



Fossil fuel exploration subsidies: Brazil

Sam Pickard and Shakuntala Makhijani

This country study is a background paper to the report **The fossil fuel bailout: G20 subsidies for oil, gas and coal** by Oil Change International (OCI) and the Overseas Development Institute (ODI).

For the purpose of this report, exploration subsidies include: national subsidies (direct spending and tax expenditures), investment by state-owned enterprises and public finance. The full report provides a detailed discussion of technical and transparency issues in identifying exploration subsidies, and outlines the methodology used in this desk-based study.

The authors would welcome feedback on the full report and on this country study, to improve the accuracy and transparency of information on G20 government support to fossil-fuel exploration.

Argentina
Australia
Brazil
Canada
China
France
Germany
India
Indonesia
Italy
Japan
Republic of Korea
Mexico
Russia
Saudi Arabia
South Africa
Turkey
United Kingdom
United States

Background

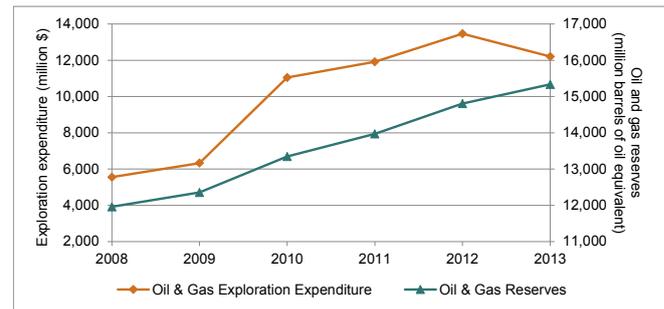
Advances in deep-water drilling and, in particular, the discovery of the ‘pre-salt’ oilfields (very large deposits trapped below 2km of salt under the seabed several hundred kilometres off Brazil’s southeast coast) have increased Brazil’s proven oil and gas reserves substantially in recent years. The industry is dominated by the state-owned enterprise Petrobras, which is by far the largest firm engaged in domestic exploration and production. Although a number of international operators have engaged in joint ventures with Petrobras in recent years, in 2011 Petrobras controlled 68 of the country’s 98 drilling rigs (Swiss Business Hub Brazil, 2011), and also maintains a monopoly for downstream operations.

Despite substantial mining operations (particularly for iron ore and bauxite), coal mining is a relatively small industry in Brazil with annual production of only 7-12 megatonnes (Mt) in recent years, despite estimated reserves of 32 gigatonnes (Gt) (Gurmendi, 2012; Florida Chamber of Commerce, n.d.).

The Ministry of Mines and Energy (Ministério de Minas e Energia, MME) is the main government agency overseeing Brazil’s extractive industries and also oversees the National Council on Energy Policy (Conselho Nacional de Política Energética, CNPE), which is responsible for energy policy and guidelines. Within MME a number of enterprises and departments hold responsibilities related to exploration for fossil-fuels (Table 1).

In October 2013, MME released the maps from their latest study with EPE on zones of natural oil and gas resources (Estudo de Zoneamento Nacional de Recursos de Óleo e Gás) in Brazil (EPE, 2014b). As well as helping federal and regional energy planning processes, these resources are freely available to aid companies in undertaking further exploration activities. These studies are scheduled to be updated every two years, and although the cost of this specific study could not be identified, it may have been funded through support worth \$28 million to a project that applied geology and geophysics to prospecting for oil and gas (Serviços de Geologia e Geofísica aplicados à Prospecção de Petróleo e Gás Natural) in

Figure 1. Oil and gas exploration expenditure and reserves in Brazil



Source: Rystad Energy, 2014

2013 (Controladoria-Geral da União, 2013). Additional direct subsidies include the ANP’s \$100 million Human Resources Program (PRH-ANP) that has provided over 2,700 scholarships to students training to enter the oil and gas industry, and the CT-Petro programme for research and development (R&D) in enhanced hydrocarbon recovery, which received \$11.9 million in 2013 (ANP, n.d.; Ramos de Souza, 2011; Controladoria-Geral da União, 2013). It was not possible to ascertain the proportion of funding for PRH-ANP that benefitted exploration activities.

