ANP - National Agency of Petroleum, Natural Gas and Biofuels

Fuel Production and Supply Opportunities in Brazil

November 2017



Fuel Production and Supply Opportunities in Brazil

November 2017

NATIONAL AGENCY OF PETROLEUM, NATURAL GAS AND BIOFUELS

DIRECTOR GENERAL

Décio Oddone

DIRECTORS

Aurélio Amaral Felipe Kury José Cesário Cecchi Dirceu Amorelli

MAIN OFFICE

Av. Rio Branco, n.65 - 12º ao 22º andar Centro - CEP 20.090-004 - Rio de Janeiro - RJ - Brasil

www.anp.gov.br



Summary

atroduction ²
. Overview of the downstream sector in Brazil
Opportunities
2.1 Infrastructure for the domestic supply of fuels and oil products 17
2.2 Opportunities in the production of oil products and biofuels 23
2.3 Opportunities in the infrastructure of imports, movement and supply logistics of fuels and oil products
Conclusions





Introduction

Brazil is one of the largest fuel users in the world and, in the last decade, the pace of growth in fuels consumption was higher than its GDP (Gross Domestic Product) evolution. To fulfill this demand, the country has an important infrastructure in refining, imports, production, specification, movement and supply to population of oil products, natural gas and biofuels.

Aiming to promote the expansion of domestic supply and enhance the quality of products delivered to consumers, considering the ongoing Petrobras divestment, many governmental and regulatory initiatives were launched recently, in order to foster free competition, grant access and increase private investment and the number of actors participating in this sector.

By presenting the existing infrastructure in Brazil, and the numbers that sustain the need for its expansion, this publication seeks to highlight the possibilities that unfold in this new political and economic environment¹.

This booklet will not cover the specific opportunities for natural gas, a subject that has been addressed in the government program Gás para Crescer ("Gas to Grow"), and which, due to its particularities, will be the object of a specific publication. The same goes for biomethane.

1. Overview of the downstream sector in Brazil

With a population estimated at 206 million inhabitants² and an area of 8.5 million km², Brazil ranked in 2016 as the seventh largest consumer of fuels and oil products in the world^{3,4}, reaching 3 million barrels per day. Regionally, the country accounted for 43.3% of the total consumed in South and Central America (Figure 1).

¹ This document was prepared by ANP based on reliable information, but which, by its nature, is inaccurate and incomplete. There is no guarantee of realization for the estimated values. Therefore, the data, information, opinions, estimates and projections presented in this document are subject to change without prior notice.

² Source: Brazilian Institute of Geography and Statistics (IBGE)

³ Source: BP Statistical Review of World Energy 2017. Includes domestic consumption of oil products, exports of aircraft fuels, bunkers for ships, refineries' consumption and loss, biofuels, and coal and gas derivatives.

⁴ Behind the USA, China, India, Russia and Saudi Arabia.





Figure 1- Consumption of fuels and oil products

Source: ANP, from BP data (2017)

Since 1997, with the enactment of Law No. 9,478, the national policies for the energy sector as a whole and for the oil and gas sector in particular have as one of its objectives to promote free competition⁵. In addition, after a transition period, from 2002 the freedom of prices regimen became effective in Brazil in all segments of the fuels and oil products market: production, distribution and sale. This means that there is neither pricing imposition nor fixing of maximum and minimum values, or any requirement of prior official authorization for readjustments.

The country still ranks as the world's third largest fuel consumer in the transportation sector (Figure 2). Domestic supply is composed of domestic production and the net import of oil products. In 2016, net imports of oil products reached 442,000 barrels/day, considering gasoline, diesel oil, aviation kerosene, LPG and naphtha.

⁵ Article 1, Section IX of Law No. 9,478



Figure 2 – Fuels* consumption in the transportation sector in selected countries (thousand tons, 2014)



Source: IEA Statistics. *Includes diesel oil, gasoline, biofuels and aviation fuels.

