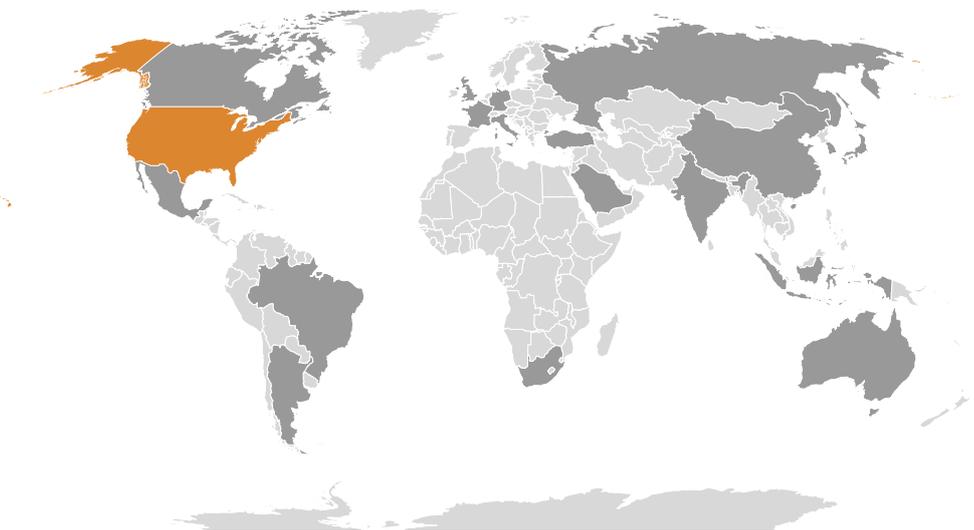




# G20 subsidies to oil, gas and coal production: United States

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- ▶ **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 the United States' production subsidies** is available at:  
<http://www.odi.org/publications/10086-g20-subsidies-oil-gas-coal-production-united-states>

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**Country Study**  
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## Background

Over the past several years, fossil fuel production has sharply increased in the United States. While coal production has declined slightly, oil and gas exploration and production continue to expand rapidly, with natural gas production increasing by 22% and oil production increasing by 59% between 2010 and 2014 (EIA, 2015b). Production and exploration growth in the US have been driven by horizontal drilling and hydraulic fracturing (fracking) technology, which enabled the development of previously unreachable reserves of oil and gas from shale and tight formations. Producer subsidies have also reduced risk and boosted returns in the US, helping to drive the supply growth that has made the US the world's largest producer of both oil and natural gas, ahead of Saudi Arabia and Russia (EIA, 2015b, 2015c). In 2014, the US produced more oil than Iran, China and Canada combined.

US President Barack Obama has repeatedly pledged to tackle climate change and eliminate US domestic and overseas subsidies for fossil fuels, but he has met resistance in the US Congress, and the administration's domestic energy strategy remains focused on an 'all-of-the-above' approach, which supports the expansion of fossil fuel production (The White House, 2015).

While upstream oil, gas and coal production continues apace, downstream production of electricity from fossil fuels is undergoing a major shift in the US, with natural gas (and to a lesser degree, renewable energy) crowding out coal, and with dozens of coal-fired power plants being shuttered due to local and national advocacy efforts (Grunwald, 2015). US electricity sector emissions in 2015 are expected to be more than 15% below 2005 levels, and in 2015 alone, analysts expect coal plant retirements amounting to roughly 7% of current US electricity generation (BNEF, 2015).

Recent action by the US Environmental Protection Agency in the form of the 'Clean Power Plan' rules will have further implications for the electricity sector, with the aim of reducing CO<sub>2</sub> emissions from electricity production to 32% below 2005 levels by 2030.

Despite this trend of decline in coal-fired power production, government support for coal mining and coal-fired power continues, as does support for oil and gas production. These support measures are described in detail below.

### National subsidies

Annually, US federal and state governments give away \$20.5 billion in subsidies for oil, coal and gas production (Table 1 lists the top five subsidies by amount, as well as total US subsidies disaggregated by industry). The analysis identified an annual average of \$17.2 billion in subsidies for fossil fuel producers at the federal level, and \$3.3 billion at the state level. Only a handful of the largest fossil fuel-producing states were assessed as part of this analysis.

The federal subsidies to fossil fuel producers represent an increase of 35% over levels when President Obama took office in 2009, in spite of calls to remove several major subsidies in every budget that the Obama administration has sent to Congress. This uptick in subsidies reflects the substantial increase in oil and gas producing activities in the US during that time.

