast areas of the block, where new assessments will be performed to evaluate the economic viability of these areas. The portion of the signature bonus pertaining to these areas amounts to US\$ 196 at December 31, 2018.

On October 27, 2017, the Company acquired three offshore blocks in the second and third rounds of bids under the production sharing regime, in partnership with Shell, British Petroleum (BP), Repsol and CNODC Brasil Petróleo e Gás. The total amount of signature bonus paid by the Company was US\$ 351. The contracts were signed on January 31, 2018.

On June 7, 2018, the Company acquired three offshore blocks (*Uirapuru, Dois Irmãos and Três Marias*) in partnership with other companies through the 4th ANP Bidding Round under the production-sharing regime. The Company will be the operator of all these blocks and the total amount of the signature bonus paid by the Company in September 2018 was US\$ 254.

On September 28, 2018, the Company acquired the *Sudoeste de Tartaruga Verde* block through the 5th ANP Bidding Round under the production-sharing regime. The Company offered the minimum profit oil set forth in this bidding and a bonus of US\$ 17 was paid in November 2018.

13.4. Service concession agreement - Distribution of piped natural gas

As of December 31, 2018, intangible assets include service concession agreements related to piped natural gas distribution in Brazil, in the amount of US\$ 145 (US\$ 171 in 2017), maturing between 2029 and 2043, which may be renewed. According to the distribution agreements, service is provided to customers in the industrial, residential, commercial, automotive, air conditioning and transport sectors, among others.

The consideration receivable is a factor of a combination of operating costs and expenses, and return on capital invested. The rates charged for gas distribution are subject to periodic reviews by the state regulatory agency.

The agreements establish an indemnity clause for investments in assets which are subject to return at the end of the service agreement, to be determined based on evaluations and appraisals.

On February 2, 2016, the state of Espírito Santo enacted Law No. 10,493/2016 under which the service concession agreements related to piped natural gas distribution are considered ineffective pursuant to Brazilian Federal Law 8,987/1995. The law states that a bidding process is required for this concession, or the establishment of a state-run company to provide this service, which would receive compensation pursuant to this law. This was appealed by the Company.

Accordingly, the Company entered into an agreement with the State of Espírito Santo, through a Memorandum of Understanding signed on August 12, 2016, aiming to evaluate the establishment of a state-run company of that state, to provide the public service of distributing piped natural gas. The evaluation is ongoing as of December 31, 2018.

This concession is accounted for as intangible assets totaling US\$ 81 as of December 31, 2018 (US\$ 82 as of December 31, 2017) and the Company has not recognized any provision on this matter based on indemnity established by law.

14. Impairment

The Company annually tests its assets for impairment on December 31 or when there is an indication that their carrying amount may not be recoverable. In 2018, impairment losses and reversals were primarily recognized in the last quarter reflecting assets management and updates of mid and long-term assumptions used in the recent Company's Business and Management Plan (BMP 2019-2023) concluded and approved in December 2018.

A higher estimate in decommissioning costs of E&P fields contributed significantly to the recognition of impairment losses, notably in Sergipe-Alagoas basin (Camorim, Piranema and Guaricema fields) and Campos basin (Linguado and Bicudo). However, these losses were partially offset by the effects of certain projects review, with consequent lengthening in the expected production curve in fields located in the Santos and Espírito Santo basins, which generated reversals of impairments previously recognized.

The deterioration in the scenario of future freight prices for the Transpetro's fleet of vessels, the need to cease the operation of a single buoy mooring (Monobóia 2 - PDET), the continuous plan to withdrawal from fertilizer business and the decision to postpone for an extended period the GASFOR II project, resulting in its removal from the Natural Gas CGU in the fourth quarter of 2018, also led the company to recognize impairment losses.

The Company accounted for impairment losses for certain assets in the scope of the partnership and divestment program, mainly with respect to oil and gas production fields in Gulf of Mexico.

The table below shows the impairment losses, net of reversals, recognized within the statement of income in 2018, 2017 and 2016:

Assets or CGU by nature (*)	Carrying amount	Recoverable amount (**)	Impairment (***)	Business segment	Comments
2018					
Property, plant and equipment and intangible assets					
Producing properties relating to oil and gas activities in Brazil (several CGUs)	7,019	9,923	524	E&P - Brazil	item (a1)
Transpetro's fleet of vessels	1,721	1,300	428	RTM - Brazil	item (b1)
Oil and gas production and drilling equipment in Brazil	199	6	197	E&P - Brazil	item (c1)
UFN III	312	200	114	RTM - Brazil	item (d1)
Producing properties relating to oil and gas activities Abroad (several CGUs)	2,258	1,554	715	E&P - Abroad	item (e1)
GASFOR II	58	-	59	Gas & Power - Brazil	item (f)
Comperj	46	-	47	RTM - Brazil	item (g1)
Second refining unit in RNEST	1,114	1,092	22	RTM - Brazil	item (h1)
Others	666	756	14	Several Segments	
			2,120		
Assets classified as held for sale					
Producing properties relating to oil and gas activities - in Riacho da Forquilha	98	459	(34)	E&P - Brazil	item 14.2
Others	25	109	(81)	Several Segments	
Total			2,005		
2017					
Property, plant and equipment and intangible assets					
Producing properties relating to oil and gas activities in Brazil (several CGUs)	11,826	16,070	(870)	E&P - Brazil	item (a2)
Second refining unit in RNEST	1,716	1,261	464	RTM - Brazil	item (h2)
Fertilizer Plants	412	-	412	Gas & Power - Brazil	item (j)
Oil and gas production and drilling equipment in Brazil	360	4	363	E&P - Brazil	item (c2)
Producing properties relating to oil and gas activities Abroad (several CGUs)	215	89	128	E&P - Abroad	item (e2)
Panamax vessels - Transpetro	112	-	112	RTM - Brazil	item (k)
Araucária	70	-	70	Gas & Power - Brazil	item (l1)
Comperj	51	-	51	RTM - Brazil	item (g2)
Conecta and DGM	38	-	38	Distribution- Abroad	item (i)
Others	1,863	1,797	68	Several Segments	
			836		
Assets classified as held for sale					
Producing properties relating to oil and gas activities in Roncador	3,164	2,766	405	E&P - Brazil	item 14.2
Others	317	366	(50)	Several Segments	
Total			1,191		
2016					
Producing properties relating to oil and gas activities in Brazil (several CGUs)	12,788	10,718	2,268	E&P - Brazil	item (a3)
Oil and gas production and drilling equipment in Brazil	918	64	854	E&P - Brazil	item (c3)
Second refining unit in RNEST	2,488	1,708	780	RTM - Brazil	item (h3)
Suape Petrochemical Complex	1,099	480	619	RTM - Brazil	item (m)
Comperj	403	-	403	RTM - Brazil	item (g3)
Transpetro's fleet of vessels	1,793	1,549	244	RTM - Brazil	item (b2)
Fertilizer Plant - UFN III	523	370	153	Gas & Power - Brazil	item (d2)
Araucária (fertilizers plant)	197	57	140	Gas & Power - Brazil	item (l2)
Quixada Power plant	28	-	28	Biofuel, Brazil	
Others	614	424	148	Several Segments	
			5,637		
Assets classified as held for sale					item 14.2
Suape Petrochemical Complex	816	381	435	RTM - Brazil	
Petrobras Chile Distribución	546	464	82	Distribution- Abroad	
Power Plants Celso Furtado and Rômulo Almeida	120	72	47	RTM - Brazil	
Others	96	104	(8)	Several Segments	
			556		
Total			6,193		

(*) It only includes carrying amounts and recoverable amounts of impaired assets or assets for which reversals were recognized.

(**) The recoverable amounts of assets for impairment computation were their value in use, except for oil and gas production and drilling equipment that were based on their fair value.

(***) Reversals are presented in brackets.

14.1. Impairment of property, plant and equipment and intangible assets

For impairment testing purposes, the Company bases its cash flow projections on:

- The estimated useful life of the asset or assets grouped into the CGU, based on the expected use of those assets, considering the Company's maintenance policy;
- Assumptions and financial budgets/forecasts approved by management for the period corresponding to the expected life cycle of each different business; and
- A pre-tax discount rate derived from the Company's post-tax weighted average cost of capital (WACC).

Information on key assumptions for impairment testing and the definition of Company's CGUs are presented in notes 5.2 and 5.3, respectively. Management assumptions and judgements, which are based on the Company's business and management model, are required on these matters.

The cash flow projections used to measure the value in use of the CGUs in 2018 were mainly based on the following estimates of key assumptions for impairment testing:

For comparative purposes, estimates of key assumptions for impairment testing in 2018, 2017 and 2016 are shown below:

2018

	2019	2020	2021	2022	2023	Long term Average
Average Brent (US\$/bbl)	66	67	72	75	75	73
Average Brazilian Real (excluding inflation) - Real /U.S. dollar exchange rate	3.64	3.56	3.5	3.46	3.44	3.37

2017

	2018	2019	2020	2021	2022	Long term Average
Average Brent (US\$/bbl)	53	58	66	70	73	71
Average Brazilian Real (excluding inflation) - Real /U.S. dollar exchange rate	3.44	3.47	3.47	3.46	3.49	3.4

2016

	2017	2018	2019	2020	2021	Long term Average
Average Brent (US\$/bbl)	48	56	68	71	71	70
Average Brazilian Real (excluding inflation) - Real /U.S. dollar exchange rate	3.46	3.54	3.48	3.42	3.38	3.36

Information on the main impairment losses and reversals of property, plant and equipment and intangible assets are described below:

a1) Producing properties in Brazil – 2018

Impairment assessment for producing properties in Brazil under the concession regime for oil and gas resulted in a net reversal of impairment losses of US\$ 524. Cash flow projections were based on financial budgets/forecasts approved by management and the post-tax discount rates (excluding inflation) derived from the WACC for the E&P business of 7.4% p.a. at December 31, 2018. This amount comprises:

Impairment losses totaling US\$ 1,054 primarily related to CGUs Camorim (US\$ 140), Linguado (US\$ 139), Piranema (US\$ 93), Guaricema (US\$ 92), Juruá (US\$ 91), Bicudo (US\$ 83), Caioba (US\$ 61), Pper-1 group (US\$ 49), Garoupinha (US\$ 39), Frade (US\$ 39), Castanhal (US\$ 36) and Papa Terra (US\$ 35). These losses were substantially due to higher estimates of future decommissioning costs driven by costs related to subsea facilities and equipment and depreciation of the Brazilian real against the U.S. dollar.

Reversals of impairment totaling US\$ 530 primarily from the CGUs Cvit group (US\$ 158), Uruguá group (US\$ 151), Ceará Mar group (US\$ 50), Dom João (US\$ 23), Miranga group (US\$ 16), Fazenda Belém group (US\$ 13) and Bijupirá-Salema group (US\$ 13), due to upward revision in the estimated production curves following a review of certain projects investments, as set out in the BMP 2019-2023.

a2) Producing properties in Brazil – 2017

Impairment assessment for producing properties in Brazil under the concession regime for oil and gas resulted in a net reversal of impairment losses of US\$ 870. Cash flow projections were based on financial budgets/forecasts approved by management and the post-tax discount rates (excluding inflation) derived from the WACC for the E&P business of 7.6% p.a. at December 31, 2017. This amount comprises:

- Reversals of impairment totaling US\$ 1,733 primarily from North group (US\$ 912), *Espadarte and Papa-Terra* fields (US\$ 125 and US\$ 122), *Uruguá* group (US\$ 100), *Pampo* field (US\$ 91), *Fazenda Alegre* group (US\$ 45), *Cidade de São Mateus* group (US\$ 44), *Riachuelo* field (US\$ 40), *Fazenda Imbé* group (US\$ 28), *Fazenda Bálsamo* field (US\$ 26), *Peroá* group (US\$ 25), *São Mateus* group (US\$ 19) and *Riacho da Forquilha* field (US\$ 18). These reversals substantially reflected the lower post-tax real discount rate, the approval of investments in enhancing recovery of mature fields and the lower tax burden set forth in the new tax rules applicable to the oil and gas industry (see note 21.4).
- Impairment losses totaling US\$ 863 mainly related to CGUs *Piranema* (US\$ 227), *Salgo* (US\$ 104) *Ceara Mar* group (US\$ 95), Cvit group (US\$ 63), *Miranga* group (US\$ 59), *Fazenda Belém* group (US\$ 49), *Frade* (US\$ 40) *Dom João* (US\$ 27) and *Candeias* (US\$ 18). These losses were substantially driven by an expected acceleration of production cessation reflecting an optimization of investment portfolio, as well as by a lower risk-adjusted discount rate for decommissioning costs, which also increased the costs of assets related to the abandonment and dismantling of these areas.

a2) Producing properties in Brazil – 2016

Impairment losses of US\$ 2,268 were recognized for certain oil and gas fields in Brazil under E&P concessions. Cash flow projections were based on: financial budgets/forecasts approved by Management and the post-tax discount rates (excluding inflation) derived from the WACC for the E&P business of 9.1% p.a. at December 31, 2016. The impairment losses were related primarily to the following fields and groups of fields: North group (US\$ 1,178), *Ceará Mar* Group (US\$ 210), *Guaricema* (US\$ 126), *Dourado* (US\$ 88), *Maromba* (US\$ 86), *Bijupirá* and *Salema* (US\$ 82), *Papa-Terra* (US\$ 72), *Trilha* (US\$ 69), *Uruguá* group (US\$ 62), *Pampo* (US\$ 67), *Frade* (US\$ 65), *Badejo* (US\$ 56), *Bicudo* (US\$ 49), *Riachuelo* (US\$ 44), *Fazenda Bálsamo* (US\$ 41) and *Água Grande* group (US\$ 31). These impairment losses were mainly due to the appreciation of the Brazilian Real against the U.S. Dollar, price assumptions review, Company's annual reviews of oil and gas reserves and decommissioning cost estimates, as well a higher discount rate following the increase in Brazil's risk premium. In addition, an impairment reversal relating to *Centro Sul* group, amounting to US\$ 415, was recognized due to increased estimate of reserves and production, as well as lower operating expenses estimates based on a review of its fields operations, as set forth in 2017-2021 BMP, considering the decommissioning of a unit which had high operational costs and replacing another unit with an investment in a new processing plant which was committed to during the third quarter of 2016.

b1) Transpetro's fleet of vessels – 2018

The lower freight rates projected in PNG 2019-2023 significantly affected impairment assessment of the Transpetro's fleet of vessels, resulting in the recognition of impairment losses in the amount of US\$ 428 in 2018. The post-tax discount rates (excluding inflation) applied to the transportation sector ranged from 3.8% p.a. to 6.6% p.a.

b2) Transpetro's fleet of vessels - 2016

In 2016, an impairment loss of US\$ 244 was recognized for Transpetro's fleet of vessels. Cash flow projections were based on: financial budgets/forecasts approved by Management; and post-tax discount rates (excluding inflation) ranging from 4.53% p.a. to 9.97% p.a. (3.92% p.a. to 8.92% p.a. in 2015) derived from the WACC for the transportation industry, considering financial leverage and the respective tax benefits. The impairment loss recognized in the third quarter mainly relates to a group of support vessels of Hidrovias project that were removed from this CGU due to the postponements and suspension of constructions projects, as well as the use of a higher discount rate. In the last quarter of 2016, additional impairment charges were accounted for due to the commencement of construction on 5 vessels after securing the projects funding, which avoided the possibility of future claims by alleging breach of contracts, as well as a further increase in discount rate.

c1) Oil and gas production and drilling equipment in Brazil – 2018

In 2018, impairment losses for oil and gas production and drilling equipment in Brazil that were not directly related to oil and gas producing properties amounted to US\$ 197, as a result of: i) ceased operation of the single buoy mooring Monobóia 2 – PDET (US\$ 172); ii) lower fair value of certain equipment related to the FPSO P-72 and P- 73 that could not be committed to other projects, when compared to their carrying amount (US\$ 24).

c2) Oil and gas production and drilling equipment in Brazil – 2017

In 2017, impairment losses amounted to US\$ 363 as a result of: i) lower fair value of certain equipment related to the FPSO P-72 and P- 73 that could not be committed to other projects, when compared to their carrying amount (US\$ 127); ii) decommissioning of a crane and launch ferry (US\$ 114) and iii) hibernation of equipment of Inhaúma Shipyard excluded from the initial scope of Inhauma logistic center (US\$ 125).

c3) Oil and gas production and drilling equipment in Brazil – 2016

Impairment losses of US\$ 854 were recognized for oil and gas production and drilling equipment which were not directly related to oil and gas producing properties. Cash flow projections were based on: financial budgets/forecasts approved by Management; and an 9.9% p.a. post-tax discount rate (excluding inflation) derived from the WACC for the oil and gas services and equipment industry. These impairment losses were mainly related to uncertainties over the ongoing hulls construction of the FPSOs P-71, P-72 and P-73, amounting to US\$ 593 as set out in note 14.4.

d1) Fertilizer Plant - UFN III – 2018

An impairment loss of US\$ 114 was recognized for the fertilizer plant UFN III (*Unidade de Fertilizantes e Nitrogenados III*) due to its lower fair value.

d2) Fertilizer Plant - UFN III - 2016

An impairment loss of US\$ 153 was recognized in 2016. Cash flow projections were based on: financial budgets/forecasts approved by Management; and an 8.3% p.a. post-tax discount rate (excluding inflation) derived from the WACC for the fertilizer business, reflecting a specific risk premium for the postponed projects. This impairment loss mainly relates to: (i) the use of a higher discount rate, (ii) the appreciation of the Brazilian Real against the US Dollar.

e1) Producing properties abroad – 2018

The Company recognized an impairment loss in the amount of US\$ 715 with respect to producing properties of oil and gas activities in the Gulf of Mexico. The impairment loss was primarily driven by changes in operational assumptions and discount rate considering the terms of the agreement between the Company and Murphy Oil Corporation in order to establish a joint venture through such assets.

e2) Producing properties abroad – 2017

In 2017, impairment losses of US\$ 128 were recognized for E&P assets located in the United States, principally reflecting the expected cessation of production and definitive abandonment of operation in Hadrian South field. Cash flow projection were based on: financial budgets/forecasts approved by Management; 5.7% p.a. post-tax real discount rate (5.5% p.a. in 2016) derived from the WACC for the E&P business in United States.

f) GASFOR II – 2018

Management decided to halt the development of the GASFOR II project, carried out by TAG, for an extended period. Accordingly, this asset was excluded from the Natural Gas CGU and its impairment test was performed separately. Due to its halt, it is not possible to estimate future cash flows arising from the use of this asset, resulting in the recognition of impairment losses in the amount equal to the carrying amount thereof (US 59).

g1) Comperj - 2018

As set forth in BMP 2019-2023, the resumption of the Comperj project still depends on new partnerships. However, the construction of Comperj's first refining unit facilities that will also support the natural gas processing plant (UPGN) are in progress as the facilities are part of the infrastructure for transporting and processing natural gas from the pre-salt layer in the Santos Basin. Nevertheless, due to the interdependence between such infrastructure and Comperj first refining unit, the Company recognized additional impairment charges, totaling US\$ 47 in 2018.

g2) Comperj - 2017

In 2017, the resumption of the Comperj project was still depending on new partnerships. Accordingly, due to the same aforementioned reasons, the Company recognized impairment charges, in 2017, totaling US\$ 51.

g3) Comperj - 2016

Following a reassessment of COMPERJ project in the second quarter of 2016 confirming the postponement of its first refining unit until December 2020, with continuous efforts to seek new partnerships to resume the project, the Company recognized an impairment charge on the remaining balance of this project (US\$ 403) in 2016.

h1) Second refining unit in RNEST – 2018

The impairment assessment over the Second refining unit in RNEST resulted in the recognition an impairment loss amounting to US\$ 22, as its start-up was postponed by five months. The real discount rate applied was 7.3% p.a. post-tax discount rate derived from the WACC for the refining business, reflecting a specific risk premium for the postponed project.

h2) Second refining unit in RNEST - 2017

An impairment loss of US\$ 464 was recognized for the second refining unit in RNEST. Cash flow projections were based on: financial budgets/forecasts approved by Management; and an 7.7% p.a. post-tax discount rate (excluding inflation) derived from the WACC for the refining business, reflecting a specific risk premium for the postponed project. The impairment loss was mainly attributable to: (i) higher costs of raw materials and (ii) lower refining margin, as set forth in BMP 2018-2022.

h3) Second refining unit in RNEST - 2016

An impairment loss of US\$ 780 was recognized for the second refining unit in RNEST. Cash flow projections were based on: financial budgets/forecasts approved by Management; and an 8.7% p.a. (8.1% p.a. in 2015) post-tax discount rate (excluding inflation) derived from the WACC for the refining business, reflecting a specific risk premium for the postponed project. The impairment loss was mainly attributable to: (i) the use of a higher discount rate and (ii) a delay in expected future cash inflows to 2023 resulting from postponing the project, considering the completion of this project with the Company's own capital resources as set forth in the 2017-2021 Business and Management Plan.

i) Conecta and DGM – 2017

Following prices forecast and current agreements of natural gas supply in Uruguay, the Company recognized impairment losses for intangible assets and property, plant and equipment, in the amount of US\$ 38, with respect to concession agreements for natural gas distribution carried out by the subsidiaries Conecta and DGM.

j) Fertilizer Plants - 2017

The Company decided to halt its operations in the fertilizer plants Camaçari-BA (FAFEN-BA) and Laranjeiras-SE (FAFEN-SE), following its plans to optimize its investment portfolio as set out in BMP 2018-2022, thereby, being removed from the Gas & Power CGU, assessed for impairment separately and their cash flow projections for the period covered by the BMP 2018-2022 were not able to be estimated. Accordingly, an impairment loss amounting to US\$ 412 was recognized in 2017 with respect to these fertilizer plants.

k) Panamax vessels – Transpetro - 2017

In December 2017, the decision to hibernate the construction of three vessels of PANAMAX project (EI-512, EI-513 and EI-514) triggered their removal from the Transpetro's fleet of vessels CGU. These assets were assessed for impairment separately and, as a result, the Company accounted for an impairment loss for the total carrying amounts of these assets (US\$ 112).

l1) Araucária - 2017

Indications of impairment were identified during this period, such as lower sales volume and prices, as well as higher production costs. Therefore, the Company assessed the related assets for impairment and, as a result, an impairment charge of US\$ 70 was recognized primarily in the second quarter of 2017 due to negative cash flow projections that were based on financial budget and forecasts approved by the management and a post-tax real discount rate of 6.6% p.a. derived for the weighted average cost of capital (WACC) for the fertilizer business.

l2) Araucária - 2016

An impairment loss of US\$ 140 was recognized for *Araucária Nitrogenados S.A.* Cash flow projections were based on: financial budgets/forecasts approved by Management; and a 7.8% p.a. post-tax discount rate (excluding inflation) derived from the WACC for the fertilizer business (6.6% p.a. in 2015). The impairment loss was mainly attributable to (i) the use of a higher discount rate, (ii) the appreciation of Brazilian Real against the U.S. Dollar and (iii) an increase in estimated production costs.

m) Suape Petrochemical Complex - 2016

An impairment loss of US\$ 619 was recognized for *Companhia Integrada Têxtil de Pernambuco S.A. - CITEPE* and *Companhia Petroquímica de Pernambuco S.A. – Petroquímica Suape* at September 30, 2016. Cash flow projections were based on: financial budgets/forecasts approved by Management; and a 7.5% p.a. post-tax discount rate (excluding inflation) derived from the WACC for the petrochemical business. The impairment loss was mainly attributable to lower market projections and the appreciation of Brazilian real against the U.S. dollar. Following the disposal of Suape Petrochemical Complex in December 2016, the Company recognized an additional impairment charge as set out in note 14.2.

14.1.1. Assets most sensitive to future impairment

As set out in note 4.10, whenever the recoverable amount of an asset or CGU falls below the carrying amount, an impairment loss is recognized to reduce the carrying amount to the recoverable amount. The following table presents the assets and CGU most sensitive to future impairment losses as their recoverable amounts were close to their current carrying amount. Changes in material assumptions for impairment testing may result in the recognition of additional impairment charges on such assets in future periods.

				12.31.2018
	Business segment	Carrying amount	Recoverable amount	Sensitivity (*)
Producing properties relating to oil and gas activities in Brazil (3 CGUs)	E&P	305	337	(7)

(*) It is based on a 10% reduction in the recoverable amount of CGUs.

For information on the main assumptions for impairment testing, see note 5.2.

14.2. Assets classified as held for sale

Following the Company's Board of Director approvals of disposal of certain assets in 2018, as described in note 10, impairment reversals amounting to US\$ 115 for assets held for sale, including the effects arising from the sale of onshore producing fields located in Potiguar basin.

In 2017, impairment losses amounting to US\$ 355 on assets held for sale were primarily attributable to the sale of 25% interest in Roncador field.

In 2016, the Company recognized impairment losses amounting to US\$ 556 due to certain sales of interests in investees approved by the Board of Directors, mainly related to Suape Petrochemical Complex (US\$ 435), Petrobras Chile Distribución (US\$ 82) and Power plants *Romulo Almeida* and *Celso Furtado* (US\$ 47).

14.3. Investments in associates and joint ventures (including goodwill)

Value in use is generally used for impairment test of investments in associates and joint ventures (including goodwill). The basis for estimates of cash flow projections includes: projections covering a period of 5 to 12 years, zero-growth rate perpetuity, budgets, forecasts and assumptions approved by management and a pre-tax discount rate derived from the WACC or the Capital Asset Pricing Model (CAPM), when applicable.

14.3.1. Investment in publicly traded associate (Braskem S.A.)

Braskem's shares are publicly traded on stock exchanges in Brazil and abroad. As of December 31, 2018, the quoted market value of the Company's investment in Braskem was US\$ 3,421 based on the quoted values of both Petrobras' interest in Braskem's common stock (47% of the outstanding shares), and preferred stock (22% of the outstanding shares). However, there is extremely limited trading of the common shares, since non-signatories of the shareholders' agreement hold only approximately 3% of the common shares.

Given the operational relationship between Petrobras and Braskem, the recoverable amount of the investment for impairment testing purposes was determined based on value in use, considering future cash flow projections and the manner in which the Company can derive value from this investment via dividends and other distributions to arrive at its value in use. As the recoverable amount was higher than the carrying amount, no impairment losses were recognized for this investment.

Cash flow projections to determine the value in use of Braskem were based on the following key assumptions:

- Estimated average exchange rate of R\$ 3.64 to U.S.\$1.00 in 2019 (converging to R\$ 3.37 in the long run);
- Average Brent crude oil price at US\$ 66 in 2019, converging to US\$ 73 in the long run;
- Prices of feedstock and petrochemical products reflecting projected international prices;
- Petrochemical products sales volume estimates reflecting projected Brazilian and global G.D.P growth;
- Post-tax real discount rate (excluding inflation) of 9.6%p.a (same rate in 2017); and
- Increases in the EBITDA margin during the growth cycle of the petrochemical industry in the next years and declining in the long run.

14.3.2. Investments in state-controlled natural gas distributors

In 2018, impairment assessments on investments in state-controlled natural gas distributors did not give rise to any indication that these assets would be impaired. Post-tax real discount rate (excluding inflation) used in such assessment was 5.8% p.a (5.9% p.a in 2017).

14.3.3. Impairment losses on equity-method investments

In 2018, the Company accounted for a US\$ 28 reversal of impairment losses previously recognized as results in equity-accounted investments, substantially attributable to POGBV and Riograndense refinery (RPR).

In 2017, the Company accounted for US\$ 20 as results in equity-accounted investments, substantially attributable to the investees Logum, Belém Bioenergia Brasil and Refinaria de Petróleo Riograndense.

In 2016, impairment losses on equity-method investments in the amount of US\$ 182 were substantially attributable to investees of biofuels segment, notably the former associate Guarani (US\$ 178) and the former joint venture Nova Fronteira (US\$ 30).

14.4. Construction of platform hulls by Ecovix and Enseada shipyards

The Company entered into contracts with the suppliers Ecovix-Engevix Construções Oceânicas S.A and Enseada Industria Naval S.A. for supplying eight hulls for the FPSOs P-66 to P-73 and for hulls conversion of four FPSOs (P-74 to P-77), respectively.

Considering the relevance of these assets in the context of the Business and Management Plan and due to the financial difficulties faced by the suppliers, escrow accounts relating to these projects were created in the last quarter of 2015 in order to ensure the ongoing performance of the services hired.

These escrow accounts have comprised funds transferred in advance for payments to be made by the shipyards, restricted to the scope of the contracts and limited to their total balance. The deposits would be offset to the extent that services rendered or equipment delivered, with the remaining balance being reimbursed. This strategy was considered effective as the projects achieved significant progress up to September 2016, enabling the delivery of P-67 hull to a shipyard in China for integration services, the recommence of the work in progress of P-69 hull also in China, the continuity of the work in progress of P-68 hull in Rio Grande shipyard, as well as the progress on priority activities for the conclusion of minimum scope of P-74 and P-76 hulls, delivering these units to shipyards in China for integration services and for setting up topsides.

During the third quarter of 2016, the Company reassessed the progress of the hulls project and the continuity of the escrow accounts related to the projects and concluded that this strategy, which in its beginning avoided the work in progress discontinuation, was not as effective as it was previously.

Due to uncertainties regarding the FPSOs P-71, P-72 and P-73 hulls construction continuity after significant delays on projects progress, the Company recognized, in the third quarter of 2016, impairment charges amounting to US\$ 593 as set out in note 14.1.

Based on management evaluation, in 2016 the Company recognized allowances for impairment amounting to US\$ 689 within other expenses, net with respect to the remaining balance of advances to these suppliers in the context of the escrow accounts (US\$ 352) and debts assumption relating to Ecovix and Enseada (US\$ 337), in which legal procedures to recover them are being assessed.