	Million m ³	Thousand bd		Million t	Thousand bd
Diesel A	8.0	139	LPG	2.3	72
Gasoline A	2.9	51			
Aviation Kerosene	1.3	22			
Naphtha	9.2	158			

Table 1: Net imports of oil products in 2016

Source: ANP

In 2016, there were 125,799 active agents in the sector of fuels and oil products supply. These agents can be divided into: (a) suppliers – including producers of oil products, biofuels and lubricants, and importers and exporters of oil and oil products; (b) distributors of liquid fuels, LPG, solvents, asphalts and aviation fuels; (c) dealers, retailers of liquid fuels, LPG, aviation fuels, transporter-dealer-retailer; (d) points of supply for consumers and industrial consumers of solvents. The main agents are listed in Figure 3.





Suppliers
18 oil refineries
383 ethanol plants
379 importers and exporters of oil and oil products
49 biodiesel producers
Distributors
164 distributors of liquid fuels
20 distributors of LPG
Retailers
41,689 retailers of liquid fuels
65,689 retailers of LPG

Source: ANP

Domestic sales of fuels and oil products have been very buoyant in recent years, because of the evolution of economic indicators, such as increased household income and consumption, and expansion of the vehicle fleet (Figure 4). The evolution of the regulatory framework also had a key role in this process, by ensuring legal certainty to the exercise of business activity. Sales of Gasoline C increased, on average, 6.5% per year between 2007 and 2016, while the annual percentage change in domestic consumption of diesel oil was of 3% over the same period (figures 5 and 6). It is important to note that in the last 10 years the variation in fuel consumption was far superior to GDP growth in the period -49.4%, compared to 21.8% growth in GDP - (Figure 7).



Figure 4 - Total vehicle fleet in Brazil in 2007 and 2016 (million)



Source: Denatran

* Others: includes trucks, buses, tractors, trailers, etc.





Source: ANP





Figure 6 - Domestic sales of diesel oil, from 2007 to 2016 (thousand barrels/day)

Source: ANP





Source: ANP

The Brazilian energy mix is notable for the strong presence of renewable sources. Brazil is the second largest producer of biofuels for the transportation sector⁶.

⁶ Brazil and the USA were responsible for 70% of the world production of biofuels in 2016. Source: http://www.ren21.net/wp-content/uploads/2017/06/17-8399_GSR_2017_Full_Report_0621_Opt.pdf



Biodiesel has been compulsorily mixed with diesel fuel since 2008. In 2017, the percentage of mandatory blending of biodiesel in the diesel fuel sold in the country increased to 8%. CNPE (the National Energetic Policy Council) approved the increase to 10% as of March 1, 2018⁷.

As for ethanol (anhydrous and hydrous), it has been part of the vehicular fuel mix since the 1970s and currently represents 27% of the gasoline blend sold to consumers (gasoline C), in addition to being sold as hydrous ethanol to meet the demand of flexible-fuel vehicles⁸. In 2016, 88% of the new licensed vehicles had this technology⁹.



Figure 8 - Biodiesel production in Brazil in 2008 and 2016 (thousand barrels/day)

Source: ANP

Figure 9 - Ethanol production in Brazil in 2007 and 2016 (thousand barrels/day)



Source: ANP

7 At an extraordinary meeting held in November 9, 2017.

8 Flexible-fuel vehicles have been sold in Brazil since 2003. This technology allows the use of ethanol, gasoline or any percentage of mixture between these two fuels.

9 Source: Anfavea. http://www.anfavea.com.br/estatisticas.html



Naphtha is an oil product used in Brazil as an input for refineries to produce gasoline and as a raw material for the petrochemical industry. In the last decade, there was a reduction in the total consumption of this derivative, mainly due to the lower demand by the petrochemical sector (Figure 10).