Although taxes on the fossil-fuel industry are levied at national, regional and local level, the majority are collected through the Federal Government. REPENEC (*Regime especial de incentivos para o desenvolvimento de infraestrutura da indústria petrolífera nas regiões Norte, Nordeste e Centro-Oeste*) and REPETRO (*Regime aduaneiro especial de exportação e importação de bens destinados às atividades de pesquisa e de lava das jazidas de petróleo e de gás natural*), the two main laws that govern Brazil’s oil and gas sector, include a number of tax exemptions that benefit exploration (EY, 2013). These subsidies include a full tax deduction for exploration expenses, and a number of additional tax incentives that may be exploited by companies engaging in exploration (EY, 2013).

Table 1: Roles and responsibilities of the Brazilian Government in extractive industries

Department/ agency	Role/ responsibility
ANP (Agência Nacional do Petróleo, Gás Natural e Biocombustíveis)	The National Department of Petroleum, Natural Gas and Biofuels oversees exploration and exploitation of mineral resources within Brazil. (ANP, 2014).
CPRM (Companhia de Pesquisa de Recursos Minerais)	The Company for Mineral Resources Research is responsible for conducting geological surveys in Brazil and disseminating the resulting information (CPRM, 2014).
EPE (Empresa de Pesquisa Energética)	The Energy Research Company engages in research related to all aspects of energy within the country, including from fossil-fuels, and produces 10-year energy plans charting future development (EPE, 2014a; Ministry of Mines and Energy, 2013).

REPENEC was introduced in 2010, and has been extended until 2017. The programme exempts companies from social contributions (PIS and COFINS¹) and excise taxation (IPI²) for domestic sales and imported machinery and materials for infrastructure projects, such as drilling rigs, pipelines and access routes, in specific regions of

Brazil. The reported value of REPENEC was \$490 million in 2013 (Receita Federal, 2014).

REPETRO is a long-running tax regime, which is set to continue until 2020, that also exempts companies from PIS, COFINS and IPI excise taxation as well as customs duties and additional taxes usually levied on goods arriving by sea for machinery and materials for exploration and

National subsidies

Table 2. Fossil-fuel exploration and production subsidies in Brazil

Subsidy	Subsidy type	Targeted fossil-fuels	Estimated annual amount (million \$)	Timeframe for subsidy- value estimate	Stage
Direct spending					
MME/EPE Mapping of zones of natural gas and oil resources (MME and EPE, 2013)	R&D programme *	Oil and gas	28	2013	Exploration
CT-Petro	Research and Development (R&D) programme targeted at innovation in oil and gas production chain	Oil and gas	11.9	2013	Exploration and extraction (including exploration)
Tax expenditure					
REPENEC	Regional tax exemptions: PIS (Programa de integração Social); COFINS (Contribuição para o Financiamento da Seguridade Social); and IPI (Imposto sobre Produtos Industrializados)	Oil and gas	490	2013	Exploration and extraction (including exploration component)
REPETRO	Regional tax exemptions (PIS, COFINS, IPI)	Oil and gas	n/a	n/a	Exploration and extraction (including exploration component)
R&D Incentives	Super tax exemption for income tax (160 – 180% of value) and 50% reduction in IPI	Oil and gas	n/a	n/a	Exploration and extraction (including exploration component)
Bonded warehouses	Exemptions from federal import taxes	Oil and gas	n/a	n/a	Exploration and extraction (including exploration component)
Total exploration			28		
Total exploration and extraction (including exploration component)			529.9		

*Assumed to be *Serviços de Geologia e Geofísica aplicados à Prospecção de Petróleo e Gás Natural*.

1 PIS (Programa de integração Social) and COFINS (Contribuição para o Financiamento da Seguridade Social).

2 IPI (Imposto sobre Produtos Industrializados).

exploitation of oil and gas. No estimates for the cost of REPETRO could be found, but it is thought to be larger than that of REPENEC.

Under this tax regime, international companies also do not have to pay federal taxes on imports and local purchases required for the construction of marine structures (EY, 2013).

