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## Comments from the CEO

Dear Shareholders and Investors,

In the face of a new reality for oil prices, 2015 was a year of major challenges for the entire oil and gas industry. Continuing the efforts made since the beginning of our journey, we adopted measures to improve the company's efficiency, expanded our efforts to cut expenses, reegotiated contracts with our suppliers, obtained financing to roll our debt on more favorable terms, and reduced our capital expenditures.

This strategy ensured not only that we could maintain our productive capacity, but that we could deliver production growth above our annual target, despite the adverse scenario under which we operated. In the pre-salt, we surpassed the barrier of 1 million barrels per day. This milestone was achieved by applying our technological excellence, and was recognized with another OTC award (Offshore Technology Conference), the most important in the industry.

Nonetheless, despite the progress made, our result were adversely impacted by the commodity price decrease and the currency devaluation. But it is important to note that cash generation exceeded our capital expenditures, thereby reversing the trend of past years and leading to an increase in our cash balances and a reduction of our net debt.

We remain absolutely committed to the reduction of leverage and creating value for the shareholders. And it is for this reason that, in the revision of our Business and Management Plan, we are prioritizing investments that maximize the return on capital employed, with particular focus on the exploration and production of the presalt. Also we will continue to work toward meeting the Plan's divestment targets, a key components to reducing ourleverage.

Another highlight is the company's new governance model. In addition to adapting our structure to meet the targets set forth in the Business Plan, these changes strengthen our management by giving greater control and compliance with our processes. Furthermore, they expand the accountability of our executives, and will become part of the daily activity of the entire company, bringing agility, transparency and the necessary efficiency to overcome our challenges.

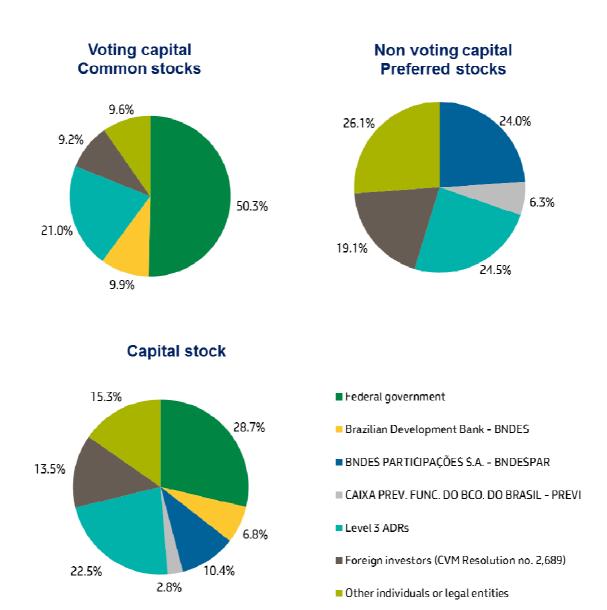
I conclude this message by stressing that in 2016 we will work with even more firmness and dedication to ensure the construction of a promising future.

Aldemir Bendine, CEO.

# **PROFILE**

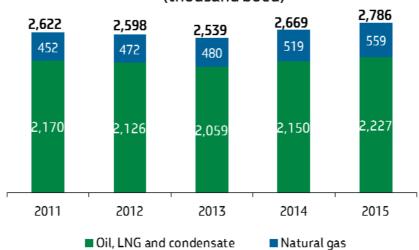
We are a publicly-held company operating on an integrated basis and specializing in the oil, natural gas and energy industry. We are present in the exploration and production, refining, marketing, transportation, petrochemicals, oil product distribution, natural gas, electricity, chemical-gas and biofuel segments.

# **OWNERSHIP STRUCTURE – December 31, 2015**

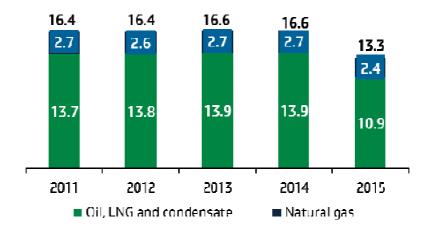


# **KEY INDICATORS**

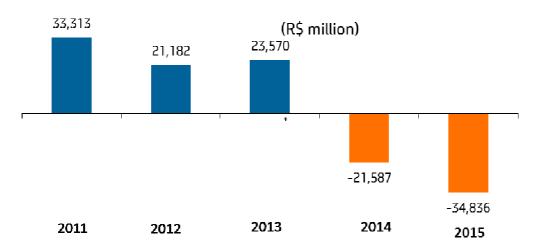
Oil, LNG, condensate and natural gas production (thousand boed)



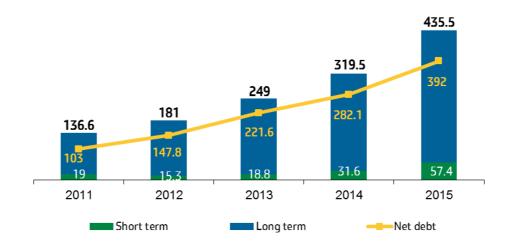
# Proven oil, LNG, condensate and natural gas reserves - ANP/SPE criterion (billion boe)



# Consolidated net (loss) income



# Consolidated debt (R\$ billion)

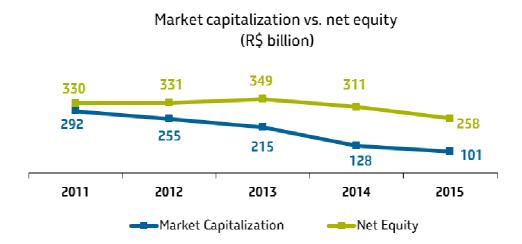


## **STOCK PERFORMANCE**

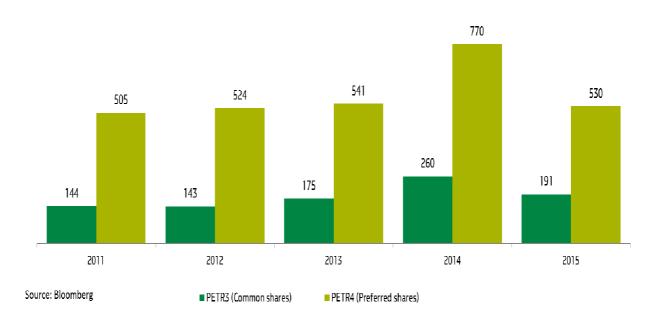
In 2015, several factors negatively affected the performance of our shares on the Stock Exchange, Commodities and Futures Exchange (BM&FBovespa). In this context, Ibovespa (the exchange's main index) fell 13% on the previous year.

Reflecting this scenario and falling international oil prices, our shares ended the year down. Common shares (PETR3) fell 11% and preferred (PETR4) 33%, and were quoted at R\$8.57 and R\$6.70, respectively on December 30, 2015. Due to these lower prices, our market cap on that date was R\$101 billion (US\$25 billion).

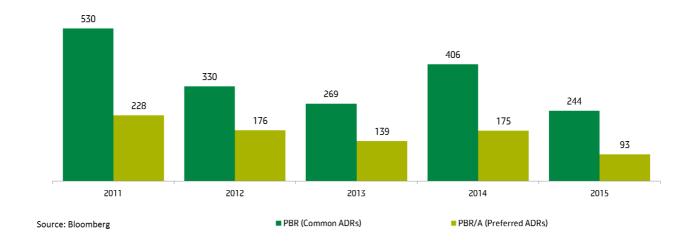
On New York Stock Exchange (Nyse), our common and preferred-stock ADRs (PBR and PBR/A) fell 41% and 55% respectively and were also impacted by Brazil's currency weakening 47% against the US dollar. On December 31, 2015, PBR closed at US\$4.30 and PBR/A at US\$3.40.



# Average Daily Traded Volume at BM&FBovespa (R\$ million)



## Average daily volume traded at Nyse (ADRs) - US\$ million



## **CORPORATE STRATEGY**

## 2015-2019 Business and Management Plan Adjusted

Our 2015-2019 Business and Management Plan (BMP) approved by the Board of Directors in June 2015 posed deleveraging the company and creating shareholder value as fundamental objectives.

The Plan sets the following targets: net leverage <sup>1</sup> below 40% by 2018 and 35% by 2020; net debt/EBITDA ratio below 3.0x by 2018 and 2.5x by 2020.

In January 2016, the Board approved adjustments to the 2015-2019 BMP (Adjusted 2015-2019 BMP), based on new levels of oil prices and exchange rates in order to preserve the fundamental objectives set by the original plan.

We have reviewed the assumptions we made for Brent oil prices and currency exchange rates when projecting investments and costs. Our Adjusted 2015-2019 BMP assumes an average Brent price of US\$45/barrel for 2016 against the original plan's US\$70/barrel estimate. The Brazilian currency's exchange rate for 2016 was adjusted from R\$3.26/US\$ to R\$4.06/US\$.

Our Adjusted 2015-2019 BMP's investment portfolio continues to prioritize oil exploration and production projects in Brazil, particularly in the pre-salt fields. For the remaining business segments, our investments are primarily aimed at maintaining oil and natural gas offtake-related operations and projects. The Adjusted 2015-2019 BMP's level of investment is US\$98.4 billion, which is US\$32 billion less than originally planned (US\$130.3 billion), to be broken down as follows:

Investments 2015-2019

mivestiments 2015 2015						
	US\$ billions	%				
Exploration and Production*	80.0	81				
Downstream **	10.9	11				
Gas and Energy	5.4	6				
Other segments ***	2.1	2				
Total	98.4	100				

<sup>\*</sup> Includes international investment (US\$4.9 billion)

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<sup>\*\*</sup> Includes Petrobras Distribuidora

<sup>\*\*\*</sup> Engineering, Technology and Materials; Finance; Corporate and Services; Governance, Risk and Compliance; and the Presidency

<sup>&</sup>lt;sup>1</sup> Net Debt / (Net Debt + Shareholders' Equity)

Of this total, we invested US\$ 23.1 billion in 2015 and we are projecting US\$20 billion for 2016.

Our estimated divestment for the 2015-2016 biennium is still US\$15.1 billion, of which we have already divested US\$0.7 billion in 2015.

Our Adjusted 2015-2019 BMP continues to plan measures for optimizing and making productivity gains in order to reduce Manageable Operating Expenses<sup>2</sup>. Initiatives already identified have shown that we may reach this result by managing outsourced services more efficiently, rationalizing structures and reorganizing businesses; optimizing personnel costs, and reducing costs of purchasing supplies and transport logistics. We emphasize that our 2015-2019 BMP is subject to a number of risk factors that may affect our estimates, such as:

- changes in market variables such as oil prices and currency exchange rates;
- divestments and other business restructuring being subject to market conditions prevailing at the time of the transactions;
- reaching oil and natural gas production targets in a scenario of difficulties in relation to suppliers in Brazil.

## **BUSINESS PERFORMANCE**

# **Exploration and Production**

Our Exploration and Production division's mission is researching, locating, identifying, developing, producing and incorporating oil and natural gas onshore and offshore. The aim is to develop and exploit reserves safely and profitably.

As world leaders in deep and ultra-deep water exploration and production, we are recognized for being at the forefront in introducing new technologies. Thanks to this leadership, we have earned prestigious local and international oil and gas industry awards such as the OTC Distinguished Achievement Award in 1992, 2001 and 2015 and the ANP Technological Innovation Award in 2013.

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<sup>&</sup>lt;sup>2</sup> Total costs and expenses, excluding purchase of raw materials

In 2015, there was a major fall in international oil prices. Brent's average price fell 47% from 2014 to US\$52.46, which adversely affected profitability for the entire industry, particularly exploration and production, leading to projects being postponed or canceled. In order to mitigate this effect, we are taking measures such as:

- prioritizing investments to develop production, focusing on more profitable and higher cash flow projects;
- optimizing projects reflecting operating gains, such as shorter drilling and well completion times in the pre-salt fields and revising the number of wells required based on higher levels of reservoir productivity;
- reducing operating costs by improving efficiency and renegotiating contracts with suppliers;
- divesting assets in Brazil and internationally.

In February 2016, FPSO Cidade de Marica (Lula Alto field) started producing and will now join two new systems to be located in the pre-salt fields in the course of this year: FPSO Cidade de Saquarema (Lula Central field) and FPSO Cidade de Caraguatatuba (Lapa field). Having these three platforms coming on stream and ramping up production from FPSO Cidade de Itaguai (Iracema Norte field) will be a major boost to cash flow and our ability to reach our production targets for the year.

## **Operational regions**

#### **Brazil**

The focus of our business is Brazil. The main process of acquiring exploratory blocks takes place through bidding processes conducted by the National Petroleum Natural Gas and Biofuel Agency (ANP). Contracts are governed by three regulatory models: concession, onerous assignment and shared production.

Our main fields currently producing are operated as concessions. Onerous assignment and shared production contracts account for a large part of our medium- and long-term production.

In 2010, we signed an onerous assignment agreement to acquire the right to produce up to 5 billion barrels of oil equivalent (boe) in selected pre-salt areas. In relation to shared production contracts, the only one we have signed with the ANP so far has been for the Santos Basin's Libra field.

Our domestic exploration portfolio consists of 146 blocks, totaling an area of 82,442 km², of which 33,316 km² are onshore and 49,126 km² offshore. We are working on 43 Discovery Evaluation Plans (DEPs), of which 40 are in exclusively exploration areas and 3 in *ring fenced* areas.

In the production development and operation segment, our domestic portfolio consists of 362 fields with concession contracts and 10 fields under onerous assignment agreements, making a total of 372 oil and natural gas fields.

#### **International**

Internationally our focus is on Latin America, the United States and Africa.

