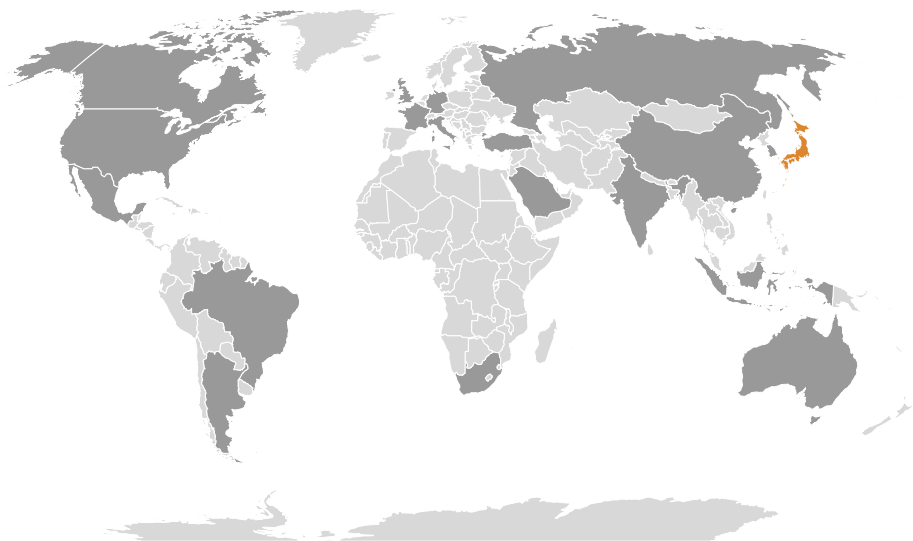




G20 subsidies to oil, gas and coal production: Japan

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Australia
Brazil
Canada
China
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India
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Italy
▶ **Japan**
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Mexico
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South Africa
Turkey
United Kingdom
United States

This country study is a background paper for the report **Empty promises: G20 subsidies to oil, gas and coal production** by Oil Change International (OCI) and the Overseas Development Institute (ODI). It builds on research completed for an earlier report **The fossil fuel bailout: G20 subsidies to oil, gas and coal exploration**, published in 2014.

For the purposes of this country study, production subsidies for fossil fuels include: national subsidies, investment by state-owned enterprises, and public finance. **A brief outline of the methodology can be found in this country summary.** The full report provides a more detailed discussion of the methodology used for the country studies and sets out the technical and transparency issues linked to the identification of G20 subsidies to oil, gas and coal production.

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

A Data Sheet with data sources and further information for Japan's production subsidies is available at:
<http://www.odi.org/publications/10076-g20-subsidies-oil-gas-coal-production-japan>

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Country Study
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Background

With scarce and rapidly dwindling fossil fuel resources of its own, Japan engages in only a small amount of domestic oil and gas exploration. It relies heavily on fossil fuel imports to meet its energy needs, particularly since the accelerated phase-out of nuclear power following the Fukushima disaster in March 2011. The Japanese government is actively involved in promoting oil, gas and coal exploration and extraction overseas to secure energy resources. In 2014, Japan was the third largest net importer of oil, and is the world's top importer of liquefied natural gas.

Before the Fukushima disaster, nuclear power accounted for about 30% of Japan's electricity generation. Since then, Japan's Nuclear Regulation Authority has required all nuclear power plants to shut down for maintenance and to undergo stress tests to evaluate their capacity to withstand conditions such as earthquakes and attacks before reopening. In 2013, fossil fuels accounted for 86% of electricity generated – this was split between natural gas (43%), oil (14%) and coal (30%); hydro contributed 8%, and nuclear power was down to marginal levels. Renewables apart from hydroelectricity accounted for just under 4% of Japan's electricity generation (EIA, 2015).

In June 2015, the Japanese government proposed rules to block the domestic construction of new but energy-inefficient coal power plants, but will continue to allow relatively more efficient (including ultra-supercritical) coal plants to be built (Obayashi, 2015). However, the current regulations only apply to coal plants above a certain size, meaning that about one third of the 45 new coal power plants currently proposed will not be subject to the efficiency requirements (Watanbe, 2015).