Investments in R&D can also qualify for tax incentives, and depending on the growth in the size of the research team involved, 160-180% of the R&D investment value can be deducted from taxable income (Deloitte, 2013). In situations where companies engage in R&D to develop their exploration capabilities, this may be interpreted as foregone tax revenue to the government that benefits the further exploration of fossil-fuels. It is not possible to quantify this amount at present. However, to provide some context, in 2012 Petrobras spent \$1.14 billion on R&D including on ‘discovery of new exploratory frontiers’ and ‘enhancement of oil and gas final recovery’ (Petrobras, 2013). Other tax reductions for R&D projects include a 50% reduction in federal excise tax (IPI) for equipment, machinery and tools, and allowing these expenses to be deducted at the time of expense (accelerated depreciation). For IT companies engaged in R&D these factors attract the 160% ‘super’ deduction (Deloitte, 2013; EY, 2013).

Investment by state-owned enterprises

The Brazilian Government holds the controlling interest in Petrobras, Brazil’s major oil and gas company, which, in turn, holds substantial interests and investments in exploration. To develop the pre-salt area and the country’s other fossil-fuel resources, Petrobras spent \$4 billion in 2012 on exploration alone, and aims to invest \$23.4 billion between 2014 and 2018 (Petrobras, 2013). When combined with the associated investment in production over the period, this adds up to \$237 billion in investment, making Petrobras’ ‘pre-sal’ development project ‘one of the world’s most expensive projects in course’ (PwC,

2013). On the basis of this investment, Petrobras expects oil and gas output in Brazil to more than double to 4.2 million barrels of oil equivalent (BOE) per day by 2020 (Petrobras, 2014). In 2012 Petrobras invested \$11.3 billion in development projects to increase the amount of proved resources, 89% of which was invested in Brazil (Petrobras, 2013).

In addition to its activities in exploration and production, Petrobras is also mandated with setting price levels for consumer fuels, which have accounted in part for substantial balance sheet losses in the refining, transportation and marketing business unit (\$11.7 billion in 2012), despite net income of more than \$11 billion (Petrobras, 2013). This vertical integration across Petrobras adds difficulty in identifying where all government support to the company has been targeted (\$58 million in tax incentives and \$385 million in grants in 2012) (KPMG, 2011; Petrobras, 2013).

Despite significant gains in transparency around the governance of Petrobras in recent decades (Musacchio and Lazzarini, 2014), a major investigation is being carried out into corruption within the company, and it is currently the world’s most indebted publicly-traded oil company (Millard, 2014; Leahy and Pearson, 2014).

In addition to operations in Brazil, Petrobras is involved in fossil-fuel activities in 21 other countries. As of the end of 2012, Petrobras was engaged in fossil-fuel exploration projects in Colombia, Peru, Uruguay, the United States, Angola, Benin, Gabon, Namibia, Nigeria, Tanzania and Portugal (Petrobras, 2013).

Public finance

Domestic

The Brazilian National Development Bank (BNDES) held approximately 21% of private sector debt and almost all of the long-term debt in the country in 2013. In 2009, 39.4% of the loans in BNDES’ database were to Petrobras.

Table 3. Brazil fossil-fuel exploration project financing, 2010 to 2013

Project	Country	Financier	Year	Amount (million US\$)	Stage
Odebrecht Drilling Norbe VIII & Norbe IX Refinancing	Various	Banco do Brasil	2010	250	Extraction (including exploration)
Odebrecht Drilling ODN I & II Refinancing	Various	Banco do Brasil	2013	563	Extraction (including exploration)
Total Extraction (including exploration) Financing, 2010-2013:				813	
Total Annual Extraction (including exploration) Financing, 2010-2013:				203	

A recent study on BNDES and state-owned enterprises (including Petrobras) in Brazil found that: ‘the bank is probably transferring subsidies to a substantial set of firms that would not need subsidies in the first place’ (Musacchio and Lazzarini, 2014).

BNDES contributes substantially to the development of oil and gas projects, with \$3.9 billion disbursed to this sector in 2012 (BNDES, 2012). Most of this investment is thought to relate to domestic midstream and downstream operations. However, although the transparency and detail of funded projects has improved in recent years, it is unclear what amount BNDES invests at present specifically in fossil-fuel exploration projects, or even upstream (exploration and production of crude oil and gas) or downstream (refining and processing) activities more broadly (PwC, 2013).