In Latin America, we operate in Argentina, Bolivia, Colombia, Mexico and Venezuela with a portfolio of 49 assets (27 production, 21 exploration and 1 transport). Of this total, we operate 32 assets (15 production and 17 exploration) under four types of exploration and production contracts: concession (Argentina and Colombia); oil operation or service (Bolivia); services contract (Mexico); and minority shareholding (Venezuela).

In the US, we focus on deepwater wells in the Gulf of Mexico, where our portfolio includes 8 production assets, of which 3 are operated by Petrobras and 47 are exploration blocks - all under concession agreements.

In Africa, we operate through our 50% stake in PO & G (Petrobras Oil and Gas). Our activities are mainly concentrated in Nigeria's Akpo and Agbami fields. We also have a project for developing production in the Egina field and carrying out exploratory work in the Egina South and Preowei fields, all under shared production contracts. In Gabon, we are exploring the Ntsina Marin and Mbeli Marin blocks.

## **Exploration**

Exploratory activity leads to discoveries of hydrocarbon reservoirs whose volumes are incorporated into our reserves depending on the results of Discovery Evaluation Plans (DEPs). In 2015, we drilled 51 exploratory wells in Brazil - 35 onshore and 16 offshore - and got a 78% success rate. In the pre-salt fields, we drilled 7 wells for an 86% success rate. Internationally, we drilled 8 wells - 6 onshore in Argentina and 2 offshore in the Gulf of Mexico - also with an 86% success rate.

Our exploratory investments totaled R\$7.4 billion in the year, of which R\$7 billion in Brazil. These investments were mainly for drilling costs, seismic surveys and acquiring blocks.

#### Main discoveries in 2015

Countr y	Basin	Concession	Area/Well	Well name (ANP)	Environmen t	Dept h (m)	% Petrobras
Brazil	Santos	BM-S-8	Carcará NW	3-BRSA-1216DA- SPS	Offshore	2,024	66%
Brazil	Santos	Libra	Libra C1	3-BRSA-1267-RJS	Offshore	2,158	40%
Brazil	Sergipe- Alagoas	BM-SEAL- 11	Farfan	9-BRSA-1280D-SES	Offshore	2,496	60%
Brazil	Sergipe- Alagoas	BM-SEAL- 11	Farfan	3-BRSA-1286-SES	Offshore	2,469	60%
Brazil	Campos	BM-C-35	Basilisco	1-BRSA-1289-RJS	Offshore	2,215	65%
Brazil	Santos	BM-S-8	Carcará N	3-BRSA-1290-SPS	Offshore	2,072	66%
Brazil	Amazonas	AM-T-84	Jusante do Anebá	1-BRSA-1293-AM	Onshore	-	60%
Brazil	Sergipe- Alagoas	BM-SEAL- 10	Moita Bonita	3-BRSA-1296-SES	Offshore	2,988	100%
Brazil	Espírito Santo	ES-T-495	Guayacan	1-BRSA-1302-ES	Onshore	-	100%
Brazil	Sergipe- Alagoas	BM-SEAL-4	Poço Verde 4	3-BRSA-1303-SES	Offshore	2,479	75%
Brazil	Santos	Libra	Libra NW3	3-BRSA-1305A-RJS	Offshore	1,952	40%
Brazil	Santos	Libra	Libra C2	3-BRSA-1310-RJS	Offshore	2,050	40%
Brazil	Potiguar	BM-POT-17	Pitu N 1	3-BRSA-1317-RNS	Offshore	1,805	40%

## **Declarations of Commerciality in 2015**

Country	Field	Basin	Volume Recoverable (million boe)	Quality (API)	% Petrobras	
Brazil	Sépia Leste	Santos	130	26	80	
Brazil	Jandaia Sul	Recôncavo	0.8	37	100	

#### **Production**

In 2015, in Brazil, we produced an average 2.128 million barrels per day (bpd) of oil, which was 4.6% up from the previous year and 0.15% more than the 2.125 million bpd planned for the year under the Business Plan and Management 2015-2019. If we include natural gas extraction, which was 9.8% up on the previous year, total production reached 2.597 million barrels of oil equivalent per day (boed) - 5.5% more than 2014's 2.461 million.

The pre-salt layer's average annual production, including Petrobras and partners, reached record levels in 2015 with an average of 767,000 bpd of oil, beating 2014 production by 56%.

Petrobras production	Brazil		International		Total	
	2014	2015	2014	2015	2014	2015
Oil ('000 bpd)	2.034	2.128	116	99	2.150	2.227
Gas (millions of m³/d)	67,8	74,5	15,9	15,4	83,7	89,9
Total (thousands of boed)	2.461	2.597	209	190	2.670	2.786

Rapid growth of production from the P-58 platform in the Parque das Baleias complex in the Espírito Santo portion of the Campos Basin, and from FPSO Cidade de Mangaratiba, which operates in the Lula field in the pre-salt Santos Basin were highlights. FPSO Itaguai City in Iracema Norte field, in the Santos Basin brought forward initial operating from November to July.

The other production fronts also played a decisive role in reaching our target for 2015. In the Campos Basin, production from the Marlim field stabilized at over 200,000 bpd' and the Roncador field reached its peak of over 400,000 bpd.

Internationally, 2015's average oil production of 99,000 bpd was 14.4% below the previous year's 116,000 bpd due mainly to the conclusion of sales of assets in Colombia and Peru in 2014 and in Argentina in March 2015. These transactions have had their effects partially offset by the Saint Malo and Lucius fields in the United States coming on stream in December/2014 and January/2015 respectively.

Internationally average natural gas production was 15.4 million m³ per day - 3.1% down from 2014's 15.9 million m³ per day. The start of operations at the Hadrian South field in March 2015, in the United States, and new wells in Rio Neuquén in Argentina were partially offset by sales of assets in Peru and Argentina. As a result, we produced 190,000 boed internationally - which was 9.4% down from 2014's 209,000 boed.

On consolidating Brazilian and international production, we reached two new records: our total oil production at 2.227 million bpd was 3.6% up on 2014's volume (2.150 million bpd), while total production of oil and gas at 2.786 million boed was 4.3% on the previous year's (2.670 million boed).

Our 2016 oil production target in Brazil is 2.145 million bpd, which is 0.8% higher than 2015's target.

#### Reserves

Based on ANP/SPE criteria, our proven reserves of oil, condensate and natural gas at December 31, 2015 amounted to 13.3 billion barrels of oil equivalent (boe), as the table below shows. In 2014, these volumes totaled 16.6 billion boe.

Proven reserves	Brazil		International		Total	
(ANP/SPE criteria)	2014	2015	2014	2015	2014	2015
Oil (billions of bbl)	13.686	10.705	0.270	0.241	13.956	10.946
Gas (billions of m³)	396.895	347.607	27.146	24.842	424.041	372.450
Total (billions of boe)	16.183	12.891	0.429	0.387	16.612	13.279

In 2015, we incorporated a volume of 16 million boe of proven reserves relating to discoveries of new deposits near current infrastructure in the fields of Albacora Leste (Campos Basin), Golfinho (Espírito Santo Basin) and El Mangrullo (Neuquén Basin in Argentina), and we issued a declaration of commerciality for the Jandaia Sul field in Bahia.

On account of technical criteria and economic factors, previous estimates were revised and our proven reserves were reduced by 2.4 billion boe.

Divestments led to a 22 million boe reduction of reserves in Brazil (Campos Basin) and Argentina (Austral Basin).

Oil and natural gas extraction accounted for a 932 million boe reduction of proven reserves. This volume includes shale production but not volume extracted from Long Duration Tests (LDTs) or production in Bolivia. LDTs are in exploratory areas that have not declared commerciality for fields and therefore have no associated reserve. In Bolivia, the Constitution does not allow reserves to be registered by a concession holder.

The balance of appropriations, revisions, sales and production of our reserves in Brazil and internationally led to a 3.3 billion boe reduction of proven reserves, as the table below shows.

Proven Reserves - Composition (Brazil and international, in billions of boe, ANP/SPE criterion)	2015	2014	2013
Proven reserves at the beginning of the year	16.612	16.565	16.440
Appropriations and Revisions	-2.379	+1.107	+1.141
Sale of reserves in situ	-0.022	-0.164	-0.156
Production	-0.932	-0.896	-0.861
Proven reserves at the end of the year	13.279	16.612	16.565

The ratio of volume reserves/production is 14.2 years overall and 14.6 years in Brazil. The Development Index (ID), which is the ratio between proven reserves developed and proven reserves, was 44.5% in 2015.

## Refining, Transportation, Marketing and Petrochemicals

Our Downstream segment is responsible for refining, transporting and marketing oil and oil-based products, guided by its strategy of boosting the efficiency of our assets in order to meet domestic demand. In the petrochemical segment, we are mainly active in partnerships that are integrated with our other business ventures.

## Refining

In 2015, with total capacity in Brazil at 2.176 million bpd, our 13 refineries processed 1.976 million bpd of oil and liquid natural gas (LNG) and produced 2.026 million bpd of oil. Some 86% of the total volume of oil processed came from Brazilian fields.

We produced a record quantity of S-10 diesel oil in Brazil, totaling 201,000 bpd, which was 40% higher than 2014's volume. S-10 diesel fuel contains a maximum of 10 parts per million sulfur and its main benefit is reducing vehicle emissions of pollutant gases.

Our three refineries in other countries processed 138,000 bpd of oil and liquid natural gas (LNG) and produced 149,000 bpd of oil-based products.

In the United States, through the Pasadena Refining System (PRSI), we are operating a refinery capable of processing 100,000 bpd of oil.

In April 2015, we decided to end the refining operations of Nansei Sekiyu Kabushiki Kaisha (NSS) in Okinawa, Japan, which had 100,000 bpd of oil processing capacity. We will be continuing to operate NSS as a marine terminal.

In Argentina, through our stake in Petrobras Argentina SA (PESA), we operate the Bahia Blanca refinery, which has 30,500 bpd oil processing capacity.

#### **New ventures**

#### Abreu e Lima Refinery (Rnest)

The first refining train is operating loads limited to 74,000 bpd of oil. This plant requires structural alterations to lower sulfur emissions (SNOX) before using its full capacity of 115,000 bpd. We will be restarting work on these alterations in 2016 and expect to finish them by 2017. The second refinery unit, with a processing capacity of 115,000 bpd, is expected to begin operating at the end of 2018, according to the Adjusted 2015-2019 BMP.

#### Rio de Janeiro Petrochemical Complex (Comperj)

We are structuring a business model that includes partnerships to conclude work on Comperj refinery's first train. Construction work at the complex's utilities center is continuing in order to support the natural gas processing unit's operation.

## **Marketing**

#### **Domestic market**

We sell 2,234,000 bpd of oil-based products in the domestic market - this volume was 9% below the 2014 number.

Our diesel oil sales fell 8% due to the following factors: a fall in economic activity with far-reaching effects on demand for transport in particular road freight; higher levels of biodiesel mixed with diesel oil; less investment in infrastructure; our lower market share due to other companies importing more; and thermoelectric plants cutting back on use of diesel oil.

Gasoline sales were down 11% due to higher demand for hydrated ethanol. In 2014, high levels of ethanol stocks ensured more supplies of the product enabling the proportion of anhydrous ethanol content mixed with gasoline mixture to be raised from 25% to 27%.

LPG sales were 1% down and were affected by shrinking industrial output, services and household consumption.

Fuel oil sales were down 13% due to lower volumes delivered to the electric generating segment and industrial production fell.

Petrochemical naphtha sales were down 18%, mainly due to contractual renegotiations in 2015 that led to Braskem's minimum off-take rules and Petrobras deliveries being suspended for a number of months in the year.

#### **Exports x Imports**

Oil exports reached 360,000 bpd, which was 55% up on 2014's volume due to growth of domestic oil production. Exports of oil-based products fell 6% to 149,000 bpd due to lower fuel oil production.

Oil imports totaled 277,000 bpd and were 29% down from 2014, while oil-based products totaled 256,000 bpd and were down 38%, both due to weak domestic demand.

We posted a US\$651 million trade deficit for oil and oil product exports and imports, excluding natural gas, LNG and nitrogen.

#### **Petrochemicals**

In the petrochemicals sector, we operate through the following subsidiaries, associated companies and joint ventures (holdings at December 31, 2015):

- Braskem S.A. (36.20%) producing chiefly ethylene, polyethylene, polypropylene and PVC;
- Deten Química S.A. (27,88%) (27.88%) producing raw material for detergents: linear alkyl benzene (LAB), linear alkyl benzene sulfonic acid (LAS), and heavy alkylates (ALP);
- Metanor S.A./Copenor S.A. (34.54%) producing methanol, formaldehyde and hexamine;
- Fábrica Carioca de Catalisadores (50%) producing catalysts and additives;
- Petrocoque S.A. (50%) producing calcined petroleum coke;
- Companhia Petroquímica de Pernambuco Petroquímica Suape (100%) and Companhia Integrada Têxtil de Pernambuco – Citepe (100%) - producing purified terephthalic acid (PTA), polyethylene terephthalate resin (PET), and polyester filament.

## **Transport**

## **Transport and storage**

Our Petrobras Transporte (Transpetro) subsidiary transports and stores oil, natural gas, oil-based products and biofuels through operations at 49 terminals (21 on land and 28 on waterways), 55 ships, 7,517 km of oil pipelines and 7,151 kilometers of gas pipelines.

In addition to supplying our plant's requirements for oil and gas production, logistics, refining and distribution, Transpetro transports imported and exported oil and other products; in addition to the Petrobras System, its main customers include distribution and petrochemical companies. Transpetro has facilities in 20 of Brazil's 27 states.