In terms of sector organisation, Japan's upstream fossil fuel production is mainly led by the private sector. The state-owned Japan Oil, Gas and Metals National Corporation (JOGMEC) however plays a key role in providing financial and knowledge support to Japanese oil and gas producers working both in Japan and in waters offshore, as well as abroad. Japex and Inpex spend the most on oil and gas exploration activities in and near Japan. Downstream, Japan's electricity generation sector is dominated by 10 privately owned integrated power companies that function as regional monopolies (EIA, 2015), but deregulation and unbundling of the sector is slated for 2016. Conversely, the private sector dominates the downstream oil and gas segment, with JX Nippon Oil & Energy, TonenGeneral and Idemitsu each operating refineries with more than 500,000 barrels per day of capacity in Japan.

National subsidies

Japan provides major national subsidies to promote oil and gas production by Japanese companies overseas and, to a smaller extent, domestically. These subsidies currently total \$736 million (Table 1) (OECD, 2015).

Based on the desk research conducted for this analysis, there is relatively little detail available on the nature of Japan's national subsidies for fossil fuel production beyond the OECD's latest estimates of fossil fuel subsidies (OECD, 2015).

Much of Japan's subsidies focus on exploration for new fossil fuel reserves. Japan's largest single subsidy to fossil fuel production is the supply of risk capital to JOGMEC, which supports the acquisition of natural gas rights, with the aim of diversifying Japan's supplies of natural gas. This subsidy is valued at \$458 million per year, but is not included in the national subsidies total, to avoid double-counting. Instead, many of JOGMEC's investments in new natural gas rights and production assets are captured in the 'Public finance' section below.

Due to Japan's limited fossil fuel resource base, much of the remaining national subsidies for fossil fuel production are targeted towards oil refining. These include the subsidy for oil refining technology programmes (\$118 million annually) and the oil refining rationalisation subsidy (\$148 million annually), both of which provided support for research and development of advanced oil refining technologies (OECD, 2015).

The Japanese government provides additional support for oil refining and marketing in the form of the subsidy for structural reform measures (\$104 million annually), which provides assistance to oil distributors for business diversification, as well as the oil product quality assurance subsidy (\$16 million annually) (OECD, 2015).

The Japanese government funds the large-scale oil disaster prevention subsidy (\$8 million annually), which provides upstream producers with oil fences to contain potential oil spills (OECD, 2015).

Japan's New Energy and Industrial Technology Development Organization also has a budget of ¥6.8 billion. It is not quantified in this analysis because the timeline for the expenditure is unclear; as a result, a US dollar figure is not provided because the timeline on which to base a currency conversion is not clear.

The Japanese government also recently phased out a subsidy to promote domestic natural gas exploration activities; this subsidy was completely phased out by 2011 (OECD, 2015).

Table 1: Japan's national subsidies to fossil fuel production, 2013–2014 (\$ million except where stated otherwise)

Subsidy	Subsidy type	Targeted energy source	Stage	2013 estimate	2014 estimate	Estimated annual average amount
Commission expenses for basic survey of domestic oil and natural gas resources	Direct spending	Oil	Extraction	168	168	168
Oil refining rationalisation subsidy	Direct spending	Oil	Refining	148	148	148
Subsidy for oil refining technology programmes	Direct spending	Oil	Refining	118	118	118
Subsidy for structural reform measures	Direct spending	Oil	Distribution (refining and marketing)	104	104	104
Methane hydrate development programme	Direct spending	Gas	Extraction	86	86	86
Other national subsidies (in Data Sheets)				113	113	113
Totals						
Total national subsidies (\$ m)						736
Total national subsidies (JPY m)						74,717

Sources and additional data are available in the Data Sheets that accompany each Country Study.

State-owned enterprise investment

For fossil fuel production in Japan, in both upstream and downstream segments, most major actors are private sector companies. The notable exception is JOGMEC, a state-owned enterprise that conducts geological surveys and exploratory oil and gas drilling both in Japan and overseas, and provides this data to Japanese exploration and production companies. JOGMEC also provides technical support and develops new exploration technologies to assist companies in their exploration activities (JOGMEC, 2013).

JOGMEC's activities are described further in estimates of public finance.

Public finance

Through financing by JOGMEC, the Japan Bank for International Cooperation (JBIC), Nippon Export and Investment Insurance (NEXI), the Japan Bank for International Cooperation (JICA), and the Development Bank of Japan (DBJ), Japan provided \$38 billion in public finance for fossil fuel production from 2013 to 2014 – an annual average of \$19 billion. The vast majority of this finance was for international projects, but JBIC also provided a smaller amount – \$703 million – for domestic fossil fuel production within Japan over the same two-year period, with an annual average of \$351 million (see Table 2).