In addition, the Company wrote-off, in 2016, capital expenditures related to the right of use the Rio Grande shipyard in the amount of US\$ 155, as well as other investments related to the P-71, P-72 and P-73 amounting to US\$ 146.

15. Exploration and evaluation of oil and gas reserves

The exploration and evaluation activities include the search for oil and gas reserves from obtaining the legal rights to explore a specific area to the declaration of the technical and commercial viability of the reserves.

Changes in the balances of capitalized costs directly associated with exploratory wells pending determination of proved reserves and the balance of amounts paid for obtaining rights and concessions for exploration of oil and natural gas (capitalized acquisition costs) are set out in the following table:

Capitalized Exploratory Well Costs / Capitalized Acquisition Costs (*)	12.31.2018	12.31.2017
Property plant and equipment		
Opening Balance	4,522	5,133
Additions to capitalized costs pending determination of proved reserves	379	797
Capitalized exploratory costs charged to expense	(10)	(107)
Transfers upon recognition of proved reserves	(95)	(1,227)
Cumulative translation adjustment	(664)	(74)
Closing Balance	4,132	4,522
Intangible Assets	1,980	1,390
Capitalized Exploratory Well Costs / Capitalized Acquisition Costs	6,112	5,912

(*) Amounts capitalized and subsequently expensed in the same period have been excluded from this table.

For detailed information about signature bonus paid and declaration of commerciality in 2018, see note 13.

Exploration costs recognized in the statement of income and cash used in oil and gas exploration and evaluation activities are set out in the following table:

	2018	2017	2016
Exploration costs recognized in the statement of income			
Geological and geophysical expenses	330	361	371
Exploration expenditures written off (includes dry wells and signature bonuses)	87	279	1,281
Contractual penalties	91	152	46
Other exploration expenses	16	8	63
Total expenses	524	800	1,761
Cash used in :	2018	2017	2016
Operating activities	346	371	435
Investment activities	1,273	1,794	1,075
Total cash used	1,619	2,165	1,510

For the year ended December 31, 2018, the Company recognized a provision in the amount of US\$ 91 arising from potential contractual penalties for non-compliance with minimum percentages of local content in 131 blocks for which the exploratory phases were concluded.

15.1. Aging of Capitalized Exploratory Well Costs

The following tables set out the amounts of exploratory well costs that have been capitalized for a period of one year or more after the completion of drilling, the number of projects whose costs have been capitalized for a period greater than one year, and an aging of those amounts by year (including the number of wells relating to those costs):

Aging of capitalized exploratory well costs (*)

	2018	2017
Exploratory well costs capitalized for a period of one year	85	111
Exploratory well costs capitalized for a period greater than one year	4,047	4,411
Total capitalized exploratory well costs	4,132	4,522
Number of projects relating to exploratory well costs capitalized for a period greater than one year	49	54

	Capitalized costs (2018)	Number of wells
2017	52	2
2016	288	4
2015	806	16
2014	1,041	16
2013 and previous years	1,860	36
Exploratory well costs that have been capitalized for a period greater than one year	4,047	74

(*) Amounts paid for obtaining rights and concessions for exploration of oil and gas (capitalized acquisition costs) are not included.

Exploratory well costs that have been capitalized for a period greater than one year since the completion of drilling amount to US\$ 4,047. Those costs relate to 49 projects comprising (i) US\$3,834 for wells in areas in which there has been ongoing drilling or firmly planned drilling activities in the near term and for which an evaluation plan (“*Plano de Avaliação*”) has been submitted for approval by ANP; and (ii) US\$213 relate to costs incurred to evaluate the reserves and their potential development.

16. Trade payables

	12.31.2018	12.31.2017
Third parties in Brazil	4,008	3,671
Third parties abroad	1,572	1,380
Related parties	747	716
Balance in current liabilities	6,327	5,767

In 2018, there was an increase in trade payables in Brazil due to a rise in oil purchases, following a higher supply of crude oil produced by third parties in Brazil, as well as due to the new production individualization agreements. The increase in trade payables abroad primarily reflects higher international prices and a rise in imports of oil, oil products, natural gas and NGL.

17. Finance debt

17.1. Balance by type of finance debt

	12.31.2018	12.31.2017
In Brazil		
Banking Market	9,576	12,672
Capital Market	3,320	3,649
Development banks	3,346	5,571
Others	9	38
Total	16,251	21,930
Abroad		
Banking Market	24,124	31,265
Capital Market	39,627	51,912
Development banks	41	-
Export Credit Agency	3,881	3,670
Others	251	269
Total	67,924	87,116
Total finance debt	84,175	109,046
Current	3,667	7,001
Non-current	80,508	102,045

In order to reflect the changes in accounting practices arising from the application of IFRS 9, the Company remeasured its financing agreements in force at January 1, 2018 which previously had their contractual clauses renegotiated and the modifications thereof did not result in substantial changes, as set out in note 2.3.1. Accordingly, the balance of current and non-current debt increased by US\$242 due to the initial application of IFRS 9, which was recognized within equity at January 1, 2018.

17.2. Changes in finance debt and reconciliation with cash flows from financing activities

	Balance at 12.31.2016	Adoption of IFRS 9	Additions	Principal amortization (*)	Interest amortization (*)	Accrued interest (**)	Foreign exchange/ inflation indexation charges	Cumulative translation adjustment (CTA)	Modification of contractual cash flows	Balance at 12.31.2017
In Brazil	25,921	-	6,801	(10,641)	(2,286)	2,296	114	(275)	-	21,930
Abroad	92,205	-	18,788	(25,489)	(4,251)	4,851	1,057	(45)	-	87,116
	118,126	-	25,589	(36,130)	(6,537)	7,147	1,171	(320)	-	109,046

	Balance at 12.31.2017	Adoption of IFRS 9	Additions	Principal amortization (*)	Interest amortization (*)	Accrued interest (**)	Foreign exchange/ inflation indexation charges	Cumulative translation adjustment (CTA)	Modification of contractual cash flows	Balance at 12.31.2018
In Brazil	21,930	65	2,442	(5,451)	(1,220)	1,338	27	(2,880)	-	16,251
Abroad	87,116	177	8,644	(27,988)	(4,465)	4,400	1,409	(1,357)	(12)	67,924
	109,046	242	11,086	(33,439)	(5,685)	5,738	1,436	(4,237)	(12)	84,175

Reconciliation to the Statement of Cash Flows

PP&E on credit	(136)	-	-
Debt restructuring	-	(635)	-
Deposits linked to financing	-	-	(106)
Finance leases	-	11	-

Net cash used in financing activities	10,950	(34,063)	(5,791)
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(*) It includes pre-payments.

(**) It includes premium and discount over notional amounts, as well as gains and losses by modifications in contractual cash flows.

In line with the Company's Business and Management Plan and following its liability management strategy, recent funds have been raised in order to settle older debts, as well as aiming at improving the debt repayment profile taking into account its alignment with investments returns over the long run.

For the year ended December 31, 2018, proceeds from financing amounted to US\$10,950, principally reflecting: (i) funds raised from the domestic and international banking market in the amount of US\$ 7,513 maturing from 4.5 to 6.5 years; (ii) global notes issued in the capital market in the amount of US\$ 1,962 and maturing in 2029; and (iii) proceeds from Export Credit Agency amounting to US\$ 1,041.

In addition, the Company repaid several finance debts, notably: (i) US\$ 13,943 relating to repurchase of global bonds previously issued by the Company in the capital market, with net premium paid to bond holders amounting to US\$ 329; and (ii) pre-payment of banking loans in the domestic and international market totaling US\$ 15,480; and (iii) pre-payment of US\$ 1,356 with respect to financings with the Brazilian Development Bank (*Banco Nacional de Desenvolvimento Econômico e Social – BNDES*).

17.3. Summarized information on current and non-current finance debt

Maturity in	2019	2020	2021	2022	2023	2024 onwards	Total (**)	Fair value
Financing in U.S.Dollars (US\$)(*):	2,100	1,538	4,598	5,726	9,274	39,189	62,425	64,763
Floating rate debt	1,359	1,473	2,526	4,358	6,175	12,550	28,441	
Fixed rate debt	741	65	2,072	1,368	3,099	26,639	33,984	
Average interest rate	5.4%	5.9%	5.8%	5.7%	5.7%	6.5%	6.2%	
Financing in Brazilian Reais (R\$):	1,380	2,164	2,090	3,906	2,160	4,308	16,008	14,621
Floating rate debt	919	1,916	1,835	3,576	1,932	3,104	13,282	
Fixed rate debt	461	248	255	330	228	1,204	2,726	
Average interest rate	6.1%	6.1%	6.7%	6.5%	6.7%	5.9%	6.3%	
Financing in Euro (€):	124	219	324	685	517	1,649	3,518	4,258
Floating rate debt	1	174	-	-	-	-	175	
Fixed rate debt	123	45	324	685	517	1,649	3,343	
Average interest rate	4.5%	4.6%	4.8%	4.9%	4.6%	4.6%	4.7%	
Financing in Pound Sterling (£):	58	-	-	-	-	2,161	2,219	2,282
Fixed rate debt	58	-	-	-	-	2,161	2,219	
Average interest rate	5.9%	-	-	-	-	6.3%	6.2%	
Financing in other currencies:	5	-	-	-	-	-	5	5
Floating rate debt	-	-	-	-	-	-	-	
Fixed rate debt	5	-	-	-	-	-	5	
Average interest rate	9.9%	-	-	-	-	-	9.9%	
Total as of December 31, 2018	3,667	3,921	7,012	10,317	11,951	47,307	84,175	85,929
Average interest rate	5.5%	5.9%	5.9%	5.8%	5.8%	6.4%	6.1%	
Total as of December 31, 2017	7,001	6,476	9,641	12,745	18,014	55,169	109,046	116,621
Average interest rate	5.6%	5.9%	5.9%	5.9%	5.7%	6.4%	6.1%	

(*) Includes debt raised in Brazil (in Brazilian reais) indexed to the U.S. dollar.

(**)The average maturity of outstanding debt as of December 31, 2018 is 9.14 years (8.62 years as of December 31, 2017).

The fair value of the Company's finance debts is mainly determined and categorized into a fair value hierarchy as follows:

Level 1- quoted prices in active markets for identical liabilities, when applicable, amounting to US\$ 39,057 as of December 31, 2018 (US\$ 54,248 as of December 31, 2017); and

Level 2 – discounted cash flows based on discount rate determined by interpolating spot rates considering financing debts indexes proxies, taking into account their currencies and also Petrobras' credit risk, amounting to US\$ 46,872 as of December 31, 2018 (US\$ 62,373 as of December 31, 2017).

The sensitivity analysis for financial instruments subject to foreign exchange variation is set out in note 34.2.

17.4. Capitalization rate used to determine the amount of borrowing costs eligible for capitalization

The capitalization rate used to determine the amount of borrowing costs eligible for capitalization was the weighted average of the borrowing costs applicable to the borrowings that were outstanding during the period, other than borrowings made specifically for the purpose of obtaining a qualifying asset. For the year ended December 31, 2018, the capitalization rate was 6.35% p.a. (6.16% p.a. for the year ended December 31, 2017).

17.5. Lines of credit

				Amount		
Company	Financial institution	Date	Maturity	Available (Lines of Credit)	Used	Balance
Abroad						
PGT BV	CHINA EXIM	10/24/2016	5/23/2019	1,000	900	100
PGT BV	Syndicate of banks	3/7/2018	2/7/2023	4,350	–	4,350
PGT BV	Credit Agricole Corporate	4/12/2018	6/20/2019	400	222	178
Petrobras	New Development Bank	8/27/2018	8/27/2022	200	40	160
Total				5,950	1,162	4,788
In Brazil						
Petrobras	Banco do Brasil	3/23/2018	1/26/2023	516	–	516
Petrobras	Bradesco	6/1/2018	5/31/2023	516	–	516
Petrobras	Banco do Brasil	10/4/2018	9/5/2025	516	–	516
Transpetro	BNDES	11/7/2008	8/12/2041	117	53	64
Transpetro	Caixa Econômica Federal	11/23/2010	Not defined	85	–	85
Total				1,750	53	1,697

In the year ended December 31, 2018, the Company entered into a revolving credit facility (RCF) with a syndicate of 17 banks and also entered into three lines of credits: two with Banco do Brasil and one with Bradesco Bank. The Company can promptly access these funds at any moment until their maturities.

17.6. Covenants and Collateral

17.6.1. Covenants

The Company has covenants that were not in default at December 31, 2018 in its loan agreements and notes issued in the capital markets requiring, among other obligations i) the presentation of interim financial statements within 90 days of the end of each quarter (not reviewed by Independent Registered Public Accounting Firm) and audited financial statements within 120 days of the end of each fiscal year, with a grace period ranging from 30 to 60 days, depending on the agreement; ii) Negative Pledge / Permitted Liens clause; iii) clauses of compliance with the laws, rules and regulations applicable to the conduct of its business including (but not limited to) environmental laws; (iv) clauses in financing agreements that require both the borrower and the guarantor to conduct their business in compliance with anti-corruption laws and anti-money laundering laws and to institute and maintain policies necessary for such compliance; (v) clauses in financing agreements that restrict relations with entities or even countries sanctioned primarily by the United States (including, but not limited to, the Office of Foreign Assets Control (OFAC), Department of State and Department of Commerce), the European Union and United Nations; and vi) covenants with respect to debt level in some of its loan agreements with the Brazilian Development Bank (Banco Nacional de Desenvolvimento Econômico e Social - BNDES).

17.6.2. Collateral

Most of the Company's debt is unsecured, but certain specific funding instruments to promote economic development are collateralized.

Financing agreements with China Development Bank (CDB) maturing in 2026 and 2027 are also collateralized based on future oil exports for specific buyers limited to 200 thousand barrels per day up to 2019, 300 thousand barrels per day from 2020 to 2026, and 100 thousand barrels per day in 2027. This collateral may not exceed the amount of the related debt (US\$ 10,020 at December 31, 2018 and US\$ 10,815 at December 31, 2017).

On January 30, 2018, the Company pre-paid the balance of a financing agreement maturing in 2019 in the amount of US\$ 2,800.

The loans obtained by structured entities are collateralized based on the projects' assets, as well as liens on receivables of the structured entities. Bonds issued by the Company in the capital market are unsecured.

The global notes issued by the Company in the capital market through its wholly-owned subsidiary Petrobras Global Finance B.V. – PGF are unsecured. However, Petrobras fully, unconditionally and irrevocably guarantees these notes, as set out in note 35.

18. Leases

18.1. Future minimum lease payments / receipts – finance leases

Estimated lease payments / receivable	Receipts			Payments		
	Future value	Annual interest	Present value	Future value	Annual interest	Present value
2019	123	(63)	60	45	(22)	23
2020 - 2023	466	(195)	271	112	(59)	53
2024 and thereafter	476	(89)	387	331	(222)	109
As of December 31, 2018	1,065	(347)	718	488	(303)	185
Current			60			23
Non-current			658			162
As of December 31, 2018			718			185
Current			54			25
Non-current			735			204
As of December 31, 2017			789			229

18.2. Future minimum lease payments – operating leases

Operating leases mainly include oil and gas production units, drilling rigs and other exploration and production equipment, vessels and support vessels, helicopters, land and building leases.

2019	11,132
2020	8,981
2021	8,498
2022	7,195
2023	6,498
2024 and thereafter	53,074
As of December 31, 2018	95,378
As of December 31, 2017	92,019

As of December 31, 2018, the balance of estimated future minimum lease payments under operating leases includes US\$ 54,825 (US\$ 52,701 as of December 31, 2017) with respect to assets under construction, for which the lease term has not commenced.

For the year ended December 31, 2018, the Company recognized expenditures of US\$ 7,253 (US\$ 10,228 for the year ended December 31, 2017) for operating leases installments.

As discussed in note 6.1, the IFRS 16 provisions have governed the accounting treatment for operating leases from January 1, 2019.

19. Related-party transactions

The Company has a related-party transactions policy, which is annually revised and approved by the Board of Directors, and is applicable to all the Petrobras Group, in accordance with the Company's by-laws.

In order to ensure the goals of the Company are achieved and to align them with transparency of processes and corporate governance best practices, this policy guides Petrobras while entering into related-party transactions and dealing with potential conflicts of interest on these transactions, based on the following assumptions and provisions:

- Prioritization of the Company's interests regardless of the counterparty;
- Arm's length basis;
- Compliance with market conditions, especially concerning terms, prices and guarantees or with adequate compensatory payment;

- Accurate and timely disclosure in accordance with applicable authorities.

The Audit Committee must approve in advance transactions between the Company and its associates, the Brazilian Federal Government, including its agencies or similar bodies and controlled entities, taking into account the materiality established by this policy. The Audit Committee reports monthly to the Board of Directors.

Transactions with entities controlled by key management personnel or by their close family members are also approved in advance by the Audit Committee regardless of the amount involved.

Transactions with the Brazilian Federal Government, including its agencies or similar bodies and controlled entities, which are under the scope of Board of Directors approval, must be preceded by the Audit Committee and Minority Shareholders Committee assessment and must have prior approval of, at least, 2/3 of the board members.

The related-party transactions policy also aims to ensure an adequate and diligent decision-making process for the Company's key management.

19.1. Transactions with joint ventures, associates, government entities and pension plans

The Company has engaged, and expects to continue to engage, in the ordinary course of business in numerous transactions with joint ventures, associates, pension plans, as well as with the Company's controlling shareholder, the Brazilian federal government, which includes transactions with banks and other entities under its control, such as financing and banking, asset management and others.

The balances of significant transactions are set out in the following table:

	12.31.2018		12.31.2017	
	Assets	Liabilities	Assets	Liabilities
Joint ventures and associates				
State-controlled gas distributors (joint ventures)	307	114	294	141
Petrochemical companies (associates)	90	7	59	16
Other associates and joint ventures	285	744	177	691
Subtotal	682	865	530	848
Brazilian government – Parent and its controlled entities				
Government bonds	1,958	–	1,702	–
Banks controlled by the Brazilian Government	7,445	10,332	5,839	14,926
Receivables from the Electricity sector (note 8.4)	4,400	–	5,247	–
Petroleum and alcohol account - receivables from the Brazilian Government	307	–	251	–
Diesel Price Subsidy Program	400	–	–	–
Federal Government - dividends	–	324	–	–
Empresa Brasileira de Administração de Petróleo e Gás Natural – Pré-Sal Petróleo S.A. – PPSA	–	144	–	–
Others	64	121	45	217
Subtotal	14,574	10,921	13,084	15,143
Pension plans	59	96	68	94
Total	15,315	11,882	13,682	16,085
Current	4,345	2,528	2,521	2,013
Non-Current	10,970	9,354	11,161	14,072
Total	15,315	11,882	13,682	16,085

The income/expenses of significant transactions are set out in the following table:

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(Expressed in millions of US Dollars, unless otherwise indicated)



	2018	2017	2016
Joint ventures and associates			
State-controlled gas distributors (joint ventures)	2,306	2,203	1,740
Petrochemical companies (associates)	3,762	3,847	3,578
Other associates and joint ventures	(896)	(633)	462
Subtotal	5,172	5,417	5,780
Brazilian government – Parent and its controlled entities			
Government bonds	109	153	130
Banks controlled by the Brazilian Government	(902)	(1,466)	(3,073)
Receivables from the Electricity sector (note 8.4)	1,713	643	962
Petroleum and alcohol account - receivables from the Brazilian Government	92	1	5
Diesel Price Subsidy Program	1,559	-	-
Federal Government - dividends	3	-	-
Empresa Brasileira de Administração de Petróleo e Gás Natural – Pré-Sal Petróleo S.A. – PPSA	(461)	-	-
Others	144	227	200
Subtotal	2,257	(442)	(1,776)
Pension plans	-	-	-
Total	7,429	4,975	4,004
Revenues, mainly sales revenues	8,733	7,517	6,652
Purchases and services	(2,239)	(1,588)	(94)
Foreign exchange and inflation indexation charges, net	(316)	239	(284)
Finance income (expenses), net	1,251	(1,193)	(2,270)
Total	7,429	4,975	4,004

In addition to the aforementioned transactions, Petrobras and the Brazilian Federal Government entered into the Assignment Agreement in 2010, which grants the Company the right to carry out prospecting and drilling activities for hydrocarbons located in the pre-salt area limited to the production of five billion barrels of oil equivalent. For detailed information on Assignment Agreement, see note 12.4.

In 2018, the Company participated in three competitive processes and, subsequently, in the second bidding round of oil sales carried out by the Pre-Sal Petróleo SA - PPSA, the state-owned company that represents the interests of the Brazilian Federal Government. In the first three processes, the Company committed to acquire approximately 200,000 m3 of oil from Mero field. With respect to the second bidding round, the Company committed to acquire, from September 2018 to August 2021, approximately 1,781,000 m3 of oil from Mero and Sapinhoá fields, with an estimated amount of US\$ 759.

On November 27, 2018, Petrobras signed a lease agreement with the Federal University of Rio de Janeiro (UFRJ) for the concession of land use in areas where the Company's research and development center is located. This contract will last 50 years, renewable for an equal period, with a total estimated value of US\$ 203.

19.1.1. Diesel Price Subsidy Program

In 2018, after risk assessment, the Company joined the Diesel Price Subsidy Program established by the Brazilian Federal Government. This program granted reimbursements to diesel producers and importers to the extent that their selling prices to the domestic distributors were equal or lower than prices determined by relevant regulation. The amount of this government grant resulted from the following parameters governed by each phase of the program as shown below:

Phase	Period	Methodology of computation	Regulation
1st phase	June 1 to June 7, 2018	US\$ 0.02 dollars (R\$0.07) per liter	Decree 9,392/2018
2nd phase	June 8 to July 31, 2018	Difference between reference price provided for by ANP (Preço de Referência - PR) and the sales price to domestic distributors (Preço de Comercialização - PC), limited to US\$ 0.08 dollars (R\$ 0.30) per liter	Decree 9,403/2018
3rd phase	August 1 to December 31, 2018	Difference between PR and PC, limited to US\$ 0.08 dollars (R\$ 0.30) per liter, taking into account a fixed portion comprising charges related to Social Integration Program and Social Security Financing (PIS and COFINS) and previous differences greater than the limit	Decree 9,454/2018

The PR was driven by diesel international prices and U.S. dollar exchange rates. The first and second phases of the program included sales of different types of diesel, such as marine diesel. From the third phase of program, the subsidy become restricted to sales of road diesel and, additionally, a fixed portion made up of charges related Social Integration Program and Social Security Financing (PIS and COFINS), as well as differences exceeding US\$ 0.08 dollars (R\$ 0.30) per liter in previous periods, were included in its computation.

The settlement of the subsidy was granted to the extent the Company provided all necessary information to ANP in order to prove its fiscal regularity and prices of diesel sold in accordance with the relevant regulation. The period of the subsidy computation was up to thirty days with ANP confirmation within fifteen business days after receiving all the necessary documentation.

On October 10, 2018, ANP refused to grant the Company the subsidy of US\$ 17 related to the first phase of the program, alleging that the Company did not comply with the requirements. The Company has taken measures to enable the collection and recognition of such amount.

Such revenue recognition occurred as the diesel was sold and delivered to distributors and the right to the grant was recognized within current account receivables. Through December 31, 2018, the Company accounted for US\$ 1,415 as revenues with respect to sales within the second and third phases of the program (see note 25). Of this amount, US\$ 1,157 was disbursed to the Company in 2018.

The Company collected the remaining balance of the subsidy in the first two months of 2019.

19.1.2. Petroleum and Alcohol accounts - Receivables from the Brazilian Federal Government

Pursuant to Provisional Measure 2,181 of August 24, 2001, the Brazilian Federal Government may settle the balance of receivables related to the Petroleum and Alcohol accounts by using National Treasury Notes in an amount equal to the outstanding balance, or allow the Company to offset the outstanding balance against amounts payable to the Federal Government, including taxes payable, or both.

The Company provided all the information required by the National Treasury Secretariat (Secretaria do Tesouro Nacional - STN) in order to resolve disputes between the parties and conclude the settlement with the Brazilian Federal Government.

Following several negotiation attempts at the administrative level, the Company filed a lawsuit in July 2011 to collect the receivables.

On October 28, 2016, the court ruled in favor of the Company disallowing the use of an alleged debt from the liquidated company of the group, Petrobras Comércio Internacional S.A. – Interbrás, by the Brazilian Federal Government, when offsetting the outstanding balance.

On July 18, 2017, the Brazilian Federal Government appealed the ruling and, shortly after, the Regional Federal Court (*Tribunal Regional Federal* – TRF) denied the appeal, sustained the aforementioned ruling from 2016 and determined the settlement of the amount owed by the Brazilian Federal Government including inflation charges from August 2011 based on the National Consumer Price Index – IPCA and interest at rates provided for the Brazilian Federal Justice.

In September 2018, the Brazilian Supreme Court ruled on a decision of including inflation indexation on an amount to be paid by the Brazilian Federal Government with respect to another proceeding in which the Company is not a party. According to this decision, such inflation charges were stayed and this decision affects all similar claims in which the Brazilian Federal Government is a party.

Accordingly, as of December 31, 2018, the balance of receivables related to the Petroleum and Alcohol accounts was US\$ 307 (US\$ 251 as of December 31, 2017) and the Company recognized US\$ 87 as finance income reflecting the interest accrued on such receivables. In addition, a favorable decision of Brazilian Supreme Court with respect to the inflation charges based on IPCA would represent an increase of US\$ 267, at December 31, 2018, on the amount owed by the Brazilian Federal Government.

19.2. Compensation of key management personnel

The criteria for compensation of employees and officers are established based on the relevant labor legislation and the Company's Positions, Salaries and Benefits Plan (Plano de Cargos e Salários e de Benefícios e Vantagens).

The compensation of employees (including those occupying managerial positions) and officers in December 2018 and December 2017 were:

Compensation of employees, excluding officers (amounts in U.S. dollars)	Dec/2018	Dec/2017
Lowest compensation	973.00	964.52
Average compensation	4,961.00	5,591.00
Highest compensation	27,219.00	30,644.55
Compensation of highest paid Petrobras officer	30,659.00	35,964.15

The compensation of Executive Officers and Board Members of Petrobras parent company, which are based on the assumptions governed by the Secretariat of Management and Governance of the State-owned Companies (*Secretaria de Coordenação e Governança das Empresas Estatais – SEST*) and the Ministry of Mines and Energy, is set out as follows:

	Jan-Dec/2018			Jan-Dec/2017		
	Officers	Board members	Total	Officers	Board members	Total
Wages and short-term benefits	3.6	0.4	4.0	3.7	0.4	4.1
Social security and other employee-related taxes	1.0	–	1.0	1.0	–	1.0
Post-employment benefits (pension plan)	0.3	–	0.3	0.4	–	0.4
Variable compensation	1.4	–	1.4	–	–	–
Benefits due to termination of tenure	0.5	–	0.5	–	–	–
Total compensation recognized in the statement of income	6.8	0.4	7.2	5.1	0.4	5.5
Total compensation paid	4.9	0.4	5.3	5.1	0.4	5.5
Average number of members in the period (*)	7.92	10.08	18.00	7.92	9.00	16.92
Average number of paid members in the period (**)	7.92	6.00	13.92	7.92	5.75	13.67

(*) Monthly average number of members.

(**) Monthly average number of paid members.

For the year ended December 31, 2018, charges related to compensation of the board members and executive officers of the Petrobras group amounted to US\$ 24.2 (US\$ 24.3 for the year ended December 31, 2017).

The Company's General Shareholder's Meeting held on April 26, 2018 determined the amount of US\$ 8 as the threshold of executive officers and board members compensation for the period from April 2018 to March 2019, as well as approved the increase in the number of board members to 11.

The compensation of the Advisory Committees to the Board of Directors is apart from the fixed compensation set for the Board Members and, therefore, has not been classified under compensation of Petrobras' key management personnel.

The monthly compensation of Audit Committee members is fixed at 10% of monthly average executive officers' compensation, excluding certain social security benefits and paid vacation.

The General Shareholder's Meeting held on October 4, 2018 amended the Company's Bylaws and created the Statutory Audit Committee of the Petrobras Conglomerate, an additional advisory committee to the Board of Directors serving as the audit committee for the Brazilian subsidiaries from Petrobras group with no such exclusive committee as required by the Law 13,303/16. The monthly compensations of its chairman and other members are fixed at 40% and 30%, respectively, of monthly average executive officers' compensation, excluding certain social security benefits and paid vacation.

In accordance with Brazilian regulations applicable to companies controlled by the Brazilian Government, Board members who are also members of the Audit Committee or Audit Committee of the Petrobras Conglomerate are only compensated with respect to their Audit Committee duties. The total compensation concerning these members was US\$ 188 thousand for the year ended December 31, 2018 (US\$ 226 thousand with social security and related charges).

In 2018, the Board of Directors approved the variable compensation program (PRV) of the Board of Executive Officers for the year 2018. The amount of compensation to be paid varies according to the percentage of achievement of the financial and operational targets. The program foresees compensations being disbursed through 5 years and may also trigger other compensations to officers from 2019, due to the achievement of certain prerequisites at December 31, 2018.

Benefits due to termination of tenure amounting to US\$ 0.5 refer to the remuneration for a period of six months, in compliance with the Public Federal Employee Conflict of Interest Law (Law 12,813/2013).

Exemption from damage (indemnity)

The company's bylaws establishes the obligation to indemnify and keep the officers without losses, members with statutory functions and other employees and agents that legally act through officers' delegation, so as to cope with certain expenses related to arbitration, judicial or administrative processes that involve acts performed in the exercise of their duties or powers, since the date of your possession or the since the beginning of the contractual relation with the Company.