The vast majority of US national and state subsidies, by both volume and number of subsidies, come in the form of tax breaks and royalty relief, rather than direct spending. Tax and royalty exemptions for oil and gas producers are among the largest federal subsidies for fossil fuel production in the United States.

Among the largest of the quantifiable subsidies to US oil and gas producers are corporate tax exemptions for master limited partnerships (MLPs), which stood at \$3.9 billion when estimated in 2012 (Koplow, 2013). MLPs are corporate structures that are able to avoid corporate-level income taxes entirely, and which can distribute cash to owners on a tax-deferred basis. Oil and gas producers dominate MLPs, with 77% of MLPs by market capitalisation associated with fossil fuels. Fossil fuel MLPs have grown from a market capitalisation of \$325 billion in 2013 to \$532 billion as of May 2015 (Koplow, 2015), although recent declines in oil and gas prices may dampen the tax benefits (and thus associated subsidy) of MLPs for the time being.

Another large tax break for oil and gas producers is the deduction for intangible drilling costs, which our analysis found to be worth \$2.6 billion annually. This provides a 100% tax deduction for costs not directly part of the final operating oil or gas well (such as labour costs, survey work and ground clearing), including exploration and development costs (Committee for a Responsible Federal Budget, 2013a). Similarly, the percentage depletion allowance is assessed as the excess of percentage over cost depletion for oil and gas producers. This measure, estimated annually to cost \$1 billion for oil and gas, and a further \$200 million for coal, allows independent fossil fuel producers to deduct 14% to 15% of large investment costs, including for exploration, from income taxes. One more accounting practice, the 'last-in, first-out' accounting practices employed by oil and gas companies, is also estimated to cost taxpayers more than \$1 billion annually. This accounting method allows a company to report the value of every good sold as that of the most recent one added to its inventory (Committee for a Responsible Federal Budget, 2013b). This effectively allows companies with physical inventories to overstate the cost of production, lowering their reported (rather than actual) income.

Lost royalties on offshore drilling represent another large subsidy to oil and gas producers. The 1995 Deep Water Royalty Relief Act provided royalty relief for leases sold between 1996 and 2000, in water 200 metres or deeper (Taxpayers for Common Sense, 2009).

This royalty relief is estimated to represent a loss to taxpayers of \$2.1 billion in 2014. In addition, a number of leases issued during the period of the Act did not include price thresholds that would trigger royalties as intended, reportedly due to a clerical error, which could cost taxpayers billions in additional foregone revenues (ibid).

One of the factors that sets the US apart from other G20 countries is the sheer variety of tax loopholes for fossil fuel producers. The deduction for oil spill remediation costs allows companies to deduct the cost of cleaning up and addressing the effects of oil spills as a standard business expense. A recent and notable example occurred in 2010 when BP (formerly British Petroleum) claimed a \$9.9 billion tax deduction due to \$32.2 billion in reported clean-up costs for the Deepwater Horizon exploration drilling rig blowout and the oil spill in the Gulf of Mexico. The value of this subsidy is projected to be \$679 million in 2014, although it is difficult to calculate exact amounts because the value of this tax deduction is considered confidential in most cases, and because the level of subsidy is highly dependent on the number and extent of spills that incur remediation costs, which can vary greatly from year to year.

In 2015, BP settled remaining federal and state claims related to the spill for \$20.8 billion. Despite public concern over BP's previous deduction of clean-up costs loopholes that allow for settlements to be deducted as business expenses persist (Morgenson, 2013). The bulk of the \$20.8 billion settlement may be tax-deductible, with only a \$5.5 billion fine that makes up part of the settlement being clearly delineated as a cost that cannot be classified as a business expense. Despite the painful lesson from BP's first

conversion of the massive clean-up costs into expenses, it appears this same loophole may remain applicable to BP's new settlement.

Also on the offshore oil and gas front, a number of newer subsidies are benefiting exploration for extreme forms of fossil fuels – those that are difficult to reach and expensive to produce, despite the fact that the vast majority of already-proven fossil fuel reserves can never be burned if there is a chance of avoiding the worst impacts of climate change (see full report, *Empty promises: G20 subsidies to oil, gas and coal production*). For example, in the case of Arctic oil exploration carried out by Shell, the US Coast Guard's top officer recently indicated that substantial Coast Guard resources, including a vessel that was being used to prevent cocaine smuggling (Gardner, 2015), had been diverted to monitor Shell's drilling activities, although this particular subsidy is not quantified here, as it is not within the scope of this analysis.