JBIC is by far Japan's largest provider of public finance for fossil fuel production, averaging \$11.3 billion per year, with \$1.3 billion of that directed towards coal, and \$9.9 billion towards oil and gas.

Japan's export credit agency, NEXI, provided an average of \$4.5 billion per year to fossil fuel production. While this is less than JBIC's total finance, NEXI financed a similar amount of coal to JBIC, averaging \$1 billion per year.

JOGMEC, JICA and DBJ also provided public finance to fossil fuel production, but at volumes far lower than JBIC and NEXI.

To avoid double-counting, JOGMEC's public finance is included in the total here, but capital injections from government and JOGMEC's capital expenditures are not counted in the sections on national subsidies or state-owned enterprises.

Japan also contributed an annual average of \$440 million to fossil fuel projects in 2013 and 2014 through its shares in the African Development Bank, the Asian Development Bank, the Inter-American Development Bank, the European Bank for Reconstruction and Development, and the World Bank Group, which range from 4.2% to 12.8% depending on the institution.

Table 2: Japan's public finance for fossil fuel production, 2013–2014 (\$ million except where stated otherwise)

Institution name	Coal mining	Coal-fired power	Upstream oil and gas	Oil and gas pipelines, power plants and refineries	Total fossil fuel finance 2013 & 2014	Annual avg. fossil fuel finance
Domestic						
Japan Bank for International Cooperation	-	106	369	-	475	237
Development Bank of Japan	-	-	-	228	228	114
Subtotal domestic	-	106	369	228	703	351
International						
Japan Bank for International Cooperation	350	2,085	10,280	9,440	22,155	11,077
Nippon Export and Investment Insurance	-	2,061	1,296	5,732	9,089	4,544
Japan Oil Gas and Metals National Corporation	7	-	3,087	-	3,094	1,547
Japan International Cooperation Agency	-	1,064	-	814	1,878	939
Development Bank of Japan	-	-	111	150	261	131
Multilateral development bank share	1	169	177	532	879	440
Subtotal international	358	5,378	14,951	16,667	37,355	18,678
Totals						
Total public finance (\$ m)						19,029
Total public finance (JPY m)						2,013,444

Sources and additional data are available in the Data Sheets that accompany each Country Study.

Private companies

Private upstream oil and gas companies

Japan's relatively small oil and gas industry is completely dominated by private sector Japanese companies, which control virtually all of the country's limited production, reserves base and exploration expenditure. These companies, led by Inpex and Japex, are therefore likely to be the

major beneficiaries of government support, in addition to benefiting from the Japanese government's financing of exploration projects overseas. Japex, spun out of the national oil company, is now 34% government-owned, but non-government shareholders own the majority of shares.

Table 3 displays these figures for the active oil and gas producers in Japan in 2014.

Table 3: Top private upstream oil and gas producers in Japan, 2013–2014

Company	Headquarter country	Oil production (million barrels in country)		Gas production (billion cubic metres in country)		Sum of operating expenditure & capital expenditure, including exploration expenditure (\$ million)		Profitability (from country operations, as measured by free cash flow) (\$ million)	
		2013	2014	2013	2014	2013	2014	2013	2014
Japex	Japan	2.1	1.7	1.1	1.0	217	243	198	134
Inpex	Japan	2.0	1.5	1.2	0.8	204	188	270	127
Mitsubishi Corp	Japan	<1	<1	<1	<1	6	6	5	3
JX Nippon Oil and Gas	Japan	<1	<1	<1	<1	10	4	-4	3

Source: Rystad Energy, 2015.

At the start of 2014, Japan had 105 million barrels of oil equivalent (mboe) in oil and gas reserves. Japex and Inpex held 80% of these reserves.

Private midstream/downstream oil and gas companies

The national industry group for oil refiners and distributors in Japan, the Petroleum Association of Japan (PAJ), provides data on oil refinery capacity (Table 4) (PAJ, 2015; Showa Shell Sekiyu, 2015). The companies with the largest refining capacities are JX Nippon Oil & Energy, TonenGeneral, Idemitsu, Cosmo, and Showa Shell, with Idemitsu set to become the second largest by refining capacity by 2016 if a planned merger with Showa Shell Sekiyu proceeds as planned (Nikkei Asian Review, 2015).

Private coal companies

There are no active coal mines in Japan.