Figure 10 - Evolution of the final consumption of naphtha, from 2007 to 2016 (thousand barrels/day)

Source: Brazilian Energy Balance (BEN), EPE (Brazilian Energy Research Company), 2017

The projection of EPE's Ten-Year Energy Expansion Plan (PDE) 2026 estimates a 2.6% increase in the final consumption of naphtha between 2016 and 2026, due to the reuse of existing petrochemical installed capacity, since there are no prospects for the construction of new petrochemical units. As for net imports, these are expected to reduce from 153,000 b/d in 2016 to 112,800 b/d at the end of the projected period, due to the startup of the second RNEST train, which increases domestic production of naphtha.



For the next 10 years, a cumulative growth of 19% is expected to take place in the demand for major oil products and biofuels (Figure 11). This estimated increase of 461,000 barrels per day in consumption can be met both by the expansion of the infrastructure for imports of oil products and by new investments that may increase the domestic production of oil products and biofuels. In addition, the infrastructure and the internal supply logistics should be able to meet the increase in local demand.



Figure 11 - Demand for major oil products and biofuels in 2016 and projection for 2026

Sources: 2016: ANP monthly sales; 2026: Ten-Year Energy Plan 2026 (PDE)/EPE, public consultation version, accessed in September 13, 2017. Projection for gasoline A demand extracted from Graph 66; for diesel A, Graph 68; for ethanol, Graph 81 and for LPG, fuel oil and kerosene, Table 44; estimates for final consumption of naphtha provided by EPE by electronic means on December 21, 2017, based on PDE 2026.

Notes:

- 1. Otto Cycle: Sum of Gasoline C and Hydrous Ethanol, measured in gasoline C equivalent;
- 2. Diesel B: Diesel Oil + Biodiesel;
- 3. All: Includes Otto Cycle, Diesel B, LPG, Fuel Oil, naphtha and Kerosene.



2. Opportunities

Several government initiatives have been launched recently, seeking to encourage private investment in the sector of fuel production and supply. All of them were developed from intense interaction and exchange of information between economic agents, society and government, jointly identifying obstacles, needs and opportunities to expand the infrastructure of the sector.



The Combustível Brasil ("Fuel Brazil") initiative, launched at the beginning of 2017, aims to propose actions and measures to stimulate free competition and the attraction of investments for the fuel supply sector, after the repositioning of Petrobras, in order to meet the need to increase domestic supply and to supply the Brazilian consumer under appropriate conditions of price and quality.



On another front, RenovaBio seeks to encourage new investments to expand biofuels production in Brazil, support the process of reducing greenhouse gas emissions and increase the share of bioenergy in the energy mix by 2030, according to the goals set at COP 21, in Paris. The actions of the program will promote investment opportunities in the production of ethanol and biodiesel, as well as other renewables like biokerosene and biomethane.

Regarding these initiatives, the National Energetic Policy Council (CNPE) published the following resolutions.



CNPE RESOLUTION No. 14, OF JUNE 8, 2017

Main guidelines that define the role of biofuels in the energy mix for investment attraction:

- ensuring predictability to allow competitive participation of the various biofuels in the Brazilian energy mix, with an emphasis on security of supply;
- recognize the ability of biofuels to promote the "decarbonisation" of the fuel market;
- define instruments that contribute to attract investments to expand the production of biofuels and/or that induce the contracting of production in medium and long-term agreements;
- develop mechanisms for the appropriate pricing of biofuels, market-based, which enables short, medium and long-term contracts between agents;
- create mechanisms to boost Brazil's potential for the commercial production of aviation biokerosene and the competitive production of cellulosic ethanol, as well as to accelerate the rational use of biogas and biomethane;
- create instruments to stimulate the commercial insertion of new biofuels, prioritizing the life-cycle analysis and its relations between efficiency and emissions.