In 2015, Transpetro's ships carried 66.3 million tons of oil and oil-based products, which was 6.9% more than in 2014. Its oil pipelines and terminals carried 620 million m<sup>3</sup> of liquids, which was 5.3% below the previous year's total. Average daily natural gas transported at 74.8 million m<sup>3</sup> was 1.3% below the 2014 average.

## Maritime transport

Transpetro's Fleet Modernization and Expansion Program (Promef) includes plans for shipbuilding at shipyards in Brazil in order to renew the fleet and incorporate new technologies to its operations.

In 2015, Transpetro took delivery of 4 oil tankers as part of Promef: Marcílio Dias, André Rebouças and José do Patrocínio (fifth, sixth and seventh in its Suezmax series), and Oscar Niemeyer, the Petrobras System's first gas tanker to be built in Brazil. A total of 13 vessels were delivered.

## **Road transport**

Our road transport service handled  $602,000 \text{ m}^3$  of light oil-based products and 1.1 million tons of dark oil-based products in addition to bulk solids, chemicals and gases totaling 132,000 tons. Transpetro's 50,000 journeys in 2015 moved 744,000 tons of 1A fuel oil and 445,000 m<sup>3</sup> of C5+ gasoline.

## Oil Terminals and Pipelines

Highlights in this segment:

- starting to provide maintenance services for easement/ROW strips along some 250 km of oil and gas pipelines operated by Espírito Santo Exploration and Operations Unit (UO-ES);
- obtaining licensing from the Rio's State Environmental Institute (INEA) to operate our Angra dos Reis terminal's effluent treatment plant, which started treated effluent disposal making for significant environmental gains and cost savings;
- starting pre-operations for two plants at our Cabiúnas (RJ) terminal as part
  of expanded infrastructures to take natural gas from pre-salt oilfields. By
  adding these units, Transpetro boosted its natural gas condensate
  processing capacity from 4,500 to 6,000 m/3 day.
- starting our Nationwide Operational Control Center's remote control facility to enable vehicle loading and inter-tank operating at the Itajaí Land Terminal (SC) where monitoring will ensure more flexibility and safety for operations while optimizing capacity without requiring new investment.
- Transpetro's waterway terminals logged successive record *bunker* deliveries to Brazilian ports reaching 456,000 tons in August. The product's 2015 volume of 5.4 million tons was up 9.47% from 2014;

 replacing monobuoys at our Tramandaí/RS (Tedut) terminal with more modern ones. Monobuoys are the main equipment items used by the Tedut terminal which handles supply and off-take logistics for the Alberto Pasqualini Refinery (Refap).

## Gas Pipelines and Natural Gas Processing

Transpetro operated 7,151 km of gas pipelines and 12 compressor stations rated at a total 432,000 HP and 2015's average volume of natural gas moved was 74.8 million m<sup>3</sup>/day, which was 1.3% below 2014's average.

At our Cabiúnas (RJ) terminal - which is Brazil's largest natural gas processing complex - average volumes processed of natural gas and condensate totaled 11.4 million m<sup>3</sup> and 794 m<sup>3</sup>/day respectively. The terminal's processing capacity is 28.4 million m<sup>3</sup> of natural gas and 6,000 m<sup>3</sup> of natural gas condensate per day.

#### **Distribution**

Petrobras Distribuidora markets and distributes oil-based products and biofuels in Brazil through a network of 8,176 service stations and 14,286 consumer-customers. It is the leader in this segment with a 35.1% *market share* at December 31, 2015.

Petrobras Distribuidora marketed 53.4 million m³ of fuel in 2015, which was 7% below 2014's volume sales, due mainly to Brazil's economic-activity contraction. Net operating revenue was R \$96.9 billion with loss income at R \$1.2 billion.

In foreign markets, we operate in the distribution segment in Chile, where we have 279 service stations; Argentina, with 265 stations; Paraguay, with 180; Uruguay, with 87 and Colombia, with 115. Our market shares in these countries are 12.5%, 6.1%, 19.5%, 22.7% and 4.1%, respectively.

#### Investments

Petrobras Distribuidora invested R \$747. 6 million in 2015, of which R \$369.8 million was used to maintain and expand logistics infrastructure; R \$135.6 million to develop and modernize service stations; R \$105.9 million for the aviation segment and R \$20.6 million for gas distribution and energy marketing/sales.

# Gas, Energy and Chemical-Gas

Our Gas and Energy division processes, transports, distributes and sells natural gas, generates and sells electricity and produces and sells fertilizers. It operates jointly with Exploration and Production in Brazil to match supply and demand for gas as well as domestic consumption of our downstream operations.

Monetizing natural gas from Brazil's sedimentary basins is one of our Gas and Energy division's key strategic objectives. As domestic oil production has grown, so has the supply of gas from associated fields. This has led to more reliable supplies of gas used for domestic consumption, distribution company contracts, and thermoelectric generation, thus gradually reducing the need for importing gas.

## **Natural gas**

Natural gas supplied to the Brazilian market was 95 million m³/day. Of this total, an average of 44.9 million m³/day came from domestic production of natural gas. Regasification accounted for an average 18 million m³/day at our liquefied natural gas (LNG) terminals in Pecém (CE), Guanabara Bay (RJ) and Bahia. Imports from Bolivia contributed an average of 32.1 million m³/day.

Of the total offered, our natural gas transportation system consumed 1.7 million m<sup>3</sup>/day. The total length of our oil pipelines remained unchanged at 9,190 km.

## **Natural Gas Sales**

We sell natural gas through 48 contracts with 19 distribution companies for the thermal and non-thermal segments, including cogenerating units.

In 2015, we supplied an average of 93.3 million m³/day of natural gas to the market. Of this volume, 41 million m³/day went to the thermoelectric market, 14.7 million m³/day to refineries and fertilizer plants and 37.5 million m³/day to gas distribution companies to meet non-thermoelectric demand.

#### **Natural Gas Distribution**

In the natural gas distribution business, we hold a 51% controlling interest in Petrobras Gás – (Gaspetro), the holding company that consolidates our stakes in state-level natural gas distributors, except for Espírito Santo's, which is wholly owned by Petrobras Distribuidora. The distribution companies in which we hold shares sold 32.6 million m³/day. Volume moved by these companies was down 2.8% from 2014.

#### **Projects concluded**

- We started operations at two natural gas delivery sites Itapetininga (SP) and Itirapina (SP).
- In April, we started operating our Caustic Treatment Unit (UTC) at the Caraguatatuba Gas Treatment Unit (UTGCA) in São Paulo, to treat liquefied petroleum gas (LPG) produced there and ensure regulatory compliance through two LPG processing modules with 2,000 m<sup>3</sup>/d processing capacity each.

- Route 2 Gas Pipeline this gas oil pipeline will interconnect the Santos Basin's pre-salt complex with the Cabiúnas terminal (Tecab) in Macae (RJ). The 401 km pipeline with off-take capacity for 13 million m³/day started operating in February 2016.
- Route 2 Natural Gas Processing Unit located in Cabiúnas, allowed the expansion daily gas processing capacity of pre-salt complex of Santos Basin's, at the Tecab-Reduc System (Duque de Caxias Refinery) from 23 million to 28.4 million m³/day. New structure also enabled Tecab to boost condensate processing from 4,500 to 6,000 m³/day. This plant started operating in February 2016.

#### **Ongoing projects**

#### Oil pipelines

- Gasfor II (CE) 83.2 km section from Horizonte to Caucaia due to start operating in October 2017;
- Route 3 Gas Pipeline this gas pipeline will interconnect the Santos Basin's pre-salt complex to our Natural Gas Processing Unit at the Rio de Janeiro Petrochemical Complex (Comperj) in Itaboraí, with off-take capacity of 18 million m<sup>3</sup>/day. The total length of this gas pipeline will be 355 km, of which 307 undersea and 48 on land. Conclusion is scheduled for 2019.

#### Natural Gas Processing Units (NGPUs)

- Tecab supplementary treatment this will enable Tecab to process an additional 2.9 million m³/day of gas from the Santos Basin's pre-salt complex with additional off-take through Gasduc II for processing by Comperj's Route <sup>3</sup> plants. Conclusion is scheduled for May 2016.
- Route 3 Natural Gas Processing Unit located at Comperj will be able to process 21 million m³/day of natural gas from the Santos Basin's pre-salt complex. The two modules will be processing 10.5 million m³/day each and operational start-up is scheduled for 2019.

## **Electricity**

Our generating facilities' capacity of 6,100 MW comprises 20 owned and leased natural-gas or fuel-oil fired thermoelectric plants. Including generating plants using renewable sources and projects in which we hold a minority interest, our electricity generation capacity totaled 6,500 MW.

In 2015, we generated 4,600 average megawatts (average MW) of electricity for Brazil's National Interconnected System (SIN). This result is similar to 2014's due to

continuous dispatching through the National Electric System Operator (ONS) due to low water levels at hydroelectric reservoirs. We sold 854 and 3,2000 average MW of electricity in the free-market and regulated environments respectively.

#### **Projects concluded**

Our integrated investments in natural-gas fired thermoelectric generation aim to ensure energy supply while taking into account our contracts and reserves.

- Baixada Fluminense (RJ) thermoelectric plant with 530 MW capacity for supplying the 2011 A-3 Energy Auction contract. Single and combined cycles started operating commercially in March 2014 and January 2015 respectively;
- Sepé Tiaraju (RS) thermoelectric plant added combined cycle took capacity from 161 MW to 248 MW in order to boost efficiency and electricity supply. Concluded in March 2015.

#### **Fertilizers**

Our Gas and Energy division runs three fertilizer plants: Fafen-BA, Fafen-SE and Fafen-PR. In 2015, we produced 1.1 million tons of ammonia (of which 847 000 ton were used to produce urea) and 1.4 million tons of urea.

Construction work at Nitrogenous Fertilizer III (MS) plant was halted and the schedule is being reviewed. We canceled the Nitrogen Fertilizer V ammonia plant.

#### **Biofuels**

Our biofuels subsidiary Petrobras Biocombustível produces biodiesel and ethanol. Its mission is managing our involvement in the biofuels market, integrating production, logistics and marketing/sales activities to exploit synergies with the Petrobras System. The company has taken measures to boost competitiveness and cost efficiency thus ensuring its sustainability

## **Biodiesel and Agricultural Supply**

Petrobras Biocombustível (biofuel) has capacity to produce 886,000 m³/year of biodiesel through its holdings in five plants in Brazil. In 2015, significant operational improvements were made to the three Petrobras owned plants - Candeias (BA), Quixadá (CE) and Montes Claros (MG) - that account for 478,000 m³/year of this total. The Guamaré (RN) plant operated for 4 months and shut down in November due to its low-scale production.

At the other two plants, located in Marialva (PR) and Passo Fundo (RS), with total capacity of 390,000 m³/year, Petrobras Biocombustível (biofuel) operates through

the company BSBios Sul Brasil, in which we have a stake with shared management. All plants qualified for the Social Fuel Seal showing conformity with the guidelines of the National Biodiesel Production and Use program.

In addition to biodiesel production assets, in partnership with Galp Energia, the company is developing the Belem program for palm-tree cultivation and oil extraction and export in Brazil and producing 270,000 tons of green diesel in Portugal. In 2015, the palm tree plantation area in Pará totaled 42,000 hectares. In order to prioritize investments, plans to install palm oil extractors in Brazil and build the green-diesel plant in Portugal were postponed until further notice.

Petrobras Biocombustível (biofuel) also extracts and sells castor oil, cottonseed oil and sunflower oil through its holding in the Bioóleo company located in Feira de Santana (BA), which has capacity to process 130,000 t/year of grains and refine 60,000 t/year of soybean oil or 48,000 tons/year of cottonseed oil. Its operations help maintain the right to use the Social Fuel Seal.

#### **Ethanol**

Petrobras Biocombustível (biofuel) operates in the ethanol segment with shared management of three companies: Bambuí Bioenergia, Guarani, and Nova Fronteira making for a combined total sugarcane milling/crushing capacity of 31.2 million tons per year.

At the end of 2015, Bambuí Bionergia's harvest was sufficient to crush 1.2 million tons of sugarcane and produce 103,000 m³ of hydrated ethanol. Although these volumes showed increases of 8% and 10% respectively on the previous year's harvest, the company posted cash flow difficulties due to rising operating costs and high indebtedness.

Guarani - in October 2015, Petrobras Biocombustível (biofuel) subscribed to its last scheduled capital contribution under the investment agreement for this company, which was paid up in January 2016, thus increasing its stake from 42.95% to 45.97%. Sugarcane crushed totaled 20.1 million tons while ethanol production reached 681,000 m<sup>3</sup> and sugar 1,494 tons.

Nova Fronteira Bioenergia S.A. - the company's high level of agricultural productivity and operating efficiency enabled it crush 4.8 million tons of sugarcane and produce 393,000 m<sup>3</sup> of ethanol, thus retaining its position as Brazil's biggest ethanol plant.

Progress on our R&D for 2nd-generation cellulosic ethanol went ahead according to plan in 2015. However, Petrobras Biocombustível (biofuel) is waiting for the economy to pick up before restarting studies for a new plant.

## **Impairment**

For details of *impairment* affecting our business units see note 14 to the financial statements in this Management Report.

## INVESTMENTS

Our investments totaled R\$ 76.3 billion in 2015, primarily allocated to exploratory activities, developing production and expanding logistics infrastructure for oil and oil-based products. Funds were also allocated to maintain and expand refining facilities and to lay and extend gas pipelines and build natural gas processing units for out-taking and treating pre-salt production.