The period of the agreement coverage began on December 18, 2018 and continues until the occurrence of the following events, whichever comes last: (i) the end of the fifth (5th) year following the date on which the beneficiary leave, for any reason, to exercise the mandate, function or position; (ii) the course of the time required in transit of any Process in which the Beneficiary is partly due to the practice of Regular Management Act; or (iii) the course of the limitation period according to law to events that can generate the obligations of indemnification by the Company, including, but not limited to, the criminal statute applicable deadline, even if such period is applied by administrative authorities. The maximum exposure established by the company (global limit for all eventual claims) until April 2020 is US\$ 505 (R\$1.955 billion).

Indemnity agreements shall not cover: (i) acts covered under and insurance policy purchased by the Company, as formally recognized and implemented by the insurance company; (ii) acts outside the regular exercise of the duties or powers of the Beneficiaries; (iii) acts in bad faith act, malicious acts, fraud or serious fault on the part of the Beneficiaries; (iv) self-interested acts or in favor of third parties that damage the company's social interest; (v) obligation to pay damages arising from social action according to article 159 of Law 6,404/76 or reimbursement of the damages according to art. 11, § 5º, II of Law 6,385/76; (iv) other cases where a manifest conflict of interest with the company is established. It is worth noting that after a final unappealable decision, if it is proved that the act performed by the beneficiary is not subject to indemnification, the beneficiary is obligated to return the advanced amounts to the company.

In case of potential conflicts of interest, it is important to mention that the company may hire outside professionals, with a principled, impartial and independent reputation and with a strong experience to evaluate eventual indemnity lawsuits, verifying whether or not the act will be covered. In addition, the beneficiary of an indemnity agreement would be prevented from attending meetings or discussions concerning the payment approval of his or her own expenses.

20. Provision for decommissioning costs

	2018	2017
Opening balance	14,143	10,252
Adjustment to provision	4,129	4,166
Transfers related to liabilities held for sale (*)	(1,221)	(117)
Payments made	(481)	(709)
Interest accrued	649	757
Others	51	24
Cumulative translation adjustment	(2,137)	(230)
Closing balance	15,133	14,143

(*) It includes transfer to held for sale related to campos basin (US\$ 850); Rio Grande do Norte (US\$ 70) and Lapa (US\$ 11), as set out note 10.2.

The estimates for abandonment and dismantling of oil and natural gas producing properties are revised annually at December 31 along with the annual process of oil and gas reserves certification and whenever an indication of significant change in the assumptions used in the estimates occurs.

In 2018, the increase to this provision in the amount of US\$ 4,129 primarily reflecting changes in the scope and timing of intermediate abandonments of equipment expected to occur during the useful life of producing fields, as well as higher costs to decommission assets in the near-term. These factors were partially offset by increases in useful lives of certain fields following higher oil prices forecast, lower operational costs estimates and upward review in their production curves.

21. Taxes

21.1. Income taxes and other taxes

Income taxes	Current assets		Current liabilities		Non-current liabilities	
	12.31.2018	12.31.2017	12.31.2018	12.31.2017	12.31.2018	12.31.2017
Taxes in Brazil						
Income taxes	733	442	66	39	-	-
Income taxes - Tax settlement programs	-	-	56	228	552	671
	733	442	122	267	552	671
Taxes abroad	6	37	89	32	-	-
Total	739	479	211	299	552	671

Other taxes	Current assets		Non-current assets		Current liabilities		Non-current	liabilities (*)
	12.31.2018	12.31.2017	12.31.2018	12.31.2017	12.31.2018	12.31.2017	12.31.2018	12.31.2017
Taxes in Brazil								
Current / Deferred ICMS (VAT)	781	934	700	707	922	1,021	-	-
Current / Deferred PIS and COFINS	442	820	2,668	2,282	309	820	-	-
CIDE	22	14	-	-	50	104	-	-
Production taxes	-	-	-	-	1,757	1,605	-	-
Withholding income taxes	-	-	-	-	308	157	-	-
Tax Settlement Program (**)	-	-	-	-	2	648	-	-
Others	36	170	158	72	184	165	107	86
Total in Brazil	1,281	1,938	3,526	3,061	3,532	4,520	107	86
Taxes abroad	15	20	14	14	24	28	-	-
Total	1,296	1,958	3,540	3,075	3,556	4,548	107	86

(*) Other non-current taxes are classified as other non-current liabilities.

(**) It includes the amount of US\$ 2 relating to refinancing program (REFIS) from previous periods.

21.2. Brazilian federal settlement programs

In 2017, the Company joined certain settlement programs created by the Brazilian Federal Government, which enabled the settlement of significant disputes in which the Company was a defendant, with certain benefits, such as the use of tax loss carry forwards and reduction in interests, penalties and related charges. The settlement of disputes involving Brazilian Federal Tax Authorities, Brazilian Federal Agencies and similar bodies reduced tax disputes amounting to US\$ 11,552 as shown below:

Provisional measures	Signed into law	Brazilian federal settlement programs	Disputes	Amount of relief	Debts
766/17	-	Tax Settlement Program - PRT (*)	502	-	502
783/17	13496/17	Special Tax Settlement Program - PERT	2,203	1,001	1,202
780/17	13494/17	Non-Tax Debts Settlement Program - PRD	340	113	227
795/17	13586/17	Withholding income tax on remittances for payment of charter of vessels	8,507	7,976	531
			11,552	9,090	2,462

(*) Benefit of using tax loss carryforwards to settle 80% of the debt.

The Company settled a portion of the balance of the respective liabilities during 2017 in accordance with the terms of the programs and, at December 31, 2017, their outstanding amounts totaled US\$ 1,545. During 2018, the Company settled a significant part of the balance of respective liabilities carried on the statement of financial position as presented in the table below:

	12.31.2017	Payments	Use of tax loss carryforwards	Inflation indexation	Others	CTA	12.31.2018
PRT							
Income taxes	153	-	(136)	-	-	(16)	1
Other taxes	-	-	-	-	-	-	-
Total	153	-	(136)	-	-	(16)	1
PERT							
Income taxes	744	(56)	-	43	(17)	(107)	607
Others taxes	40	(60)	-	2	16	2	-
	784	(116)	-	45	(1)	(105)	607
PRD							
Production taxes	87	(95)	-	2	5	1	-
Law 13.586/17							
Withholding income tax	521	(500)	-	17	13	(51)	-
Total	1,545	(711)	(136)	64	17	(171)	608
Current	874						56
Non-current	671						552

The following table presents the settlement years of the outstanding amounts under these programs:

	2019	2020	2021	2022	2023	2024 onwards	Total
PRT	1	-	-	-	-	-	1
PERT	55	55	55	55	55	332	607
Total	56	55	55	55	55	332	608

21.2.1. Tax Settlement Program (Programa de Regularização Tributária - PRT)

The PRT enabled relief for the settlement of tax and non-tax debts overdue up to November 30, 2016 to the Brazilian Federal Tax Authorities (Brazilian Federal Revenue Service and National Treasury Attorney's Office).

The Company joined the program to settle, principally, proceedings at administrative level totaling US\$ 502, for which outflow of resources were probable, related to disallowed tax credits applied for income taxes and other Brazilian Federal taxes computation. After assessing the reliefs provided by the PRT, the Company decided to settle it with the benefit of using tax loss carry forwards to pay US\$ 136.

The impacts of this program were accounted for in the second quarter of 2017 within the Company's statement of income amounting to US\$ 82 after tax effects, as shown in note 21.2.5.

21.2.2. Special Tax Settlement Program (Programa Especial de Regularização Tributária - PERT)

The PERT enabled relief for the settlement of tax and non-tax debts overdue up to April 30, 2017 to the Brazilian Federal Tax Authorities (Brazilian Federal Revenue Service and National Treasury Attorney's Office), including amounts under disputes involving these authorities.

The Company elected to join the PERT to settle the legal proceeding, in the amount of US\$ 1,977, with respect to a notice of deficiency issued due to the use of expenses arising from the Terms of Financial Commitment (TFC), signed by Petrobras and Petros Plan in 2008, as deductible in determining taxable profit. The Company decided to settle this tax dispute, by paying US\$ 1,317, which takes into account the benefits reliefs on interests, penalties and related charges. Of this amount, US\$ 432 was settled up to December 2017, and the remaining amount is being settled through 145 monthly installments bearing interest from January 2018 onwards. In addition, pursuant the law 13.496 enacted on October 24, 2017, which enabled incremental relief relating to this matter, the remaining amount was recalculated and decreased by US\$ 239.

Pursuant to the Provisional Measure 807/2017 enacted on October 31, 2017, the period to join this program was extended from August 31 to November 14, 2017. Therefore, the Company decided in the third quarter of 2017 to settle other disputes relating to debts in the scope of the Brazilian Federal Revenue Service amounting to US\$ 226. After the relief under the PERT, the total amount of these disputes was reduced to US\$ 125, of which US\$ 103 was settled in January 2018 through a lump sum payment, and the remaining amount is being settled through 141 monthly installments.

Accordingly, the Company recognized the amount of US\$ 1,839 within the statement of income in 2017, made up of tax debts after reliefs and tax effects amounting to US\$ 1,117, reversals of deferred income tax assets for unused tax losses from 2012 to 2017 amounting to US\$ 711 and indexation charges of US\$ 22.

21.2.3. Non-Tax Debts Settlement Program (Programa de Regularização de Débitos não Tributários - PRD)

The PRD enabled relief for the settlement of non-tax debts overdue to the Brazilian Federal Agencies and similar bodies up to October 25, 2017, including amounts under disputes and debts in the scope of other settlement programs involving these authorities.

The Company joined the PRD to settle some legal proceedings involving ANP, with respect to production tax debts for which the likelihood of losses were deemed probable, following a court ruling in August 2017 granting to ANP its arguments. After assessing the benefits from relief on interest, penalties and related charges provided for by this program, the Company decided to settle these disputes, totaling US\$ 340 by paying US\$ 227 plus interest, of which US\$ 136 was settled in the fourth quarter of 2017 and the remaining amount in January 2018.

Accordingly, the Company recognized US\$ 164 within the statement of income in December 31, 2017, after tax effects, as shown in note 21.2.5.

21.2.4. Settlement program under law 13.586/2017

As presented in note 21.4, the law 13.586 enacted on December 28, 2017, formerly Provisional Measure 795/17, provided for the tax treatment of several relevant issues relating to the exploration and production of oil or natural gas. This law also established the settlement program of withholding income tax on remittances abroad related to charter contracts for vessels, enabling the regularization of events occurred in the period from 2008 to 2014.

The decision to join the program was based on the economic benefits thereof. Proceeding with the disputes would involve financial efforts to provide significant judicial deposits and this program gave rise to the possibility of ceasing disputes at administrative and judicial levels related to the period from 2008 to 2013 in the amount of US\$ 8,507, as well as amounts relating to the 2014 not yet under dispute. The Company paid US\$ 531 in 12 consecutive installments bearing interest at SELIC rate, of which the first was paid in January 2018.

Accordingly, the Company recognized US\$ 351 within the statement of income in December 31, 2017, after tax effects, as shown in note 21.2.5.

21.2.5. Impacts of the tax settlement programs within statement of income of 2017

	PRT	PERT	PRD	Law 13,586/17	Total
Cost of sales	-	-	(131)	-	(131)
Other taxes	(169)	(366)	(25)	(323)	(883)
Finance expenses	(249)	(309)	(71)	(208)	(837)
Income taxes - notice of deficiency	(98)	(565)	-	-	(663)
Total - after reliefs	(516)	(1,240)	(227)	(531)	(2,514)
Impacts of PIS/COFINS on settlement programs	-	(69)	(7)	-	(76)
Income taxes - deductible expenses	(51)	192	70	180	391
Other income and expenses - reversal of provision	485	11	-	-	496
Total	(82)	(1,106)	(164)	(351)	(1,703)
Income taxes - reversal of unused tax losses from 2012 to 2017	-	(711)	-	-	(711)
Impacts within the statement of income (before Indexation charges)	(82)	(1,817)	(164)	(351)	(2,414)
Indexation charges	-	(22)	-	-	(22)
Impacts within the statement of income	(82)	(1,839)	(164)	(351)	(2,436)

21.3. Tax amnesty programs – State Tax (Programas de Anistias Estaduais)

In accordance with its current corporate governance process and following cost-benefit analysis, the Company elected, during the year ended December 31, 2018, to settle in cash VAT (ICMS) tax disputes by joining states amnesty settlement programs and taking advance of their reliefs, as shown below:

State	State Law/Decree n°	Benefits received	Disputes	Reduction Benefit	Amount to be paid after benefit (*)
TO	3.346/18	Reduction of 90% of debts from fines and interest.	5	(3)	2
RN	27.679/18 and 10.341/18	Reduction of 95% of fines, 80% of the interest and 50% of Vat tax forgiveness	205	(175)	30
SE	8.458/18	Reduction of 90% of fines and interest	252	(219)	33
MT	10.433/16 and 1.630/18	Reduction of 75% of interest, fines and penalties.	104	(48)	56
BA	14.016/18	Reduction of 90% of fines and interest	269	(199)	70
RJ	182/18	Reduction of 50% of interest and 70% or 85% of the fines related to ICMS, with the respective charges.	376	(185)	191
RS	54.346/2018	Reduction of up to 85% and 40% over fines and interest, respectively.	1	-	1
			1,212	(829)	383

(*) Amounts recognized in other taxes (US\$ 289) and financial expenses (US\$ 94).

21.4. New Taxation Model for the Oil and Gas Industry

On December 28, 2017, the Brazilian Federal Government enacted Law No. 13,586, which outlines a new taxation model for the oil and gas industry and, along with the Decree 9,128/2017, establishes a new special regime for exploration, development and production of oil, gas and other liquid hydrocarbons named Repetro-Sped.

Due to the application of this new regime, the Company expects greater legal stability in the oil and gas industry in Brazil, which may encourage higher investments and reduce the number of litigations involving the industry players.

Regarding the Repetro-Sped, this regime provides for the continuation of total tax relief over goods imported with temporary permanence in Brazil, as previously governed by the former Repetro (Special Customs Regime for the Export and Import of Goods designated to Exploration and Production of Oil and Natural Gas Reserves), and adds this relief to goods permanently held in Brazil. Accordingly, the absence of the need to return such goods to foreign countries eliminates future cost of removal. This benefit made possible the migration of all the goods acquired in the former REPETRO to the REPETRO-Sped, with lower operating and financial costs. Since 2018, the Company has transferred the ownership of oil and gas assets under this regime from foreign subsidiaries to the parent company in Brazil and intends to finish this process until 2020. The regime will expire in December, 2040.

Following the creation of Repetro-Sped, the Brazilian states, pursuant to a decision of the Brazilian National Council of Finance Policies (CONFAZ), agreed to grant tax incentives relating to VAT (ICMS) over transactions in the scope of this regime to the extent each state enacts its specific regulation providing for the tax relief for the oil and gas industry.

At the date of issuance of these financial statements, the states enacting new regulations governing the VAT tax incentives authorized by CONFAZ were: Amazonas, Bahia, Ceará, Espírito Santo, Rio de Janeiro, Rio Grande do Norte, São Paulo, Sergipe, Minas Gerais and Piauí.

21.5. Deferred income taxes - non-current

a) The changes in the deferred income taxes are presented as follows:

Income taxes in Brazil comprise corporate income tax (IRPJ) and social contribution on net income (CSLL). Brazilian statutory corporate tax rates are 25% and 9%, respectively.

	Property, Plant and Equipment									
	Exploration and decommissioning costs	Others (*)	Loans, trade and other receivables / payables and financing	Finance leases	Provision for legal proceedings	Tax losses	Inventories	Employee Benefits	Others	Total
Balance at January 1, 2017	(11,205)	937	3,512	(90)	1,128	6,040	429	3,009	284	4,044
Recognized in the statement of income for the year	363	(1,292)	(1,099)	(64)	1,134	278	130	(4)	139	(415)
Recognized in shareholders' equity (**)	-	-	(887)	-	-	(69)	-	(273)	9	(1,220)
Cumulative translation adjustment	150	45	34	4	(40)	(67)	(6)	(34)	(11)	75
Use of tax credits	-	-	-	-	-	(271)	-	-	-	(271)
Others	-	(188)	(16)	20	(21)	120	16	(10)	108	29
Balance at December 31, 2017	(10,692)	(498)	1,544	(130)	2,201	6,031	569	2,688	529	2,242
Initial application of IFRS9	-	-	117	-	-	-	-	-	5	122
Balance at January 1, 2018	(10,692)	(498)	1,661	(130)	2,201	6,031	569	2,688	534	2,364
Recognized in the statement of income for the period	2,048	(1,109)	(1,509)	(134)	208	(244)	(49)	192	(167)	(764)
Recognized in shareholders' equity (**)	-	-	1,916	-	-	-	-	(119)	2	1,799
Cumulative translation adjustment	1,397	205	(260)	28	(345)	(668)	(65)	(417)	(34)	(159)
Use of tax credits	-	-	-	-	-	(1,117)	-	-	(105)	(1,222)
Others	-	(26)	18	89	2	15	-	11	(101)	8
Balance at December 31, 2018	(7,247)	(1,428)	1,826	(147)	2,066	4,017	455	2,355	129	2,026
Deferred tax assets										3,438
Deferred tax liabilities										(1,196)
Balance at December 31, 2017										2,242
Deferred tax assets										2,680
Deferred tax liabilities										(654)
Balance at December 31, 2018										2,026

(*) It mainly includes impairment adjustments and capitalized borrowing costs.

(**) The amounts presented as Loans, trade and other receivables/payables and financing relate to the tax effect on exchange rate variation recognized within other comprehensive income (cash flow hedge accounting) as set out in note 34.2.

The Company recognizes the deferred tax assets based on assessment of uncertainty over income tax treatments in the context of applicable tax laws, as well as projections of future taxable profits in a ten-year perspective supported by the Business and Management Plan, which is revised annually.

b) Timing of reversal of deferred income taxes

Deferred tax assets were recognized based on projections of taxable profit in future periods supported by the Company's 2019-2023 Business and Management Plan (BMP). The main goals and objectives outlined in its business plan include business restructuring, a divestment plan, demobilization of assets and reducing operating expenses.

Management considers that the deferred tax assets will be realized to the extent the deferred tax liabilities are reversed and expected taxable events occur based on its 2019-2023 BMP.

The estimated schedule of recovery/reversal of net deferred tax assets (liabilities) recoverable (payable) as of December 31, 2018 is set out in the following table:

	Assets	Liabilities
2019	268	(89)
2020	386	(63)
2021	464	(21)
2022	495	27
2023	521	322
2024 and thereafter	546	478
Recognized deferred tax assets	2,680	654
Brazil	3	-
Abroad	1,472	-
Unrecognized deferred tax assets	1,475	-
Total	4,155	654

At December 31, 2018, the Company had tax loss carryforwards arising from offshore subsidiaries, for which no deferred tax assets had been recognized. These tax losses totaling US\$1,472 (US\$ 2,660 as of December 31, 2017) arose mainly from oil and gas exploration and production and refining activities in the United States of US\$1,398 (US\$ 2,370 as of December 31, 2017), as well as activities in Spain in the amount of US\$69 (US\$ 290 as December 31, 2017).

An aging of the unrecognized tax carryforwards, from companies abroad is set out below:

	Unrecognized deferred tax assets
2020	14
2021	36
2022	1
2023	13
2024	9
2025	4
2026	68
2027	78
2028	88
2029	97
2030 and thereafter	1,064
Total	1,472

21.6. Reconciliation between statutory tax rate and effective tax expense rate

The following table provides the reconciliation of Brazilian statutory tax rate to the Company's effective rate on income before income taxes:

Petróleo Brasileiro S.A. – Petrobras
Notes to the financial statements - unaudited
(Expressed in millions of US Dollars, unless otherwise indicated)


	2018	2017	2016
Net income before income taxes	12,098	1,997	(3,665)
Nominal income taxes computed based on Brazilian statutory corporate tax rates (34%)	(4,114)	(679)	1,247
· Tax benefits from the deduction of interest on capital distribution (*)	604	16	-
· Different jurisdictional tax rates for companies abroad	355	669	(157)
· Brazilian income taxes on income of companies incorporated outside Brazil (**)	(41)	(70)	(320)
· Tax incentives	75	169	51
· Tax loss carryforwards (unrecognized tax losses)	(484)	(146)	(265)
· Non-taxable income (non-deductible expenses), net (***)	(824)	(488)	(1,080)
· Tax settlement programs (****)	-	(1,373)	-
· Agreement with US authorities	(293)	-	-
· Others	38	74	(160)
Income taxes expense	(4,684)	(1,828)	(684)
Deferred income taxes	(764)	(467)	913
Current income taxes	(3,920)	(1,361)	(1,597)
Total	(4,684)	(1,828)	(684)
Effective tax rate of income taxes	38.7%	91.5%	(18.7)%

(*) It includes amounts received from non-consolidated companies, as well as paid to non-controlling interests.

(**) It relates to Brazilian income taxes on earnings of offshore investees, as established by Law No. 12,973/2014.

(***) It includes results in equity-accounted investments and expenses relating to health care plan.

(****) Income taxes in the scope of PRT and PERT and reversals of losses carry forwards from 2012 to 2017.

22. Short-term benefits

	2018	2017
Accrued vacation pay	781	845
Profit sharing	355	138
Employees variable compensation program	269	0
Voluntary Separation Incentive Plan	36	34
Salaries and related charges	217	292
Total	1,658	1,309

22.1. Profit sharing

Changes in the provision for profit sharing are presented below:

	2018
Opening balance	138
Adjustment to provision	7
Payments	(135)
Additions	462
Advances	(68)
CTA	(49)
Closing balance	355

The Company's profit sharing benefits comply with Brazilian legal requirements and those of the Brazilian Secretariat of Coordination and Governance of State-Owned Enterprises (SEST), of the Ministry of Planning, Budget and Management, and of the Ministry of Mines and Energy and the current Collective bargaining agreement. This compensation is computed based on the consolidated net income attributable to the shareholders of Petrobras.

The computation of the amount of profit sharing benefits takes into account the results of six corporate indicators, for which annual goals are defined by the Executive Board and approved by the Board of Directors pursuant to the review of the Annual Business Plan (PAN). The annual goals are based on the results of the following corporate indicators:

- Total volume of crude oil and oil products spill;
- Lifting cost excluding production taxes in Brazil;
- Crude oil and NGL production in Brazil;
- Feedstock processed - excluding NGL - in Brazil,
- Vessel operating efficiency; and
- Percentage of compliance with natural gas delivery schedules.

The results of the six individual goals are factored into a consolidated result that will determine the percentage of the profit to be distributed as a profit sharing benefit to employees. At December 31, 2018, the consolidated result reach 100%, which represents a percentage of 6.25% to be applied in the distribution computation.

The subsidiary Liquigás and the joint operations Fábrica Carioca de Catalizadores (FCC) and Ibiritermo have their specific methodology for profit sharing computation pursuant to their own collective bargaining agreement, apart from other entities of the group.

For 2018, the Company recognized a provision of US\$ 462 as other income and expenses regarding profit sharing benefits in accordance with clauses of the collective bargaining agreement, including US\$ 3 as complement of the profit sharing for 2017.

In 2017, as the Company recorded a net loss for the year and all the annual goals were achieved, the profit sharing benefit was the half a month salary for each employee added to half of the lowest amount of profit sharing paid in the prior year. Based on these terms, the Company recognized a provision of US\$ 151 in 2017 as other income and expenses.

22.2. Employees variable compensation program

The Company has an active variable compensation program for its employees (PRVE), focusing on meritocracy and encouraging employees to achieve better results.

The employees are entitled to the variable compensation whenever the Company recognizes a net income for the year and reaches at least 90% of the top metrics outlined in the BMP. The amount granted is a combination of this achievement and the employee performance during the year. The variable compensation does not affect the amounting of profit sharing to be distributed to each employee. However, in case of a profit sharing higher than a variable compensation, the employee is only entitled to receive its profit sharing.

On December 31, 2018, the Company reached the top metrics and provisioned US\$ 289 as other operating income and expenses. Due to the loss in 2017, there was no provision pertaining to this program.

22.3. New Employee Career and Compensation Plan

On July 2, 2018, the Company released to its workforce the Employee Career and Compensation Plan (*Plano de Carreiras e Remuneração* – PCR), an upgrade of the remuneration and career model, with the goal of matching the new initiatives of personnel management to the current and future business needs, besides meeting the demands of the employees for recognition and more innovative work models.

The new plan enhances the Company's personnel management model by means of a number of criteria that enables higher rewards based on skills and performance, broader mobility and career development.

The PCR results in a greater alignment with practices suggested by the SEST. The employees were able to join the program until September 14, 2018, except for certain specific cases.

The Company granted monetary incentive to employees joining the program in order to achieve a higher number of enrollments in the plan, and estimates that this cost will be offset in the mid-term through the application of the recognition and reward best practices.

Through December 31, 2018, the Company disbursed US\$ 293 with respect to the 39,781 employees who joined the program until September 14, 2018 and accounted for this charge within other income and expenses.

23. Employee benefits (Post-Employment)

	2018	2017
Liabilities		
Petros Pension Plan	–	10,728
Petros Pension Plan - Renegotiated	7,152	–
Petros Pension Plan - Non-renegotiated	2,880	–
Petros 2 Pension Plan	411	260
AMS Medical Plan	12,236	10,802
Other plans	71	40
Total	22,750	21,830
Current	810	844
Non-current	21,940	20,986
Total	22,750	21,830

23.1. Pension Plans

The Company's post-retirement plans are managed by Fundação Petrobras de Seguridade Social (Petros Foundation), which was established by Petrobras as a nonprofit legal entity governed by private law with administrative and financial autonomy.

a) Petros Plan

The Petros Plan was established by Petrobras in July 1970 as a defined-benefit pension plan and currently provides post-retirement benefits for employees of Petrobras and Petrobras Distribuidora S.A., in order to complement government social security benefits. The Petros Plan has been closed to new participants since September 2002.

Petros Foundation performs an annual actuarial review of its costs using the capitalization method for most benefits. The employers (sponsors) make regular contributions in amounts equal to the contributions of the participants (active employees, assisted employees and retired employees), on a parity basis.

On February 15, 2018, the the Superintendency of Post-retirement Benefits (PREVIC) authorized the split of Petros Plan into two new separate plans: Petros Plan –Renegotiated (PPR) and Petros Plan – Non-renegotiated (PPNR). The Petros Plan split has been in place since April 1, 2018.

As of December 31, 2018, the balance of the Terms of Financial Commitment (TFC), signed by Petrobras and Petros Foundation in 2008 is US\$ 3,268. The TFC is a financial commitment agreement to cover obligations under the pension plans (PPR and PPNR), which amounts are due in 20 years, with 6% p.a. semiannual coupon payments based on the updated balance. The Company has provided crude oil and oil products pledged as security for the TFC totaling US\$ 4,496.

The employers' expected contributions to such plans for 2019 are US\$ 197. Interest payments on TFC are expected to reach US\$ 195. Estimated costs amounting to US\$ 838 will be recognized within the income statement ratably over the year (increase in the present value of the defined benefit).

The average durations of the actuarial liability related to the plans, as of December 31, 2018, are 13.08 and 11.69 years, respectively (12.51 years as of December 31, 2017 for the former Petros Plan).

Deficit settlement plan – Petros Plan

The Petros Plan has a deficit settlement plan (PED) in place due to its accumulated deficit until 2015. This deficit, updated by interest and inflation, reached US\$ 8,253 at December 31, 2017. The PED was approved by the Executive Council of Petros Foundation on September 12, 2017 and assessed by the Company and the SEST.

Additional contributions from participants and sponsors commenced in March 2018. Certain participants appealed before the judiciary and have had their contributions suspended based on judicial injunctions. In these cases, the Company has not paid its parity contributions. In 2018, the Company made contributions amounting to US\$ 166 with respect of contributions under the PED.

Pursuant to relevant regulation, the sponsors and participants will cover this deficit based on their respective proportions of regular contributions (parity basis).

The deficit of Petros Plan was transferred to PPR and PPNR on April 1, 2018.

Split of Petros Plan

This split arose from the renegotiation procedures held in 2006-2007 period and in 2012, when 75% of the participants accepted the option to change to a model that sets forth solely inflation indexation on the annual adjustment of their benefits. The other participants' benefits remained adjusted by the same rate as the Petrobras' workforce had their salaries adjusted.

Assets and actuarial liability of Petros plan were transferred to the new plans based on future commitments on a participant basis. As there were no changes in post-retirement benefits rules, the actuarial liabilities of these plans were reviewed only during the annual actuarial assumptions review carried out in December 2018.