CNPE RESOLUTION No. 15, OF JUNE 8, 2017

Main strategic guidelines to develop the market of fuels, other oil products and biofuels to attract investments:

- increase and diversification of the domestic supply of fuels and oil products;
- expansion of the production of oil products in the country;
- expansion of the infrastructure to guarantee the national supply of fuels, other oil products and biofuels, stimulating more efficient modes of transportation;
- development of a competitive market in the various links of the chain, with fuels, other oil products and biofuels available at market prices;
- promotion of free competition, respect for contracts and protection of consumers' interests;



Under the regulatory framework, the ANP Strategic Map 2017-2020 aims to encourage investment in production, distribution and sale of oil products and biofuels. Its scope includes promoting regulatory actions that stimulate diversity in the supply of oil products and biofuels to guarantee domestic supply and the quality of products delivered to consumers. In this regard, the Agency is running the ANP Regulatory Agenda 2017-2018, which presents several "Regulatory Actions" distributed in 14 thematic platforms¹⁰.

In addition, recent changes in Petrobras' strategy¹¹ have led the company to promote a market pricing policy, the maximization of margins in the value chain and the expansion of partnerships and divestitures, allowing the entry of other actors in the midstream and downstream.

As an example, the company's pricing policy for the diesel oil and gasoline sold at its refineries increased the frequency of price adjustments to allow greater alignment of domestic prices to the international market¹². Thus, in 2016 there was a significant increase in diesel oil and gasoline imports from private companies, due to the difference between domestic and international prices of these products. There were new import agents entering the market and an increase in the participation of other suppliers over the total volume imported in 2016. (Figures 12 and 13).

¹⁰ The ANP Regulatory Agenda is available at: http://www.anp.gov.br/wwwanp/acoes-e-programas/agenda-regulatoria

¹¹ In the second half of 2016, Petrobras, the main owner of assets in the Brazilian oil products supply business, announced its business plan for refining, transportation, logistics, distribution and marketing of fuels and oil products in the period from 2017 to 2021. The following stand out as the company's strategies: the promotion of market pricing and margin maximization in the value chain; maximizing value generation and the adequacy of its participation in the natural gas chain; and reducing the risk of action through the expansion of partnerships and divestitures, allowing the entry of other actors in the midstream and downstream. Source: Strategic Plan and Business Plan 2017-2021, Petrobras. Available at: http://www.petrobras. com.br/pt/quem-somos/estrategia/plano-de-negocios-e-gestao/

¹² The previous system displayed a lag in transferring changes in international prices to domestic prices. Source: Petrobras. Material fact - Review of diesel and gasoline pricing policy, June 30, 2017. Available at: http://www.petrobras.com.br/fatos-e-dados/revisao-da-politica-de-precos-de-diesel-e-gasolina.htm >. Accessed on: June 30, 2017.







Source: ANP





Source: ANP



The growing volume of imports and active agents also contributed to increase competition in the distribution segment. The greater diversity of supply allowed distributors to adopt different purchasing strategies, which increased the competitiveness of those who took advantage of the new market configuration.

2.1 Infrastructure for the domestic supply of fuels and oil products

Domestic production of biofuels, oil products and natural gas occurs through hundreds of authorized producers, such as refineries, natural gas processing units (UPGNs), petrochemical raw material plants (CPQs), fuel developers, ethanol distilleries/plants and biodiesel plants (figures 14 to 17).



Figure 14 – Oil and natural gas fuels production units

Source: ANP Statistical Yearbook 2017







Source: ANP



Figure 16 – Ethanol production units in the North and Northeast

Source: ANP







Source: ANP Statistical Yearbook 2017

From these producers' facilities, the fuels are transferred to waterway and land terminals and to authorized distributors' bases, through various modes of transport: pipeline, waterway cabotage, rail and road. Figure 18 shows the current infrastructure for production and movement of oil and oil products.



Figure 18 – infrastructure for refining and movement of oil and oil products



Source: ANP Statistical Yearbook 2017

The primary infrastructure for transportation of liquid fuels, consisting of terminals and pipelines, is responsible for the storage and movement of oil products and biofuels, imported or produced in the country.

The set of transport pipelines consists of about 5,000 km of different pipelines operated by Transpetro, supplemented by the 350-kilometer ethanol pipeline operated by Logum.

The largest pipeline extension is concentrated in the South and Southeast: 63% of the pipelines in Brazil are located in these regions, where most of the processing facilities are also located.