#### Capital expenditures and investments

	DĆ:III: a.a.			
	R\$ million			
	Fiscal Year			
	2015	2014	<u>∧</u> %	
Exploration & Production	63,321	60,072	5	
Downstream	8,390	18,510	-55	
Gas and Power	2,581	6,064	-57	
Distribution	853	1,152	-26	
Biofuels	152	281	-46	
Corporate	1,018	1,061	-4	
<b>Total investments</b>	76,315	87,140	-12	

We invested R\$63.3 billion in Exploration & Production. Of this total, R\$7.4 billion was allocated to exploration, R\$55.9 billion to development of production, to infrastructure and support. These investments were used to develop production from new fields, maintain old fields, and improve logistics infrastructure and technology. In 2015, we started operating two platforms: Cidade de Itaguaí in the Iracema Norte area of the Lula field, and P-61 in the Papa-Terra field.

In the Downstream segment, we invested R\$ 8.4 billion, mainly to maintain and expand our refining facilities. We invested R\$941 million to conclude work on the first train of the Abreu e Lima Refinery (Rnest) and R\$2.2 billion on the State of Rio de Janeiro Petrochemical Complex (Comperj), focusing new facilities for its natural gas treatment plant.

We allocated R\$2.6 billion to Gas and Power, some of which was used to build and expand capacity for gas pipelines and plants processing natural gas produced by the

pre-salt projects. We started operating two combined cycle power plants, UTE Baixada Fluminense and UTE Sepé Tiarajú with generating capacity of 530 MW and 248.6 MW respectively.

In the Distribution segment, we invested R\$853 million billion and prioritized work on expanding logistics capacity to meet domestic demand.

#### **Divestments**

We held two asset sales under our 2015-2016 Divestment Plan for an estimated US\$15.1 billion:

- All our assets in Argentina's Santa Cruz province Austral Basin were sold to Compañía General de Combustibles S.A. for US \$101 million.
- 49% of stock capital of Petrobras Gás S.A. (Gaspetro), the holding company consolidating our ownership interests in state-level natural gas distributors in Brazil, was sold to Mitsui Gás e Energia do Brasil Ltda. for R\$1.9 billion.

## CONTROLLING SHAREHOLDER RELATIONS

We are a mixed-capital company set up by Law No. 2004/53 to run the Federative Republic of Brazil's monopoly in oil, gas and their by product business. As of the promulgation of Law No. 9,478/97, we started to do business under free-competition conditions.

Brazilian law requires the Federative Republic of Brazil, which is our controlling shareholder, to hold a majority of our voting shares with the power of electing a majority of board members and thus the officers responsible for managing the company.

## **Pricing Policy**

Our pricing policy pursues long-term alignment between domestic international oil and oil-product prices therefore we avoid passing on short-term effects arising from volatile prices and currency exchange rates. Although pursuing convergence in the long run, we may go through periods in which our products' prices are not aligned with international levels.

As a result, depending on the quantity and intensity of variations in international prices for oil and oil-based products and the Brazilian real's exchange rate against the US dollar, we may for certain intervals of time decide against adjusting prices of our products in Brazil, which is reflected in our operating results.

# "LAVA-JATO" OPERATION ("OPERATION CAR WASH")

In 2009, the Brazilian Federal Police's "Operation Car Wash" started to investigate money laundering practiced by criminal organizations in several of the country's states. In 2014 and 2015, federal public prosecutors concentrated part of their investigations on illegal practices involving Petrobras contractors and suppliers and discovered an extensive scheme of overpayments involving a numerous participants that included former Petrobras employees. Based on the information available to the company, the above scheme involved a group of companies that organized a cartel to obtain contracts with Petrobras from 2004 through April 2012 involving additional costs used to make illicit payments to political parties, elected officials or other political agents, employees of contractors and suppliers, former Petrobras employees and other persons involved in this scheme.

In connection with the investigation, former Petrobras executives were arrested, accused and/or convicted in courts of first instance for money laundering, criminal organization and passive corruption. Other former executives of our company and executives of companies that supply goods and services to Petrobras have been, or may be, charged as part of this investigation.

For more details of "Operation Car Wash ", see the notes to this Management Report.

# **CLASS ACTION AND RELATED PROCEEDINGS**

From December 2014, several lawsuits were filed against Petrobras in the United States by investors who claim to have suffered losses for having acquired (between 2010 and 2015) the company's securities traded on the New York Stock Exchange (NYSE) or due to other transactions that took place in the United States. The Federal Court for the Southern District of New York is currently judging a *class action* and twenty-eight lawsuits filed by individual investors as well as an action brought by an individual investor in the Court Federal for the Eastern District of Pennsylvania, all making similar allegations.

The plaintiffs claim that Petrobras reported materially false information and committed omissions capable of inducing investor error in its filings of material facts and other information with the Securities and Exchange Commission (SEC), particularly in relation to the value of its assets, expenses, net income and the efficacy of its internal controls over the company's financial statements and anti-corruption policies, thus supposedly artificially raising the price of the company's securities.

In February 2016, the judge issued a decision certifying two classes of investors. The first, whose claims are based on the Securities Act will be represented by the

plaintiffs Employees' Retirement System of the State of Hawaii and the North Carolina Department of State Treasurer; the latter, whose claims are based on the Exchange Act, will be represented by the plaintiff Universities Superannuation Scheme Limited. Pomerantz LLP will be acting as attorneys for both classes.

The actions are still ongoing and may be appealed; the complex issues involved are subject to substantial uncertainties and depend on factors such as the originality of legal arguments; progress on the discovery procedure, the schedule set by the court; delays for judgments; obtaining evidence in the possession of third parties or adversaries; the court's decisions on key issues; expert witnesses' analyses; potential for the parties to start negotiating; and the parties' intention of negotiating any agreements in good faith. Furthermore, the claims as formulated are wide-ranging, covering several years, aimed at activities in several areas of Petrobras. The plaintiffs' class action and their individual cases have not quantified the alleged damages. The uncertainties inherent to all of these issues will affect the amount involved and the date of the final decision on these actions. Consequently, we are unable to reliably estimate the potential loss involved in this litigation. We have retained the services of a specialized US law office and will be mounting a steadfast defense in relation to the allegations made.

## **MANAGEMENT**

## Corporate governance

Our corporate governance structure consists of the Shareholders General Meeting; Board of Directors and its committees; Fiscal Council; internal and external audits; General Ombudsman and Whistleblower Channel; and Executive Board and its committees.

Members of the Board of Directors are elected at the General Meeting. We currently have ten members, of whom seven, including the chairman, are designated by the controlling shareholder; one by minority holders of common shares; one by holders of preferred shares (excluding the controlling shareholder); and one by employees, as stated in the bylaws which as of 2015 require alternate members serving for two-year periods.

In 2015, five statutory committees were formally attached to the Board of Directors were set up: Strategic; Financial; Audit; Safety, Environment and Health; and Compensation and Succession. These committees consist of collegiate members and/or persons of proven experience and expertise in the market. Their purpose is to advise the board through analysis and recommendations on matters requiring more in-depth study before being submitted to the board for decision making.

In February 2016, our Audit Committee has been instated and consists exclusively of members of the Board of Directors as required by bylaws.

Governance, Risk and Compliance (GRC) started to act in 2015 with the mission of ensuring compliance for processes and mitigating risk, including fraud and corruption risk, adherence to laws, standards and internal and external regulations. The GRC officer was elected from a slate of three prepared by a company specializing in selecting industry executives. The officer's three-year mandate may be renewed and he or she may be removed only by a board resolution voted by at least one of the directors elected by the minority or preferred shareholders.

In 2015, the Board of Directors approved the General Ombudsman's Office restructuring process, which included selecting a new general ombudsman and setting up an independent reporting channel. The board's choice of general ombudsman was based on a list of professionals prepared by a company specializing in selecting executives which was analyzed by the Audit and Compensation and Succession committees.

We also started work on a review of our governance and management model, a project that will lead to new organizational structure and Executive Board advisory committees. Among the measures being taken to improve and strengthen our corporate governance, we are reviewing instruments such as our bylaws, corporate governance guidelines and internal regulations for the board of directors and its advisory committees and for the executive board.

In addition, senior management has conducted a review of authorizing powers in place for the Board of Directors and Executive Board and we have adopted a shared authorization model stipulating collective rather than individual decision-making.

#### **Audit Committee**

Composed of independent members, in 2015 the Committee held 29 regular meetings involving the members of the Executive Board, Executive Managers, Internal Auditors, Independent Auditors and the Fiscal Council.

The Committee's responsibilities include the analysis of the integrity of the quarterly and annual financial statements and the transactions with related parties report. It also evaluates the effectiveness of the audit processes and the structure of internal controls.

In addition, the Committee monitored the company's exposure to risks and called meetings to discuss its main business strategies.

# **Risk Management and Compliance**

## Risk management

Risk management's organizational structure consists of the Enterprise Risk Executive attached to the Governance, Risk and Compliance officer and units or departments managing risk in their own business units.

Our Enterprise Risk Executive is tasked with the coordinated performance of the following duties:

- identifying and monitoring the effects major risks have on our integrated results and reporting them periodically to the Executive Board and Board of Directors;
- stimulating integration and capturing synergy across risk management initiatives taken in the organizational units, as well as in other business, support and management processes;
- establishing a corporate risk management methodology guided by an integrated systemic view that enables a continuous risk monitoring environment on different hierarchical levels;
- disseminating knowledge of risk management;
- providing support for managers to develop and implement the measures required to ensure that exposure to tolerable risk levels is aligned.

In June, the Board of Directors approved our Corporate Risk Management Policy specifying authorities, responsibilities, principles and guidelines that should guide risk-management related initiatives taken in the Petrobras System.

Our Enterprise Risk Management Policy is fully compliant with methodological references recognized worldwide, such as the Committee of Sponsoring Organizations of the Treadway Commission (COSO-ERM) and ISO 31000, and with the Corporate Risk Management Guideline issued by the Brazilian Institute of Corporate Governance (IBGC).

This policy highlights a more comprehensive approach to enterprise risk management that combines the traditional economic and financial vision with management of factors that endanger life, health and the environment (SMES); protects assets and business information (Asset Security); and combats fraud and corruption (legal compliance), among other enterprise risks.

Our enterprise risk management policy allows any employee to access terms and concepts related to the issue, initiatives being developed and the persons responsible for managing of each of the Enterprise Risk to which we are exposed. These enterprise risks are classified into five groups: Strategic, Financial, Compliance, Business and Operational.

## Compliance

Our Compliance Executive has been working to implement control and compliance activities, aiming the reducing of fraud and corruption risks, among others, reporting to senior management on measures taken and results across the entire Petrobras System.

We are officially recognized as victim of crimes discovered during by "Operation Car Wash "by investigators and the judge in charge of criminal proceedings. We have therefore taken the measures required to recover damages suffered by the company, including those related to our corporate image.

We have brought five civil-law actions for acts of administrative misconduct judged by federal prosecutors in February 2015, and in another action for the same purpose brought by the Federative Republic, including a compensation claim for moral damages. In addition, we have joined penal actions as assistant plaintiff and we have renewed our commitment to continue cooperating in order to elucidate the facts and disclose them to our investors and the general public on a regular basis.

In as much as "Operation Car Wash" investigations lead to leniency agreements with the companies investigated or with individuals who agree to return funds, we may be entitled to part of the amounts.

In this respect, as compensation for damage to the company, the amount of R\$229.7 million related to funds repatriated by the authorities has been returned to our treasury.

#### **Correction Committee**

We set up the Correction Committee to guide, standardize and monitor the implementation of disciplinary action in cases related to fraud or corruption in the company. The Committee is attached to the Governance Risk and Compliance officer and consists of executive managers from Legal, Human Resources and Compliance plus an executive secretary.

#### **Communication and Training**

In order to publicize the activities we are developing, we have started an employee awareness campaign called "Petrobras in *Compliance*." We are spreading

information through messages, emphasizing our ethical values and conduct, and producing publications, reports and videos with the president and Governance, Risk and Compliance officer and managers.

We are also partnering Petrobras University for training, both physical-presence and distance learning courses, as well as talks for the entire workforce. Members of our senior management attended a course on anti-corruption laws, including the Foreign Corrupt Practices Act of the United States.

#### **Compliance Agents**

We have designated about 100 employees to act as *compliance* agents and help with outreach for our control and compliance measures, in particular those aimed at preventing fraud, corruption and money laundering. These professionals are committed to encouraging discussions on the subject, which includes explaining guidelines and other issues related to the Petrobras Program for Preventing Corruption.

## **Integrity Due Diligence**

In order to mitigate integrity risks in our procurement of goods and services, since August we have been applying a new criterion for evaluating suppliers which we call the "Integrity Criterion".

All companies interested in starting an application process, or renewing or reclassifying their entries in our database are now required to provide information concerning their organizational and business structure, relations with government or public-sector officials, integrity record, relations with outsourcers or other third parties and their integrity program. This information will be used to support the Integrity *Due Diligence* procedure as a result of which a supplier's Integrity Risk Level may be rated high, medium or low.

Integrity Risk ratings, as well as the results of technical, legal, economic and Safety, Environment, and Health (HSE) assessments are taken in to account when selecting companies that will be invited to participate in our bidding processes. From August to December, some 8,400 Integrity Due Diligence processes were entered in our registration system.

#### Specialized independent whistleblower channel

We are restructuring our General Ombudsman Office, which manages the whistle blower channel, in order to make its processes and controls more efficacious and to ensure confidentiality for whistle blowers; secrecy and integrity of information; traceability of processes; and full treatment of all reports. The new whistleblower channel is managed by an outside company called Contato Seguro and functions as one single channel for the entire Petrobras System. Its role is to formally receive and register internal or external reports or complaints relating to fraud, corruption, money laundering and serious irregularities while guaranteeing anonymity and commitment on our part that there will be no retaliation for whistleblowers.