The movement of these events is shown below:

	Consolidated			2018
	Petros	Petros Renegotiated	Petros Non-renegotiated	Total
Changes in the present value of obligations				
Obligations at the beginning of 2018	25,081	-	-	25,081
Interest expense	591	-	-	591
Current service cost	23	-	-	23
Contributions paid by participants	86	-	-	86
Benefits paid	(500)	-	-	(500)
Cumulative Translation Adjustment	(124)	-	-	(124)
Balance at March 31, 2018	25,157	-	-	25,157
Transfer due to split of Petros plan	(25,157)	18,940	6,217	-
Current interest cost	-	1,144	374	1,518
Current service cost	-	53	7	60
Contributions paid by participants	-	219	69	288
Benefits Paid	-	(881)	(788)	(1,669)
Remeasurement: Experience (gains) / losses *	-	(1,295)	(30)	(1,325)
Remeasurement: (gains) / losses - demographic assumptions	-	6	71	77
Remeasurement: (gains) / losses - financial assumptions	-	1,206	336	1,542
Cumulative Translation Adjustment	-	(2,704)	(883)	(3,587)
Obligations at the end of the year of December 31, 2018	-	16,688	5,373	22,061
Changes in the fair value of plan assets				
Fair value of plan assets at the beginning of the year	14,353	-	-	14,353
Interest income	336	-	-	336
Contributions paid by the sponsor (Company)	93	-	-	93
Contributions paid by participants	86	-	-	86
Benefits Paid	(500)	-	-	(500)
Cumulative Translation Adjustment	(69)	-	-	(69)
Balance at March 31, 2018	14,299	-	-	14,299
Transfer due to split of Petros plan	(14,299)	10,786	3,513	-
Interest income	-	653	211	864
Contributions paid by the sponsor (Company)	-	229	74	303
Contributions paid by participants	-	219	69	288
Term of financial commitment (TFC) paid by the Company	-	141	54	195
Benefits Paid	-	(881)	(788)	(1,669)
Remeasurement: Return on plan assets due to lower interest income	-	(71)	(153)	(224)
Cumulative Translation Adjustment	-	(1,539)	(488)	(2,027)
Fair value of plan assets at the end of the year of December 31, 2018	-	9,537	2,492	12,029
Amounts recognized in the Statement of Financial Position				
Present value of obligations	-	16,688	5,373	22,061
(-) Fair value of plan assets	-	(9,537)	(2,492)	(12,029)
Net actuarial liability as of December 31,	-	7,151	2,881	10,032
Changes in the net actuarial liability				
Balance as of January 1,	10,728	-	-	10,728
Remeasurement effects recognized in OCI **	-	(12)	531	519
Current service cost	23	53	7	83
Net interest on liabilities / (assets)	255	1,144	374	1,773
Contributions paid	(93)	(229)	(74)	(396)
Payments related to Term of financial commitment (TFC)	-	(141)	(54)	(195)
Transfer due to spin-off	(10,858)	8,155	2,703	-
Cumulative Translation Adjustment	(55)	(1,818)	(607)	(2,480)
Balance at December 31, 2018	-	7,152	2,880	10,032

(*) It includes the effect of the extraordinary contributions of the participants related to the deficit with the Petros plan, as set out in note 23.

(**) Other Comprehensive Income

b) Petros 2 Plan

Petros 2 Plan was established in July 2007 by Petrobras and certain subsidiaries as a variable contribution plan recognizing past service costs for contributions for the period from August 2002 to August 29, 2007. The Petros 2 Plan currently provides post-retirement benefits for employees of Petrobras, Petrobras Distribuidora S.A., Stratura Asfaltos, Termobahia, Termomacaé, Transportadora Brasileira Gasoduto Brasil-Bolívia S.A. – TBG, Petrobras Transporte S.A. – Transpetro, Petrobras Biocombustível and Araucária Nitrogenados. The plan is open to new participants although there will no longer be payments relating to past service costs.

Certain elements of the Petros 2 Plan have defined benefit characteristics, primarily the coverage of disability and death risks and the guarantee of minimum defined benefit and lifetime income. These actuarial commitments are treated as defined benefit components of the plan and are accounted for by applying the projected unit credit method. Contributions paid for actuarial commitments that have defined contribution characteristics are accrued monthly in the statement of income and are intended to constitute a reserve for programmed retirement. The contributions for the portion of the plan with defined contribution characteristics were US\$ 260 in 2018.

The defined benefit portion of the contributions was suspended from July 1, 2012 to June 30, 2019, as determined by the Executive Council of Petros Foundation, based on advice of the actuarial consultants from Petros Foundation. Therefore, the entire contributions are being applied to the individual accounts of plan participants.

For 2019, the employers' expected contributions to the defined contribution portion of the plan are US\$255. Estimated costs amounting to US\$ 80 will be recognized within the income statement ratably over the year (increase in the present value of the defined benefit).

The average duration of the actuarial liability related to the plan, as of December 31, 2018 is 42.48 years (43.53 at December 31, 2017).

c) Petros 3 Plan

On December 18, 2018, the Board of Directors approved a proposal for a new pension plan with defined contribution characteristics to be offered. Its adhesion is voluntary to the participants of Petros Plan –Renegotiated and Petros Plan – Non-renegotiated.

The migration to this new plan will only be possible after the proposal review and approval by all relevant bodies. The proposal has already been approved by the Petros Deliberative Council and the Petrobras Board of Directors and is awaiting approval from PREVIC and SEST.

The participants' new benefit will be recalculated based on future commitments on a participant basis at the time of migration. Therefore, each participant will have an individual account, and the amount of the retirement benefit will depend on the accumulated balance, being recalculated annually in connection with the return on plan assets.

23.2. Other plans

The Company also sponsors other pension and health care plans of certain of its Brazilian and international subsidiaries. Most of these plans are unfunded and their assets are held in trusts, foundations or similar entities governed by local regulations.

23.3. Pension Plans assets

Pension plans assets follow a long term investment strategy based on the risks assessed for each different class of assets and provide for diversification, in order to lower portfolio risk. The portfolio profile must comply with the Brazilian National Monetary Council (*Conselho Monetário Nacional* – CMN) regulations.

Petros Foundation establishes investment policies for 5-year periods, reviewed annually. Petros uses an asset liability management model (ALM) to address net cash flow mismatches of the benefit plans, based on liquidity and solvency parameters, simulating a 30-year period.

	PPR		PPNR		Petros plan 2	
	Minimum	Maximum	Minimum	Maximum	Minimum	Maximum
Fixed-income	50%	100%	45%	100%	55%	70%
Variable-income	-	25%	-	30%	5%	12%
Structured investments	-	4%	-	4%	-	6%
Real estate properties	-	12%	-	12%	-	2%
Loans to participants	-	8%	-	8%	2%	5%
Investments abroad	-	-	-	-	-	5%

The pension plan assets by type of asset are set out as follows:

Type of asset	2018				2017	
	Quoted prices in active markets	Unquoted prices	Total fair value	%	Total fair value(*)	%
Receivables	-	1,087	1,087	9%	1,139	8%
Fixed income	6,522	1,239	7,761	61%	8,686	58%
Government bonds	6,522	-	6,522	-	6,744	-
Fixed income funds	-	940	940	-	1,815	-
Other investments	-	299	299	-	9	-
Variable income	2,081	127	2,208	17%	3,162	21%
Common and preferred shares	2,081	-	2,081	-	2,877	-
Other investments	-	127	127	-	285	-
Structured investments	-	237	237	2%	373	2%
Real estate properties	-	829	829	7%	1,045	7%
	8,603	3,519	12,122	96%	14,405	96%
Loans to participants	-	533	533	4%	620	4%
Total	8,603	4,052	12,655	100%	15,025	100%

(*) Amounts reclassified for comparative purposes.

As of December 31, 2018, the investment portfolio included debentures of US\$ 11, Company's common shares in the amount of US\$ 3 and real estate properties leased by the Company in the amount of US\$ 344.

Loans to participants are measured at amortized cost, which is considered to be an appropriate estimate of fair value.

The Company has improved its monitoring model over Petros Foundation, mainly through the enhancement on internal controls over investment portfolio and the establishment of specific committees to provide technical advisory for the members indicated by the Company to the Executive and Fiscal Councils of Petros Foundation, in accordance with relevant regulation establishing practices to be performed by the Board of Directors and Executive Officers of the sponsors.

23.4. Medical Benefits: Health Care Plan - *Assistência Multidisciplinar de Saúde* ("AMS")

Petrobras, Petrobras Distribuidora S.A., Petrobras Transporte S.A. – Transpetro, Petrobras Biocombustível, Transportadora Brasileira Gasoduto Brasil-Bolívia – TBG and Termobahia operate a medical benefit plan for their employees in Brazil (active and retired) and their dependents: the AMS health care plan. The plan is managed by the Company based on a self-supporting benefit assumption and includes health prevention and health care programs. The plan is mainly exposed to the risk of an increase in medical costs due to new technologies, new types of coverage and to a higher level of usage of medical benefits. The Company continuously improves the quality of its technical and administrative processes, as well as the health programs offered to beneficiaries in order to mitigate such risks.

The employees make fixed monthly contributions to cover high-risk procedures and variable contributions for a portion of the cost of the other procedures, both based on the contribution tables of the plan, which are determined based on certain parameters, such as salary and age levels. The plan also includes assistance towards the purchase of certain medicines in registered drugstores throughout Brazil. There are no health care plan assets.

Benefits are paid and recognized by the Company based on the costs incurred by the participants, of which the Company satisfies 70% of these costs as governed by the collective bargaining agreement.

The average duration of the actuarial liability related to this health care plan, as of December 31, 2018, is 22.24 years (22.08 as of December 31, 2017).

CGPAR resolutions

On January 18, 2018, the Inter-ministerial Commission for Corporate Governance and Administration of Participations of the Union (CGPAR), through CGPAR Resolutions 22 and 23, established guidelines and parameters of governance and cost limits to health care plans operated by state-owned companies.

The main objective of the resolutions is to make feasible the sustainability and the economic, financial and actuarial balance of the health plans operated by state-owned companies.

The company has up to 48 months to adjust the AMS health plan to this new regulation provisions and is assessing the financial impacts it may cause, including among others, a possible decrease in its actuarial liability following the parity basis of contribution, between the Company and the participants, determined by this rule.

23.5. Net actuarial liabilities and expenses calculated by independent actuaries and fair value of plans assets

a) Changes in the actuarial liabilities, in the fair value of the assets and in the amounts recognized in the statement of financial position

					2018
		Pension Plans	Medical Plan		
	Petros plans (*)	Petros 2	AMS	Other plans	Total
Changes in the present value of obligations					
Obligations at the beginning of the year	25,081	887	10,802	85	36,855
Interest expense	2,111	77	927	4	3,119
Current service cost	83	33	155	7	278
Contributions paid by participants	374	–	–	–	374
Benefits paid	(2,173)	(35)	(456)	(3)	(2,667)
Remeasurement: Experience (gains) / losses (**)	(1,373)	8	(115)	–	(1,480)
Remeasurement: (gains) / losses - demographic assumptions	80	–	176	–	256
Remeasurement: (gains) / losses - financial assumptions	1,577	165	2,412	(2)	4,152
Others	–	–	–	34	34
Cumulative Translation Adjustment	(3,699)	(139)	(1,665)	(13)	(5,516)
Obligations at the end of the year	22,061	996	12,236	112	35,405
Changes in the fair value of plan assets					
Fair value of plan assets at the beginning of the year	14,353	627	–	45	15,025
Interest income	1,203	54	–	–	1,257
Contributions paid by the sponsor (Company)	278	–	321	–	599
Contributions paid by participants	374	–	–	–	374
Term of financial commitment (TFC) paid by the Company	223	–	–	–	223
Benefits Paid	(2,401)	(38)	(504)	(3)	(2,946)
Remeasurement: Return on plan assets due to lower interest income	(233)	35	–	(4)	(202)
Others	–	–	–	3	3
Cumulative Translation Adjustment	(1,768)	(93)	183	–	(1,678)
Fair value of plan assets at the end of the year	12,029	585	–	41	12,655
Amounts recognized in the Statement of Financial Position					
Present value of obligations	22,061	996	12,236	112	35,405
(-) Fair value of plan assets	(12,029)	(585)	–	(41)	(12,655)
Net actuarial liability as of December 31,	10,032	411	12,236	71	22,750
Changes in the net actuarial liability					
Balance as of January 1,	10,728	260	10,802	40	21,830
Remeasurement effects recognized in other comprehensive income	517	138	2,473	2	3,130
Costs incurred in the period	991	56	1,082	11	2,140
Current service cost	908	23	927	4	1,862
Contributions paid	(278)	–	(321)	–	(599)
Payments related to Term of financial commitment (TFC)	(223)	–	–	–	(223)
Others	–	–	–	31	31
Cumulative Translation Adjustment	(2,611)	(66)	(2,727)	(17)	(5,421)
Balance as of December 31,	10,032	411	12,236	71	22,750

(*) It includes the changes in Petros plan, PPR and PPNR plans.

(**) It includes additional contributions of participants regarding the deficit settlement plan as set out in note 23.1.

	2017				
	Pension Plan		Medical Plan		
	Petros	Petros 2	AMS	Other plans	Total
Changes in the present value of obligations					
Obligations at the beginning of the year	25,872	678	11,214	78	37,842
Interest expense:	2,776	72	1,222	10	4,080
Term of financial commitment (TFC)	325	-	-	-	325
Actuarial	2,451	72	1,222	10	3,755
Current service cost	89	44	161	4	298
Contributions paid by participants	68	-	-	-	68
Benefits paid	(1,905)	(34)	(466)	(3)	(2,408)
Remeasurement: Experience (gains) / losses (*)	(2,755)	61	(520)	7	(3,207)
Remeasurement: (gains) / losses - demographic assumptions	22	(30)	(63)	(9)	(80)
Remeasurement: (gains) / losses - financial assumptions	1,293	113	(567)	7	846
Others	-	-	-	(6)	(6)
Cumulative Translation Adjustment	(379)	(17)	(179)	(3)	(578)
Obligations at the end of the year	25,081	887	10,802	85	36,855
Changes in the fair value of plan assets					
Fair value of plan assets at the beginning of the year	15,120	385	-	40	15,545
Interest income	1,609	40	-	3	1,652
Contributions paid by the sponsor (Company)	230	-	467	2	699
Contributions paid by participants	68	-	-	-	68
Term of financial commitment (TFC) paid by the Company	223	-	-	-	223
Benefits Paid	(1,905)	(34)	(466)	(3)	(2,408)
Remeasurement: Return on plan assets due to lower interest income	(786)	249	-	4	(533)
Others	-	-	-	-	-
Cumulative Translation Adjustment	(206)	(13)	(1)	(1)	(221)
Fair value of plan assets at the end of the year	14,353	627	-	45	15,025
Amounts recognized in the Statement of Financial Position					
Present value of obligations	25,081	887	10,802	85	36,855
(-) Fair value of plan assets	(14,353)	(627)	-	(45)	(15,025)
Net actuarial liability as of December 31,	10,728	260	10,802	40	21,830
Changes in the net actuarial liability					
Balance as of January 1,	10,752	293	11,214	38	22,297
Remeasurement effects recognized in other comprehensive income	(654)	(105)	(1,150)	1	(1,908)
Costs incurred in the period	1,256	76	1,383	11	2,726
Contributions paid	(230)	-	(467)	(2)	(699)
Payments related to Term of financial commitment (TFC)	(223)	-	-	-	(223)
Others	-	-	-	(6)	(6)
Cumulative Translation Adjustment	(173)	(4)	(178)	(2)	(357)
Balance as of December 31,	10,728	260	10,802	40	21,830

(*) It includes additional contributions of participants regarding the deficit settlement plan as set out in note 23.1.

b) Defined benefit costs

							2018
				Pension Plans	Medical Plan		
	Petros plan	PPR	PPNR	Petros 2	AMS	Other Plans	Total
Service cost	23	54	6	33	155	7	278
Interest on net liabilities (assets)	254	492	162	23	927	4	1,862
Net expenses for the year	277	546	168	56	1,082	11	2,140
Related to active employees:							
Included in the cost of sales	46	94	23	29	235	–	427
Operating expenses in statement of income	19	46	11	17	122	9	224
Related to retirees	212	406	134	10	725	2	1,489
Net expenses for the year	277	546	168	56	1,082	11	2,140

						2017
			Pension Plans	Medical Plan		
	Petros Plans	Petros 2	AMS	Other Plans	Total	
Service cost	89	44	161	4	298	
Interest on net liabilities (assets)	1,167	32	1,222	7	2,428	
Net expenses for the year	1,256	76	1,383	11	2,726	
Related to active employees:						
Included in the cost of sales	236	40	263	–	539	
Operating expenses in statement of income	103	24	136	10	273	
Related to retirees	917	12	984	1	1,914	
Net expenses for the year	1,256	76	1,383	11	2,726	

						2016
			Pension Plans	Medical Plan		
	Petros Plans	Petros 2	AMS	Other Plans	Total	
Service cost	83	21	128	18	250	
Interest on net liabilities (assets)	945	12	1,093	4	2,054	
Net expenses for the year	1,028	33	1,221	22	2,304	
Related to active employees:						
Included in the cost of sales	257	18	287	2	564	
Operating expenses in statement of income	128	11	154	19	312	
Related to retirees	643	4	780	1	1,428	
Net expenses for the year	1,028	33	1,221	22	2,304	

c) Sensitivity analysis of the defined benefit plans

The effect of a 100 basis points (bps) change in the assumed discount rate and medical cost trend rate is as set out below:

	Discount Rate				Medical Cost	
	Pension Benefits		Medical Benefits		Medical Benefits	
	+100 bps	-100 bps	+100 bps	-100 bps	+100 bps	-100 bps
Pension Obligation	(1,714)	3,889	(1,498)	1,869	1,994	(1,005)
Current Service cost and interest cost	13	140	(74)	89	248	(117)

d) Actuarial assumptions

Assumptions	2018			
	PPR	PPNR	Petros 2	AMS
Discount rate - (real rate)(1)	9.11%	9.08%	9.22%	9.16%
Nominal discount rate (real rate + inflation) (2)	For 2019: 5.55%	For 2019: 5.40%	For 2019: 7.28%	according to security plan
	As of 2020: 5.33%	As of 2020: 5.24%	As of 2020: 6.84%	
Expected changes in medical and hospital costs (3)	n/a	n/a	n/a	12.03% to 4% p.a.
Mortality table	EX-PETROS 2013 (bidecremental)	EX-PETROS 2017 (bidecremental)	AT-2000 female, smoothed in a 10%	EX-PETROS 2013 (bidecremental)
Disability table	American group	American group	American group reduced by 40%	American group
Mortality table for disabled participants	AT-49 male	AT-49 male	IAPB 1957 strong	AT-49 male
Age of retirement	Male, 56 years / Female, 55 years	Male, 58 years / Female, 56 years	1st eligibility	Male, 56 years / Female, 55 years

Assumptions	2017		
	Petros plan	Petros 2	AMS
Discount rate - (real rate)(1)	9.52%	9.63%	9.59%
Nominal discount rate (real rate + inflation) (2)	5.19%	6.59%	according to security plan
Expected changes in medical and hospital costs (3)	n/a	n/a	11.3% to 4.5% p.a.
Mortality table	EX-PETROS 2013 (bidecremental)	AT-2000 female, smoothed in a 10%	EX-PETROS 2013 (bidecremental)
Disability table	American group	American group reduced by 40%	American group
Mortality table for disabled participants	AT-49 male	IAPB 1957 strong	AT-49 male
Age of retirement	Male, 57 years / Female, 56 years	1st eligibility	Male, 57 years / Female, 56 years

(1) Inflation reflects market projections: 4.01% for 2019 and converging to 4% in 2026 onwards.

(2) Expected salary growth only of Petrobras, the sponsor, based on the Salaries and Benefits Plan.

(3) Decreasing rate, converging in 30 years to the long-term expected inflation. Refers only to Petrobras (sponsor) rate.

e) Expected maturity analysis of pension and medical benefits

						2018
	Pension Plan			Medical Plan		
	PPR	PPNR	Petros 2	AMS	Other plans	Total
Up to 1 Year	1,278	476	34	417	4	2,209
1 To 2 Years	1,163	409	33	439	3	2,047
2 To 3 Years	1,137	390	32	458	3	2,020
3 To 4 Years	1,108	372	32	476	3	1,991
Over 4 Years	12,002	3,726	865	10,446	99	27,138
Total	16,688	5,373	996	12,236	112	35,405

23.6. Other defined contribution plans

Petrobras, through its subsidiaries in Brazil and abroad, also sponsors other defined contribution pension plans for employees. Contributions paid amounting to US\$ 3 in 2018 were recognized in the statement of income.

24. Equity

24.1. Share capital (net of share issuance costs)

As of December 31, 2018, subscribed and fully paid share capital, net of issuance costs, was US\$ 107,101, represented by 7,442,454,142 outstanding common shares and 5,602,042,788 outstanding preferred shares, all of which are registered, book-entry shares with no par value. Preferred shares have priority on returns of capital, do not grant any voting rights and are non-convertible into common shares.

24.2. Capital reserve

Capital reserve comprises treasury shares owned by Petrobras, in the amount of US\$ 2, held in the Brazilian depository bank at December 31, 2018.

24.3. Capital transactions

24.3.1. Incremental costs directly attributable to the issue of shares

It includes any transaction costs directly attributable to the issue of new shares, net of taxes.

24.3.2. Change in interest in subsidiaries

It includes any excess of amounts paid/received over the carrying value of the interest acquired/disposed. Changes in interests in subsidiaries that do not result in loss of control of the subsidiary are equity transactions, such as the change in BR Distribuidora, in 2017.

24.3.3. Treasury shares

Shares held in treasury in the amount of US\$ 2, represented by 222,760 common shares and 72,909 preferred shares.

24.4. Profit reserves

24.4.1. Legal reserve

It represents 5% of the net income for the year, calculated pursuant to article 193 of the Brazilian Corporation Law.

24.4.2. Statutory reserve

Appropriated by applying a minimum of 0.5% of the year-end share capital and is retained to fund technology research and development programs. The balance of this reserve may not exceed 5% of the share capital, pursuant to article 55 of the Company's bylaws.

24.4.3. Tax incentives reserve

Government grants are recognized in the statement of income and are appropriated from retained earnings to the tax incentive reserve in the shareholders' equity pursuant to article 195-A of Brazilian Corporation Law. This reserve may only be used to offset losses or increase share capital.

In 2018, US\$ 203 was appropriated to this reserve relating to the subvention of investments, of which US\$ 169 arising from the result of 2018 and US\$ 34 from the results of 2014 to 2017.

The effect of the tax incentives granted from 2014 to 2017 by *Superintendência de Desenvolvimento do Nordeste* (SUDENE) and *Superintendência de Desenvolvimento da Amazônia* (SUDAM), in the north and northeast regions of Brazil, were not allocated to the tax incentives reserve, due to the absence of income in those years. From the US\$ 203 abovementioned, US\$ 191 relates to this incentive, of which US\$ 29 is destined for reinvestments with own resources.

24.4.4. Profit retention reserve

It Includes funds intended for capital expenditures, primarily in oil and gas exploration and development activities, as per the capital budget of the Company, pursuant to article 196 of the Brazilian Corporation Law.

The Board of Directors proposes to retain in the shareholder's equity, within the profit retention reserve, the amount of US\$ 4,294 in order to partially fund the annual investment program determined in the capital budget for 2019, to be approved at the Shareholder's General Meeting.

24.5. Other comprehensive income

In 2018, the Company primarily recognized as other comprehensive income the following effects:

- Cumulative translation adjustment loss of US\$ 6,409 primarily reflecting translations from the main functional currency of Petrobras group (Brazilian real) into the presentation currency (U.S. dollar);
- Actuarial loss on defined benefit plans in the amount of US\$ 3,249, after taxes.
- Foreign exchange rate variation loss of US\$ 3,719 after taxes and amounts reclassified to the statement of income, recognized in the Company's equity, as a result of its cash flow hedge accounting policy. In 2018, the cumulative balance of foreign exchange variation losses, net of tax effects, was US\$ 13,292 (see note 34.2).

24.6. Distributions to shareholders

Pursuant to Brazilian Corporation Law, the Company's shareholders are entitled to receive minimum mandatory dividends (and/or interest on capital) of 25% of the adjusted net income for the year in proportion to the number of common and preferred shares held by them.

To the extent the Company proposes dividend distributions, preferred shares have priority in dividend distribution, which is based on the highest of 3% of the preferred shares' net book value or 5% of the preferred share capital. Preferred shares participate under the same terms as common shares in capital increases resulting from the capitalization of profit reserves or retained earnings. However, this priority does not necessarily grant dividend distributions to the preferred shareholders in the event of loss for a year.

The General Shareholders Meeting held on April 26, 2018 amended provisions in the Company's bylaws governing distribution to shareholders (dividends and interest on capital) on a quarterly basis. The quarterly distributions were included in the Company's minimum mandatory distribution for 2018 and were updated by Selic rate from the date of the payments to the end of the fiscal year.

Distributions to shareholders for 2018 amounting to US\$ 1,850, most of it proposed as interest on capital, to be approved at the 2019 Shareholder's General Meeting, are consistent with the minimum mandatory dividend of 25% of the adjusted income and withholding income tax rate of 15%, and include a complement to common shareholders as the distributions during 2018 were higher than the minimum mandatory dividend for this year. This proposal meets the priority rights of the preferred shareholders, whose criteria of 5% on the part of the capital represented by this class of shares prevailed for 2019.

	Payment	Date of approval by the Board of Directors	Date of Payment	Common Shares		Preferred Shares		Total Amount
				Amount (*)	Amount per Share	Amount (*)	Amount per Share	
1 st payment of interest on capital		05.07.2018	05.29.2018	105	0.0141	79	0.0141	184
2 nd payment of interest on capital		08.02.2018	08.23.2018	99	0.0133	74	0.0133	173
3 rd payment of interest on capital		11.05.2018	12.03.2018	201	0.0270	151	0.0270	352
4 th payment of interest on capital		12.18.2018	(**)	95	0.0128	1,006	0.1795	1,101
Complement of minimum mandatory dividends		02.27.2019	(**)	7	0.0009	33	0.0058	40
Total				507	0.0681	1,343	0.2397	1,850

(*) Amounts translated into U.S. dollar based on the exchange rate prevailing at the date of the approval, except for the complement of minimum mandatory dividends, based on the closing exchange rate at the date of the financial statements.

(**) To be settled within 60 days after the Shareholder's General Meeting.

Dividends payable attributable to shareholders of Petrobras amounts to US\$ 1,005 as of December 31, 2018, and comprise the minimum mandatory dividend of 25% of the adjusted income, including indexation charges based on Selic rate, net of the advances made during the year.

In addition to the dividends payable to Petrobras' shareholders, there are dividends payable to non-controlling shareholders of BR Distribuidora (US\$ 58), Logigás (US\$ 37), Gaspetro (US\$ 7) and other subsidiaries, totaling US\$ 1,109 accounted for in the statement of financial position as of December 31, 2018.

Due to the loss recorded in 2017 and 2016, the Board of Directors did not propose dividend distributions for those years.

24.7. Earnings per share

	2018			2017			2016		
	Common	Preferred	Total	Common	Preferred	Total	Common	Preferred	Total
Net income (loss) attributable to shareholders of Petrobras	4,093	3,080	7,173	(52)	(39)	(91)	(2,760)	(2,078)	(4,838)
Weighted average number of outstanding shares	7,442,454,142	5,602,042,788	13,044,496,930	7,442,454,142	5,602,042,788	13,044,496,930	7,442,454,142	5,602,042,788	13,044,496,930
Basic and diluted earnings (losses) per share - in U.S. dollars	0.55	0.55	0.55	(0.01)	(0.01)	(0.01)	(0.37)	(0.37)	(0.37)
Basic and diluted earnings (losses) per ADS equivalent - in U.S. dollars (*)	1.10	1.10	1.10	(0.02)	(0.02)	(0.02)	(0.74)	(0.74)	(0.74)

(*) Petrobras' ADSs are equivalent to two shares.

Basic earnings per share are calculated by dividing the net income (loss) attributable to shareholders of Petrobras by the weighted average number of outstanding shares during the period.

Diluted earnings (losses) per share are calculated by adjusting the net income (loss) attributable to shareholders of Petrobras and the weighted average number of outstanding shares during the period taking into account the effects of all dilutive potential shares (equity instrument or contractual arrangements that are convertible into shares).

Basic and diluted earnings (losses) are identical as the Company has no potential share in issue.

25. Sales revenues

25.1. Revenues from contracts with customers

As an integrated energy company, revenues from contracts with customers derive from different products sold according to our operating segments, taking into consideration specific characteristics of the markets where it operates. For additional information about the operating segments of the Company, its activities and its respective products sold, see notes 4.2 and 30.

The determination of transaction prices derives from methodologies and policies based on the parameters of these markets, reflecting operating risks, level of market share, changes in exchange rates and international commodity prices, including Brent oil prices, oil products such as diesel and gasoline, and the Henry Hub Index.

As described in note 4.21, revenues from sales are recognized at the moment the control is transferred to the client, that occurs upon delivery at the contractual agreed place or when the service is provided. Generally, prices for products and services are fixed prior to or shortly after delivery. Therefore, no significant changes in transactions prices are expected to be recognized in periods after the satisfaction of the performance obligations, except for some exports in which final prices are linked to changes in commodity price after their transfer of control (note 7.1). Sales proceeds are generally collected in the short-term, thus there are no significant financing components.

In addition, the company acts as an agent in the biofuel segment, where there is no control of the biodiesel sold to distributors at any time during the sale operation. Those revenues totaled US\$ 26 in 2018.

25.2. Disaggregation of revenues

	2018	2017	2016
Diesel	28,076	25,049	25,524
Diesel subsidy (note 19.1.1)	1,415	-	-
Gasoline	15,757	16,765	16,263
Liquefied petroleum gas	4,490	3,999	3,083
Jet fuel	3,985	3,131	2,573
Naphtha	2,455	2,637	2,472
Fuel oil (including bunker fuel)	1,267	1,392	1,167
Other oil products	4,247	3,775	3,372
Subtotal oil products	61,692	56,748	54,454
Natural gas	5,613	5,174	3,952
Ethanol, nitrogen products and renewables	2,137	3,878	3,743
Breakage	687	-	-
Electricity	2,028	3,620	1,942
Services and others	862	913	811
Domestic market	73,019	70,333	64,902
Exports	15,925	13,075	8,439
Sales abroad (*)	6,640	5,419	8,064
Foreign market	22,565	18,494	16,503
Sales revenues (**)	95,584	88,827	81,405

(*) Sales revenues from operations outside of Brazil, including trading and excluding exports.