The 2010-2014 ‘Brasil Maior’ plan—the National Industrial Development Council’s (*Conselho Nacional de Desenvolvimento Industrial*, CNDI) multi-sector industrial development plan—involves approximately \$70 billion in investment credit. This includes the BNDES FINEM (*Financiamento a Empreendimentos*) line of credit to support the development of new fields and enhanced extraction; and the Progredir financing programme, which reduces borrowing costs for companies in the Petrobras supply chain by 20-50% (PwC, 2013). Estimates of the specific level of support that these subsidies provide to exploration alone are not publicly available.

Anecdotal evidence suggests that in 2010 Banco de Brasil provided \$250 million for refinancing by Odebrecht Drilling and a further \$563 million for ODN I and II deep-water drilling ships in 2013, both of which are likely to support exploration (IJ Global, 2014).

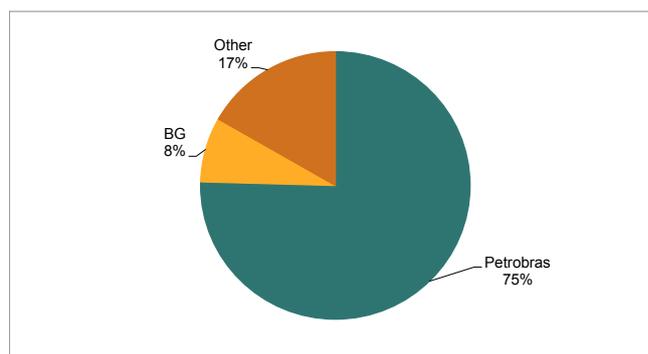
International

In addition to its domestic support, BNDES operates as an export credit agency (EXIM Brazil). Although transparency also appears to be improving here, a review of international projects suggests that not enough detail is provided to allow for identification of specific support to fossil-fuel exploration (BNDES, 2014).

Brazil contributed an average of 1% of funding to multilateral development banks (MDBs) that invested in fossil-fuel exploration projects between 2010 and 2013. These contributions render Brazil responsible for average annual spending on exploration for fossil-fuels of \$7.5 million across this period (Oil Change International, 2014).³

Finally, the recent announcement of the New Development Bank, to be led by the BRICS countries,⁴ with authorised lending up to \$34 billion annually (mainly

Figure 2. Brazil’s top oil and gas reserve holders’ share of total reserves as of January 2014



Source: Rystad Energy, 2014

for infrastructure) may include support for fossil-fuel exploration activities (Khanna, 2014). Brazil is slated to pledge \$18 billion of the initial \$100 billion total capitalisation of the bank (José Romero, 2014).

Major companies

Oil and gas

In 2013, oil and gas companies in Brazil made \$82 billion in revenue from upstream operations. As a result of high expenses, the industry faced overall net losses of \$3.6 billion that year. Petrobras dominates the country’s oil and gas production and revenues, and made \$4.9 billion in profits in 2013 when most other major producers in Brazil faced significant losses (Table 4). Sinochem, a Chinese state-owned company, was another exception to the overall losses in Brazil, with profits of almost \$300 million in 2013.

Of the \$82 billion in revenue, the Government of Brazil received \$12.3 billion in income taxes, \$8.3 billion in bonus payments and a comparatively small amount (\$43 million) in royalties. The share of revenue (aside from royalties and bonuses) going to income taxes averaged 17% for Brazil’s upstream oil and gas industry.

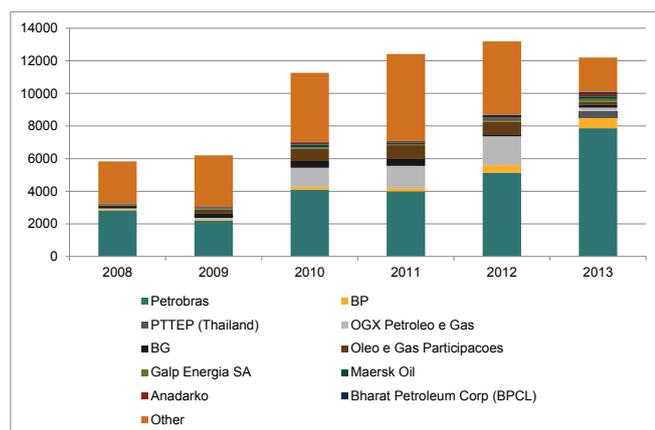
Petrobras is by far the largest holder of oil and gas reserves in Brazil, which totalled 15.9 billion BOE at the start of 2014, with 75% (12 billion BOE) of total reserves. BG, a British company, held the next highest share, with 8% (1.2 billion BOE) (Figure 2).