#### **Ethics**

Our commitment to ethics is stated in documents such as the Petrobras System Code of Ethics and the Petrobras Conduct Guide; and initiatives such as the Ethics Management System.

Our Code of Ethics sets forth the ethical principles and commitments of conduct to be followed by members of our Board of Directors, Fiscal Council Board and Executive Board and by Petrobras System employees, trainees and service providers. The Conduct Guide was adopted in 2014 to reach the same segments and it explains the principles behind the Code of Ethics, with practical guidelines for day-to-day work.

We are part of the Ethics Management System of the Federal Executive Branch, coordinated, evaluated and supervised by the Public Ethics Commission. We have an Ethics Committee whose attributions are to act as advisory body for our managers and employees; advise on, disseminate and foster fulfillment of ethical principles and commitments to good conduct and determine investigation of conduct contrary to ethical standards by the units concerned. On receiving a consistent report or complaint, the Ethics Commission will assess the need to set up an Internal Investigation Commission to examine evidence of or instances of irregularities and provide support for administrative or disciplinary measures, among other appropriate procedures.

Through the Ethics Commission, the Petrobras Ethics Management System implemented to establish and structure institutional initiatives for the promotion, diagnosis, assessment and monitoring of ethical conduct in our internal activities and external relationships. We are prioritizing prevention of misconduct and disseminating educational information and activities through training for the workforce and new managers.

In 2015 we trained 105 professionals to be multipliers of ethical principles and to support managers developing local initiatives. We are developing a communication campaign for the workforce and specifically for managers including guidance on ethical conduct in the company. We are taking measures to encourage Petrobras System employees to formally declare their awareness of the Code of Ethics and Conduct Guide.

## INTERNATIONAL SITUATION AND OIL MARKET

The world economy's 2015 growth rate of 3.1% 3 showed a slight slowdown in relation to 2014's 3.4%. Slower growth worldwide was mainly due to China's continuing to grow at a lower rate, along with the Russian economy's drastic contraction and a weak showing from Latin America, particularly South America, as secondary factors. However, the major advanced economies (the USA, Europe and Japan) grew at the same rate or slightly faster.

The United States was able to hold its 2015 GDP growth rate to the same level as the previous year's with 2.4%<sup>4</sup>. However, while the 2014 number was due to higher investment and exports, the key factors driving growth in 2015 were private consumption and investment in real estate assets picking up. A sharp fall in exports reflected lower levels of growth in North America's major trading partners and the dollar's generalized strengthening against other currencies.

Unemployment continued to fall in the USA to reach 5% at the end of 2015, thus contributing to stronger growth in consumer spending. This good result prompted widespread expectations of a Fed Funds Rate hike particularly in the second half of the year. However, the Central Bank waited until the last month of 2015 to finally start basic rate hikes.

Europe continued to meet with difficulties over income and employment growth policies. Worries arising from spending cuts remained on the fiscal side but were less pronounced than in 2014. Greece reached another agreement with its creditors, including renegotiated debt and terms of payment, that settled its fiscal situation for the time being at least. The United Kingdom (which has major influence despite not being in the Euro zone) voted stricter tax legislation but Euro zone countries' internal imbalances continued to give rise to concern. While Germany, the UK and Spain have succeeded, France and Italy are still struggling to sustain more consistent recovery. Overall, the European economy's GDP grew 1.5% in 2015.

Japan saw economic growth rising again to reach 0.7% against a fall of 0.1% in 2014. Continuing fiscal and monetary stimulus measures may be having an effect. However, there is persistent doubt domestically as to the Japanese government's ability to reach its economic targets, particularly its 2% annual inflation.

China's economy posted another slowdown to 6.9% in 2015 from 7.4% in 2014. Lower levels of retail sales indicators and fixed-capital investments led to falling domestic demand. Exports posted even worse results with annual exports of goods and services showing a fall (in US\$) for the first time since 2009.

<sup>&</sup>lt;sup>3</sup> Estimate published in World Economic Outlook, the IMF's official document issued on January 19, 2016

<sup>&</sup>lt;sup>4</sup> Source: Bureau of Economic Analysis

<sup>&</sup>lt;sup>5</sup> Source: National Bureau of Statistics of China

This behavior on the demand side led to a slowdown in China's industrial output and a steep rise in levels of idle capacity. In response to these results, the Chinese government again wagered on monetary stimulus measures such as lower interest rates and compulsory deposits requirement for commercial banks in order to stimulate credit.

Other major emerging economies affected by China's slowdown include Russia and Latin American countries. This reflected China's role as a major importer of the agricultural *commodities*, minerals and metals, the predominant items exported for these countries, who saw their volume exports fall. In addition, China's lower growth also helped weaken commodity prices, thus affecting income growth in these countries.

Falling prices for oil and gas, Russia's main export *commodities* (70% of the total in 2013, according to the World Bank), worsened its economic situation. This effect combined with economic embargoes due to Russia's involvement in the Ukraine conflict led to its GDP falling 3.9% in 2015. A point to note is the ceasefire in Ukraine means withdrawing weapons from the conflict zone and holding new regional elections while recognizing the special status of regions not under the government's control. New elections have yet to be held in these territories.

Fast falling commodity prices for South America's exports adversely affected the entire region. From July 2014 through October 2015, oil, iron ore, copper and soybean prices fell 56%, 26.9%, 38%, and 23.6% respectively. Given the significant weight of these products in the continent's exports, their lower prices have led to deterioration for almost all of these countries' current accounts with their currencies heavily depreciated. In addition to foreign trade, South American countries met with major fiscal difficulties. Falling commodity prices directly impacted governments whose revenues are most dependent on their exports, such as Venezuela, Colombia, Ecuador and Chile. In other cases, such as Argentina's, the main issue was higher public spending. These adversities were aggravated by a polarized political environment, leading to a 0.4% fall in South America's GDP for the 2014-2015 biennium against 3% growth back in 2012-2013.

Brazil was hit by severe recession in 2015 with GDP down 3,8%, its worst fall since 1990. This contraction largely reflected a significant deterioration in business and consumer expectations for the economy together with a sharp drop in domestic demand and particularly investments and private consumption.

The worsening macroeconomic scenario was also decisive for the Brazilian currency's sharp fall against the dollar during the year. After starting 2015 at R\$2.69, the US\$ ended the year at R\$3.9. The average exchange rate for the year was R\$3.33/US\$.

<sup>&</sup>lt;sup>6</sup> Corresponding to the variation between Jun/14 and Oct/15 averages of Bloomberg's CO1, IOE1, S 1 and HG1 tickers

Despite domestic demand falling while idle capacity in industry rose steeply, the inflation rate measured by 2015's consumer price index (IPCA) soared over the Central Bank's targeting range ceiling of 6.5% to reach 10.7% for the year, due mainly to steep increases in government controlled prices, particularly electricity and fuel, on top of the weaker currency itself. Given the high level of imported content in Brazil's supply chains, the weakened currency led to much higher costs that were largely passed through to domestic producers' final prices.

Fiscal indicators too showed significant deterioration. With sharply falling tax revenues reflecting weak GDP, the public-sector primary deficit (before interest on debt) reached 1.9% of GDP. Then the basic interest rate hike pushed the cost of servicing public debt to about 8.4% of GDP. These factors together led to a nominal deficit (or public sector borrowing requirement) of 10.3% of GDP.

The above situation was behind a rise of five percentage points in the overall ratio of the stock of government debt to GDP, from 57.2% to 66.2% in 2015. The worsening of the fiscal situation was also decisive for the downgrading of the country's credit rating, which meant that Brazil passed from investment grade to speculative grade in the three major credit rating agencies in the world.

Brent oil prices<sup>7</sup> remained low in 2015 to end the year at US\$35.75/barrel and 2015's annual average of US\$52.46/barrel showed a fall of 47% on the previous year while West Texas Intermediate (WTI) referenced from Cushing in the Midwest approached Brent prices due to higher Gulf of Mexico offtake logistics capacity. At US\$48.68/barrel, WTI's annual average per barrel in was down 48% from 2014.

In December 2015, the United States Congress voted to allow oil exports after 40 years of restrictions affecting trade in this commodity. This regulatory change was immediately reflected in relative prices of American oil. After falling in relation to Brent year after year since 2011, WTI ended 2015 at US\$37.04/barrel, which was US\$1.29/barrel above Brent levels.

World oil consumption<sup>8</sup> showed a substantial increase of 1.54 million bpd - 1.7% more than the 2014 volume. In this period, the United States - in addition to non-OECD member countries - also made a significant contribution to demand-side growth. Note that 2015 oil prices remained at significantly lower levels - around US\$50/barrel - and this was a major driver for growth of consumption.

With falling oil prices, there was a change in the dynamics of supply coming from non-OPEC member countries, which rose by 1.23 million bpd in 2015. However, although some of these countries have increased their supply, there was a drastic decline in growth of production during the year, particularly in the USA, where it rose

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<sup>&</sup>lt;sup>7</sup> Source: Bloomberg (Brent Dated, WTI).

<sup>8</sup> Source: OPEC Monthly Oil Market Report - estimates.

by less than 800,000 bpd in the last quarter of 2015 after rising by 1.6 million bpd during the first half of 2015. Meanwhile, the OPEC countries - particularly Iraq and Saudi Arabia - substantially boosted production to end the year at 32.18 million bpd, which is 1.18 million bpd more than 2014's volume. Note also that the OPEC countries are characterized by low production costs, so their output is resilient in a low oil-price context.

In relation to climate issues, the UN Climate Conference (COP 21) was held in Paris in December and it adopted the first global extension agreement to reduce greenhouse gas (GHG) emissions and mitigate climate impacts. For the first time, the historic Paris Agreement saw 195 signatories to the Climate Convention, thus admitting that GHG emissions must be cut back.

The main points made in the document, which will come into effect in 2020, involve voluntary measures to avoid global temperatures rising more than 2°C - preferably 1.5°C - compared to the pre-industrial period; guaranteed financing from the rich countries (US\$100 billion/year) to mitigate impacts on developing countries; and a 5-yearly review of the Nationally Determined Intended Contributions (NDICs) that countries propose to reduce their emissions. Brazil's NDIC for COP 21 stipulated a 37% reduction in greenhouse gas emissions (GHG) by 2025 (from base-year 2005), then 43% by 2030. For the energy sector, the proposal mentions renewable energy's share of the energy matrix rising to 45% by 2030 from its current 39.4% - due to growing use of alternatives such as wind, solar, biomass and hydroelectric sources.

The United States and China presented a joint position in the month prior to the Paris Conference and underline the commitment assumed in their bilateral agreement signed in 2014. China is to reach its maximum level of emissions in 2030, while the United States promises 26% to 28% lower emissions by 2025 (base-year 2005).

Note that the results obtained at COP 21 and their possible consequences in terms of national policies and targets may pose new prospects for the transition to a low carbon economy and should be therefore be monitored as a point to watch for the oil and gas industry.

Brazil's windpower capacity totaled 7.8GW at the end of 2015, which was 59% more than the 2014 number. In addition, the second Reserve Energy auction specifically for solar sources was held in August with 833.80 MW being committed. Measures such as tax relief for electric and hybrid (electricity plus combustion) models may favor the spread of new technologies and these vehicles, which accounted for only 0.007% of Brazil's total<sup>9</sup> in 2015.

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<sup>&</sup>lt;sup>9</sup> Source: Estratégia e Organização/Estudos de Mercados e Negócios/ Strategy and Organization / Market and Business Research

This low oil price environment has posed challenges for technological development and innovation in the oil and gas industry as upstream projects go ahead at a slower pace or are postponed. In this context, companies are prioritizing technologies and techniques that hold out the promise of lower costs and higher efficiency in the short and medium term, although maintaining and increasing oil and gas reserves is still a long-term objective. In the USA, in addition to efforts to tap unconventional sources (shale gas and tight oil) more efficiently, companies are looking for lower costs and environmental impacts by applying reducing/recycling/reusing technologies to water used in their processes.

### **CORPORATE FUNCTIONS**

# Safety, Environment, Energy Efficiency and Health (HSEE)

In 2015, we invested R\$6.9 billion in operations and projects related to integrated management of safety, environment and health (HSE). In this context, we have developed initiatives to enhance performance in these areas, comply with specific legislation and ensure that our plants' operational practices are safe, profitable and environmentally responsible.

These initiatives include certification of compliance with ISO 14001 (environmental management) and OHSAS 18001 (health and safety management) for our HSE management systems at our plants operating in Brazil and internationally. In 2015, all oil refined in Brazil was processed at certified plants.

The Board of Directors' Safety, Environment and Health Committee, consisting of three members, monitors and evaluates our performance in these areas and guides the development of strategies that will be adopted to improve results.

# **Safety**

With the spread of fundamentals, concepts and practices and the implementation of programs and measures in the Process Safety and Occupation Safety disciplines, as well as the application of solutions to prevent injuries and illnesses, allowed the Reportable Event Rate indicator to fall by 9% compared with 2014.

Despite the prevention programs developed in all our areas and companies, we recorded a Rate of Frequency of Accidents with Absence 6% higher than in 2014. Also, we recorded and regret the 16 fatalities that took place involving our own employees and contractors' professionals in the year.

This adverse outcome was impacted by 9 fatalities in one single accident at FPSO Cidade de São Mateus in February.