Source: SCM/ANP

To illustrate the logistic importance of pipelines, Figure 20 compares¹³ the total volume of oil products sold by distributors in the country and the total volume of products moved in Transpetro's pipelines with a length of more than 15 km.





Source: ANP, with Transpetro data

¹³ The comparison is merely illustrative, because the sales data include imported products and consider biofuel sales, which do not use on a large scale the pipeline mode, and they do not take into account whether the products moved in the pipelines are the same sold by distributors.



It is possible to observe that the growth in fuel sales over the last years was not followed by an increase in the volume transported by long pipelines, which remained relatively stable since 2000, considering that there was little investment in this type of infrastructure in the given period. Therefore, the share of pipeline transportation in relation to the total sales of oil products tended to fall during this period.

With respect to terminals, currently there are 115 operating facilities, classified as shown in Figure 21.



Figure 21 – Terminals by location type

Most of the fuel tank capacity of these terminals is located on offshore facilities (64%), as shown in Figure 22.





Source: Simp/ANP



In the case of LPG, 76% of the tankage is located in ports, which is equivalent to 363,000 cubic meters of capacity in terminals. However, 98% of this total capacity belongs to Petrobras facilities, operated by Transpetro.

The next sections will describe the investment opportunities in each segment of the fuel production and supply chain.

2.2 Opportunities in the production of oil products and biofuels

Prospects for increased domestic demand bring opportunities for investments in domestic production of fuels. In the segment of oil products and natural gas, there are projects under discussion, such as the 2nd train of the RNEST refinery in Ipojuca/PE (115,000 barrels per day) and the Comperj refinery in Itaboraí/RJ (159,000 barrels/ day), as well as the resumption of the UPGN construction in Comperj (processing of 21 million m³/day of natural gas). In addition to these projects, in regional terms, the greatest prospects for increased demand and the need for investment in the supply of fuels and oil products are located in the North, Northeast and Midwest regions.

Another opportunity arises from the expansion in the production capacity of biofuels – a substitute for fossil fuels consumed in the transport sector. The biodiesel blend already points to the mandatory demand of diesel B10 (blend of diesel oil with biodiesel, in the proportion of 90%/10%, respectively). Ethanol production can also be expanded, either by the construction of new plants/distilleries (or the expansion of existing ones) or through technological improvements in agriculture (productivity and yield for sugar cane) and industry (2^{nd} generation ethanol).

2.3 Opportunities in the infrastructure of imports, movement and supply logistics of fuels and oil products

The recent increase in imports of oil products is limited by the capacity of the existing infrastructure and the lack of investments for its expansion. According to information collected along the Combustível Brasil ("Brazil Fuel") initiative, the fuel tankage in port areas, which currently corresponds to about 5 million cubic meters, is not enough to meet the growing demand. So, there is opportunity for investments in port terminals and terminals that favor the internalization of large volumes of fuel, typically located in areas connected – via pipelines or railway – with ports.

The port infrastructure suited for the transportation of fuels was developed in a period in which the market conditions were quite different from the current one. Petrobras had a monopoly on the right to explore and import oil, and also to produce and import oil products in Brazil.

The current logistical bottleneck in this type of essential facility¹⁴ stems from the lack of investments for expansion not just in storage. There is a need to expand the locations

¹⁴ An essential facility consists of a resource, usually a kind of infrastructure in a given sector, which allows access to a market, but whose duplication is not economically feasible.



that receive larger vessels and modernize the operation of ports, as well as widen the routes for input and output modes, in order to increase productivity¹⁵.

2.3.1 Ports and terminals

Ports can move fuels, basically, in two ways: by importing or exporting, and by cabotage of domestic or foreign product, after nationalization. Figure 23 shows the volume of fuels moved and the percentage of the national total (gasoline, diesel, aviation kerosene, LPG and fuel oil), by port.