(**) Sales revenues by business segment are set out in note 30.

For the years ended December 31, 2018, 2017 and 2016 there was no customer whose sales revenues totaled 10% or more of the Company's sales revenues.

As set out in note 19.1, the revenue recognition of the diesel subsidy occurs when the diesel is sold and delivered to distributors.

The impacts of the adoption of IFRS 15 for the year ended December 31, 2018 are presented in note 2.3.2.

25.3. Remaining performance obligations

The company has current sales contracts with original expected duration of more than 1 year, in which volumes of goods or services for future sales are determined with their respective payment terms.

The estimated remaining values of these contracts at the end of 2018 presented below are based on volumes of goods and services for future sales, as well as prices prevailing at December 31, 2018 or practiced in recent sales when they reflect the more directly observable information:

	Total	Expected recognition within 1 year
Domestic market		
Gasoline	60,589	10,128
Diesel	44,452	10,292
Natural gas	27,370	7,470
Services and others	9,226	1,470
Ethanol, nitrogen products and renewables	8,507	1,071
Naphtha	6,732	3,366
Electricity	5,255	1,021
Other oil products	4,881	453
Jet fuel	936	935
Foreign market		
Exports	33,745	4,118
Sales abroad	313	26
Total	202,006	40,350

The revenues will be recognized once goods are transferred and services are provided to the customers and their measurement and timing of recognition will be subject to future demands, changes in commodities prices, exchange rates and other market factors.

The table above does not include information on contracts with original expected duration of one year or less, such as spot-market contracts, variable considerations which are constrained, and information on contracts only establishing general terms and conditions (Master Agreements), for which volumes and prices will only be defined in subsequent contracts.

In addition, electricity sales are mainly driven by demands to generate electricity from thermoelectric power plants, according to the Brazilian National Electric System Operator (ONS) requests. These requests are substantially affected by Brazilian hydrological conditions, thus, the table above presents fixed amounts representing sales of certified capacity in accordance with the installed capacity of the Company.

25.4. Contract liabilities

The balance of contract liabilities carried on the statement of financial position at December 31, 2018 amounted to US\$ 245 (US\$ 336 at December 31, 2017). This amount is classified as other current liabilities and primarily comprises advances from customers in take and ship or pay contracts, that, will be recognized as revenue based on future sales of natural gas or following the non-exercise of the right by the customer.

26. Other income and expenses

	2018	2017	2016
Gains / (losses) related to legal, administrative and arbitration proceedings (*)	(2,040)	(898)	(1,393)
Pension and medical benefits - retirees	(1,489)	(1,914)	(1,428)
Unscheduled stoppages and pre-operating expenses	(1,282)	(1,598)	(1,859)
Agreement with US Authorities	(895)	-	-
Profit sharing	(462)	(151)	-
Gains/(losses) with Commodities Derivatives	(409)	-	-
Variable compensation program (**)	(289)	-	-
Employee Career and Compensation Plan - PCR	(293)	-	-
Equalization of expenses - Production Individualization Agreements	(279)	-	-
Institutional relations and cultural projects	(223)	(258)	(253)
Operating expenses with thermoelectric power plants	(107)	(67)	(96)
Health, safety and environment	(77)	(70)	(80)
Allowance for impairment of other receivables	(59)	(432)	(671)
Gains / (losses) on decommissioning of returned/abandoned areas	621	337	1,491
Amounts recovered from Lava Jato investigation	457	252	131
Gains / (losses) on disposal/write-offs of assets (***)	419	1,498	293
Expenses/Reimbursements from E&P partnership operations	332	372	569
Government grants	248	91	173
Ship/Take or Pay agreements	126	543	282
Provision for the class action agreement	-	(3,449)	-
Reclassification of cumulative translation adjustments - CTA	-	(37)	(1,457)
Gain on remeasurement of investment retained with loss of control	-	217	-
Provision for debt assumed from suppliers with subcontractors	-	-	(105)
Others	75	(35)	(804)
Total	(5,626)	(5,599)	(5,207)

(*) In 2018, it includes foreign exchange losses relating to the Class Action Settlement provision, in the amount of US\$ 452, as set out in note 31.4.1.

(**) It includes US\$ 13 of the variable compensation program of Petrobras Distribuidora, as well as US\$ 1 relating to the key management personnel of Petrobras.

(***) In 2018, it primarily comprises gains with divestments, as set out in note 10. In 2017, it includes returned areas and cancelled projects, as well as the divestment in NTS.

27. Costs and expenses by nature

	2018	2017	2016
Materials, third-party services, freight, rent and other related costs	(18,938)	(19,049)	(14,920)
Raw material and products for resale	(22,068)	(20,053)	(18,870)
Depreciation, depletion and amortization	(12,028)	(13,307)	(13,965)
Production taxes	(10,892)	(7,900)	(4,879)
Employee compensation	(8,839)	(9,045)	(9,984)
(Losses) /Gains on legal, administrative and arbitration proceedings	(2,040)	(898)	(1,393)
Agreement with US Authorities	(895)	-	-
Gains/(losses) with Commodities Derivatives	(409)	-	-
Unscheduled stoppages and pre-operating expenses	(1,282)	(1,598)	(1,859)
Other taxes (*)	(752)	(1,843)	(714)
Allowance for expected credit losses	(102)	(708)	(1,131)
Institutional relations and cultural projects	(223)	(258)	(253)
Exploration expenditures written off (includes dry wells and signature bonuses)	(87)	(279)	(1,281)
Health, safety and environment	(77)	(70)	(80)
Impairment (losses)/reversals	(2,005)	(1,191)	(6,193)
Provision for debt acknowledgments of suppliers with subcontractors	-	-	(105)
Provision for the class action agreement	-	(3,449)	-
Reclassification of cumulative translation adjustment	-	(37)	(1,457)
Gain on remeasurement of investment retained with loss of control	-	217	-
Amounts recovered from Lava Jato investigation	457	252	131
Equalization of expenses - AIP	(279)	-	-
Gains and losses on disposal/write-offs of assets (**)	419	1,498	293
Changes in inventories	1,888	110	(437)
Total	(78,152)	(77,608)	(77,097)
In the Statement of income			
Cost of sales	(61,517)	(60,147)	(55,417)
Selling expenses	(4,631)	(4,538)	(3,963)
General and administrative expenses	(2,455)	(2,918)	(3,319)
Other taxes (*)	(752)	(1,843)	(714)
Exploration costs	(524)	(800)	(1,761)
Research and development expenses	(642)	(572)	(523)
Impairment	(2,005)	(1,191)	(6,193)
Other income and expenses	(5,626)	(5,599)	(5,207)
Total	(78,152)	(77,608)	(77,097)

(*) In 2017, it includes the impact of tax settlement programs in the amount of US\$ 883.

(**) In 2018, it includes gains with divestments, as set out in note 10.1. In 2017, it includes returned areas and cancelled projects, as well as the divestment in NTS.

28. Net finance income (expense)

	2018	2017	2016
Debt interest and charges	(6,020)	(7,181)	(7,714)
Foreign exchange gains (losses) and indexation charges on net debt (*)	(3,054)	(4,129)	(2,507)
Discount and premium on repurchase of debt securities	(328)	(337)	(50)
Income from investments and marketable securities (Government Bonds)	563	580	547
Financial result on net debt	(8,839)	(11,067)	(9,724)
Capitalized borrowing costs	1,814	1,976	1,729
Gains (losses) on derivatives	(366)	(64)	(111)
Unwinding of discount on the provision for decommissioning costs	(652)	(762)	(662)
Other finance expenses and income, net (**)	1,987	(468)	291
Other foreign exchange gains (losses) and indexation charges, net	199	490	722
Net finance income (expenses)	(5,857)	(9,895)	(7,755)
Income	3,155	1,047	1,053
Expenses	(5,790)	(7,395)	(6,958)
Foreign exchange gains (losses) and indexation charges	(3,222)	(3,547)	(1,850)
Total	(5,857)	(9,895)	(7,755)

(*) Includes debt raised in Brazil (in Brazilian reais) indexed to the U.S. dollar.

(**) It includes US\$ 1,418 related to electricity sector as described in note 8.4.

29. Supplemental information on statement of cash flows

	2018	2017	2016
Additional information on cash flows:			
Amounts paid/received during the period:			
Withholding income tax paid on behalf of third-parties	839	857	932
Capital expenditures and financing activities not involving cash			
Purchase of property, plant and equipment on credit	137	133	123
Finance leases	-	86	90
Provision/(reversals) for decommissioning costs	4,777	4,503	937
Use of deferred tax and judicial deposit for the payment of contingency	60	314	138

30. Segment information

The operating segment information is reported in the manner in which the Company's senior management assesses business performance and makes decisions regarding investments and resource allocation.

	Exploration and Production	Refining, Transportation & Marketing	Gas & Power	Biofuels	Distribution	Corporate	Eliminations	Total
Consolidated assets by operating segment-12.31.2018								
Current assets	5,324	11,964	2,027	79	2,575	18,750	(3,657)	37,062
Non-current assets	126,989	32,119	13,582	137	2,565	9,418	196	185,006
Long-term receivables	8,115	3,286	1,525	2	837	8,059	235	22,059
Investments	650	1,303	757	45	–	4	–	2,759
Property, plant and equipment	116,153	27,356	11,057	90	1,529	1,237	(39)	157,383
Operating assets	93,172	24,347	8,517	89	1,313	1,058	(39)	128,457
Under construction	22,981	3,009	2,540	1	216	179	–	28,926
Intangible assets	2,071	174	243	–	199	118	–	2,805
Total Assets	132,313	44,083	15,609	216	5,140	28,168	(3,461)	222,068

Consolidated assets by operating segment-12.31.2017

Current assets	7,575	12,670	1,811	64	2,961	27,472	(5,422)	47,131
Non-current assets	137,044	38,396	16,744	126	3,160	9,274	(509)	204,235
Long-term receivables	7,619	3,330	2,395	4	1,074	7,489	(461)	21,450
Investments	1,429	1,492	830	33	5	6	–	3,795
Property, plant and equipment	126,487	33,400	13,231	89	1,862	1,629	(48)	176,650
Operating assets	91,386	29,217	10,580	85	1,603	1,306	(48)	134,129
Under construction	35,101	4,183	2,651	4	259	323	–	42,521
Intangible assets	1,509	174	288	–	219	150	–	2,340
Total Assets	144,619	51,066	18,555	190	6,121	36,746	(5,931)	251,366

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(Expressed in millions of US Dollars, unless otherwise indicated)


Consolidated Statement of Income by operating segment

								2018
	Exploration and Production	Refining, Transportation & Marketing	Gas & Power	Biofuels	Distribution	Corporate	Eliminations	Total
Sales revenues	52,382	73,448	12,269	255	27,960	–	(70,730)	95,584
Intersegments	50,052	16,655	3,427	240	356	–	(70,730)	–
Third parties	2,330	56,793	8,842	15	27,604	–	–	95,584
Cost of sales	(28,968)	(67,011)	(9,013)	(240)	(26,281)	–	69,996	(61,517)
Gross profit (loss)	23,414	6,437	3,256	15	1,679	–	(734)	34,067
Income (expenses)	(5,068)	(3,437)	(2,477)	(5)	(955)	(4,657)	(36)	(16,635)
Selling	(80)	(1,777)	(1,883)	(3)	(877)	15	(26)	(4,631)
General and administrative	(257)	(376)	(152)	(19)	(228)	(1,422)	(1)	(2,455)
Exploration costs	(524)	–	–	–	–	–	–	(524)
Research and development	(443)	(11)	(21)	–	(1)	(166)	–	(642)
Other taxes	(115)	(207)	(65)	(4)	(69)	(292)	–	(752)
Impairment of assets	(1,391)	(442)	(190)	18	–	–	–	(2,005)
Other income and expenses	(2,258)	(624)	(166)	3	220	(2,792)	(9)	(5,626)
Net income / (loss) before financial results and income taxes	18,346	3,000	779	10	724	(4,657)	(770)	17,432
Net finance income (expenses)	–	–	–	–	–	(5,857)	–	(5,857)
Results in equity-accounted investments	75	362	95	(7)	(2)	–	–	523
Net income / (loss) before income taxes	18,421	3,362	874	3	722	(10,514)	(770)	12,098
Income taxes	(6,236)	(1,020)	(266)	(4)	(248)	2,828	262	(4,684)
Net income (loss) for the period	12,185	2,342	608	(1)	474	(7,686)	(508)	7,414
Non-controlling interests	(5)	(51)	128	–	130	39	–	241
Net income attributable to shareholders of Petrobras	12,190	2,393	480	(1)	344	(7,725)	(508)	7,173

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Consolidated Statement of Income by operating segment
2017

	Exploration and Production	Refining, Transportation & Marketing	Gas & Power	Biofuels	Distribution	Corporate	Eliminations	Total
Sales revenues	42,184	67,037	12,374	213	27,567	–	(60,548)	88,827
Intersegments	40,762	16,142	3,027	201	416	–	(60,548)	–
Third parties	1,422	50,895	9,347	12	27,151	–	–	88,827
Cost of sales	(27,937)	(57,778)	(8,797)	(222)	(25,501)	–	60,088	(60,147)
Gross profit (loss)	14,247	9,259	3,577	(9)	2,066	–	(460)	28,680
Income (expenses)	(3,750)	(3,603)	(676)	(22)	(1,266)	(8,217)	73	(17,461)
Selling	(125)	(1,731)	(1,793)	(2)	(995)	27	81	(4,538)
General and administrative	(331)	(457)	(165)	(22)	(274)	(1,669)	–	(2,918)
Exploration costs	(800)	–	–	–	–	–	–	(800)
Research and development	(333)	(13)	(26)	–	–	(200)	–	(572)
Other taxes	(503)	(203)	(258)	(7)	(42)	(830)	–	(1,843)
Impairment of assets	43	(781)	(446)	(7)	–	–	–	(1,191)
Other income and expenses	(1,701)	(418)	2,012	16	45	(5,545)	(8)	(5,599)
Net income / (loss) before financial results and income taxes	10,497	5,656	2,901	(31)	800	(8,217)	(387)	11,219
Net finance income (expenses)	–	–	–	–	–	(9,895)	–	(9,895)
Results in equity-accounted investments	136	443	117	(26)	2	1	–	673
Net income / (loss) before income taxes	10,633	6,099	3,018	(57)	802	(18,111)	(387)	1,997
Income taxes	(3,571)	(1,922)	(985)	10	(272)	4,780	132	(1,828)
Net income (loss) for the period	7,062	4,177	2,033	(47)	530	(13,331)	(255)	169
Non-controlling interests	41	(58)	118	–	9	150	–	260
Net income attributable to shareholders of Petrobras	7,021	4,235	1,915	(47)	521	(13,481)	(255)	(91)

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(Expressed in millions of US Dollars, unless otherwise indicated)


Consolidated Statement of Income by operating segment
2016

	Exploration and Production	Refining, Transportation & Marketing	Gas & Power	Biofuels	Distribution	Corporate	Eliminations	Total
Sales revenues	33,675	62,588	9,401	240	27,927	–	(52,426)	81,405
Intersegments	32,195	17,090	2,490	231	420	–	(52,426)	–
Third parties	1,480	45,498	6,911	9	27,507	–	–	81,405
Cost of sales	(24,863)	(48,444)	(6,790)	(264)	(25,757)	–	50,701	(55,417)
Gross profit (loss)	8,812	14,144	2,611	(24)	2,170	–	(1,725)	25,988
Income (expenses)	(6,789)	(5,425)	(1,439)	(62)	(2,084)	(5,968)	87	(21,680)
Selling	(143)	(1,846)	(768)	(2)	(1,309)	10	95	(3,963)
General and administrative	(346)	(442)	(206)	(25)	(271)	(2,029)	–	(3,319)
Exploration costs	(1,761)	–	–	–	–	–	–	(1,761)
Research and development	(198)	(57)	(17)	(1)	–	(250)	–	(523)
Other taxes	(85)	(98)	(220)	(4)	(29)	(278)	–	(714)
Impairment of assets	(3,272)	(2,457)	(375)	(7)	(82)	–	–	(6,193)
Other income and expenses	(984)	(525)	147	(23)	(393)	(3,421)	(8)	(5,207)
Net income / (loss) before financial results and income taxes	2,023	8,719	1,172	(86)	86	(5,968)	(1,638)	4,308
Net finance income (expenses)	–	–	–	–	–	(7,755)	–	(7,755)
Results in equity-accounted investments	32	(75)	80	(265)	10	–	–	(218)
Net income / (loss) before income taxes	2,055	8,644	1,252	(351)	96	(13,723)	(1,638)	(3,665)
Income taxes	(687)	(2,964)	(397)	28	(29)	2,809	556	(684)
Net income (loss) for the period	1,368	5,680	855	(323)	67	(10,914)	(1,082)	(4,349)
Non-controlling interests	(57)	(66)	123	–	–	489	–	489
Net income attributable to shareholders of Petrobras	1,425	5,746	732	(323)	67	(11,403)	(1,082)	(4,838)

31. Provisions for legal proceedings

31.1. Provisions for legal proceedings, judicial deposits and contingent liabilities

The Company recognizes provisions based on the best estimate of the costs of proceedings for which it is probable that an outflow of resources embodying economic benefits will be required and that can be reliably estimated. These proceedings mainly include:

- Labor claims, in particular: (i) opt-out claims related to a review of the methodology by which the minimum compensation based on an employee's position and work schedule (*Remuneração Mínima por Nível e Regime - RMNR*) is calculated; (ii) lawsuits relating to overtime pay and (iii) actions of outsourced employees;
- Tax claims including: (i) claims relating to Brazilian federal tax credits applied that were disallowed; and (ii) alleged misappropriation of VAT (ICMS) tax credits on import of platforms;
- Civil claims relating to: (i) agreement to settle the Consolidated Securities Class Action before the United States District Court for the Southern District of New York; (ii) collection of royalties over the shale extraction; (iii) non-compliance with contractual terms relating to oil platform construction; (iv) compensation relating to an easement over a property; (v) collection of production taxes over natural gas production; (vi) penalties applied by ANP relating to measurement systems; (vii) termination of the drilling service contract tied to ship-probe Titanium Explorer; and (viii) differences in production taxes (special participation) relating to the unification of oil fields in the Parque das Baleias complex.

Provisions for legal proceedings are set out as follows:

	12.31.2018	12.31.2017
Current and Non-current liabilities		
Labor claims	1,093	1,364
Tax claims	491	1,229
Civil claims	5,710	4,342
Environmental claims	111	91
Total	7,405	7,026
Current liabilities	3,482	2,256
Non-current liabilities	3,923	4,770
	Jan-Dec/2018	Jan-Dec/2017
Opening Balance	7,026	3,391
Additions, net of reversals	1,325	3,937
Use of provision	(650)	(454)
Accruals and charges	736	285
Others	95	-
Cumulative translation adjustment	(1,127)	(133)
Closing Balance	7,405	7,026

In preparing its consolidated financial statements for the year ended December 31, 2018, the Company considered all available information concerning legal proceedings in which the Company is a defendant, in order to estimate the amounts of obligations and probability that outflows of resources will be required.

The main additions to the provision for legal proceedings in 2018 were primarily attributable to differences in special participation relating to the unification of oil fields in the Parque das Baleias complex, termination service contract tied to drilling rig Titanium Explorer, unfavorable court rulings that changed the probabilities of outflows of resources relating to certain claims to probable, as well as changes in the assessment of civil claim for compensation. These additions were partially offset by reversal of provisions relating to the class action requiring a review of the RMNR following a favorable decision of the Brazilian Supreme Court, to an extrajudicial settlement of BR Distribuidora relating to tax debts with the state of Mato Grosso, as well as the tax relief of VAT (ICMS) on jet fuel sales and on imports of platforms, granted by state amnesty programs.

Foreign exchange losses over the provision for the Class Action in the USA, as well as withholding income tax disbursed on the installments of the class action settlement (see note 31.4), also affected the balance of provisions for legal proceedings during the year ended December 31, 2018.

31.2. Judicial deposits

Judicial deposits made in connection with legal proceedings are set out in the table below according to the nature of the corresponding lawsuits:

	12.31.2018	12.31.2017
Non-current assets		
Tax	4,563	3,302
Labor	1,161	1,209
Civil	823	891
Environmental	160	176
Others	4	4
Total	6,711	5,582

	12.31.2018	12.31.2017
Opening Balance	5,582	3,999
Additions	1,883	1,601
Use	(86)	(138)
Accruals and charges	294	226
Others	26	-
Cumulative translation adjustment	(988)	(106)
Closing Balance	6,711	5,582

For the year ended December 31, 2018, the Company made judicial deposits in the amount of US\$ 1,883, mainly resulting from an unfavorable decision issued by the Regional Federal Court of Rio de Janeiro (*Tribunal Regional Federal – TRT/RJ*) in October 2017, with respect to withholding income tax on remittances for payments of vessel charters from 1999 to 2002, as well as judicial deposits related to tax claim alleging taxable income from foreign subsidiaries and associates located outside Brazil, as set out in note 31.3.

31.3. Contingent liabilities

Contingent liabilities for which either the Company is unable to make a reliable estimate of the expected financial effect that might result from resolution of the proceeding, or a cash outflow is not probable, are not recognized as liabilities in the financial statements but are disclosed in the notes to the financial statements, unless the likelihood of any outflow of resources embodying economic benefits is considered remote.

The estimates of contingent liabilities for legal proceedings are indexed to inflation and updated by applicable interest rates. As of December 31, 2018, estimated contingent liabilities for which the possibility of loss is not considered remote are set out in the following table:

Nature	12.31.2018	12.31.2017
Tax	37,290	39,137
Labor	8,619	7,202
Civil - General	6,539	9,621
Civil - Environmental	4,221	2,354
Total	56,669	58,314

A brief description of the nature of the main contingent liabilities (tax, civil, environmental and labor) is set out in the following table:

	Estimate	
Description of tax matters	12.31.2018	12.31.2017
Plaintiff: Secretariat of the Federal Revenue of Brazil		

1) Withholding income tax (IRRF), Contribution of Intervention in the Economic Domain (CIDE), Social Integration Program (PIS) and Contribution to Social Security Financing (COFINS) on remittances for payments of vessel charters.

Current status: The claim about the incidence of withholding income tax (Imposto de Renda Retido na Fonte- IRRF) on remittances for payments of vessel charters, occurred from 1999 to 2002, involves the legality of the normative rule issued by the Federal Revenue of Brazil, which ensured no taxation over those remittances. The Company considers the likelihood of loss as possible, since there are decisions from Superior Courts favorable to the understanding of the Company, and will continue to defend its opinion.

The other claims, concerning CIDE and PIS/COFINS, involve lawsuits in different administrative and judicial stages, for which the Company understands there is a possible likelihood of loss, since there are legal predictions in line with the position of the Company.

11,568 13,041

2) Income from foreign subsidiaries and associates located outside Brazil not included in the computation of taxable income (IRPJ and CSLL).

Current status: This claim involves lawsuits in different administrative and judicial stages. The Company considers the likelihood of loss as possible, since there are decisions from Superior Courts favorable to the understanding of the Company. There is a notice issued for one more year.

5,208 3,988

3) Requests to compensate federal taxes disallowed by the Brazilian Federal Tax Authority.

Current status: This claim involves lawsuits in different administrative and judicial stages.

3,156 3,621

4) Incidence of social security contributions over contingent bonuses paid to employees.

Current status: A definitive favorable decision was rendered for some cases, and the remaining claims involve lawsuits in different administrative and judicial stages.

929 1,541

5) Collection of Contribution of Intervention in the Economic Domain (CIDE) on transactions with fuel retailers and service stations protected by judicial injunctions determining that fuel sales were made without gross-up of such tax.

Current status: This claim involves lawsuits in different judicial stages.

588 672

6) Deduction from the basis of calculation of taxable income (income tax - IRPJ and social contribution - CSLL) of several expenses related to employee benefits.

Current status: The court ruled on this matter in the second quarter of 2017 granting the deduction of these expenses from the taxable profit computation, but limited it to 20% of the payroll and compensation of key management participants in the plan. In 2017, after assessing the fundamentals of this court ruling, the Company considered as probable the likelihood of outflow of resources with respect to the portion of the deduction that exceeds the 20% limit, and as remote the portion within the 20% limit.

The other claims of this item, which have different legal basis, remain with their likelihood of loss as possible and are in different administrative and judicial stages.

542 613

Plaintiff: States of SP, CE, PB, RJ, BA, PA, AL and SE Finance Departments

7) VAT (ICMS) and VAT credits on internal consumption of bunker fuel and marine diesel, destined to chartered vessels.

Current status: This claim involves several tax notices from the states, including two new material notices applied in the third quarter of 2018, which are in different administrative and judicial stages.

1,323 578

Plaintiff: States of RJ, BA and AL Finance Departments

8) VAT (ICMS) on dispatch of liquid natural gas (LNG) and C5+ (tax document not accepted by the tax authority), as well as challenges on the rights to this VAT tax credit.

Current status: This claim involves lawsuits in different administrative and judicial stages.

1,198 1,366

Plaintiff: Municipal governments of the cities of Anchieta, Aracruz, Guarapari, Itapemirim, Marataizes, Linhares, Vila Velha and Vitória

9) Alleged failure to withhold and pay tax on services provided offshore (ISSQN) in favor of some municipalities in the State of Espírito Santo, under the allegation that the service was performed in their "respective coastal waters".

Current status: This claim involves lawsuits in different administrative and judicial stages.

1,123 1,224

Plaintiff: States of RJ, SP, PR, RO and MG Finance Departments

10) Additional VAT (ICMS) due to differences in rates on jet fuel sales to airlines in the domestic market, among other questions relating to the use of tax benefits.

Current status: This claim involves lawsuits in different administrative and judicial stages.

965 1,087

Plaintiff: States of RJ, AL, AM, PA, BA, GO, MA, SP and PE Finance Departments

11) Alleged failure to write-down VAT (ICMS) credits related to zero tax rated or non-taxable sales made by the Company and its customers.

Current status: This claim involves lawsuits in different administrative and judicial stages.

942 1,029

Plaintiff: States of RJ, SP, ES, BA, PE, MG, RS, AL, SE and CE Finance Departments

12) Misappropriation of VAT tax credit (ICMS) that, per the tax authorities, are not related to property, plant and equipment.

Current status: This claim involves lawsuits in different administrative and judicial stages. 900 994

Plaintiff: States of PR, AM, BA, ES, PA, PE, SP, PB and AL Finance Departments

13) Incidence of VAT (ICMS) over alleged differences in the control of physical and fiscal inventories.

Current status: This claim involves lawsuits in different administrative and judicial levels. 890 976

Plaintiff: States of RJ Finance Departments

14) The plaintiff alleges that the transfers without segregating VAT (ICMS), under the special regime, reduced the total credits of the central department.

Current status: The Company presented administrative defense from the notices issued, pending court assessment. 800 -

Plaintiff: States of SP, RS and SC Finance Departments

15) Collection of VAT (ICMS) related to natural gas imports from Bolivia, alleging that these states were the final destination (consumers) of the imported gas.

Current status: This claim involves lawsuits in different administrative and judicial stages, as well as three civil lawsuits in the Federal Supreme Court. 740 852

Plaintiff: State of São Paulo Finance Department

16) Deferral of payment of VAT (ICMS) taxes on B100 Biodiesel sales and the charge of a 7% VAT rate on B100 on Biodiesel interstate sales, including states in the Midwest, North and Northeast regions of Brazil and the State of Espírito Santo.

Current status: This claim involves lawsuits in different administrative and judicial stages. In the third quarter of 2018, the company obtained final favorable decisions in proceedings in administrative stages, contributing to the partial reduction of the exposure.

659 887

17) Charge of VAT (ICMS), as a result of the temporary admission being unauthorized, since the customs clearance regarding the import of the rig has been done in Rio de Janeiro instead of São Paulo.

Current status: This claim involves lawsuits in different judicial stages. The State of São Paulo Finance Department appeal was denied, thus the likelihood of loss became remote in the third quarter of 2018.

- 761

Plaintiff: States of MG, MT, GO, RJ, PA, CE, BA, PR, SE, AL, RN, SP and PR Finance Departments

18) Misappropriation of VAT tax credit (ICMS) on the acquisitions of goods that, per the tax authorities, are not related to inventories.

Current status: There are notices issued by these states. This claim involves lawsuits in different administrative and judicial stages. 589 284

Plaintiff: States of RJ, SP, SE and BA Finance Departments

19) Misappropriation of VAT tax credit (ICMS) on the acquisitions of goods that, per the tax authorities, are not related to property, plant and equipment.

Current status: This claim involves lawsuits in different administrative and judicial stages. New lawsuits during the third quarter of 2018 contributed to the increase of the balance.

567 513

Plaintiff: States of GO, PA, RJ, RR, SC, SP and TO.

20) Charge of VAT (ICMS) on remittance and symbolic return of jet fuel to retail establishment which, in the understanding of the tax authority, should have retention and collection of the ICMS for the subsequent operations, since it is considered a remittance to a retail taxpayer established in the State.

Current status: This claim involves lawsuits in different administrative and judicial stages. 373 416

Plaintiff: States of PE and BA Finance Departments.

21) Alleged incorrect application of VAT (ICMS) tax base with respect to interstate sales of natural gas transport through city-gates in the State of Pernambuco destined to the distributors in that State. The Finance Department of the State of Pernambuco understands that activity as being an industrial activity which could not be characterized as an interstate sale transaction (considering that the Company has facilities located in Pernambuco), consequently charging the difference on the tax levied on the sale and transfer transactions.