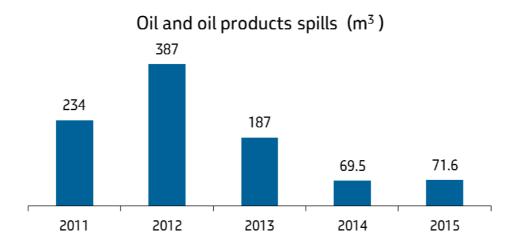
Eliminating fatal accidents and any other types involving people is the main challenge for our safety management, based on the value of "Respect for Life" stated in our Strategic Plan 2030.

We are investigating all accidents reported in order to identify their root causes. We recommend preventive and corrective actions, which are monitored once they have been adopted. In cases of serious accidents, we send out company-wide alerts to enable plants to assess the probability of similar events occurring in their own operations and decide on the advisability of adopting the recommended measures.

# Leakage of oil and oil products

Oil and oil product leaks/spills totaled 71.6m<sup>3</sup> in 2015, which 3% higher than the volume reported in 2014 and 84% below the 461 m<sup>3</sup> alert threshold. Spillage levels remained below 1 m<sup>3</sup> per million barrels of oil produced, which in itself is an excellent number in relation to the world's oil and gas industry.

By introducing a system for communicating, recording and treating leaks we were able to ensure daily monitoring of incidents, impacts and mitigating measures. Moreover, through continuing measures taken under our Zero Leakage Plan introduced in 2012, we were able to optimize management processes and reduce the risk of these incidents for our operations.



# Spill Response

Our standards, procedures and response plans for leaks/spills are structured at local, regional and corporate levels. To act effectively in these situations, we have the following resources: 36 oil collecting vessels; 113 support vessels and other vehicles; 270 oil collectors; approximately 92,000 meters of containment barriers; 113,000 liters of chemical dispersants, and other items. These resources are distributed around 12 Environmental Defense Centers and 11 outposts, in addition to Transpetro's Emergency Response Centers all over the country.

We are associated with Oil Spill Response Limited, an organization that acts on a global scale and specializes in providing and mobilizing additional resources to ensure effective oil spill responses. In 2015, we conducted 22 simulated drills at regional level, including spill response training.

#### **Environment and Energy Efficiency**

To increasingly heighten the eco-efficiency of our operations, we work for rational use of water, energy and other inputs while managing atmospheric emissions and waste and effluent. Our goal is to minimize environmental impacts of our activities.

Our investment projects systematically assess the main risks on the safety, environment, energy efficiency and health dimensions. The results of these evaluations are monitored regularly by our SEH committees and the Board's audit committee, verifying alignment with corporate guidelines and compliance with our Risk Management and Mitigation Plan's recommendations. In 2015, we issued 26 technical reports/opinions for investment projects, including recommendations to improve SEH performance. In the same period, assessments of the implementation of recommendations in 23 projects approved by senior management were submitted to the Board's SEH Committee.

#### Water resources, effluents and biodiversity

We reused 23 million m³ of water in 2015 - a volume equivalent to a year's supply for a city of 550,000 inhabitants. The savings from rationalization and reuse help to ensure the secure supplies required for our operations. After conducting pilot tests, we started using a Water Scarcity Risk Index developed in partnership with COPPE/UFRJ to assess areas around our plants and support initiatives and investments mitigating these risks.

To compile our Annual Biodiversity Report, we centralized the collection and consolidation of data for biodiversity-risk management and its impacts. With this information, we plan and develop projects for preventing and mitigating impacts, and for restoring environments or offsetting impacts. These initiatives may involve characterizing flora and fauna, protecting and recovering ecosystems, environmental monitoring, protecting endangered or endemic species and managing fauna.

# Atmospheric emissions, climate change and energy efficiency

In recent years, we have reduced greenhouse gas emissions (GHG) from our processes through various initiatives, particularly modernizing facilities, using more efficient equipment, using more natural gas, standardizing projects and operating practices, and investing in R&D.

We have cut GHG emissions by 3.7% against 2014. This result was due to making more use of gas associated with oil producing operations, burning less fuel oil at thermoelectric plants, and reducing emissions from maritime transportation operations.

#### Health

Our annual healthcare and wellness initiatives conducted at corporate and organizational unit levels are based on monitoring strategic health indicators and analyzing the epidemiological profile of our employees.

Planning for our initiatives is guided by profiles obtained from data we have collected during occupational exams and data associated with the characteristics of employees' activities.

Our time-lost indicator tracks the evolution of absenteeism due to accidents and illnesses and their main causes, whether workplace related or otherwise. This stratified monitoring also influences our healthcare and wellness initiatives. In 2015, time lost was 2.47%, which was above the 2.41% alert threshold set for the year.

# **Social Responsibility**

#### **Human Rights and local development**

In 2015, we defined the dimensions of human rights and local development methodology for Social Responsibility Management in Investment Projects. These dimensions - determined by mapping critical issues that have major impact for the oil and gas industry - are the basis for our social risk identification, analysis and treatment, bearing in mind our relations with stakeholders, particularly local communities and suppliers. This work helps us select of alternative locations and technological routes for our projects with the aim of minimizing negative interference from project activities for communities' everyday lives, especially when indigenous peoples and traditional communities are involved.

# **Managing Social Risks**

We have approved a number of management guidelines to identify social risks in operations, decommissioning and exploration, investment, acquisition and divestment projects. The methodology helps managers address these risks by examining macro processes in the Petrobras system's value chain. The document poses the premises, requirements and issues relevant to risk identification that arise from our Social Responsibility and Business Risk Management policies. These guidelines are important for the integration of social responsibility into decision-making and business management.

#### **Social Investment**

We invested approximately R\$271.2 million in 907 social, environmental, educational and sports projects. Through the Petrobras Environmental Program, we articulated

initiatives that help create solutions and offer alternatives with transformative potential to tackle the social and environmental issues affecting Brazil.

#### **Community relations**

In 193 communities served by the Petrobras Agenda 21 program, we held workshops on social management to strengthen the program's community forums and train leaders from the locality and young people living in the vicinity of our operational units and plants. Subjects covered include producing written content, social entrepreneurship, cooperatives and sharing economy, developing community projects and structuring legal entities.

# **Research and Development**

Our R&D center coordinating our activities in this field is named for Leopoldo Américo Miguez de Mello, hence its local acronym 'Cenpes'. We have 1,808 employees at Cenpes, of whom 1,338 are working exclusively on R&D and 300 on basic engineering projects, while 23% are teachers and 14% doctors. We work in partnership with over 100 Brazilian and foreign universities and research institutions, suppliers and other operators.

In 2015, our R&D investments totaled R\$ 2 billion. Our goal is to develop technologies for our Business and Management Plan while staying ahead of new trends.

#### Our main accomplishments:

- deploying software known as 'Pressure While Drilling Analyzer' (PWDa) which
  collects real-time well drilling data to detect hazardous situations and warn
  of operational problems. By using this program, we reduced rig use by 43.8
  days and posted US\$38.3 million cost savings in the year;
- starting operations at the first delayed coker atmospheric residue plant at the Abreu e Lima Refinery (RNEST). By using this trailblazing proprietary technology in the refining process at RNEST, we may obtain distillate yields of around 60%, which is a gain of around 25% in relation to the Petrobras System's average using conventional technologies;
- deploying a new version of Octopus software to optimize oil field drainage networks, maximize their offtake efficiency and recovery factors. We are using this tool in pre-salt fields too;
- Floating Mud Cap Drilling (FMCD) led to US\$18 million savings on drilling and completing a well in the Marlim Leste field. Using this drilling technique, fluids

and cuttings are pumped into highly permeable formations rather than returned to the surface;

- removing and chemical inhibiting (squeeze) inorganic scaling in wells at the Rio de Janeiro Operating Unit (UO-RIO) using innovative formulations developed in cooperation with suppliers. Chemicals are used to remove scaling in production facilities and chemical inhibitors are injected directly into the reservoir (squeeze) to prevent further inorganic scaling. These operations avoided losses of 16,500 bpd at UO-RIO;
- starting operations at the first pumping module using a submerged centrifugal pump containing Poseidon gas handler specially designed for gas fractions of up to 70% by volume. The module was fitted to the Jubarte field's JUB-04 well for an estimated additional gain of 1,000 bpd;
- developing coke drum inspection and repair techniques that lengthened their useful life from 2 to 12 years and shortened repair time by 56% compared to conventional methods. At Gabriel Passos Refinery (REGAP), these techniques led to R\$42 million cost savings by eliminating the need to purchase new drums;
- defining geological control of variability of petroleum discovered in Sergipe-Alagoas basin deep waters, which enhanced prediction of subsurface fluid distribution and connectivity between reservoirs;
- concluding regional characterization projects for the Espirito Santo and Sergipe-Alagoas basins. All environmentally relevant events were mapped, thus streamlining licensing procedures. The studies cover an area of 77,800 km<sup>2</sup>;
- applying innovative biological technology for the new effluent treatment plant at Ilha Grande Bahia Terminal (TEBIG). By using this alternative to conventional physical-chemical treatment, definitive operational licensing was obtained for this effluent plant.

Through Cenpes we also provide technical assistance facilitating solutions for operational problems and boosting efficiency, thus obtaining gains by optimizing operations and cutting costs. Our researchers were active in the Long Duration Test (LDT) at the lara Oeste field where they collected data from reservoirs and planned development for the field, thus avoiding the need to drill more wells.

Our R&D center also inspected equipment to verify its integrity, thus avoiding production downtime and loss of earnings. By inspecting the steam turbine rotor shaft at the Fernando Gasparian Thermoelectric Plant (SP), for example, we avoided incurring R\$600,000 daily losses.

For the third time, Petrobras earned the Distinguished Achievement Award for Companies, Organizations and Institutions, the top award made by the Offshore Technology Conference (OTC), for the top ten major technological innovations related to pre-salt layer production: first riser support buoy; first steel catenary riser; deepest steel lazy wave riser (SLWR); deepest flexible riser; first application of flexible risers with integrated monitoring; record water depth for drilling an underwater well using the pressurized mud cap drilling technique (PMCD); first intensive use of smart completion in ultra-deep waters in satellite wells with potential for calcium carbonate scaling;  $CO_2$  separation in deep water; deepest underwater well with  $CO_2$  gas injection and first deep-water use of alternating water-and-gas injection.

# **Human Resources**

Human Resources supports our strategy through a number of initiatives to recruit talents required in terms of competence and quantity, as well as employee satisfaction, engagement and productivity.

#### Headcount

The Petrobras System ended 2015 with 78,470 employees, which was 3% less than the 2014 total. Petrobras Controladora (holding company) admitted 244.

Headcount per Region	2015	2014
Petrobras Controlling Company	56,874	58,618
Southeast	40,326	41,207
South	2,740	2,836
Northeast	12,344	12,818
North	1,214	1,282
Middle West	250	475
Controlled Companies – Brazil	14,740	15,293
Southeast	9,396	9,546
South	1,816	1,852
Northeast	2,267	2,606
North	655	667
Middle West	606	622
Controlled Companies -		
Overseas	6,856	6,997
Total Petrobras System	78,470	80,908

# **Downsizing**

Two programs - the Voluntary Termination Incentive Program (local acronym PIDV) and Mobilize - have helped match headcount to challenges posed by the Business and Management Plan for 2015-2019 while meshing our requirements with employees' interests.

We developed and implemented the PIDV in 2014, based on knowledge management, management succession and operational continuity principles, thus enabling systemic employment termination to be planned for those enrolled in the program.

The PIDV targeted employees aged 55 or over who were due for retirement by March 31, 2014. A total of 5,902 employees have left the company since its introduction.

The Mobilize program offers opportunities for internal transfers to departments or areas in need of manpower, thus cutting new admission costs: 83 employees transferred to another department during the year.

## **Human Resource Development**

Employee training investments totaled R\$174 million and yielded in an average 54 hours training per employee. We logged approximately 196,000 participations in continuing education courses in Brazil and internationally and training courses for new employees.

In partnership with Governance, Risk and Compliance, we have developed a portfolio of education solutions for employees to learn more about means of ensuring efficiency and compliance in the management of our business. In 2015, we logged 9,300 participations in these courses.

As part of Management Development, our Petrobras Leadership Development Program trains new managers for the exercise of their attributions. Our management and business units logged more than 17,800 participations in training initiatives that involved employees from all departments.

# Information on services unrelated to the external audit provided by the independent auditors – CVM Instruction 381/2003

Our business management instruments are based on the Code of Ethics, Code of Best Practices and Corporate Governance Guidelines.

Article 29 of the Bylaws determines that the independent auditors may not provide us consulting services for the duration of their audit contract.

On April 27, 2015, we have hired PricewaterhouseCoopers Auditores Independentes to provide specialized accounting services for fiscal years 2015 and 2016.

During fiscal year 2015, PricewaterhouseCoopers Auditores Independentes provided the following services for us, our subsidiaries and affiliates:

	R\$ thousand	%
Auditing of accounts	48,322	71.8
SOX audit	9,302	13.8
Additional audit-related services	8,506	12.6
Tax audit fees	1,140	1.8
Total	67,270	100

# **FINANCIAL ANALYSIS**

Petrobras presents the financial analysis of its consolidated financial statements in millions of reais, except when indicate otherwise.