Oil and gas reserves in Brazil are increasing alongside exploration expenditure. Petrobras is consistently the largest investor in exploration, accounting for more than half of total exploration expenditure in 2013. In recent years, foreign state-owned oil companies such as PTTEP

³ Data are based on shares of multilateral development banks (MDBs) held by each G20 country from the respective MDB annual reports and replenishment agreements.

⁴ Brazil, Russia, India, China and South Africa.

Figure 3. Oil and gas exploration expenditure in Brazil



Source: Rystad Energy, 2014

(Thailand) and Bharat Petroleum Corporation (India) have begun to spend significant amounts on exploration in Brazilian territories.

Coal

Coal production in Brazil is relatively minor, supplying just 5% of the country's primary energy needs with the annual production of approximately 7Mt dominated by the Brazilian firm VALE (Companhia Vale do Rio Doce) (Gurmendi, 2012).

Table 4. Brazil's top 10 oil and gas producers' revenues, profits and income taxes, 2013

Company	Headquarter Country	Revenue (million \$)	Profit (million \$)	Income tax payments (million \$)	Income-tax share of revenue
Petrobras	Brazil	\$70,452	\$4,932	\$14,599	21%
Statoil	Norway	\$1,323	\$311	\$226	17%
BG	UK	\$1,249	-\$1,621	\$179	14%
Sinochem	China	\$943	\$295	\$182	19%
HRT Oil & Gas	Brazil	\$418	\$133	\$34	8%
Repsol	Spain	\$300	-\$380	-\$18	-6%
Galp Energia SA	Portugal	\$284	-\$302	\$52	18%
Queiroz Galvao Exploracao e Producao	Brazil	\$259	-\$50	-\$3	-1%
OGX Petroleo e Gas	Brazil	\$0	\$76	-\$269	-
Shell	Netherlands	-\$593	-\$1,613	-\$263	44%

Source: Rystad Energy, 2014

Note: The income-tax share is calculated by dividing income tax by revenue, excluding royalties, bonuses and government profit.

References

ANP (2014) 'ANP'. Rio de Janeiro: Agência Nacional do Petróleo, Gás Natural e Biocombustíveis. (<http://anp.gov.br/>)

ANP (n.d.) *Institutional Folder*. Rio de Janeiro: Agência Nacional do Petróleo, Gás Natural e Biocombustíveis. (goo.gl/0JT4i7)

BNDES (2014) 'Consulta às operações de exportação pós-embarque'. Rio de Janeiro: Brazilian National Development Bank. (goo.gl/14Rsse)

BNDES (2012) *Annual Report 2012*. Rio de Janeiro: Brazilian National Development Bank. (goo.gl/UtmTl4)

CPRM (2014) 'Mission and Values'. Brasília: Companhia de Pesquisa de Recursos Minerais. (goo.gl/CFrRHh)

Controladoria-Geral da União (2013) 'Gastos Diretos Por Programa'. Brasília: Governo Federal. (goo.gl/VlpDvf)

Deloitte (2013) 'Oil and gas taxation in Brazil' *Deloitte taxation and investment guides*. New York: Deloitte. (<https://dits.deloitte.com/#TaxGuides>)