Current status: This claim involves lawsuits in different judicial stages. 304 335

Plaintiff: States of AM, RS and RJ Finance Departments

22) Disagreement about the basis of calculation of VAT (ICMS) on interstate sales and transfers between different stores from the same contributor.

Current status: This claim involves lawsuits in different administrative and judicial stages. 174 448

23) Other tax matters 3,752 3,911

Total for tax matters 37,290 39,137

Description of labor matters	Estimate	
	12.31.2018	12.31.2017
Plaintiff: Employees and Sindipetro Union of ES, RJ, BA, MG, SP, PE, PB, RN, CE, PI, PR and SC.		
1) Actions requiring a review of the methodology by which the minimum compensation based on an employee's position and work schedule (Remuneração Mínima por Nível e Regime - RMNR) is calculated.		
Current status: The Superior Labor Court (Tribunal Superior do Trabalho - TST) denied the special appeal filed by the Company. Petrobras filed a Motion for Clarification on the decision, which was denied by the TST. The Company will file the appropriate appeal. On July 26, 2018, a minister of the Superior Federal Court (Superior Tribunal Federal - STF) granted Petrobras' request to prevent the effects of the judgment of the TST, determining the suspension of individual and class actions on this subject, pending the deliberation on this matter in the Supreme Court or further deliberation of the rapporteur minister assigned to this case. On August 13, 2018, the rapporteur confirmed the decision of the minister and extended the decision to the ongoing actions on the matter, suspending all cases relating to this subject.		
	6,254	4,516
Plaintiff: Sindipetro of Norte Fluminense – SINDIPETRO/NF		
2) The plaintiff claims Petrobras failed to pay overtime for standby work exceeding 12-hours per day. It also demands that the Company respects a 12-hour limit of standby work per workday, as well as an 11-hour period for rest between workdays, subject to a daily fine.		
Current status: The claim was denied by the TST, but the plaintiff is still able to appeal.		
	352	389
3) Other labor matters	2,013	2,297
Total for labor matters	8,619	7,202

Description of civil matters	Estimate	
	12.31.2018	12.31.2017
Plaintiff: Several plaintiffs in Brazil and EIG Management Company in USA		
1) Arbitration in Brazil and lawsuit in the USA regarding Sete Brasil.		
Current status: The Company litigates, confidentially, in several arbitrations on the case, one of them was given arbitration award favorable to Petrobras. The unsuccessful investor in this arbitration award filed an annulment requirement, which did not have the injunction granted even with appeal to the lower court. The lawsuit brought by EIG and its affiliates alleges that the Company has committed fraud by inducing the claimants to invest in "Sete" through communications that would have omitted an alleged corruption scheme involving Petrobras and "Sete". The U.S. District Court for the District of Columbia upheld in part Petrobras' preliminary defense (motion to dismiss). Petrobras appealed the court's decision to dismiss in part Petrobras' preliminary defense. On January 19, 2018, oral argument on the appeal was held before the U.S. Court of Appeals for the District of Columbia Circuit. On July 3, 2018, a panel of the Court of Appeals rendered a decision, by a majority, rejecting Petrobras' appeal. This ruling did not discuss the merits of EIG's allegations and examined only whether Petrobras would be exempt from prosecution in the US at the initial stage of the case. Petrobras presented a Petition for Rehearing on August 2, 2018 and on October 1st, 2018 the D.C. Circuit denied it.		
	2,082	2,127
Plaintiff: Agência Nacional de Petróleo, Gás Natural e Biocombustíveis - ANP		
2) Administrative proceedings challenging an ANP order requiring Petrobras to pay additional special participation fees and royalties (production taxes) with respect to several fields. It also includes contention about fines imposed by ANP due to alleged failure to comply with the minimum exploration activities program, as well as alleged irregularities relating to compliance with oil and gas industry regulation.		
Current status: The claims involve lawsuits in different administrative and judicial stages.		
	1,663	1,635
3) Proceedings challenging an ANP order requiring Petrobras to unite Lula and Cernambi fields on the BM-S-11 joint venture; to unite Baúna and Piracicaba fields; to unite Tartaruga Verde and Mestiça fields; and to unite Baleia Anã, Baleia Azul, Baleia Franca, Cachalote, Caxaréu, Jubarte and Pirambu, in the Parque das Baleias complex, which would cause changes in the payment of special participation charges.		
Current status: This list involves claims that are disputed in court and in arbitration proceedings, as follows: a) Lula and Cernambi: initially, the Company made judicial deposits for the alleged differences resulting from the special participation. However, with the reversal of the favorable injunction, the arbitration is stayed and currently the payment of these alleged differences have been made directly to ANP, until a final judicial decision is handed down. b) Baúna and Piracicaba: the Court reassessed previous decision that disallowed judicial deposits, therefore the Company is currently depositing the controversial amounts. The arbitration is stayed. c) Tartaruga Verde and Mestiça: The Company has authorization to make the judicial deposits relating to these fields. The Regional Federal Court of the Second Region has the opinion that the Chamber of Arbitration has jurisdiction on this claim and the arbitration is ongoing. On both parties initiative, the arbitration is stayed. d) Parque das Baleias complex: the Judiciary stated decisions allowing the arbitration with ANP. Therefore, the Chamber of Arbitration disallowed ANP to charge for special participation, establishing that Petrobras should provide collateral on the debt to be negotiated. On both parties initiative, the arbitration is stayed, with the objective of seeking an alternative to solve this dispute, which amounts to US\$ 2.8 billion at December 31, 2018. In December 2018, the ANP held a hearing presenting a draft of the preliminary agreement developed by the technical departments of Petrobras and ANP, including the calculation of the updated amounts of special participation due up the last quarter of 2018, totaling US\$ 0.9 billion. Therefore, the Company believes, as of December 31, 2018, that an outflow of resources in this amount is probable to settle the controversy with the ANP and, as a result, recognized a provision for this proceeding in 2018.		
	287	2,633
Plaintiff: Vantage Deepwater Company and Vantage Deepwater Drilling Inc.		
4) International litigations relating to the unilateral termination of the drilling service contract tied to Titanium Explorer drilling rig.		

Current status: An unfavorable arbitration award was rendered on July 2, 2018 in Texas, USA. The Arbitral Tribunal formed by three arbitrators decided by a majority vote that Vantage is entitled to receive US\$ 622 million, bearing interests at a 15.2% annual rate, in compensation for early termination of the contract related to the drilling service provided by the Titanium Explorer drilling rig, and for services already billed. On August 31, 2018, the Company challenged the arbitral award, arguing that it has been denied the fundamental safeguards of due process, as expressed by the dissenting arbitrator. On August 27, 2018, the Dutch Judiciary granted an injunction in favor of Vantage, blocking any amounts and assets due to Petrobras, arising from obligations of some of its Netherlands-based subsidiaries until August 27, 2018, limited to US\$ 684 million. The injunction also reaches the subsidiaries Petrobras Netherlands B.V. and Petrobras International Braspetro B.V. On November 15, 2018, Vantage filed a motion before the Dutch Judicial Branch for the recognition of the arbitration award. On December 19, 2018, the Federal Court of Texas denied the Company's request to collect the dissenting arbitrator's testimony. On March 08, 2019, the Federal Court of Texas will hold a final hearing on the request for confirmation of the arbitration award made by Vantage and the request for annulment made by Petrobras. Therefore, the Company understands the chance of loss is probable and made a provision for this proceeding in the last quarter of 2018.

	-	400
5) Other civil matters	2,507	2,826
Total for civil matters	6,539	9,621

		Estimate
Description of environmental matters	12.31.2018	12.31.2017
Plaintiff: Ministério Público do Estado do Rio de Janeiro.		

1) Five public civil actions filed by the Public Prosecutor's Office of the State of Rio de Janeiro against Petrobras, the State Environmental Institute - INEA and Rio de Janeiro State, requesting proof of compliance with regulation relating to the environmental licensing of COMPERJ, complementation of technical researches, as well as compensation for collective material and moral damages.

Current status: The five actions are currently stayed.

2,096 -

Plaintiff: Ministério Público Federal, Ministério Público Estadual do Paraná, AMAR - Associação de Defesa do Meio Ambiente de Araucária, IAP - Instituto Ambiental do Paraná and IBAMA - Instituto Brasileiro de Meio Ambiente e Recursos Naturais Renováveis.

2) Legal proceeding related to specific performance obligations, indemnification and compensation for damages related to an environmental accident that occurred in the State of Paraná on July 16, 2000.

Current status: The court partially ruled in favor of the plaintiff. However, both parties (the plaintiff and the Company) filed an appeal.

901 942

Plaintiff: Instituto Brasileiro de Meio Ambiente - IBAMA and Ministério Público Federal

3) Administrative proceedings arising from environmental fines related to exploration and production operations (Upstream) contested because of disagreement over the interpretation and application of standards by IBAMA, as well as a public civil action filed by the Ministério Público Federal for alleged environmental damage due to the accidental sinking of P-36 Platform.

Current status: A number of defense trials and the administrative appeal regarding the fines are pending, and others are under judicial discussion. With respect to the civil action, the Company appealed the ruling that was unfavorable in the lower court and monitors the use of the procedure that will be judged by the Regional Federal Court.

400 444

4) Other environmental matters	824	968
Total for environmental matters	4,221	2,354

31.4. Class action and related proceedings

31.4.1. Class action and related proceedings in the USA

At the end of 2017, the Company signed an agreement to settle the Consolidated Securities Class Action (the Class Action Settlement) that had been filed against it and certain other defendants. As previously reported, between December 8, 2014 and January 7, 2015, five putative securities class action complaints were filed against the Company, Petrobras International Finance Company S.A. ("PifCo"), which was merged into Petrobras Global Finance B.V. ("PGF"), PGF (collectively with the Company and PifCo, the "Petrobras Defendants"), certain underwriters of debt securities (the "Underwriter Defendants"), among other defendants (the "Defendants"), in the United States District Court for the Southern District of New York ("SDNY" or the "District Court"). These actions were consolidated on February 17, 2015 (the "Consolidated Securities Class Action" or "Class Action"). The Court appointed a lead plaintiff, Universities Superannuation Scheme Limited ("USS"), on March 4, 2015.

In sum and substance, the complaints in the Consolidated Securities Class Action asserted claims under the Securities Exchange Act of 1934, as amended (the “Exchange Act”) and Securities Act of 1933, as amended (the “Securities Act”), alleging that in the Company’s press releases, filings with the SEC and other communications, the Company made materially false and misleading statements and omissions regarding the value of its assets, the amounts of the Company’s expenses and net income, the effectiveness of the Company’s internal controls over financial reporting, and the Company’s anti-corruption policies.

On June 22, 2018, the District Court granted final approval of the Class Action Settlement, rejecting challenges that had been raised by objectors.

The Class Action Settlement is intended to resolve all pending and prospective claims by purchasers of Petrobras securities, including debt securities issued by PifCo and/or PGF, in the United States, and by purchasers of Petrobras securities that are listed for trading on the New York Stock Exchange or pursuant to other covered transactions, or that clear or settle through the Depository Trust Company. Excluded from the definition of “covered transaction” are purchases of any Petrobras Security on the Brazilian Stock Exchange (B3).

The Class Action Settlement was entered into to eliminate the risk of an adverse judgment which, as Petrobras has previously reported, could have a material adverse effect on the Company and its financial situation, and puts an end to the uncertainties, burdens and costs of protracted litigation.

Under the Class Action Settlement, Petrobras (together with its subsidiary PGF) has agreed to pay US\$ 2,950 to resolve claims in two installments of US\$ 983 and a further installment of US\$ 984. Accordingly, the Company charged US\$ 3,449 to its statement of income for the last quarter of 2017 as other income and expenses, taking into account the gross up of tax related to the Petrobras’s portion of the settlement. On March 1, 2018, Petrobras and PGF disbursed the first installment into an escrow account designated by the lead plaintiff and accounted for it as other current assets. The second installment was deposited on July 2, 2018, 10 days after the final approval of the Class Action Settlement. Foreign exchange losses on the provision amounted to US\$ 452 at December 31, 2018 and were accounted for as other income and expenses. The third installment was deposited on January 15, 2019.

Certain objectors have appealed the District Court’s final decision to approve the Class Action Settlement, and one such appeal remains pending. In the event that a higher court annuls the agreement, or if the agreement does not become final for other reasons, the Company will return to its position prior to the Class Action Settlement and, depending on the outcome of the subsequent litigation, the Company might be required to pay substantial amounts, which could have a material adverse effect on the Company’s financial condition, its consolidated results of operations or its consolidated cash flows for an individual reporting period.

A petition for a writ of certiorari filed by Petrobras to the United States Supreme Court on August 30, 2017 remains under consideration by the United States Supreme Court pending final approval of the Class Action Settlement. If the Class Action Settlement becomes final, Petrobras will dismiss the petition for writ of certiorari.

Individuals are seeking measures against Petrobras in Brazil to annul and/or suspend the Class Action Settlement. No adverse measure has been granted to date against the settlement.

In addition to the Consolidated Securities Class Action, 33 lawsuits were filed by individual investors before the same judge in the SDNY, and one was filed in the United States District Court for the Eastern District of Pennsylvania (collectively, the “Individual Actions”), consisting of allegations similar to those in the Consolidated Securities Class Action. All of the Individual Actions have been resolved, either because the individual plaintiffs voluntarily joined the Class Action, or through settlements. The terms of such settlements are confidential and Petrobras denies all allegations of wrongdoing. The settlements are aimed at eliminating the uncertainties, burdens and expense of ongoing litigation.

In connection with consummated settlements of Individual Actions, the Company charged US\$ 456 to the statement of income as other income and expenses in previous years (US\$ 8 in 2018, US\$ 76 in 2017 and US\$ 372 in 2016).

31.4.2. Class action in the Netherlands

On January 23, 2017, the Stichting Petrobras Compensation Foundation (“Foundation”) filed a class action before the district court in Rotterdam, in the Netherlands, against Petrobras parent company and its subsidiaries Petrobras International Braspetro B.V. (PIBBV) and Petrobras Global Finance B.V. (PGF); joint venture Petrobras Oil & Gas B.V. (PO&G), and some former managers of Petrobras.

The Foundation allegedly represents the interests of an unidentified group of investors and alleges that as a result of the facts uncovered by the Lava Jato investigation the defendants acted unlawfully towards investors. Based on the allegations, the Foundation seeks a number of declaratory relieves from the Dutch court.

The Company filed their first response to the claim on May 3, 2017 (first docket date), presenting the law firms that will defend these companies and requesting a hearing to discuss some aspects of the case.

On August 23, 2017, a hearing was held at the District Court in Rotterdam to establish the timeframe for proceedings. Petrobras (and other defendants) presented preliminary defenses on November 29, 2017 and the Foundation presented its response on March 28, 2018. On June 28, 2018, a hearing was held for the parties to present oral arguments. On September 19, 2018, the District Court rendered its interim decision in the motion proceedings in which it accepted jurisdiction in most of 7 claims of the Foundation, without any assessment on the merits of the case.

On December 18, 2018, a hearing was held before the District Court and the schedule of the next phases of the collective action was defined. The next hearing shall be held on April 16, 2019.

This collective action involves complex issues that are subject to substantial uncertainties and depend on a number of factors such as the standing of the Foundation as the alleged representative of the investors' interests, the applicable rules to this complaint, the information produced the evidentiary phase of the proceedings, analysis by experts, the timing of court decisions and rulings by the court on key issues, and the Foundation only seeks declaratory reliefs in this collective action. Currently, it is not possible to determine if the Company will be found responsible for the payment of compensation in subsequent individual complaints after this action as this assessment depends on the outcome of these complex issues. Moreover, it is uncertain which investors will be able to file subsequent individual complaints related to this matter against the Company.

In addition, the allegations asserted are broad, span a multi-year period and involve a wide range of activities, and, at the current stage, the impacts of such allegations are highly uncertain. The uncertainties inherent in all such matters affect the amount and timing of the ultimate resolution of these actions. As a result, the Company is unable to make a reliable estimate of eventual loss arising from this action. The company is victim of the corruption scheme uncovered by the Lava Jato investigation and aims to present and prove this before the Dutch Court.

The uncertainties inherent in all such matters do not enable the company to identify possible risks related to this action. Compensation for the alleged damages will only be determined by court rulings on complaints to be filed by individual investors. The Foundation is not able to demand compensation for damages.

The Company denies the allegations presented by the Foundation and intend to defend themselves vigorously.

31.4.3. Arbitration in Brazil

Petrobras is also currently a party to 5 arbitration proceedings brought by Brazilian and foreign investors that purchased Petrobras' shares traded in Brazilian Stock Exchange (B3), alleging financial losses caused by facts uncovered in the *Lava Jato* investigation.

These claims involve complex issues that are subject to substantial uncertainties and depend on a number of factors such as the novelty of the legal theories, the timing of the Chamber of Arbitration decisions, the information produced in discovery and analysis by retained experts.

Moreover, the claims asserted are broad and span a multi-year period. The uncertainties inherent in all such matters affect the amount and timing of their ultimate resolution. As a result, the Company is unable to make a reliable estimate of eventual loss arising from such arbitrations asserted. The Company denies the allegations presented by these investors and intends to defend these claims vigorously. Moreover, half of amount deposited in accordance with the Commitment Assumption Agreement executed with the Brazilian Federal Prosecutor's Office (see note 3.3.1) may be used in the event of any loss involving such arbitration proceedings.

Depending on the outcome of these complaints, the company may have to pay substantial amounts, which may cause a significant effect on its financial condition, its financial statements or consolidated cash flow in a certain period.

31.4.4. Arbitration in Argentina

On September 11, 2018, Petrobras was served of an arbitral claim filed by Consumidores Financieros Asociación Civil para su Defensa ("Association") against the company and other individuals and legal entities, before the "Tribunal de Arbitraje General de la Bolsa de Comercio de Buenos Aires". Among other issues, the Association alleges Petrobras' liability for a supposed loss of market value of Petrobras' shares in Argentina, due to proceedings related to *Lava Jato* investigation.

As a result of a preliminary analysis, Petrobras considers that the claim is without grounds. However, considering: (i) that Petrobras has not yet replied the complaint; (ii) that the proceeding is at an early stage and (iii) the uncertainties inherent in this kind of proceedings, it is not possible for the Company to identify possible risks related to this arbitration and to produce a reliable estimate of the potential loss in this arbitration, if any.

Petrobras denies the allegations presented by the Association and intends to defend itself vigorously.

31.5. Tax recoveries under dispute

31.5.1. Recovery of PIS and COFINS

The Company filed civil lawsuits against the Brazilian Federal Government claiming to recover PIS and COFINS paid over finance income and foreign exchange variation gains, from February 1999 to January 2004.

The court granted to the Company, in all the lawsuits, the definitive right to recover those taxes, but it requires previous examination and approval by the court of the settlement reports (court-ordered liquidation stage). In 2017, there were a settlement reports issued in favor of the Company relating to the most significant amount to be recovered. However, final approvals by the court are still pending.

As of December 31, 2018, the Company had non-current receivables of US\$ 810 (US\$ 944 as of December 31, 2017) related to PIS and COFINS, which are indexed to inflation.

31.5.2. Deduction of VAT tax (ICMS) from the basis of calculation of PIS and COFINS

The Company filed complaints against Brazilian Federal Government challenging the constitutionality of the inclusion, from 2001 to 2017, of VAT tax within the calculation basis of PIS and COFINS.

The Brazilian Supreme Court ruled on this matter, on March 2017, determining that such tax must not be included in the computation. However, the Brazilian Federal Government filed a motion to clarification in October 2017, and its assessment by the court is still pending.

The Regional Federal Court ruled in favor to the Company in August 2018, reinforcing the decision of the Brazilian Supreme Court.

The Company is gathering all the amounts involved in this matter, which covers a long period of time, and is not yet able to reasonably estimate this contingent asset until the issuance of these financial statements.

32. Commitment to purchase natural gas

The Company has an active GSA agreement (Gas Supply Agreement) entered into with Yacimientos Petroliferos Fiscales Bolivianos – YPF to purchase certain minimum volumes of natural gas at prices linked to the international fuel oil price through 2019, after which the agreement may be extended until all contracted volume has been delivered.

As of December 31, 2018, the total amount of the GSA for 2019 is nearly 11 billion cubic meters of natural gas (equivalent to 30.08 million cubic meters per day) and corresponds to a total estimated value of US\$ 2.09 billion. Based on the aforementioned extension clause, the Company foresees an extension of the GSA term to June 2022 on the same volume basis according to current indicators, representing an estimated additional amount of US\$ 4.85 billion, for the period from January 1, 2020 to June 30, 2022.

33. Collateral for crude oil exploration concession agreements

The Company has granted collateral to the Brazilian Agency of Petroleum, Natural Gas and Biofuels (Agência Nacional de Petróleo, Gás Natural e Biocombustíveis - ANP) in connection with the performance of the Minimum Exploration Programs established in the concession agreements for petroleum exploration areas in the total amount of US\$ 2,326 of which US\$ 1,198 were still in force as of December 31, 2018, net of commitments undertaken. The collateral comprises crude oil from previously identified producing fields, pledged as collateral, amounting to US\$ 1,092 and bank guarantees of US\$ 106.

34. Risk management

The Company is exposed to a variety of risks arising from its operations, including price risk (related to crude oil and oil products prices), foreign exchange rates risk, interest rates risk, credit risk and liquidity risk. Corporate risk management is part of the Company's commitment to act ethically and comply with the legal and regulatory requirements of the countries where it operates. To manage market and financial risks the Company prefers structuring measures through adequate capital and leverage management. While managing risks, the Company considers its corporate governance and controls, involving the Executive Risk Committee, technical departments and statutory committees monitoring, under the guidance of the Board of Executive Officers and the Board of Directors. The Company takes account of risks in its business decisions and manages any such risk in an integrated manner in order to enjoy the benefits of diversification.

A summary of the positions of the derivative financial instruments held by the Company and recognized in other current assets and liabilities as of December 31, 2018, as well as the amounts recognized in the statement of income and other comprehensive income and the guarantees given is set out as follows:

	Statement of Financial Position				Maturity
	Notional value		Fair value Asset Position (Liability)		
	12.31.2018	12.31.2017	12.31.2018	12.31.2017	
Derivatives not designated for hedge accounting					
Future contracts - total (*)	(14,043)	(15,561)	108	(98)	
Long position/Crude oil and oil products	40,017	43,862	-	-	2019/2020
Short position/Crude oil and oil products	(54,060)	(59,423)	-	-	2019/2020
Forward contracts - total					
Long position/Foreign currency forwards (BRL/USD) (**)	US\$ 137	US\$ 55	(2)	0.3	2019
Short position/Foreign currency forwards (BRL/USD) (**)	US\$ 92	US\$ 78	(1)	(0.3)	2019
Long position/Foreign currency forwards (EUR/USD) (**)	EUR 3000	-	(123)		2019
Long position/Foreign currency forwards (GBP/USD) (**)	GBP 419	-	(11)		
Swap			-	-	
Foreign currency / Cross-currency Swap (**)	GBP 700	GBP 700	0.5	92	2026
Foreign currency / Cross-currency Swap (**)	GBP 600	GBP 600	(70.5)	13	2034
Total recognized in the Statement of Financial Position			(99)	7	

(*) Notional value in thousands of bbl.

(**) Amounts in US\$, GBP and EUR are presented in million.

	Gains/ (losses) recognized in the statement of income (*)			Gains/(losses) recognized in the Shareholders' Equity (**)		
	2018	2017	2016	2018	2017	2016
Commodity derivatives	(409)	(144)	(48)	-	(9)	-
Foreign currency derivatives	(366)	89	(55)	-	1	7
Interest rate derivatives	-	(9)	(8)	-	6	4
	(775)	(64)	(111)	-	(2)	11
Cash flow hedge on exports (***)	(3,315)	(3,154)	(2,841)	(5,635)	2,611	13,620
Total	(4,090)	(3,218)	(2,952)	(5,635)	2,609	13,631

(*) Amounts recognized in finance income in the period.

(**) Amounts recognized as other comprehensive income in the period.

(***) Using non-derivative financial instruments as designated hedging instruments, as set out in note 34.2.

	Guarantees given as collateral	
	12.31.2018	12.31.2017
Commodity derivatives	(48)	205
Foreign currency derivatives	70	(50)
Total	22	155

A sensitivity analysis of the derivative financial instruments for the different types of market risks as of December 31, 2018 is set out as follows:

Financial Instruments	Risk	Probable Scenario (*)	Reasonably possible scenario (*)	Remote Scenario (*)
Derivatives not designated for hedge accounting				
Future contracts	Crude oil and oil products - price changes	-	(134)	(268)
Forward contracts	Foreign currency - depreciation BRL x USD	1	(11)	(23)
		1	(145)	(291)

(*) The probable scenario was computed based on the following risks: oil and oil products prices: fair value on December 31, 2018 / R\$ x U.S. Dollar - a 2.7% appreciation of the Real. Source: Focus and Bloomberg. Reasonably possible and remote scenarios consider 25% and 50% deterioration in the associated risk variables, respectively.

34.1. Risk management of crude oil and oil products prices

The Company is usually exposed to commodity price cycles, although it may use derivative instruments to hedge exposures related to prices of products purchased and sold to fulfill operational needs and in specific circumstances depending on business environment analysis and assessment of whether the Business and Management targets are being met.

Accordingly, Petrobras executed a hedge strategy for part of its oil exports foreseen for 2018. The transaction was carried out during February and March, in a volume equivalent to 128 million barrels of oil. Over-the-Counter Put Options (OTC Put Options) were purchased with an average cost of US\$ 3.48 per barrel and an average strike price of US \$ 65 / barrel. These options expired at the end of 2018.

This transaction aimed to hedge a portion of the cash flow from operating activities for 2018, guaranteed a minimum price level for the volume under this transaction without limiting the sales price if the average Brent price in the year had exceeded the reference value, thereby protecting the Company in case of oil prices downturn while enabling it to take advantage of higher prices. The goal was to reduce negative impacts on the Company's cash generation in the most adverse price scenarios, increasing the confidence in the strategy of reducing its leverage.

As of December 31, 2018, the Company accounted for a US\$ 401 loss as other income and expenses within corporate business segments, due to the decrease in the fair value of these put options driven by the increase in the commodity price in the international market.

From September 2018, the Company also has executed a hedge strategy related to gasoline prices and foreign exchange rates by using commodity derivatives and non-deliverable forwards (NDF), in order to improve flexibility of its pricing policy for this oil product. It allows the Company to hold constant gasoline prices in the domestic market for periods of up to 15 days, which represents a better alignment between the Company interest and demands from customers and market players in general.

The Company may apply this strategy in periods of high volatility of prices in order to meet the aforementioned alignment and generate results equivalent to those that would be generated if prices were adjusted on a daily basis. The Company recognized a US\$ 34 loss in 2018 arising from this strategy.

34.2. Foreign exchange risk management

The Company's Risk Management Policy provides for, as an assumption, an integrated risk management that extends to the whole corporation, pursuing the benefit from the diversification of its businesses.

By managing its foreign exchange risk, the Company takes into account the group of cash flows derived from its operations. This concept is especially applicable to the risk relating to the exposure of the Brazilian Real against the U.S. dollar, in which future cash flows in U.S. dollar, as well as cash flows in Brazilian Real affected by the fluctuation between both currencies, such as cash flows derived from diesel and gasoline sales in the domestic market, are assessed in an integrated manner.

Accordingly, the financial risk management mainly involves structured actions encompassing the business of the Company.

Changes in the Real/U.S. dollar spot rate, as well as foreign exchange variation of the Real against other foreign currencies, may affect net income and the statement of financial position due to the exposures in foreign currencies, such as:

- High probable future transactions;
- Monetary items; and

- Firm commitments.

The Company seeks to mitigate the effect of potential variations in the Real/U.S. dollar spot rates mainly raising funds denominated in US dollars, aiming at reducing the net exposure between obligations and receipts in this currency, thus representing a form of structural protection that takes into account criteria of liquidity and cost competitiveness.

Foreign exchange variation on future exports denominated in U.S. Dollar in a given period are efficiently hedged by the US dollar debt portfolio taking into account changes in such portfolio over time.

The foreign exchange risk management strategy may involve the use of derivative financial instruments to hedge certain liabilities, mitigating foreign exchange rate risk exposure, especially when the Company is exposed to a foreign currency in which no cash inflows are expected, for example, the Pound Sterling.

In the short-term, the foreign exchange risk is managed by applying resources in cash or cash equivalent denominated in Brazilian Real, U.S. Dollar or in another currency.

a) Cash Flow Hedge involving the Company's future exports

Considering the natural hedge and the risk management strategy, the Company designates hedging relationships to account for the effects of the existing hedge between a foreign exchange gain or loss from proportions of its long-term debt obligations (denominated in U.S. dollars) and foreign exchange gain or loss of its highly probable U.S. dollar denominated future export revenues, so that gains or losses associated with the hedged transaction (the highly probable future exports) and the hedging instrument (debt obligations) are recognized in the statement of income in the same periods.

Foreign exchange gains and losses on proportions of debt obligations (non-derivative financial instruments), as well as foreign exchange rate forward contracts (derivative financial instruments) have been designated as hedging instruments. Derivative financial instruments expired during the year were replaced by debts in the hedging relationships for which they had been designated.

Only a portion of the Company's forecast exports are considered highly probable. The highly probable future exports for each month are hedged by a proportion of the debt obligations with an equal US dollar nominal amount.

The Company's future exports are exposed to the risk of variation in the Brazilian Real/U.S. dollar spot rate, which is offset by the converse exposure to the same type of risk with respect to its debt denominated in US dollar.

The hedge relationships are assessed on a monthly basis and they may cease and may be re-designated in order to achieve the risk management strategy.