Figure 23 - Total fuel received in Brazilian ports in the first half of 2017

Source: ANP - Simp and PCotas Systems

¹⁵ Other factors may contribute to the unavailability of transport capacity in ports to import fuels, namely: (i) fuels compete among themselves and with other products for the use of the port and its facilities; (ii) in ports, not all facilities are required by law to share their resources; (iii) the concentration of the storage infrastructure for some products, and also of cabotage operations, by Transpetro/Petrobras; and (iv) the modality of contracting offered by the port terminal operator (short or long term).



The ports of Suape, Itaqui, Santos and Paranaguá are the ones that, individually, move more products. In addition, when considered together, these four ports have a significant share of the total domestic movement.

Table 2 - Share of the ports of Itaqu	i, Suape, Paranaguá and Santos,
---------------------------------------	---------------------------------

GAS A ¹	DIESEL	QAV	LPG	
65%	69%	57%	89%	100%

Source: ANP – Simp e PCotas Systems Notes: ¹ GAS A – Gasoline A; ² OC – Fuel Oil.

The port of Itaqui is responsible for supplying not only the state of Maranhão, but also part of the state of Pará, and should increase its participation in the Midwest. Due to its location and the fact that it can receive large ships, it stands out in the importation of fuels and it is an important transshipment point for smaller ships, which will supply other states by cabotage.

The port of Suape carries out significant movement of several fuels, but in relative terms, it is more important for the domestic supply of LPG, since it receives the greatest share of imports of this fuel.

The port of Santos has private terminals for the movement of diesel oil, gasoline and aviation fuels. Transpetro has facilities on site for moving LPG and other gases, which are essential for the domestic supply of this fuel.

There was an increase in the import of diesel oil and gasoline through the port of Paranaguá, which now has greater relative importance in the national supply. The port's PDZ (Development and Zoning Plan), from August 2012, points out problems of availability of piers and difficulties in road and rail access.

The main ports that receive the three oil products most relevant for the balance of trade (diesel oil, gasoline and LPG) are shown in Figure 24.





Figure 24 - Main import ports for diesel oil, gasoline and LPG

Source: Aliceweb/MDIC (2017)

Figure 24 shows that the Northeast Region plays an important role in the foreign trade of fuels, since the largest quantities of gasoline and LPG are imported by the ports of São Luis, in Maranhão, and Suape, in Pernambuco. The port of São Luis, for example, leads the imports of gasoline, followed by the port of Suape. This, in addition, is the one through which most of the LPG is imported. Together, these two ports account for 77.8% of the imports of gasoline and 56% of LPG.

The North and Northeast regions offer the greatest opportunities for port investments, as the current infrastructure has high utilization rates. There is a demand for fuel storage facilities, for receiving large-capacity ships with imported product. For example, in Manaus (AM), Santana (AP) and Belém (PA), distributors have performed transshipment of imported fuel from ships to ferries, which carry out transfers to the various waterway terminals in the region (Porto Velho, Santarém, Belém).

The other three relevant national ports in 2016 were those of Santos, Rio de Janeiro and Paranaguá – the latter is currently the main entrance for diesel oil, with a 28.8% share of imports.



The data presented in Figure 24 also reveal a change in the imports profile between 2015 and 2016: firstly, there was a relative loss of importance of the Northeast region in relation to the Mid-South; secondly, there was a shift of diesel oil imports towards the ports of Santos and Paranaguá. This change reflects the dynamics of the domestic market, in which the greater performance of trading companies in the diesel oil and gasoline market led to a diversification in the supply of these fuels and to a greater concentration of operations in the ports of the Mid-South, where there is more availability of private terminals.

An equally relevant factor for analyzing the current scenario, but not specific to fuels, is the possibility of investing in the installation of Private Use Terminals¹⁶ (TUPs) outside the areas of organized ports, which could provide additional capacity to import fuels without being affected by the concession rules of public ports.

2.3.1.1 Multiproduct terminals

Not all tank storage authorized by ANP in ports is dedicated to fuels, since liquid terminals, especially marine, move several products. This is a characteristic of this market, present in various countries.