- EPE (2014a) 'Who we are'. Rio de Janeiro: Empresa de Pesquisa Energética. (<http://www.epe.gov.br/quemsomos/Paginas/default.aspx>)
- EPE (2014b) 'EPE e MME disponibilizam os mapas do Estudo de Zoneamento Nacional de Recursos de Óleo e Gás'. Rio de Janeiro: Empresa de Pesquisa Energética. (goo.gl/F8Oc9P)
- EY (2013) *Global oil and gas tax guide*. Ernst and Young. (goo.gl/S9zweS)
- Florida Chamber of Commerce (n.d.) 'Mining'. Tallahassee: Florida Chamber of Commerce. (<http://www.flchamber.com/wp-content/uploads/Mining.pdf>)
- Gurmendi, A.C. (2012) 'The Mineral Industry of Brazil'. *2012 Minerals Yearbook of the U.S. Geological Society: Brazil*: 4.1-4.18. Virginia: U.S. Geological Society. (goo.gl/bfwU6c)
- IJ Global (2014) 'Database'. London: IJ Global: Infrastructure Journal and Project Finance Magazine. (<http://www.ijonline.com/data>)
- José Romero, M. (2014) 'A major political move: the BRICS launch the New Development Bank and a reserve arrangement'. *Brettonwoods Project*, 18 July. (goo.gl/S4lTR6)
- Khanna, P. (2014) 'New BRICS Bank a Building Block of Alternative World Order'. *The Huffington Post*, 18 July. (http://www.huffingtonpost.com/parag-khanna/new-brics-bank_b_5600027.html)
- KPMG (2011) *A Guide to Brazilian Oil and Gas Taxation*. São Paulo: KPMG.
- Leahy, J. and Pearson, S. (2014) 'Brazil's Petrobras: Tarrred by corruption'. *The Financial Times*, 10 August. (goo.gl/Jsuivd)
- Millard, P. (2014) 'Petrobras Profit Falls as Fuel Losses Counter Cost Cuts'. Bloomberg, 10 May. (goo.gl/zbDgKF)
- MME and EPE (2013) *Ten Year Plan for Energy Expansion to 2022*. Brasília: Ministry of Mines and Energy. (http://www.epe.gov.br/PDEE/20140124_1.pdf)
- Musacchio, A. and Lazzarini, S. (2014) 'State-owned enterprises in Brazil: History and Lessons', presented at 'Workshop on State-Owned Enterprises in the Development Process'. Paris: Organisation for Economic Co-operation and Development, 4 April. (http://www.oecd.org/daf/ca/Workshop_SOEsDevelopmentProcess_Brazil.pdf)
- Oil Change International (2014) 'Shift the Subsidies'. Washington D.C.: Oil Change International. (<http://shiftthesubsidies.org>)
- Petrobras (2014) 'Oil and Gas Exploration and Production'. Rio de Janeiro: Petrobras. (<http://goo.gl/ig97DA>)
- Petrobras (2013) *Annual Report*. Rio de Janeiro: Petrobras. (www.petrobras.com.br)
- PwC (2013) *The Brazilian Oil and Gas Industry*. Rio de Janeiro: PricewaterhouseCoopers. (<http://goo.gl/8R7GFW>)
- Ramos de Souza, E. (2011) 'Rules of Human Resources Programs (PRH-ANP, R&D Clause, SwB): Challenges of a rapidly expanding petroleum industry'. Rio de Janeiro: Agência Nacional do Petróleo, Gás Natural e Biocombustíveis. (<http://goo.gl/YZp3qA>)
- Receita Federal (2014) 'Previsões PLOA - Relatórios de renúncia que acompanharão os Projetos de Lei Orçamentária Annual'. Brasília: Receita Federal (Federal Revenue of Brazil) (<http://goo.gl/USCXZD>)
- Rystad Energy (2014) 'Rystad Energy UCube Upstream Database' Oslo: Rystad Energy. (<http://www.rystadenergy.com/Databases/UCube>)
- Swiss Business Hub Brazil (2011) *The Brazilian Oil and Gas Sector*. Sao Paulo: Swiss Business Hub Brazil. (<http://goo.gl/Wbhxsh>)



Overseas Development Institute
 203 Blackfriars Road
 London SE1 8NJ
 Tel +44 (0)20 7922 0300
 Fax +44 (0)20 7922 0399
www.odi.org
info@odi.org



Oil Change International
 714 G Street SE Suite 202
 Washington, DC 20003 USA
 Tel: +1 202 518 9029
 Fax: +1 202 330 5952
www.priceofoil.org
info@priceofoil.org

Readers are encouraged to reproduce material for their own publications, as long as they are not being sold commercially. As copyright holders, ODI and OCI request due acknowledgement and a copy of the publication. For online use, we ask readers to link to the original resource on the ODI website. The views presented in this paper are those of the author(s) and do not necessarily represent the views of ODI or OCI. © Overseas Development Institute and Oil Change International 2014. This work is licensed under a Creative Commons Attribution-NonCommercial Licence (CC BY-NC 3.0).