While the bulk of US subsidies to fossil fuel producers benefit the oil and gas sector, coal producers also benefit from significant subsidies: the Powder River Basin is not designated as a coal-producing region, despite supplying approximately 40% of US coal and being the largest coal reserve in the US. This lack of official designation allows coal companies to lease federal lands at costs lower than would otherwise be the case, amounting to a subsidy of more than \$1 billion per year when last calculated in 2012 (Sanzillo, 2012). In addition to underpricing federal leases, as is the case with the application of oil and gas royalties described above, the federal process for assessing royalties on coal also contain loopholes that amount to a significant subsidy. Instead of assessing royalties on the

**Table 1: US 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
Corporate tax exemption for master limited partnerships	Tax expenditure	Oil and gas	Production	3,931	3,931	3,931
Intangible drilling oil and gas deduction	Tax expenditure	Oil and gas	Production	3,490	1,663	2,577
Lost royalties on offshore drilling (Outer Continental Shelf Deep Water Royalty Relief Act)	Tax expenditure	Oil and gas	Extraction	576	2,120	1,348
Excess of percentage over cost depletion	Tax expenditure	Oil and gas	Extraction	1,100	1,000	1,050
Powder River Basin not designated as a coal-producing region	Tax expenditure	Coal	Extraction	1,047	1,047	1,047
Other national and state subsidies (see Data Sheet)				10,561	10,944	10,538
Total national subsidies (\$ m)						20,491

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

ultimate sale price of coal produced on federal lands, the government assesses royalties on the price of the initial sale (Lee-Ashley and Thakar, 2015). This occurs even when a parent company sells coal to one of its own affiliate companies, and the affiliate then re-sells the coal to foreign buyers at a higher price. The impact of this particular subsidy is not included in the total US subsidies due to a lack of available recent estimates, but a 2012 investigation by Reuters estimated that this loophole cost \$40 million in tax revenue on coal exports from Wyoming and Montana in 2011 (Rucker, 2012). The US Department of Interior's Bureau of Land Management launched a high-level review, in part to reassess this loophole, in July 2015.

Recent research has found that production subsidies in the Powder River Basin equal nearly \$8 per tonne, a total of \$2.9 billion per year, and that removal of these subsidies would result in an 8% to 29% reduction in demand for coal from the basin, with associated cumulative reductions of 0.7 to 2.5 GtCO<sub>2</sub> to 2035, demonstrating the significant potential climate impact of removing these production subsidies (CTI et al., 2015).

Some of the largest US subsidies for fossil fuel producers are actually state-level tax breaks. An example is the Texas severance tax exemption for natural gas, a subsidy worth \$811 million annually. Among major oil, gas and coal-producing states, Texas and Alaska each provide subsidies to producers totalling more than \$1 billion annually.

There are also a number of subsidies that are not quantified here, either because numbers are not available or possible to readily estimate, and also because certain types of support may not meet the definition of subsidy. Some other recent state-level developments on subsidies are also out of the scope of being quantified for the purposes of this assessment, but they present illustrations of how US subsidies for fossil fuel producers are playing out during a rapid decline in global oil prices. For example, in Alaska, an oil and gas production tax is expected to cost taxpayers more than it brings in for fiscal years 2015 and 2016 (Box 10 in the full report, *Empty promises: G20 subsidies to oil, gas and coal production*). Despite being designed as a tax to generate revenue for the state, because of the types of tax breaks and credits available to producers, this particular tax is expected to result in a net cost to Alaskans of \$442 million. These subsidies are not quantified in the total amount for national subsidies because they are for 2015 and 2016, and this analysis considers the period from 2013 to 2014.

In another example, for the past several years, Pennsylvania has been one of the major gas-producing states in the country, yet has lacked any severance tax on natural gas, representing a huge windfall to producers. However, because this is a standing zero tax rate and not an exemption or deduction, it is not counted as a subsidy here. But it is important to recognise that the list

of producer subsidies presented here is not an exhaustive accounting of those subsidies and similar types of government support that benefit producers and represent a loss to treasuries.

## State-owned enterprise investment

The US does not have state-owned enterprises (SOEs) engaged in upstream oil, gas and coal production. However, the federal government does own several utilities that produce and sell coal-fired electricity, including the Tennessee Valley Authority and the Western Area Power Administration (which sells power from one coal-fired power plant owned and operated by a collection of federal, state and municipal agencies).