Thus, fuels, in addition to competing with each other for the same space in tanks, also compete for storage with other liquids of the same class and/or compatibility, which also need to be imported and exported, such as chemicals and petrochemicals.

In Brazil, 61% of waterway terminals move exclusively oil, its products or biofuels, accounting for 77% of the total volume allowed by the ANP for storage. Hence, there is room for specialized logistics operators to expand their areas or settle in the country.

2.3.2 Cabotage

Most liquid bulk are transported by water, by means of cabotage, as shown in Figure 25. According to Antaq¹⁷, the highlight of Brazilian cabotage are fuels and mineral oils (116 million tons or 77.6% of the volume moved by cabotage in 2016).

¹⁶ Since the enactment of the Ports Act (Law No. 12,815, from 2013), 67 private port facilities have been authorized, including new authorizations and extensions of existing terminals, totaling an investment forecast of R\$ 16.2 billion (US\$ 5 billion). The increase in liquid bulk cargo movement was of 23,720,000 m³/year. Source: http://www.portosdobrasil.gov.br/assuntos-1/investimentos/terminais-de-uso-privado 17 Source: Antaq, http://web.antaq.gov.br/Anuario/





Figure 25 - Liquid bulk by transportation mode - 2015

Brazil has enormous potential for cabotage transport, since it has 7,367 km of coastline, with 80% of its population inhabiting areas up to 200 km from the coast and a great concentration of industrial activity along this coastline.

A relevant fact about fuel cabotage is that the fleet for maritime transport is concentrated with Transpetro (98% of the total), as shown in Figure 26, below. Thus, the entrance of new agents to operate in the sector and increasing the diversity of the fleet is desirable. However, at the same time, there must be investment in more efficient port facilities and in ports with deeper draft.



Figure 26 – Percentage of the fleet belonging to Petrobras/Transpetro

Source: ANP, from Transpetro data

Source: EPL (2015)



2.3.3 Multimodal integration

Due to the concentration of demand, as occurs with pipelines, most railroads are also located in the South and Southeast regions. In addition to being concentrated and in small numbers, there is also little integration between rail and waterway modes, in the case of fuels. Integration would be interesting in view of the massive use of cabotage for transportation of these products.

	PERCENTAGE
RIVER TERMINALS	13%
LAKE TERMINALS	33%
SEA TERMINALS	16%
LAND TERMINALS	17%

Table 3 – Percentage of terminals connected to the rail mode

Source: ANP

Biofuels are transported mainly by road, because of the low scale of some of these products and the lack of other transport modes in the national territory.





3. Conclusions

The overview presented, of the current infrastructure for fuel production and supply in Brazil, together with the prospects of increased domestic demand, shows a favorable scenario for private investments.

Other factors reinforce the attractiveness for new actors to the production and supply segment in Brazil, such as the change in Petrobras' pricing policy and its search for the expansion of partnerships and divestitures, as well as governmental and regulatory initiatives to encourage the diversification of agents operating in the production of oil products and biofuels, and to increase investment in supply infrastructure.

Thus, there are opportunities to expand the domestic supply of liquid fuels, either by expanding the production of oil products or biofuels, or through investments in expanding the infrastructure for importing and internalizing fuels.

In the LPG segment, there are investment opportunities in: increasing distributors' storage capacity; installing a terminal facility in the Northeast to receive imports of LPG; creation of a terminal in the Southern region, where the total storage capacity is the lowest in Brazil; and investments to readjust the storage and distribution infrastructure to new sources of supply, in case of increased pre-salt production and consequent growth in associated gas production – which may shift part of the LPG supply to Rio de Janeiro.

Finally, with the evolution of the RenovaBio Program and the increased biodiesel blend levels, investments in the biofuels distribution infrastructure will also be necessary. The increase in ethanol production should enable the construction of collection centers near the production areas. Opportunities will also be created for investment in biofuels transportation to major consumer centers – for example, in the railway segment and in pipeline expansion.