# Consolidated Economic-Financial Summary

	R\$ million		
	2015	2014	2015 x 2014 (%)
Sales revenues	321,638	337,260	(5)
Gross profit	98,576	80,437	23
Net income before financial results, share of profit of equity-accounted investments and income taxes	(12,391)	(21,322)	42
Net finance income (expense)	(28,041)	(3,900)	(619)
Adjusted EBITDA – R\$ million <sup>1</sup>	73,859	59,140	25
Consolidated net income attributable to the shareholders of Petrobras	(34,836)	(21,587)	(61)
Basic and diluted earnings per share <sup>2</sup>	(2.67)	(1.65)	(62)
Market capitalization (Parent Company)	101,316	127,506	(21)
Gross margin (%)	31	24	7
Operating margin (%) <sup>3</sup>	(4)	(4)	_
Net margin (%)	(11)	(6)	(5)
Adjusted EBITDA margin (%) <sup>4</sup>	23	18	5
Total net Assets	900,135	793,375	13
Investments, Property, Plant and Equipaments and Intangible	655,675	608,248	8
Net Debt <sup>5</sup>	391,962	282,089	39
Shareholders' equity	257,930	310,722	(17)
Net third parties capital / total net liabilities <sup>6</sup>	32/68	43/57	-

<sup>[1]</sup>Our adjusted EBITDA (according to CVM Instruction 527 of October 4, 2012) is the net income before net finance income (expense), income taxes, depreciation, depletion and amortization, share of profit of equity-accounted investments and impairment in order to provide a better information about our ability to pay debt, carry out investments and cover our working capital needs. Adjusted EBITDA is not an IFRS measure and may not be comparable with the same measure as reported by other companies.

- [2] Basic and diluted earnings per share calculated based on the weighted average number of shares.
- [3] Calculated based on net income before financial results, share of profit of equity-accounted investments and income taxes.
- [4] Adjusted EBITDA margin equals Adjusted EBITDA divided by sales revenues.
- [5] Our net debt is not computed in accordance with International Standards -IFRS and should not be considered in isolation or as a substitute for total long-term debt calculated in accordance with IFRS. Our calculation of net debt may not be comparable to the calculation of net debt by other companies. Management believes that net debt is an appropriate supplemental measure that helps investors assess our liquidity and assists management in targeting leverage improvements.
- [6] Third parties capital net of cash and cash equivalents/financial investments.

#### **RECONCILIATION OF EBTIDA**

	R\$ million			
	2015	2014	2015 2014	(%)
Net loss	(35,171)	(21,924)		(60)
Net finance income (expense)	28,041	3,900		619
Income taxes	(6,058)	(3,892)		(56)
Depreciation, depletion and amortization	38,574	30,677		26
EBITDA	25,386	8,761		190
Share of earnings in equity-accounted investments	797	(451)		277
Impairment losses / (reversals)	47,676	44,636		7
Write-off - overpayments incorrectly capitalized	_	6,194		
Adjusted EBITDA	73,859	59,140		25

The Company decided not to include write-offs of overpayments incorrectly capitalized in the calculation of the Adjusted EBITDA, because the Company's future cash generation and its current balance of cash and cash equivalents are not impacted by those adjustments. The Company believes excluding those write-offs provides more appropriate information about its potential cash generation.

#### Results, market capitalization and investments

	R\$ million		
	2015	2014	2015 x 2014 (%)
Prices/Rates			
Brent crude (R\$/bbl)	172.65	231.30	(25)
Brent crude (US\$/bbl)	52.46	98.99	(47)
Average commercial selling rate for U.S. dollar	3.34	2.35	42
Period-end commercial selling rate for U.S. dollar	3.90	2.66	47
Variation of the period-end commercial selling rate for U.S. dollar (%)	47.0	13.4	34
Selic interest rate - average (%)	13.38	10.86	3
Indicators			
Domestic Sales Price			
. Crude oil (U.S. dollars/bbl) <sup>7</sup>	42.16	87.84	(52)
. Natural gas (U.S. dollars/bbl)	36.24	47.93	(24)
International Sales price			
. Crude oil (U.S. dollars/bbl)	55.99	82.93	(32)
. Natural gas (U.S. dollars/bbl)	22.62	21.18	7

<sup>[7]</sup> Average between the exports prices and the internal transfer prices from Exploration & Production to Refining, Transportation and Marketing

#### Sales volumes

Our domestic sales volumes decreased by 7%, primarily due to:

- Diesel (an 8% decrease):
  - i) a lower consumption by infrastructure construction projects in Brazil;
- ii) a higher share of diesel sales from other market players (based on diesel imports); and
- iii) An increased percentage of mandatory biodiesel content requirements in diesel (diesel/biodiesel mix).

These effects were partially offset by an increase in the Brazilian diesel-moved light vehicle fleet (vans, pick-ups and SUVs).

- Gasoline (an 11% decrease):
- i) an increase in the anhydrous ethanol content requirement for Type C gasoline (from 25% to 27%);
  - ii) a higher share of gasoline sales from other market players;
  - iii) a higher demand of hydrous ethanol in flex vehicles; and
  - iv) a decrease in the automotive gasoline-moved fleet.
- Naphtha (an 18% decrease): due to a lower demand from domestic customers, mainly Braskem;
- Fuel oil (a 13% decrease): due to lower demand from thermoelectric and industrial sectors in several Brazilian states; and
- Natural Gas (a 3% decrease): lower demand from electric sector.

#### Sales Volumes - (Mbbl/day)

	2015	2014	2015 x 2014 (%)
Diesel	923	1,001	(8)
Gasoline	553	620	(11)
Fuel oil	104	119	(13)
Naphtha	133	163	(18)
LPG	232	235	(1)
Jet fuel	110	110	-
Others	179	210	(15)
Total oil products	2,234	2,458	(9)
Ethanol, nitrogen fertilizers, renewables and other products	123	99	24
Natural gas	432	446	(3)
Total domestic market	2,789	3,003	(7)
Exports	510	393	30
International sales	546	571	(4)
Total international market	1,056	964	10
Total	3,845	3,967	(3)

# **Impairment**

2015 Petrobras' business context, as a result of a decrease in expected future operating revenues due to the decline of oil prices in the international market, the revision of the reservoir geological Papa-Terra field and the increase of the discount rate as a result of higher risk premium for Brazil, for the loss of investment grade (investment grade), spurred a review of the future prospects of the company, with a reduction in the pace of the Company's capital expenditures.

As a result, the Company reported impairment charges of R\$ 47,676 million, mainly related to the following assets:

- Producing properties in Brazil (R\$ 33,722 million), related primarily to fields
  Papa-Terra, Centro Sul group, Uruguá group, Espadarte, Linguado, CVIT –
  Espírito Santo group, Piranema Lapa, Bicudo, Frade, Badejo, Pampo and Trilha.
  These impairment losses are mainly due to the impact of the decline in
  international crude oil prices on the Company's price assumptions, the use of a
  higher discount rate, as well as the geological revision of Papa-Terra reservoir;
- Comperj (R\$ 5,281 million), mainly attributable to the use of a higher discount rate and the delay in expected future cash inflows resulting from postponing construction;
- Producing properties in Abroad (R\$ 2,466 million), mainly in producing properties located in the United States and Bolivia, attributable to the decline in international crude oil prices;

- Oil and gas production and drilling equipment in Brazil (R\$ 1,993 million), mainly related to the planned idle capacity of two drilling rigs in the future and the use of a higher discount rate; and
- Fertilizer Plant UFN III (R\$ 1,955) mainly related to the use of a higher discount rate and the delay in expected future cash inflows resulting from postponing the project.

# The "Lava Jato (Car Wash) Operation" and its effects on the Company

In the third quarter of 2014, the Company wrote off R\$ 6,194 million of capitalized costs representing amounts that Petrobras overpaid for the acquisition of property, plant and equipment in prior years, according to the information obtained about the "Lava Jato" operation.

The Company has continuously monitored the investigations for additional information and to assess any potential impact on the adjustments made. No additional information has been identified that impacted the adopted calculation methodology or the recorded adjustment in 2014 for the preparation of the financial statements for the year ended December 31, 2015. Petrobras will continue to monitor the results of the investigations and the availability of other information concerning the payment scheme. If information becomes available that indicates with sufficient precision that the estimate described above should be adjusted, Petrobras will evaluate whether the adjustment is material and, if so, recognize it.

Petrobras does not believe that new information from investigations of "Lava Jato" operation by the Brazilian authorities, the independent internal investigation conducted by law firms or new internal committees of investigation that come to be established (or revisions of internal commissions already completed) may impact or change in a relevant way such methodology.

For a more detailed description, see Note 3 of the Company's audited consolidated financial statements of the period ended December 31, 2015

#### **Consolidated Results**

Gross profit increased by 23% (R\$ 18,139 million) due to higher decrease of costs compared to sales revenues reduction.

- Sales revenues of R\$ 321,638 million, 5% lower (R\$ 15,622 million), resulting from:
  - Decreased domestic demand for oil products (9%), reflecting lower economic activity in Brazil;
  - · Lower crude oil and oil product export prices;
  - Decreased domestic prices of naphtha, jet fuel and fuel oil;
  - Higher diesel and gasoline prices, following prices increases in November 2014 and September 2015; and
  - Higher crude oil export volumes (55%) attributable to an increase in domestic crude oil production (5%) and to a decrease in feedstock processed by our domestic refineries (6%).
- Cost of sales of R\$ 223,062 million in 2015, 13% lower (R\$ 33,761 million), due to:
  - Lower crude oil and oil product import unit costs, as well as lower production taxes;
  - Decreased domestic demand for oil products that generated lower share of crude oil imports on feedstock processing and a lower share of oil product imports in the sales mix; and
  - Higher depreciation expenses.

Loss before finance income (expense), share of earnings in equity-accounted investments, profit sharing and income taxes was R\$ 12,391 million in 2015, a 42% decrease (R\$ 8,931 million) compared to an operating loss of R\$ 21,322 million in 2014, due to:

- Higher gross profit (R\$ 18,139 million);
- Higher tax expenses attributable to the Company's decision to benefit from the Tax Recoverable Program (Programa de Recuperação Fiscal – REFIS) and from the State Tax Amnesty Program (R\$ 7,437 million);
- Higher legal proceedings expenses, mainly related to tax and labor claims (R\$ 5,103 million);

- Higher impairment of assets (R\$ 3,040 million); and
- Higher pension and medical benefits expenses in 2015 attributable to an increase in the Company's net actuarial liability in 2014, as a result of a decrease in real interest rates, following the Company's valuation review of its pension and medical benefits (R\$ 1,352 million).

# Net finance expense was R\$ 28,041 million in 2015, R\$ 24,141 million higher when compared to 2014, resulting from:

- Higher interest expenses (R\$ 12,290 million) attributable to:
  - i) an increase in the net debt (R\$ 7,118 million);
  - ii) a decrease in the level of capitalized borrowing costs due to a lower balance of assets under construction (R\$ 2,590 million), reflecting the relevant projects concluded during 2014 and the write-offs and impairment of assets recognized in December 2014; and
  - iii) interest expenses related to tax expenses arised from the adhesion to REFIS of *Imposto sobre Operações Financeiras IOF* (R\$ 1,410 million) and withholding income tax (R\$ 1,074 million);
- Foreign exchange losses of R\$ 9,240 million caused by the impact of a 47.0% depreciation of the Brazilian Real against the U.S. dollar on the Company's net debt (compared to a 13.4% depreciation in 2014), partially offset by the application of cash flow hedge accounting; and
- Foreign exchange losses of R\$ 2,100 million caused by the impact of a 31.7% depreciation of the Brazilian Real against the Euro on the Company's net debt (compared to a 0.02% depreciation in 2014).

# **Net income by Business Segment**

Petrobras is an integrated energy company and most of the crude oil and natural gas production from the Exploration & Production segment is transferred to other business segments of the Company. Our results by business segment include transactions carried out with third parties, transactions between companies of Petrobras's Group and transfers between Petrobras's business segments that are calculated using internal prices defined through methodologies based on market parameters.

Due to international department extinction, the international business management was transferred to the other segments to which the underlying activities correspond preserving the specificity of each business which the Company operates.

For comparison purposes, the consolidated results for the year 2014 are presented herein based on the current business model.

	RŞ million		
	2015	2014	2015 x 2014 (%)
Exploration & Production	(12,963)	32,008	(140)
Refining, Transportation and Marketing	18,034	(39,836)	(145)
Gas & Power	423	(785)	(154)
Distribution	(798)	1,339	(160)
Biofuel	(966)	(298)	224

# **Exploration & Production**

The net loss is attributable to lower crude oil sales/transfer prices and to the impairment of production fields in Brazil and abroad, due to the review of price assumptions generated by decreased projections of international crude oil prices, which decreased crude oil and gas reservoirs and cash flow projects, as well as higher discount rate and geological review of Papa-Terra reservoir.

These effects were partially offset by higher crude oil volume transferred due to increased production.

# Refining, transportation and marketing

Earnings in 2015 were attributable to:

- A decrease in crude oil purchase/transfer costs due to lower crude oil international prices;
- Lower shares of crude oil imports on feedstock processing and lower share of oil product imports in our sales mix; and
- Diesel and gasoline price increases in November 2014 and in September 2015.

The decreased oil product domestic demand, as a result of lower economic activity in Brazil and the impairment on COMPERJ, partially offset these effects.

#### Gas & Power

Earnings in 2015 was generated by: i) lower natural gas import acquisition costs (LNG and Bolivian gas); ii) an increase in natural gas sales margins, resulting from higher sales average prices; and iii) lower impairment of trade receivables from companies in the isolated electricity sector.

These effects were partially offset by: i) decreased electricity sales margins (due to the 57% decrease of electricity prices in the spot market); ii) impairment losses recognized for Nitrogen Fertilizers Plants III and V (Unidade de Fertilizantes Nitrogenados – UFNs III and V); and iii) tax expenses related to deferred VAT tax on natural gas purchase and reversal of VAT tax credit on natural gas transportations.