Whenever a portion of future exports for a certain period, for which their foreign exchange gains and losses hedging relationship has been designated is no longer highly probable, the Company revokes the designation and the cumulative foreign exchange gains or losses that have been recognized in other comprehensive income remain separately in equity until the forecast exports occur.

If future exports for which foreign exchange gains and losses hedging relationship has been designated is no longer expected to occur, any related cumulative foreign exchange gains or losses that have been recognized in other comprehensive income from the date the hedging relationship was designated to the date the Company revoked the designation is immediately recycled from equity to the statement of income.

In addition, when a financial instrument designated as a hedging instrument expires or settles, the Company may replace it with another financial instrument in a manner in which the hedge relationship continues to occur. Likewise, whenever a hedged transaction effectively occurs, its financial instrument previously designated as a hedging instrument may be designated for a new hedge relationship.

Ineffectiveness may occur as hedged items and hedge instruments have different maturity dates and due to discount rate used to determine their present value. Accordingly, the Company recognized a US\$ 50 loss as foreign exchange gains (losses) due to ineffectiveness.

The carrying amounts, the fair value as of December 31, 2018, and a schedule of expected reclassifications to the statement of income of cumulative losses recognized in other comprehensive income (shareholders' equity) based on a US\$ 1.00 / R\$ 3.8748 exchange rate are set out below:

Present value of hedging instrument notional value at
12.31.2018

Hedging Instrument	Hedged Transactions	Nature of the Risk	Maturity Date (US\$ million)	(US\$ million)	(R\$ million)
Foreign exchange gains and losses on proportion of non-derivative financial instruments cash flows	Foreign exchange gains and losses on a portion of highly probable future monthly exports revenues	Foreign Currency – Real vs U.S. Dollar Spot Rate	January 2019 to December 2028	66,168	256,390

Changes in the present value of hedging instrument notional value

	US\$	R\$ million
Amounts designated as of December 31, 2017	58,400	193,189
Additional hedging relationships designated, designations revoked and hedging instruments re-designated	31,521	116,927
Exports affecting the statement of income	(6,881)	(25,151)
Principal repayments / amortization	(16,872)	(61,277)
Foreign exchange variation	-	32,702
Amounts designated as of December 31, 2018	66,168	256,390
Nominal value of of hedging instrument at December 31, 2018	75,223	291,476

The average ratio of future exports for which cash flow hedge accounting was designed to the highly probable future exports is 57.7%.

A roll-forward schedule of cumulative foreign exchange losses recognized in other comprehensive income as of December 31, 2018 is set out below:

	Exchange rate	Tax effect	Total
Balance at January 1, 2017	(17,119)	5,822	(11,297)
Recognized in shareholders' equity	(543)	185	(358)
Reclassified to the statement of income - occurred exports	3,151	(1,071)	2,080
Reclassified to the statement of income - exports no longer expected or not occurred	3	(1)	2
Balance at December 31, 2017	(14,508)	4,935	(9,573)
Recognized in shareholders' equity	(8,950)	3,043	(5,907)
Reclassified to the statement of income - occurred exports	3,315	(1,127)	2,188
Balance at December 31, 2018	(20,143)	6,851	(13,292)

Additional hedging relationships may be revoked or additional reclassification adjustments from equity to the statement of income may occur as a result of changes in forecast export prices and export volumes following a review of the Company's business plan. Based on a sensitivity analysis considering a US\$ 10/barrel decrease in Brent prices stress scenario, when compared to the Brent price projections in our BMP-2019-2023, would not indicate a reclassification adjustment from equity to the statement of income.

A schedule of expected reclassification of cumulative foreign exchange losses recognized in other comprehensive income to the statement of income as of December 31, 2018 is set out below:

	2019	2020	2021	2022	2023	2025	2025	2026 to 2028	Total
Expected realization	(4,670)	(4,085)	(3,875)	(4,230)	(2,543)	(1,353)	152	461	(20,143)

IFRS 9 is effective from January 1, 2018 and provides for new requirements for hedge accounting. See note 2.3.1 for additional information on impacts of this new accounting standard on the Company's financial statements.

b) Cross currency swap – Pounds Sterling x Dollar

In 2017, the Company, through its wholly owned subsidiary Petrobras Global Trading B.V. (PGT), entered into cross currency swaps maturing in 2026 and 2034, with notional amounts of £ 700 million and £ 600 million, respectively, in order to hedge its Pounds/U.S. Dollar exposure arising from bonds issued amounting to £ 1,300. During 2018, changes in the fair value of these derivatives resulted in a US\$ 265 loss recognized within finance income and expenses (a US\$ 96 gain in 2017). The Company does not expect to settle these swaps before their expiration dates.

c) Non Deliverable Forward (NDF) – Euro x Dollar

In 2018, the Company, also through PGT, entered into non deliverable forwards with notional amounts of Euro 3,000 million and £ 419 million, and maturing in 2019, in order to reduce its euro x dollar exposure raised by bonds issued. During 2018, changes in the fair value of these derivatives resulted in a US\$ 139 loss recognized within finance income and expenses. The Company does not intend to settle such derivatives before their expiration dates.

d) Sensitivity analysis for foreign exchange risk on financial instruments

A sensitivity analysis is set out below, showing the probable scenario for foreign exchange risk on financial instruments, computed based on external data along with stressed scenarios (a 25% and a 50% change in the foreign exchange rates), except for assets and liabilities of foreign subsidiaries, when transacted in a currency equivalent to their respective functional currencies.

Financial Instruments	Exposure at 12.31.2018	Risk	Probable Scenario (*)	Reasonably possible scenario	Remote Scenario
Assets	7,182		(194)	1,795	3,591
Liabilities (**)	(73,199)	Dollar/Real	1,980	(18,300)	(36,600)
Cash flow hedge on exports	66,169		(1,790)	16,542	33,084
	152		(4)	37	75
Liabilities	-	Yen/Dollar	-	-	-
	-		-	-	-
Assets	8	Euro/Real	-	2	4
Liabilities	(20)		1	(5)	(10)
	(12)		1	(3)	(6)
Assets	3,520	Euro/Dollar	13	880	1,760
Liabilities	(6,738)		(25)	(1,684)	(3,369)
Non Deliverable Forward (NDF)	3,437		13	859	1,718
	219		1	55	109
Assets	1	Pound Sterling/Real	-	-	1
Liabilities	(20)		-	(5)	(10)
	(19)		-	(5)	(9)
Assets	2,337	Pound Sterling /Dollar	35	584	1,169
Liabilities	(4,031)		(60)	(1,008)	(2,016)
Derivative - cross currency swap	1,665		25	416	832
Non Deliverable Forward (NDF)	537		8	134	268
	508		8	126	253
Total	848		6	210	422

(*) On December 31, 2018, the probable scenario was computed based on the following risks: R\$ x U.S. Dollar - a 2.7% appreciation of the Real / Japanese Yen x U.S. Dollar - a 1% depreciation of the Japanese Yen/ Euro x U.S. Dollar: a 0.4% appreciation of the Euro / Pound Sterling x U.S. Dollar: a 1.5% appreciation of the Pound Sterling / Real x Euro - a 2.3% appreciation of the Real / Real x Pound Sterling - a 1.2% appreciation of the Real. Source: Focus and Bloomberg.

(**)It includes the Class Action provision as set out note 31.4.

34.3. Interest rate risk management

The Company considers that interest rate risk does not create a significant exposure and therefore, preferably does not use derivative financial instruments to manage interest rate risk, except for specific situations faced by certain subsidiaries of Petrobras.

34.4. Capital management

The Company's objectives in its capital management is to achieve an adequate level of return on its capital structure in order to safeguard its ability to continue as a going concern, adding value to its shareholders and investors. Its main sources of funding have been cash provided by its operating activities and divestments.

In line with the assumptions in the 2019-2023 Business and Management Plan, the Company does not foresee net proceeds from financing over the next five years. However, the Company has continually assessed options of funding following its liability management strategy, aiming at improving its debt repayment profile and achieving a lower cost of its debt along with an indebtedness level matching the capital expenditures. Currently, the average repayment term is 9.14 years (8.62 years as of December 31, 2017).

As a part of the financing planning, the Company expects to raise funds by means of its partnership and divestment program outlined by its portfolio management. However, this divestment portfolio is dynamic and the occurrence of the transactions depends on business conditions, market conditions and the Company's continuing assessment of its businesses.

34.5. Credit risk

Credit risk management in Petrobras aims to mitigate risk of not collecting receivables, financial deposits or collateral from third parties or financial institutions through efficient credit analysis, granting and management based on quantitative and qualitative parameters that are appropriate for each market segment in which the Company operates.

The commercial credit portfolio is broad and diversified and comprises clients from the domestic and foreign markets. Credit granted to financial institutions is related to collaterals received, cash surplus invested and derivative financial instruments. It is spread among "investment grade" international banks rated by international rating agencies and Brazilian banks with low credit risk.

34.5.1. Credit quality of financial assets

a) Trade and other receivables

The Company has internal credit commissions that assess creditworthiness and define credit limits, which are regularly monitored, based on the customer's main activity, commercial relationship and credit history with Petrobras, solvency, financial situation and external market assessment of the customer.

b) Other financial assets

Credit quality of cash and cash equivalents, as well as marketable securities is based on external credit ratings provided by Standard & Poor's, Moody's and Fitch. The credit quality of those financial assets, that are neither past due nor have been impaired, are set out below:

	Cash and cash equivalents		Marketable securities (*)	
	2018	2017	2018	2017
AAA	-	-	1	-
AA	811	752	-	609
A	8,421	14,864	-	-
BBB	51	801	-	-
BB	2,599	3,566	-	-
B	2	4	-	-
AAA.br	706	126	1,077	-
AA.br	1,299	818	58	-
A.br	-	1,239	-	-
BB.br	-	317	-	1,162
Other ratings	10	32	-	-
	13,899	22,519	1,136	1,771

(*) In 2017, it does not include the former investment in São Martinho shares as described in note 10.

34.6. Liquidity risk

Liquidity risk is represented by the possibility of a shortage of cash or other financial assets in order to settle the Company's obligations on the agreed dates and is managed by the Company based on policies such as: centralization of cash management, optimization of the level of cash and cash equivalents held and reduction of working capital; maintenance of an adequate cash balance to ensure that cash need for investments and short-term obligations is met even in adverse market conditions; increase in the average debt maturity, increase in funding sources from domestic and international markets (new markets and financial products), as well as funds under the partnership and divestment program.

Following its liability management strategy, the Company regularly evaluates market conditions and may enter into transactions to repurchase its own securities or those of its affiliates, through a variety of means, including tender offers, make whole exercises and open market repurchases, in order to improve its debt repayment profile and cost of debt.

A maturity schedule of the Company's finance debt (undiscounted), including face value and interest payments is set out as follows:

Maturity	2019	2020	2021	2022	2023	2024 and thereafter	Balance at December 31, 2018	Balance at December 31, 2017
Principal	2,408	4,069	7,148	10,441	12,118	49,095	85,279	110,530
Interest	4,952	4,839	4,574	4,148	3,516	29,330	51,359	60,728
Total	7,360	8,908	11,722	14,589	15,634	78,425	136,638	171,258

34.7. Insurance

The Company's insurance strategy involves acquiring insurance to cover risks that may produce material impacts and to cover risks that are subject to compulsory insurance coverage (pursuant to legal or contractual requirements). The remaining risks are self-insured and Petrobras intentionally assumes the entire risk by abstaining from contracting insurance. The Company assumes a significant portion of its risk, by entering into insurance policies that have deductible clauses up to the equivalent to US\$180.

The main information concerning the insurance coverage outstanding at December 31, 2018 is set out below:

Assets	Types of coverage	Amount insured
Facilities, equipment inventory and products inventory	Fire, operational risks and engineering risks	145,891
Tankers and auxiliary vessels	Hulls	3,341
Fixed platforms, floating production systems and offshore drilling units	Oil risks	28,611
Total		177,843

Petrobras does not have loss of earnings insurance or insurance related to automobiles and pipeline networks in Brazil.

35. Fair value of financial assets and liabilities

Fair values are determined based on market prices, when available, or, in the absence thereof, on the present value of expected future cash flows.

The hierarchy of the financial assets and liabilities recorded at fair value is set out below:

Level 1: inputs are quoted prices (unadjusted) in active markets for identical assets or liabilities that the entity can access at the measurement date.

Level 2: inputs are inputs other than quoted prices included within Level 1 that are observable for the asset or liability, either directly or indirectly.

Level 3: inputs are unobservable inputs for the asset or liability.

	Fair value measured based on			Total fair value recorded
	Level I	Level II	Level III	
Assets				
Marketable securities	1,091	-	-	1,091
Foreign currency derivatives	-	1	-	1
Balance at December 31, 2018	1,091	1	-	1,092
Balance at December 31, 2017	1,829	105	-	1,934
Liabilities				
Foreign currency derivatives	-	(208)	-	(208)
Commodity derivatives	108	-	-	108
Balance at December 31, 2018	108	(208)	-	(100)
Balance at December 31, 2017	(98)	-	-	(98)

The estimated fair value for the Company's long term debt, computed based on the prevailing market rates, is set out in note 17.3.

The fair values of cash and cash equivalents, short-term debt and other financial assets and liabilities are equivalent or do not differ significantly from their carrying amounts.

36. Subsequent events

36.1. Sale of Pasadena Refinery

On January 30, 2019, Petrobras America Inc. (PAI) entered into a Share Purchase Agreement (SPA) with Chevron USA Inc. (Chevron) for the sale of the shares held by PAI on Pasadena Refining System Inc. (PRSI) and PRSI Trading LLC (PRST), which make up the Pasadena refining system in the United States.

The value for this transaction is US\$ 562, of which US\$ 350 refers to shares of Pasadena and US\$ 212 relates to its working capital in October 2018. The final value is subject to working capital adjustments up to the transaction closing.

The conclusion of this transaction is subject to the fulfillment usual conditions precedent, such as approvals from the antitrust agencies of the United States and Brazil.

36.2. Public Offering of Debentures

On January 31, 2019, the Company finalized the bookbuilding of issuance of simple, non-convertible, unsecured debentures amounting to US\$ 929 (R\$ 3,600 million).

The Debentures of the 1st and 2nd series will count on the incentive pursuant to Law 12,431/2011 and other relevant regulations, with respective proceeds being used in exploration and production operations. The Company will use 90% of proceeds from the 3rd series to prepay a bank financing maturing in 2023, and the remainder for general corporate purposes.

The nominal amount of the 1st and 2nd series will be updated by the Brazilian price index rate (IPCA), mature in seven years and ten years, respectively. The 1st one will bear interest at IPCA rate plus 4.0460% p.a, while the second will be updated by IPCA rate plus 4.2186% p.a. The Debentures of the third series, whose nominal unit value will not be updated, will mature in seven years and bear interest at 106.25% of the Brazilian interbank offering rate (CDI).

37. Information related to guaranteed securities issued by subsidiaries

37.1. Petrobras Global Finance B.V. (PGF)

Petróleo Brasileiro S.A. - Petrobras fully and unconditionally guarantees the debt securities issued by Petrobras Global Finance B.V. (PGF), a 100-percent-owned finance subsidiary of Petrobras. There are no significant restrictions on the ability of Petrobras to obtain funds from PGF.

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Supplementary information (unaudited)

(Expressed in millions of US Dollars, unless otherwise indicated)

Supplementary information

Supplementary information on Oil and Gas Exploration and Production (unaudited)

This section provides supplemental information on oil and gas exploration and production activities of the Company. The information included in items (i) through (iii) provides historical cost information pertaining to costs incurred in exploration, property acquisition and development, capitalized costs and results of operations. The information included in items (iv) and (v) presents information on Petrobras' estimated net proved reserve quantities, standardized measure of estimated discounted future net cash flows related to proven reserves, and changes in estimated discounted future net cash flows.

The Company, on December 31, 2018, maintains activities in Brazil; South America, which includes Argentina, Colombia and Bolivia; and North America, in Mexico. The equity-accounted investments are comprised of the operations of Petrobras Oil and Gas B.V. (PO&G) in Africa, in Nigeria, and the joint venture company of which Murphy Exploration & Production Company ("Murphy") has 80% stake and Petrobras America Inc ("PAI") 20% stake in North America, in United States of America. However, the Company only reports reserves in Brazil, United States of America, Nigeria and Argentina. Bolivian reserves are not included due to restrictions determined by Bolivian Constitution.

i) Capitalized costs relating to oil and gas producing activities

As set out in note 4.7, the Company uses the successful efforts method of accounting for appraisal and development costs of crude oil and natural gas production. In addition, notes 4.8 and 4.9 presents the accounting policies applied by the Company for recognition, measurement and disclosure of property, plant and equipment and intangible assets.

The following table summarizes capitalized costs for oil and gas exploration and production activities with the related accumulated depreciation, depletion and amortization, and asset retirement obligations:

	Consolidated entities						
	Abroad						
	Brazil	South America	North America	Others	Total	Total	Equity Method Investees
December 31, 2018							
Unproved oil and gas properties	5,999	112	-	-	112	6,111	-
Proved oil and gas properties	88,572	144	-	-	144	88,716	4,091
Support Equipment	83,822	649	-	389	1,038	84,860	6
Gross Capitalized costs	178,393	905	-	389	1,294	179,687	4,097
Depreciation, depletion and amortization	(60,890)	(544)	-	(29)	(573)	(61,463)	(1,410)
Net capitalized costs	117,503	361	-	360	721	118,224	2,687
December 31, 2017							
Unproved oil and gas properties	5,803	109	-	-	109	5,912	-
Proved oil and gas properties	96,195	111	4,656	-	4,767	100,962	3,134
Support Equipment	86,021	606	81	392	1,079	87,100	6
Gross Capitalized costs	188,019	826	4,737	392	5,955	193,974	3,140
Depreciation, depletion and amortization	(63,245)	(504)	(2,217)	(12)	(2,733)	(65,978)	(1,287)
Net capitalized costs	124,774	322	2,520	380	3,222	127,996	1,853
December 31, 2016							
Unproved oil and gas properties	6,978	115	276	-	391	7,369	-
Proved oil and gas properties	87,925	88	4,264	-	4,352	92,277	2,811
Support Equipment	84,549	473	70	4	547	85,096	6
Gross Capitalized costs	179,452	676	4,610	4	5,290	184,742	2,817
Depreciation, depletion and amortization	(55,580)	(348)	(1,917)	(4)	(2,269)	(57,849)	(1,165)
Net capitalized costs	123,872	328	2,693	-	3,021	126,893	1,652

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Supplementary information on Oil and Gas Exploration and Production (unaudited)
(Expressed in millions of US Dollars, unless otherwise indicated)



ii) Costs incurred in oil and gas property acquisition, exploration and development activities

Costs incurred are summarized below and include both amounts expensed and capitalized:

	Consolidated entities						
	Abroad						
	Brazil	South America	North America	Others	Total	Total	Equity Method Investees
December 31, 2018							
Acquisition costs:							
Proved	-	-	-	-	-	-	-
Unproved	832	-	-	-	-	832	-
Exploration costs	776	10	1	-	11	787	5
Development costs	9,685	32	229	-	261	9,946	252
Total	11,293	43	230	-	272	11,565	257
December 31, 2017							
Acquisition costs:							
Proved	-	-	-	-	-	-	-
Unproved	903	-	-	-	-	903	-
Exploration costs	1,223	33	4	-	37	1,260	4
Development costs	11,553	23	230	-	253	11,806	294
Total	13,679	56	234	-	290	13,969	298
December 31, 2016							
Acquisition costs:							
Proved	-	98	-	-	98	98	-
Unproved	-	-	-	-	-	-	-
Exploration costs	1,459	44	6	1	51	1,510	5
Development costs	12,429	176	148	-	324	12,753	389
Total	13,888	318	154	1	473	14,361	394

(iii) Results of operations for oil and gas producing activities

The Company's results of operations from oil and gas producing activities for the years ended December 31, 2018, 2017 and 2016 are shown in the following table. The Company transfers substantially all of its Brazilian crude oil and gas production to the Refining, Transportation & Marketing segment in Brazil. The internal transfer prices calculated by the Company's model may not be indicative of the price the Company would have realized had this production been sold in an unregulated spot market. Additionally, the prices calculated by the Company's model may not be indicative of the future prices to be realized by the Company. Gas prices used are those set out in contracts with third parties.

Production costs are lifting costs incurred to operate and maintain productive wells and related equipment and facilities, including operating employees' compensation, materials, supplies, fuel consumed in operations and operating costs related to natural gas processing plants.

Exploration expenses include the costs of geological and geophysical activities and projects without economic feasibility. Depreciation and amortization expenses relate to assets employed in exploration and development activities. In accordance with Codification Topic 932 – Extractive Activities – Oil and Gas, income taxes are based on statutory tax rates, reflecting allowable deductions. Interest income and expense are excluded from the results reported in this table.

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Supplementary information on Oil and Gas Exploration and Production (unaudited)
(Expressed in millions of US Dollars, unless otherwise indicated)



(iii) Results of operations for oil and gas producing activities

	Consolidated entities						
	Abroad						
	Brazil	South America	North America	Others	Total	Total	Equity Method Investees
December 31, 2018							
Net operation revenues:							
Sales to third parties	1,142	190	998	–	1,188	2,330	375
Intersegment	50,052	–	–	–	–	50,052	
	51,194	190	998	–	1,188	52,382	375
Production costs	(19,741)	(77)	(152)	–	(229)	(19,970)	(40)
Exploration expenses	(516)	(7)	(1)	–	(8)	(524)	(2)
Depreciation, depletion and amortization	(8,716)	(40)	(221)	(21)	(282)	(8,998)	(109)
Impairment of oil and gas properties	(686)	–	(705)	–	(705)	(1,391)	–
Other operating expenses	(2,188)	(839)	(88)	(38)	(965)	(3,153)	(12)
Results before income tax expenses	19,347	(773)	(169)	(59)	(1,001)	18,346	212
Income tax expenses	(6,576)	263	57	20	340	(6,236)	-162
Results of operations (excluding corporate overhead and interest costs)	12,771	(510)	(112)	(39)	(661)	12,110	50
December 31, 2017							
Net operation revenues:							
Sales to third parties	482	215	725	–	940	1,422	443
Intersegment	40,762	–	–	–	–	40,762	–
	41,244	215	725	–	940	42,184	443
Production costs	(17,894)	(71)	(163)	–	(234)	(18,128)	(51)
Exploration expenses	(686)	(37)	(77)	–	(114)	(800)	1
Depreciation, depletion and amortization	9,466	(44)	(302)	(8)	(354)	(9,820)	(123)
Impairment of oil and gas properties	169	(13)	(113)	–	(126)	43	–
Other operating expenses	(2,571)	(12)	(125)	(274)	(411)	(2,982)	(19)
Results before income tax expenses	10,796	38	(55)	(282)	(299)	10,497	251
Income tax expenses	3,672	(13)	18	96	101	(3,571)	(98)
Results of operations (excluding corporate overhead and interest costs)	7,124	25	(37)	(186)	(198)	6,926	153
December 31, 2016							
Net operation revenues:							
Sales to third parties	693	224	563	–	787	1,480	381
Intersegment	31,689	506	–	–	506	32,195	31
	32,382	730	563	–	1,293	33,675	412
Production costs	(13,939)	(315)	(132)	–	(447)	(14,386)	(56)
Exploration expenses	(1,603)	(35)	(122)	(1)	(158)	(1,761)	(4)
Depreciation, depletion and amortization	(10,051)	(99)	(327)	–	(426)	(10,477)	(170)
Impairment of oil and gas properties	(3,102)	(126)	(44)	–	(170)	(3,272)	–
Other operating expenses	(1,497)	(97)	(184)	22	(259)	(1,756)	(28)
Income before income tax expenses	2,190	58	(246)	21	(167)	2,023	154
Income tax expenses	(745)	(44)	–	12	(32)	(777)	(108)
Results of operations (excluding corporate overhead and interest costs)	1,445	14	(246)	33	(199)	1,246	46

(iv) Reserve quantities information

As presented in note 5.1, proved oil and gas reserves are those quantities of oil and gas, which, by analysis of geoscience and engineering data, can be estimated with reasonable certainty to be economically producible from a given date forward, from known reservoirs, and under existing economic conditions, operating methods, and government regulations – prior to the time at which contracts providing the right to operate expire, unless evidence indicates that renewal is reasonably certain. The project to extract the hydrocarbons must have commenced or the operator must be reasonably certain that it will commence within a reasonable time. Reserves estimate involves a high degree of judgment and complexity and its application affects different items of these Financial Statements.

The Company's estimated net proved oil and gas reserves and changes thereto for the years 2018, 2017 and 2016 are shown in the following table. Proved reserves are estimated in accordance with the reserve definitions prescribed by the Securities and Exchange Commission.

Developed oil and gas reserves are reserves of any category that can be expected to be recovered: (i) through existing wells with existing equipment and operating methods or in which the cost of the required equipment is relatively minor compared to the cost of a new well; and (ii) through installed extraction equipment and infrastructure operational at the time of the reserves estimate if the extraction is done by means not involving a well.

In some cases, substantial new investments in additional wells and related facilities will be required to recover these proved reserves and are named proved undeveloped reserves. Due to the inherent uncertainties and the limited nature of reservoir data, estimates of reserves are subject to changes as additional information becomes available. A summary of the annual changes in the proved reserves of oil is as follows (in millions of barrels):

Proved developed and undeveloped reserves - Consolidated Entities (*)	Abroad				Total of crude oil abroad	Synthetic oil in Brazil	Total
	Crude oil in Brazil	South America	North America	Africa			
Reserves at December 31, 2015	8,544.1	52.3	90.6	-	142.9	6.9	8,693.9
Revisions of previous estimates	179.5	0.1	17.9	-	18.0	0.8	198.4
Extensions and discoveries	87.8	-	-	-	-	-	87.8
Improved Recovery	-	-	-	-	-	-	-
Sales of reserves	-	(46.6)	-	-	(46.6)	-	(46.6)
Purchases of reserves	-	0.7	-	-	0.7	-	0.7
Production for the year	(748.5)	(5.7)	(12.1)	-	(17.8)	(0.9)	(767.2)
Reserves at December 31, 2016	8,063.0	0.8	96.4	-	97.3	6.8	8,167.1
Revisions of previous estimates	649.3	0.3	31.4	-	31.7	0.2	681.1
Extensions and discoveries	69.1	0.3	-	-	0.3	-	69.4
Improved Recovery	212.7	-	-	-	-	-	212.7
Sales of reserves	-	-	-	-	-	-	-
Purchases of reserves	-	-	-	-	-	-	-
Production for the year	(744.6)	(0.2)	(13.2)	-	(13.4)	(1.0)	(759.0)
Reserves at December 31, 2017 (1)	8,249.4	1.2	114.6	-	115.8	6.0	8,371.3
Transfers by loss of control (2)	-	-	(100.4)	-	(100.4)	-	(100.4)
Revisions of previous estimates	342.7	-	-	-	-	(0.3)	342.5
Extensions and discoveries	308.5	0.6	-	-	0.6	-	309.1
Improved Recovery	224.2	-	-	-	-	-	224.2
Sales of reserves	(254.8)	-	-	-	-	-	(254.8)
Purchases of reserves	-	-	-	-	-	-	-
Production for the year	(701.3)	(0.3)	(14.3)	-	(14.5)	(0.9)	(716.8)
Reserves at December 31, 2018	8,168.7	1.6	-	-	1.6	4.8	8,175.1

(1) In 2017, total proved reserves includes 263.7 million barrels related to assets held for sale.

(2) Amounts transferred from consolidated entities to equity method investees, as the Company concluded the operation that has resulted in the formation of a joint venture company ("JV"), of which Murphy Exploration & Production Company ("Murphy") has 80% stake and Petrobras America Inc ("PAI") 20% stake.

(*) Apparent differences in the sum of the numbers are due to rounding off.

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Proved developed and undeveloped reserves - Equity Method Investees (*)	Abroad						Total
	Crude oil in Brazil	South America	North America	Africa	Total of crude oil abroad	Brazil's Synthetic Oil	
Reserves at December 31, 2015	-	14.6	-	65.8	80.4	-	80.4
Revisions of previous estimates	-	-	-	11.9	11.9	-	11.9
Extensions and discoveries	-	-	-	-	-	-	-
Improved Recovery	-	-	-	-	-	-	-
Sales of reserves	-	(14.1)	-	-	(14.1)	-	(14.1)
Purchases of reserves	-	-	-	-	-	-	-
Production for the year	-	(0.5)	-	(8.7)	(9.2)	-	(9.2)
Reserves at December 31, 2016	-	-	-	69.0	69.0	-	69.0
Revisions of previous estimates	-	-	-	2.6	2.6	-	2.6
Extensions and discoveries	-	-	-	-	-	-	-
Improved Recovery	-	-	-	-	-	-	-
Sales of reserves	-	-	-	-	-	-	-
Purchases of reserves	-	-	-	-	-	-	-
Production for the year	-	-	-	(8.2)	(8.2)	-	(8.2)
Reserves at December 31, 2017	-	-	-	63.4	63.4	-	63.4
Transfers by loss of control (2)	-	-	100.4	-	100.4	-	100.4
Revisions of previous estimates	-	-	(0.9)	3.7	2.9	-	2.9
Extensions and discoveries	-	-	-	-	-	-	-
Improved Recovery	-	-	-	-	-	-	-
Sales of reserves	-	-	(80.4)	-	(80.4)	-	(80.4)
Purchases of reserves	-	-	7.9	-	7.9	-	7.9
Production for the year	-	-	(0.4)	(7.3)	(7.7)	-	(7.7)
Reserves at December 31, 2018 (1)	-	-	26.6	59.8	86.4	-	86.4

(1) In 2018, total proved reserves includes 59.8 million barrels related to PO&G assets held for sale.