Private electricity companies (fossil fuel-based)

Japan's electricity production is dominated by 10 regional monopolies, represented by the Federation of Electric Power Companies of Japan (FEPC), a national industry organisation. The Japanese electricity market is currently preparing for deregulation, which will go into effect in 2016 and will open the electricity market more fully to other power producers (Matsuo, 2015).

Table 5 displays the fossil fuel generation capacity owned by the major regional monopolies (FEPC, 2011). The FEPC

Table 4: Top private companies operating in Japan's downstream oil and gas sectors

Company	Refining capacity (barrels per day)
JX Nippon Oil & Energy	1,310,700
TonenGeneral	698,000
Idemitsu	535,000
Cosmo	452,000
Showa Shell	445,000
Fuji	143,000
Taiyo	118,000
OIREC	115,000
Nansei	100,000
Toa	70,000

Source: PAJ, 2015

lists only facilities larger than 1,000 MW, so the actual fossil fuel capacity is even larger. With the shutdown of most of the country's nuclear power capacity following the 2011 Fukushima disaster, fossil fuels account for a larger share of these companies' power production portfolios than before, and new fossil fuel (including coal) power plants are currently being planned.

Table 5: Private operators in Japan's electricity sector

Company	Coal capacity (MW)	Oil capacity (MW)	Natural gas capacity (MW)	Total fossil fuel capacity (MW)
Tokyo	1,000	18,449	19,196	38,645
Chubu	4,100	8,181	10,813	23,094
Kansai	1,800	7,425	6,892	16,117
Tohoku	3,200	1,300	4,810	9,310
EPDC	7,600	-	-	7,600
Kyushu	1,400	2,000	4,095	7,495
Chugoku	2,000	1,200	1,400	4,600
Hokuriku	2,400	1,500	-	3,900
Shikoku	-	2,395	-	2,395
Hokkaido	1,650	-	-	1,650
Total capacity from large fossil fuel power plants	25,150	42,450	47,206	114,806

Source: FEPC, 2011. Data as of 2011.

Methodology

(for detailed methodology see Chapter 3 of main report)

This report compiles publicly available information on G20 subsidies to oil, gas and coal production across G20 countries in 2013 and 2014. It provides a baseline to track progress on the phase-out of such subsidies as part of a wider global energy transition. It uses the following terms and their definitions.

Production subsidies

Government support for fossil fuel production. For the purpose of this country study, production subsidies include national subsidies, investment by state-owned enterprises (SOEs) (domestic and international) and public finance (domestic and international) specifically for fossil fuel production.

Fossil fuel production

Production in the oil, gas and coal sectors. This includes access, exploration and appraisal, development, extraction, preparation, transport, plant construction and operation, distribution and decommissioning. Although subsidies for the consumption of fossil fuels can support their production, this report excludes such subsidies as well as subsidies for the consumption of fossil fuel-based electricity.

National subsidies

Direct spending, tax and duty exemptions and other mechanisms (such as forms of capacity markets) provided by national and sub-national governments to support fossil fuel production. Normally, the value assigned for a national subsidy is the number provided by the government's own sources, by the OECD, or by an independent research institution.

State-owned enterprise (SOE) investment

A SOE is a legal entity created by a government to undertake commercial activities on its behalf. SOEs can be wholly or partially owned by governments.

It is difficult to identify the specific component of SOE investment that constitutes a subsidy, given the limited publicly available information on government transfers to SOEs (and vice-versa), and on the distribution of investment within their vertically integrated structures. Therefore, this report provides data on total investment by SOEs in fossil fuel production (where this information is available from the company), which are presented separately from national subsidies.

For the purpose of this report, 100% of the support provided to fossil fuel production through domestic and international investment by an SOE is considered when a government holds >50% of the shares.

Public finance

Public finance includes the provision of grants, equity, loans, guarantees and insurance by majority government-owned financial institutions for domestic and international fossil fuel production. Public finance is provided through institutions such as national and multilateral development banks, export credit agencies and domestic banks that are majority state-owned.

The transparency of investment data for public finance institutions varies. Assessing the portion of total financing that constitutes a subsidy requires detailed information on the financing terms, the portion of finance that is based directly on public resources (rather than raised on capital markets) or that depends on the institutions' government-linked credit rating. Few of the institutions assessed allow public access to this information. Therefore, we report the total value of public finance from majority government-owned financial institutions for fossil fuel production separately from 'national subsidy' estimates.

For the purpose of this report, 100% of the support provided to fossil fuel production through domestic and international financing is considered when a government holds >50% of the shares in the bank or financial institution.

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