#### **Distribution**

The net loss of 2015 was due to lower domestic sales volumes (7%), increased losses with trade receivables from companies in the isolated electricity sector and impairment of assets.

#### **Biofuel**

Biofuel losses were higher in 2015, when compared to 2014, due to further impairment charges recognized for ethanol and biodiesel investees and to impairment charges in biodiesel plants, as a result of the worsening in market conditions and of higher discount rate due to higher oil industry risk premium and Brazilian risk.

#### **Liquidity and Capital Resources**

Cash Flow		llion
	2015	2014
Adjusted cash and cash equivalents at the beginning of period <sup>8</sup>	68,946	46,257
Government securities at the beginning of period	(24,707)	(9,085)
Cash and cash equivalents at the beginning of period	44,239	37,172
Net cash provided by operating activities	86,407	62,241
Net cash used in investing activities	(42,218)	(85,208)
Investments in operating segments	(70,781)	(81,795)
Sale of assets (disinvestments)	2,592	9,399
Investments in marketable securities	25,971	(12,812)
(=) Net cash flow	44,189	(22,967)
Net financings	(14,434)	35,134
Proceeds from long-term financing	56,158	72,871
Repayments	(70,592)	(37,737)
Dividends paid to shareholders	-	(8,735)
Non-controlling interest	243	(250)
Effect of exchange rate changes on cash and cash equivalents	23,608	3,885
Cash and cash equivalents at the end of period	97,845	44,239
Government securities at the end of period	3,042	24,707
Adjusted cash and cash equivalents at the end of period <sup>8</sup>	100,887	68,946

[8] Our adjusted cash and cash equivalents include government bonds with maturities of more than 90 days. This measure is not computed in accordance with International Financial Reporting Standards – IFRS and should not be considered in isolation or as a substitute for cash and cash equivalents computed in accordance with IFRS. It may not be comparable to adjusted cash and cash equivalents of other companies, however management believes that it is an appropriate supplemental measure that helps investors assess our liquidity and assists management in targeting leverage improvements.

As of December 31, 2015, the balance of cash and cash equivalents increased by 121% when compared to the balance as of December 31, 2014 and the balance of

adjusted cash and cash equivalents for the same period increased by 46%. Our principal uses of funds in 2015 were for repayment of long-term financing (and interest payments) and for capital expenditures. We met these requirements with cash provided by operating activities of R\$ 86,407 million and with proceeds from long-term financing of R\$ 56,158 million. The balance of adjusted cash and cash equivalents was positively impacted in 2015 by foreign exchange rate variation applied on our foreign financial investments.

Net cash provided by operating activities increased by 39% in 2015 when compared to 2014, reflecting higher diesel and gasoline prices, increased crude oil export volumes, lower production taxes and lower crude oil and oil product imports costs, along with a higher share of domestic crude oil on feedstock processing.

Capital expenditures and investments in operating segments were 13% lower in 2015 compared to 2014, mainly due to a 55% decrease in capital expenditures in our Refining, Transportation and Marketing (RTM) segment.

The amount of R\$ 25,971 million of divestments in marketable securities relates to proceeds from the maturity of financial investments with maturities longer than three months, most of which were invested in other financial investments, with maturities of less than three months (classified as cash and cash equivalents).

Free cash flow was positive in R\$ 15,626 million in 2015, compared to a negative free cash flow of R\$ 19,554 million in 2014.

The Company raised long-term financing of R\$ 56,158 million in 2015, mainly through a US\$ 5 billion funding agreement with the Chinese Development Bank (CDB), US\$ 2 billion raised through the issuance of Global Notes maturing in 2115, and also through bilateral credit agreements with Brazilian banks. The average maturity of outstanding debt was 7.14 years in 2015 and 6.10 years in 2014.

Repayments of interest and principal were R\$ 70,592 million in 2015, 87% higher than in 2014 and the nominal cash flow (undiscounted), including face value and interest payments, by maturity, is set out as follows:

		R\$ million						
		Consolidated						
Maturity	2016	2017	2018	2019	2020	2021 and thereafter	12.31.2015	12.31.2014
Principal	50,764	44,709	63,124	88,529	60,325	189,838	497,289	354,226
Interest	25,854	23,482	21,809	18,055	13,293	128,038	230,531	123,105
Total	76,618	68,191	84,933	106,584	73,618	317,876	727,820	477,331

# **Debt**

The consolidated debts, referring to loans and financing in the country and abroad, reached R\$ 492,849 million, as shown below:

#### **Consolidated debt**

R\$	mi	Ш	in	'n
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	12.31.2015	12.31.2014	Δ%
Current debt <sup>9</sup>	57,382	31,565	82
Non-current debt <sup>10</sup>	435,467	319,470	36
Total	492,849	351,035	40
Cash and cash equivalents	97,845	44,239	121
Government securities (maturity of more than 90 days)	3,042	24,707	(88)
Adjusted cash and cash equivalents	100,887	68,946	46
Net debt	391,962	282,089	39
Net debt/(net debt+shareholders' equity)	60%	48%	12
Total net liabilities <sup>11</sup>	799,248	724,429	10
(Net third parties capital / total net liabilities)	68%	57%	11
Net debt/Adjusted EBITDA ratio	5.31	4.77	11

#### **US\$** million

	12.31.2015	12.31.2014	Δ%
Current debt	14,695	11,884	24
Non-current debt	111,521	120,274	(7)
Total	126,216	132,158	(4)
Net debt	100,379	106,201	

[9] Includes Capital lease obligations (R\$ 82 million on December 31, 2015 and R\$ 42 million on December 31, 2014).

[10] Includes Capital lease obligations (R\$154 million on December 31, 2015 and R\$ 148 million on December 31, 2014).

Consolidated net debt in Reais increased by 39% when compared to December 31, 2014 as a result of exchange depreciation of 47.0%, being that 74% of the debt is indexed to the dollar. This higher debt resulted in an increase of R\$ 7.118 million in financial expense.

<sup>[11]</sup> Total liabilities net of adjusted cash and cash equivalents

# **Contractual Obligations**

The following table summarizes our contractual obligations and commitments pending at 12.31.2015:

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	Payments due by period			
	Total	2016	2017-2020	2021 onwards
Items of the financial position statement: 12				
Debt obligations	492,648	57,334	256,233	179,081
With transfer of benefits, risks and controls of assets	202	15	38	150
Decommissioning off areas	35,728	2,393	8,236	25,099
Total of items of the financial position statement	528,578	59,742	264,506	204,330
Other contractual commitments				_
Natural gas ship or pay	11,549	2,566	7,973	1,010
Hired services	265,709	87,950	106,989	70,770
Purchase commitment of natural gas	31,042	4,213	20,775	6,054
Without transfer of benefits, risks and controls of assets	387,332	45,631	121,398	220,303
Purchase commitments	85,718	41,277	37,763	6,678
Total other commitments	781,350	181,637	294,898	304,815
Total	1,309,928	241,379	559,404	509,145

[12] Does not include employees' postretirement benefit plan obligations. For a more detailed, see Note 22 of the Company´s audited consolidated financial statements of the period ended December 31, 2015

# Assets and Liabilities subject to Exchange Variation

The Company has assets and liabilities subject to foreign exchange rate variation, for which the main exposure is to the Real relative to the U.S. dollar and the U.S. dollar relative to the Euro. Beginning in mid-May 2013, the Company extended the use of the hedge accounting practice to hedge highly probable future exports.

On December 31, 2015, were designated as hedging instruments, the amount of US\$ 61,520 million (R\$ 240,222), as shown in table below:

#### Changes in the reference value (principal and interest)

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Amounts designated as of December 31, 2014	50,858	135,088
New hedging instruments designated	23,336	81,137
Exports affecting profit or loss	(5,401)	(17,704)
Principal repayments / amortization	(7,273)	(27,038)
Foreign exchange variation		68,739
Amounts designated as of December 31, 2015	61,520	240,222

The balances of assets and liabilities in foreign currency of controlling companies outside of Brazil are not included on the exposure below when transacted in a currency equivalent to their respective functional currencies.

On December 31, 2015, the Company had a net liability position regarding foreign exchange exposure.

Assets	
Liabilities	
Hedge Accounting	
Total	

RŞ million			
12.31.2015	12.31.2014		
67,040	30,600		
(350,695)	(222,279)		
240,222	135,088		
(43,433)	(56,591)		

# **Contingent liabilities**

Petrobras carries out estimation as to the likelihood of resource output due to proceedings, based on the opinions of legal advisors and Management judgements, which resulted in the recognition of expense of R\$ 5,583 million during the year 2015 (R\$ 480 million in 2014).

The main proceedings recognized with expectation of probable loss were:

- Tax claim related to Brazilian federal tax credits applied that were disallowed;
- Tax claim related to alleged failure to pay VAT (ICMS) tax on jet fuel sales;
- Labor claims, in particular 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 and lawsuits concerning remunerated weekly rest; and
- Civil claim related to failure to pay royalties on oil shale extraction.

# **Tax Expenses**

As a result of the assessment of the situation of continuous tax processes, the Company has adopted the following measures in fiscal year 2015: i)Petrobras paid to settle a definitive ruling at the administrative stage with respect to a tax deficiency notice issued by the Brazilian Federal Tax Authorities. The notice is related to the tax on financial operations (*Imposto sobre operações financeiras - IOF*) applied to intercompany loans made by Petrobras to foreign subsidiaries in 2008; ii) opted to join the Tax amnesty and refinancing program – *Programa de Recuperação Fiscal* (*REFIS*), including debts of IOF in mutual transactions of other exercises, among other taxes; and iii) the Company elected to settle taxes in cash (VAT tax – ICMS) through an amnesty settlement programs administered by the states, mainly in Rio

de Janeiro, Espírito Santo and Bahia. These accessions will result in the recognition of tax expenses of R\$ 6,136 million and R\$ 2,710 million in financial expenses.

# **GLOSSARY**

**Boe/d:** barrels of oil equivalent per day.

**Brent:** oil used as a major reference in the international oil market. Dated Brent contracts or derivatives in the financial market concern multiple contracts of purchase and sale of petroleum in the world.

**Combined cycle**: gas and steam turbines combined in a single plant, both generating electricity from burning the same fuel. For this, the existing heat in the exhaust gases of the gas turbine is recovered to produce steam for powering the steam turbine.

**Completion**: phase of oil exploration in which the equipment required to bring, in a controllable manner, the desired fluid to surface and enable the installation of well monitoring equipment is installed in the well.

**Condensate:** mixture of gaseous hydrocarbons in the reservoir that becomes liquid at the surface, under normal atmospheric conditions.

Dark derivatives high viscosity petroleum derivatives such as fuel oil, or asphalt.

**Diesel S-10:** fuel with 10 ppm (Parts per million), Euro V type (high quality and very low sulfur content) and following international specifications.

**Discovery Assessment Plan (PAD):** the document containing the set of operations to be performed in an area where a discovery occurred to assess its economic viability. A PAD must be submitted by the franchisee for approval by the Brazilian Oil Agency.

**FPSO:** ship with capacity to produce, store and dispose of oil and/or natural gas for shuttle tankers.

**Green Diesel:** Renewable Diesel which can be mixed in any ratio with petroleum product without requiring changes in the engines. The production process for green diesel of Petrobras Biofuel in partnership with Galp generates a clean energy fuel similar to oil-derivative diesel.

**Impairment**: a reduction in a value of an asset.

**Light products:** liquid petroleum and low viscosity derivatives such as gasoline, kerosene and diesel.

**Middle distillates:** made from petroleum such as diesel, kerosene, naphtha and jet fuel products.

**Ramp up**: stage of gradual growth of a platform's oil and gas production until the system reaches its production potential. This stage usually begins after the first well is connected to the system.

**Reserve/production ratio:** measures the longevity of current proven reserves considering the constant level of production.

**Reserve replacement ratio:** measures the replacement of production by reserve additions, extensions, revisions of estimates or improvement of recovery.

**Ring fence**: exploration area adjacent to a field where there have been previous discoveries.

**Second-generation Ethanol (2G):** ethanol of agricultural residues, obtained by fermentation of the sugars contained in the cellulosic structure of the sugarcane bagasse. The final product is chemically identical to first-generation (corn) or advanced (cane) ethanol. The spread of this technology is to increase production of ethanol in the same hectare of land, with a large reduction of CO <sub>2</sub> compared to first generation biofuels.

**Shale oil/gas**: includes without distinction all source rocks (silty shales, siliceous shales, siltstones and clay loam) that function as oil source, reservoir and seal. Its production requires the use of hydraulic fracturing.

**Simple cycle**: turbine operating solely.

**Smart completion**: set of operations to case and equip the well for water or gas production or injection, using different well monitoring sensors and valves with remote operations to control the flow produced or injected.

**Social Fuel Seal**: granted by the Ministry of Agrarian Development for biodiesel producers that use raw material from family farming.

**Tight Oil:** oil produced from shale or other rock with very low permeability, using methods similar to the production of shale gas, such as horizontal drilling and hydraulic fracturing techniques. The production of tight oil is considered a non-conventional type of oil production.

**Type C5 + gasoline:** extracted from natural gas, may be mixed with gasoline for specification, or be reprocessed or added to the oil stream.

**Type 1A fuel oil (FO 1)**: used in industry to heat ovens and boilers or in internal combustion engines to generate heat.

**WTI:** the acronym WTI means West Texas Intermediate and is used to designate the current that brings together conventional onshore light and low sulfur content oil production of the PADD3 region in the U.S.A. The WTI is one of the main references for contracts for the sale of oil in the Atlantic Basin and is treated as a global benchmark for the oil market.