(2) Amounts transferred from consolidated entities to equity method investees, as the Company concluded the operation that has resulted in the formation of a joint venture company ("JV"), of which Murphy Exploration & Production Company ("Murphy") has 80% stake and Petrobras America Inc ("PAI") 20% stake.

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A summary of the annual changes in the proved reserves of natural gas is as follows (in billions of cubic feet):

Proved developed and undeveloped reserves - Consolidated Entities (*)	Abroad					Brazil's Synthetic Gas	Total
	Natural Gas in Brazil	South America	North America	Africa	Total Natural Gas Abroad		
Reserves at December 31, 2015	9,587.7	680.5	138.5	-	819.1	9.3	10,416.1
Revisions of previous estimates	(476.2)	22.9	(19.3)	-	3.6	1.2	(471.4)
Extensions and discoveries	92.1	-	-	-	-	-	92.1
Improved Recovery	0.1	-	-	-	-	-	0.1
Sales of reserves	-	(631.9)	-	-	(631.9)	-	(631.9)
Purchases of reserves	-	93.3	-	-	93.3	-	93.3
Production for the year	(809.7)	(50.9)	(32.1)	-	(82.9)	(1.4)	(894.0)
Reserves at December 31, 2016	8,394.0	113.9	87.2	-	201.1	9.2	8,604.3
Revisions of previous estimates	(81.5)	19.5	(24.9)	-	(5.5)	0.1	(86.9)
Extensions and discoveries	37.4	41.0	-	-	41.0	-	78.4
Improved Recovery	204.2	-	-	-	-	-	204.2
Sales of reserves	-	-	-	-	-	-	-
Purchases of reserves	-	-	-	-	-	-	-
Production for the year	(877.9)	(14.2)	(21.3)	-	(35.5)	(1.2)	(914.6)
Reserves at December 31, 2017 (1)	7,676.1	160.2	40.9	-	201.1	8.1	7,885.3
Transfers by loss of control (2)	-	-	(36.8)	-	(36.8)	-	(36.8)
Revisions of previous estimates	737.2	-	-	-	-	(1.0)	736.2
Extensions and discoveries	136.8	70.1	-	-	70.1	-	206.9
Improved Recovery	207.6	-	-	-	-	-	207.6
Sales of reserves	(165.5)	-	-	-	-	-	(165.5)
Purchases of reserves	-	-	-	-	-	-	-
Production for the year	(801.8)	(16.2)	(4.1)	-	(20.3)	(1.3)	(823.5)
Reserves at December 31, 2018	7,790.5	214.1	-	-	214.1	5.7	8,010.3

(1) In 2017, total proved reserves includes 173.7 billion cubic feet related to assets held for sale.

(2) Amounts transferred from consolidated entities to equity method investees, as the Company concluded the operation that has resulted in the formation of a joint venture company ("JV"), of which Murphy Exploration & Production Company ("Murphy") has 80% stake and Petrobras America Inc ("PAI") 20% stake.

(*) Apparent differences in the sum of the numbers are due to rounding off.

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Proved developed and undeveloped reserves - Equity Method Investees (*)	Abroad				Total Natural Gas Abroad	Brazil's Synthetic Gas	Total
	Natural Gas in Brazil	South America	North America	Africa (1)			
Reserves at December 31, 2015	-	16.9	-	16.6	33.5	-	33.5
Revisions of previous estimates	-	-	-	(4.1)	(4.1)	-	(4.1)
Extensions and discoveries	-	-	-	-	-	-	-
Improved Recovery	-	-	-	-	-	-	-
Sales of reserves	-	(16.8)	-	-	(16.8)	-	(16.8)
Purchases of reserves	-	-	-	-	-	-	-
Production for the year	-	(0.1)	-	-	(0.1)	-	(0.1)
Reserves at December 31, 2016	-	-	-	12.5	12.5	-	12.5
Revisions of previous estimates	-	-	-	5.7	5.7	-	5.7
Extensions and discoveries	-	-	-	-	-	-	-
Improved Recovery	-	-	-	-	-	-	-
Sales of reserves	-	-	-	-	-	-	-
Purchases of reserves	-	-	-	-	-	-	-
Production for the year	-	-	-	(0.9)	(0.9)	-	(0.9)
Reserves at December 31, 2017	-	-	-	17.3	17.3	-	17.3
Transfers by loss of control (2)	-	-	36.8	-	36.8	-	36.8
Revisions of previous estimates	-	-	(3.1)	34.8	31.8	-	31.8
Extensions and discoveries	-	-	-	-	-	-	-
Improved Recovery	-	-	-	-	-	-	-
Sales of reserves	-	-	(29.7)	-	(29.7)	-	(29.7)
Purchases of reserves	-	-	6.9	-	6.9	-	6.9
Production for the year	-	-	(0.1)	(4.8)	(4.9)	-	(4.9)
Reserves at December 31, 2018 (1)	-	-	10.8	47.3	58.1	-	58.1

1) In 2018, total proved reserves includes 47.3 billion cubic feet related to PO&G assets held for sale.

(2) Amounts transferred from consolidated entities to equity method investees, as the Company concluded the operation that has resulted in the formation of a joint venture company ("JV"), of which Murphy Exploration & Production Company ("Murphy") has 80% stake and Petrobras America Inc ("PAI") 20% stake.

(*) Apparent differences in the sum of the numbers are due to rounding off.

Natural gas production volumes used in these tables are the net volumes withdrawn from our proved reserves, including fuel gas consumed in operations and excluding reinjected gas. Our disclosure of proved gas reserves also includes fuel gas volumes, which represent 32% of our total proved reserves of natural gas at December, 2018.

The tables below summarizes information about the changes in total proved reserves of crude oil and natural gas, in millions of barrels of oil equivalent, in our consolidated entities and equity method investees for 2018, 2017 and 2016:

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Abroad							
Proved developed and undeveloped reserves (*)	Oil equivalent in Brazil	South America	North America	Africa	Total oil equivalent abroad	Total synthetic oil equivalent in Brazil	Total for all products
Reserves at December 31, 2015	10,142.1	165.7	113.7	-	279.4	8.5	10,430.0
Revisions of previous estimates	100.2	3.9	14.7	-	18.6	1.0	119.8
Extensions and discoveries	103.2	-	-	-	-	-	103.2
Improved Recovery	-	-	-	-	-	-	-
Sales of reserves	-	(151.9)	-	-	(151.9)	-	(151.9)
Purchases of reserves	-	16.3	-	-	16.3	-	16.3
Production for the year	(883.4)	(14.2)	(17.4)	-	(31.6)	(1.2)	(916.2)
Reserves at December 31, 2016	9,462.0	19.8	111.0	-	130.8	8.3	9,601.1
Revisions of previous estimates	635.7	3.5	27.2	-	30.7	0.2	666.6
Extensions and discoveries	75.4	7.1	-	-	7.1	-	82.5
Improved Recovery	246.7	-	-	-	-	-	246.7
Sales of reserves	-	-	-	-	-	-	-
Purchases of reserves	-	-	-	-	-	-	-
Production for the year	(891.0)	(2.6)	(16.7)	-	(19.3)	(1.2)	(911.4)
Reserves at December 31, 2017 (1)	9,528.8	27.9	121.5	-	149.3	7.4	9,685.5
Transfers by loss of control (2)	-	-	(106.5)	-	(106.5)	-	(106.5)
Revisions of previous estimates	465.6	-	-	-	-	(0.4)	465.2
Extensions and discoveries	331.3	12.3	-	-	12.3	-	343.6
Improved Recovery	258.8	-	-	-	-	-	258.8
Sales of reserves	(282.4)	-	-	-	-	-	(282.4)
Purchases of reserves	-	-	-	-	-	-	-
Production for the year	(834.9)	(3.0)	(15.0)	-	(17.9)	(1.2)	(854.0)
Reserves at December 31, 2018	9,467.1	37.2	-	-	37.2	5.8	9,510.1

(1) In 2017, total proved reserves includes 292.7 million barrels of oil equivalent related to assets held for sale.

(2) Amounts transferred from consolidated entities to equity method investees, as the Company concluded the operation that has resulted in the formation of a joint venture company ("JV"), of which Murphy Exploration & Production Company ("Murphy") has 80% stake and Petrobras America Inc ("PAI") 20% stake.

(*) Apparent differences in the sum of the numbers are due to rounding off.

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Abroad							
Proved developed and undeveloped reserves - Equity Method Investees (*)	Oil equivalent in Brazil	South America	North America	Africa	Total oil equivalent abroad	Total synthetic oil equivalent in Brazil	Total for all products
Reserves at December 31, 2015	-	17.4	-	68.6	86.0	-	86.0
Revisions of previous estimates	-	-	-	11.2	11.2	-	11.2
Extensions and discoveries	-	-	-	-	-	-	-
Improved Recovery	-	-	-	-	-	-	-
Sales of reserves	-	(16.9)	-	-	(16.9)	-	(16.9)
Purchases of reserves	-	-	-	-	-	-	-
Production for the year	-	(0.5)	-	(8.7)	(9.2)	-	(9.2)
Reserves at December 31, 2016	-	0.0	-	71.1	71.1	-	71.1
Revisions of previous estimates	-	-	-	3.5	3.5	-	3.5
Extensions and discoveries	-	-	-	-	-	-	-
Improved Recovery	-	-	-	-	-	-	-
Sales of reserves	-	-	-	-	-	-	-
Purchases of reserves	-	-	-	-	-	-	-
Production for the year	-	-	-	(8.3)	(8.3)	-	(8.3)
Reserves at December 31, 2017	-	-	-	66.3	66.3	-	66.3
Transfers by loss of control (2)	-	-	106.5	-	106.5	-	106.5
Revisions of previous estimates	-	-	(1.4)	9.6	8.2	-	8.2
Extensions and discoveries	-	-	-	-	-	-	-
Improved Recovery	-	-	-	-	-	-	-
Sales of reserves	-	-	(85.4)	-	(85.4)	-	(85.4)
Purchases of reserves	-	-	9.1	-	9.1	-	9.1
Production for the year	-	-	(0.5)	(8.1)	(8.6)	-	(8.6)
Reserves at December 31, 2018 (1)	-	-	28.4	67.7	96.1	-	96.1

(1) In 2018, total proved reserves includes 67.7 million barrels of oil equivalent related to PO&G assets held for sale.

(2) Amounts transferred from consolidated entities to equity method investees, as the Company concluded the operation that has resulted in the formation of a joint venture company ("JV"), of which Murphy Exploration & Production Company ("Murphy") has 80% stake and Petrobras America Inc ("PAI") 20% stake.

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							Abroad
Proved developed and undeveloped reserves - Consolidated and Equity Method Investees (*)	Oil equivalent in Brazil	South America	North America	Africa	Total oil equivalent abroad	Total synthetic oil equivalent in Brazil	Total for all products
Reserves at December 31, 2015	10,142.1	183.1	113.7	68.6	365.4	8.5	10,516.0
Revisions of previous estimates	100.2	3.9	14.7	11.2	29.8	1.0	131.0
Extensions and discoveries	103.2	-	-	-	-	-	103.2
Sales of reserves	-	(168.8)	-	-	(168.8)	-	(168.8)
Purchases of reserves	-	16.3	-	-	16.3	-	16.3
Production for the year	(883.4)	(14.7)	(17.4)	(8.7)	(40.8)	(1.2)	(925.4)
Reserves at December 31, 2016	9,462.0	19.8	111.0	71.1	201.8	8.3	9,672.2
Revisions of previous estimates	635.7	3.5	27.2	3.5	34.3	0.2	670.1
Extensions and discoveries	75.4	7.1	-	-	7.1	-	82.5
Improved Recovery	246.7	-	-	-	-	-	246.7
Sales of reserves	-	-	-	-	-	-	-
Purchases of reserves	-	-	-	-	-	-	-
Production for the year	(891.0)	(2.6)	(16.7)	(8.3)	(27.7)	(1.2)	(919.8)
Reserves at December 31, 2017 (1)	9,528.8	27.9	121.5	66.3	215.6	7.4	9,751.7
Revisions of previous estimates	465.6	-	(1.4)	9.6	8.2	(0.4)	473.3
Extensions and discoveries	331.3	12.3	-	-	12.3	-	343.6
Improved Recovery	258.8	-	-	-	-	-	258.8
Sales of reserves	(282.4)	-	(85.4)	-	(85.4)	-	(367.8)
Purchases of reserves	-	-	9.1	-	9.1	-	9.1
Production for the year	(834.9)	(3.0)	(15.4)	(8.1)	(26.5)	(1.2)	(862.6)
Reserves at December 31, 2018 (1)	9,467.1	37.2	28.4	67.7	133.3	5.8	9,606.2

(1) In 2017, total proved reserves includes 292.7 million barrels of oil equivalent related to assets held for sale in Brazil; and in 2018, includes 67.7 million barrels of oil equivalent related to PO&G assets held for sale in Africa.

(2) Amounts transferred from consolidated entities to equity method investees, as the Company concluded the operation that has resulted in the formation of a joint venture company ("JV"), of which Murphy Exploration & Production Company ("Murphy") has 80% stake and Petrobras America Inc ("PAI") 20% stake.

(*) Apparent differences in the sum of the numbers are due to rounding off.

In 2018, we incorporated 473.3 million boe of proved reserves by revising of previous estimates, including 233.5 million boe due to economic revisions, mainly due to the increase in prices, and 239.9 million boe due to technical revisions, mainly due to the good performance of reservoirs in the pre-salt layer of Santos and Campos basins, both in Brazil. In addition, we added 258.8 million boe in our proved reserves resulting from positive responses from improved recovery (water injection), and added 343.6 million boe in our proved reserves due to extensions and discoveries, mainly in the pre-salt of Santos basin.

We reduced 367.8 million boe of our proved reserves due to sales of reserves and increased 9.1 million boe in our proved reserves due to purchases of reserves, resulting in a net effect of a decrease of 358.7 million boe in our proved reserves.

Considering a production of 862.6 million boe in 2018 and changes above, the company total proved reserves resulted in 9,606.2 million boe. This 862.6 million boe production volume is the net volume withdrawn from our proved reserves. Therefore, exclude NGL (except for North America), as we estimate our oil and gas reserves at a reference point prior to the gas processing plants, and does not consider the production of Extended Well Tests (EWTs) in exploratory blocks and production in Bolivia, since the Bolivian Constitution prohibits the disclosure and registration of its reserves.

In 2017, we incorporated 670.1 million boe of proved reserves by revising of previous estimates, including 355.4 million boe due to economic revisions, mainly due to the increase in prices, and 314.7 million boe due to technical revisions, mainly due to better than forecasted behavior from reservoirs, in the pre-salt layer of Santos and Campos basins, both in Brazil. In addition, we added 246.7 million boe in our proved reserves resulting from positive responses from improved recovery (water injection), and added 82.5 million boe in our proved reserves due to extensions and discoveries, mainly in the pre-salt of Santos basin.

Considering a production of 919.8 million boe in 2017, the company total proved reserves resulted in 9,751.7 million boe. This 919.8 million boe production does not consider the production of Extended Well Tests (EWTs) in exploratory blocks and production in Bolivia, since the Bolivian Constitution prohibits the disclosure and registration of its reserves.

In 2016, we incorporated 103 million boe of proved reserves from extensions and discoveries in Brazil (Santos Basin), and we added 131 million boe to our proved reserves due to revisions of previous estimates, as a result of drilling of new production development wells and better reservoir response in onshore and offshore post-salt fields, in Brazil and the USA, and as result of positive answers from the reservoirs, recovery mechanisms (water injection) and operating efficiency of production systems in operation, as well as the growing drilling activities and tie-back activities, in the pre-salt layer of Santos and Campos Basins.

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We reduced 169 million boe of our proved reserves due to sales of minerals in situ and increased 16 million boe in our proved reserves due to purchases of minerals in situ, resulting in a net effect of a decrease of 153 million boe in our proved reserves. The net result of these additions and disposals, excluding production, was an increase of 81 million boe to our proved reserves in 2016. Considering a production of 925 million boe in 2016, our decrease of proved reserves was 844 million boe.

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	2018				2017				2016			
	Crude Oil	Synthetic Oil	Natural Gas	Synthetic Gas	Crude Oil	Synthetic Oil	Natural Gas	Synthetic Gas	Crude Oil	Synthetic Oil	Natural Gas	Synthetic Gas
	(millions of barrels)		(billions cubic feet)		(millions of barrels)		(billions cubic feet)		(millions of barrels)		(billions cubic feet)	
Net proved developed reserves (*):												
Consolidated Entities												
Brazil	4,339.5	4.8	4,807.0	5.7	4,282.2	6.0	4,515.9	8.1	4,250.1	6.8	5,034.2	9.2
South America	1.0	-	83.5	-	0.7	-	56.7	-	0.5	-	33.7	-
North America	-	-	-	-	72.1	-	24.2	-	79.6	-	83.6	-
Africa	-	-	-	-	-	-	-	-	-	-	-	-
Abroad	1.0	-	83.5	-	72.8	-	80.9	-	80.1	-	117.3	-
Total Consolidated Entities	4,340.5	4.8	4,890.5	5.7	4,355.0	6.0	4,596.8	8.1	4,330.2	6.8	5,151.5	9.2
Equity Method Investees												
Brazil	-	-	-	-	-	-	-	-	-	-	-	-
South America	-	-	-	-	-	-	-	-	-	-	-	-
North America (2)	20.0	-	8.3	-	-	-	-	-	-	-	-	-
Africa	30.9	-	27.6	-	29.6	-	9.3	-	32.5	-	8.6	-
Abroad	51.0	-	35.9	-	29.6	-	9.3	-	32.5	-	8.6	-
Total Equity Method Investees	51.0	-	35.9	-	29.6	-	9.3	-	32.5	-	8.6	-
Total Consolidated and Equity Method Investees (1)	4,391.5	4.8	4,926.4	5.7	4,384.6	6.0	4,606.0	8.1	4,362.7	6.8	5,160.1	9.2
Net proved undeveloped reserves (*):												
Consolidated Entities												
Brazil	3,829.2	-	2,983.5	-	3,967.2	-	3,160.2	-	3,812.9	-	3,359.7	-
South America	0.5	-	130.6	-	0.5	-	103.5	-	0.3	-	80.2	-
North America	-	-	-	-	42.6	-	16.7	-	16.8	-	3.6	-
Africa	-	-	-	-	-	-	-	-	-	-	-	-
Abroad	0.5	-	130.6	-	43.0	-	120.2	-	17.1	-	83.8	-
Total Consolidated Entities	3,829.7	-	3,114.1	-	4,010.2	-	3,280.5	-	3,830.0	-	3,443.6	-
Equity Method Investees												
Brazil	-	-	-	-	-	-	-	-	-	-	-	-
South America	-	-	-	-	-	-	-	-	-	-	-	-
North America (2)	6.5	-	2.5	-	-	-	-	-	-	-	-	-
Africa	28.9	-	19.7	-	33.8	-	8.0	-	36.5	-	3.9	-
Abroad	35.4	-	22.2	-	33.8	-	8.0	-	36.5	-	3.9	-
Total Equity Method Investees	35.4	-	22.2	-	33.8	-	8.0	-	36.5	-	3.9	-
Total Consolidated and Equity Method Investees (1)	3,865.1	-	3,136.3	-	4,044.0	-	3,288.5	-	3,866.5	-	3,447.5	-

(1) It includes amounts related to assets held for sale in 2017 (191.9 million barrels of oil and 131.8 billion cubic feet of natural gas in net proved developed reserves and 71.9 million barrels of oil and 41.9 billion cubic feet of natural gas in net proved undeveloped reserves) in Brazil and in 2018 (30.9 million barrels of oil and 27.6 billion cubic feet of natural gas in net proved developed reserves and 28.9 million barrels of oil and 19.7 billion cubic feet of natural gas in net proved undeveloped reserves) in Africa (PO&G).

(2) In 2018, North America oil reserves includes 4.2% of natural gas liquid (NGL) in proved developed reserves and 3.6% of NGL in proved undeveloped reserves.

(*) Apparent differences in the sum of the numbers are due to rounding off.

(v) Standardized measure of discounted future net cash flows relating to proved oil and gas quantities and changes therein

The standardized measure of discounted future net cash flows, related to the above proved oil and gas reserves, is calculated in accordance with the requirements of Codification Topic 932 – Extractive Activities – Oil and Gas.

Estimated future cash inflows from production in Brazil are computed by applying the average price during the 12-month period prior to the ending date of the period covered by the report, determined as an unweighted arithmetic average of the first-day-of-the-month price for each month within such period, unless prices are defined by contractual arrangements, excluding escalations based upon future conditions. Future price changes are limited to those provided by contractual arrangements existing at the end of each reporting year. Future development and production costs are those estimated future expenditures necessary to develop and produce year-end estimated proved reserves based on year-end cost, assuming continuing economic conditions. Estimated future income taxes (including future social contributions on net income - CSLL) are calculated by applying appropriate year-end statutory tax rates. The amounts presented as future income taxes expenses reflect allowable deductions considering statutory tax rates. Discounted future net cash flows are calculated using 10% mid-period discount factors. This discounting requires a year-by-year estimate of when the future expenditures will be incurred and when the reserves will be produced.

The valuation prescribed under Codification Topic 932 – Extractive Activities – Oil and Gas requires assumptions as to the timing and amount of future development and production costs. The calculations are made as of December 31 each year and should not be relied upon as an indication of Petrobras' future cash flows or the value of its oil and gas reserves.

Petróleo Brasileiro S.A. – Petrobras

Supplementary information on Oil and Gas Exploration and Production (unaudited)

(Expressed in millions of US Dollars, unless otherwise indicated)



	Consolidated entities					
	Abroad					
	Brazil (2)	South America	North America	Total	Total	Equity Method Investees (3)
December 31, 2018						
Future cash inflows	601,754	1,112	-	1,112	602,866	5,998
Future production costs	(269,942)	(425)	-	(425)	(270,367)	(1,570)
Future development costs	(34,119)	(218)	-	(218)	(34,337)	(520)
Future income tax expenses	(111,522)	(91)	-	(91)	(111,613)	(1,006)
Undiscounted future net cash flows	186,171	379	-	379	186,549	2,903
10 percent midyear annual discount for timing of estimated cash flows (1)	(75,050)	(194)	-	(194)	(75,244)	(613)
Standardized measure of discounted future net cash flows	111,121	185	-	185	111,305	2,290
December 31, 2017						
Future cash inflows	439,058	912	5,361	6,274	445,332	3,487
Future production costs	(213,037)	(412)	(2,291)	(2,703)	(215,740)	(857)
Future development costs	(46,731)	(147)	(649)	(796)	(47,527)	(524)
Future income tax expenses	(63,087)	(89)	(86)	(175)	(63,262)	(339)
Undiscounted future net cash flows	116,204	265	2,335	2,600	118,803	1,768
10 percent midyear annual discount for timing of estimated cash flows (1)	(52,516)	(138)	(707)	(845)	(53,361)	(474)
Standardized measure of discounted future net cash flows	63,687	126	1,628	1,755	65,442	1,294
December 31, 2016						
Future cash inflows	357,374	600	3,809	4,408	361,783	2,950
Future production costs	(209,413)	(239)	(2,153)	(2,392)	(211,806)	(1,088)
Future development costs	(42,357)	(120)	(531)	(652)	(43,009)	(703)
Future income tax expenses	(46,234)	(65)	(40)	(105)	(46,338)	(229)
Undiscounted future net cash flows	59,370	175	1,084	1,259	60,630	929
10 percent midyear annual discount for timing of estimated cash flows(1)	(24,946)	(78)	(255)	(332)	(25,279)	(346)
Standardized measure of discounted future net cash flows	34,424	98	830	927	35,351	584

(1) Semiannual capitalization

(2) Includes the amount of US\$ 1,770 million related to assets classified as held for sale in 2017.

(3) Includes the amount of US\$ 1,675 million related to PO&G assets classified as held for sale in 2018.

Bolivian proved reserves are not included due to restrictions determined by Bolivian Constitution.

Apparent differences in the sum of the numbers are due to rounding off.

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Supplementary information on Oil and Gas Exploration and Production (unaudited)
(Expressed in millions of US Dollars, unless otherwise indicated)



(v) Standardized measure of discounted future net cash flows relating to proved oil and gas quantities and changes therein

	Consolidated entities					Equity Method Investees (2)
	Abroad				Total	
	Brazil (1)	South America	North America	Total	Total	
Balance at January 1, 2018	63,687	126	1,628	1,755	65,442	1,294
Transfers by loss of control (3)	-	-	(1,428)	(1,428)	(1,428)	1,428
Sales and transfers of oil and gas, net of production cost	(31,429)	(76)	(844)	(921)	(32,350)	(369)
Development cost incurred	9,685	32	229	261	9,946	252
Net change due to purchases and sales of minerals in place	(4,773)	-	-	-	(4,773)	(1,770)
Net change due to extensions, discoveries and improved recovery related costs	11,284	123	-	123	11,407	-
Revisions of previous quantity estimates	10,688	-	-	-	10,688	50
Net change in prices, transfer prices and in production costs	72,662	44	383	427	73,089	1,740
Changes in estimated future development costs	1,857	(76)	(118)	(194)	1,664	(93)
Accretion of discount	6,369	19	150	169	6,537	129
Net change in income taxes	(28,910)	(4)	-	(4)	(28,914)	(489)
Other - unspecified	-	(4)	-	(4)	(4)	119
Balance at December 31, 2018	111,121	185	-	185	111,305	2,290
Balance at January 1, 2017	34,424	98	830	927	35,351	583
Sales and transfers of oil and gas, net of production cost	(23,394)	(60)	(564)	(624)	(24,018)	(261)
Development cost incurred	11,553	23	230	253	11,806	294
Net change due to purchases and sales of minerals in place	-	-	-	-	-	-
Net change due to extensions, discoveries and improved recovery related costs	4,187	69	-	69	4,256	-
Revisions of previous quantity estimates	8,264	37	443	480	8,744	51
Net change in prices, transfer prices and in production costs	50,326	3	735	738	51,064	494
Changes in estimated future development costs	(15,878)	(31)	(144)	(175)	(16,053)	(25)
Accretion of discount	3,442	14	76	90	3,532	58
Net change in income taxes	(9,237)	(18)	(2)	(20)	(9,257)	(92)
Other - unspecified	-	(9)	25	16	16	190
Balance at December 31, 2017	63,687	126	1,628	1,755	65,442	1,294
Balance at January 1, 2016	42,770	1,205	873	2,078	44,848	511
Sales and transfers of oil and gas, net of production cost	(18,425)	(351)	(432)	(783)	(19,208)	(208)
Development cost incurred	12,429	176	148	324	12,753	389
Net change due to purchases and sales of minerals in place	-	(1,094)	-	(1,094)	(1,094)	(54)
Net change due to extensions, discoveries and improved recovery related costs	1,234	-	484	484	1,718	67
Revisions of previous quantity estimates	1,197	-	223	223	1,420	242
Net change in prices, transfer prices and in production costs	(27,031)	-	(760)	(760)	(27,791)	(477)
Changes in estimated future development costs	9,175	-	231	231	9,406	(18)
Accretion of discount	4,277	162	82	244	4,521	52
Net change in income taxes	8,799	-	(1)	(1)	8,798	62
Other - unspecified	-	(1)	(19)	(19)	(19)	17
Balance at December 31, 2016	34,424	98	830	927	35,351	583

(1) Includes the amount of US\$ 1,770 million related to assets classified as held for sale in 2017.

(2) Includes the amount of US\$ 1,675 million related to PO&G assets classified as held for sale in 2018.

(3) Amounts transferred from consolidated entities to equity method investees, as the Company concluded the operation that has resulted in the formation of a joint venture company ("JV"), of which Murphy Exploration & Production Company ("Murphy") has 80% stake and Petrobras America Inc ("PAI") 20% stake.

Apparent differences in the sum of the numbers are due to rounding off.

Additional information of general public concern – Law 13.303/16 (unaudited)

In order to comply with rules of disclosure about the activities that, in accordance with the requirements of article 3 of Petrobras' Bylaws, are related to the achievement of public interest purposes under conditions different from those of any other private sector company operating in the same market, we summarize below the commitments in effect in the year 2018.

I – Priority Thermoelectric Program – (Programa Prioritário de Termoeletricidade- PPT)

On February 24, 2000, the Brazilian federal government enacted the Decree No. 3.371 governing the implementation of thermoelectric power plants in Brazil through the Priority Thermoelectric Program (PPT). The thermoelectric power plants in the scope of this program were entitled to supply natural gas for up to 20 years with a pre-established price indexed to the U.S. inflation. The gas supply for the plants included in this program, in 2018, generated revenues of approximately US\$ 229 and costs of US\$ 587. As of December 31, 2018, the company had two plants in the scope of this program plus one plant, which supply of natural gas occurs by virtue of a court order.

II– National Program for Rationalization of the Use of Oil and Gas Products – (Programa Nacional de Racionalização do Uso dos Derivados do Petróleo e do Gás Natural – CONPET)

On February 18, 1991, the Brazilian federal government established the National Program for Rationalization of the Use of Oil and Gas Products (CONPET), which was intended to develop an anti-waste culture in the use of non-renewable natural resources. The Company is also a member of the Brazilian Labeling Program (Programa Brasileiro de Etiquetagem- PBE) in partnership with the National Institute of Metrology, Quality and Technology (INMETRO), which goal is to stimulate the production and use of gas appliances and vehicles with lower carbon emission, in addition of taking part in other agreements for the elaboration of partnerships with entities for the purpose of monitoring and guidance on vehicular emissions. In 2018, the costs associated with CONPET were immaterial.