Of these, the largest generator of electricity from fossil fuels is the Tennessee Valley Authority, which operates 11 gigawatts (GW) of coal-fired generating capacity and approximately 9 GW of gas-fired generating capacity (Tennessee Valley Authority, n.d.). It is also worth noting that the Western Area Power Administration's Navajo Generating Station is the third-largest point source of carbon dioxide emissions in the US (EPA, 2015a). Data on investment in fossil fuel production by these federally-owned utilities was not readily available, and is not included in this analysis.

There are also several municipally owned utilities in the US that produce and sell electricity generated in part by coal or natural gas. Although a full analysis of investment by these multiple, relatively small utilities is not within the remit of this study, the largest of these is City Water, Light and Power in Illinois, which operates fossil fuel electricity generating assets with a combined nameplate capacity of 723 MW (City Water, Light and Power, 2015), which produced 2.9 TWh of electricity in their fiscal year ending 2014 (Burns, 2014).

## Public finance

### Domestic

There was no significant public financing for fossil fuels domestically found from independent US government agencies. The US Department of Agriculture operates the Rural Utilities Service, which provides loans and loan-guarantees at interest rates below those available to investor-owned utilities. The total value of all of these preferential loans and guarantees, as well as federal support to federally owned utilities, was estimated at \$30 million for 2013 (EIA, 2015a). There are also some government-backed loan opportunities for small businesses, including those in the energy sector, as well as financing opportunities for R&D.

## International

US public finance for overseas fossil fuel projects totalled \$7.5 billion in 2013 and 2014 – an annual average of \$3.7 billion. It was dominated by financing from the US Export-Import Bank (ExIm), with additional significant amounts from the US portion of ownership in the major multilateral development banks. Bilaterally, the US provides billions of dollars in loans and guarantees each year for overseas oil, gas and coal projects through ExIm and, to a much smaller extent, through the Overseas Private Investment Corporation (OPIC) (Table 2).

Notably, OPIC has instituted measures to limit greenhouse gas emissions from projects that it funds, resulting in a far smaller amount of fossil fuels financed from 2013 to 2014 (\$126 million) compared with ExIm, which financed \$5.8 billion to fossil fuel projects from 2013 to 2014. Further, the US commitment to stop funding coal power plants overseas except in extreme circumstances has meant lower coal financing in recent years from both ExIm and OPIC. The Obama administration has also sought to apply emissions restrictions to ExIm, an effort that has suffered setbacks as a result of Congressional actions that have deferred or defunded the implementation of ExIm's restrictions on investment in high-emitting infrastructure. At the time of writing, ExIm's Congressional authorisation has lapsed, which means that it is not committing funding to any new investments for the time being.

Other US government agencies, including the Millennium Challenge Corporation, the US Agency for International Development, and the US Trade Development Agency provide public financing for energy projects, but

there is not enough publicly available information to determine the amount of financing from these institutions going to fossil fuels, and therefore these agencies were not included in the tallies. The Millennium Challenge Corporation, in particular, 'expects to invest approximately \$2 billion to support Power Africa through compacts that improve the quality and reliability of electricity and promote climate-smart measures', and, given Power Africa's emerging focus, a portion of that financing is likely to go to natural gas infrastructure and power plants (MCC, 2015).

The US also contributed an annual average of \$743 million to fossil fuel projects in 2013 and 2014 through its shares in the World Bank Group, African Development Bank, Asian Development Bank, Inter-American Development Bank and European Bank for Reconstruction and Development.

## Private companies

### Private upstream oil and gas companies

US oil and gas production has boomed in recent years, with oil production at nearly 2 billion barrels in 2009 climbing to nearly 3.2 billion barrels by 2014. Natural gas production has risen from 26 trillion cubic feet to nearly 32 trillion cubic feet over the same period (EIA, 2015b, 2015c).

No single player dominates the upstream US oil and gas industry: between 2013 and 2014, 37 oil and gas companies produced an average of at least 150 million

**Table 2: US 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
<b>Domestic</b>						
N/A	-	-	-	-	-	-
Subtotal domestic	-	-	-	-	-	-
<b>International</b>						
Export-Import Bank of the United States	79	-	5,097	682	5,858	2,929
Overseas Private Investment Corporation	-	-	68	58	126	63
Multilateral development banks	2	220	400	863	1,485	743
Subtotal international	81	220	5,565	1,603	7,469	3,735
<b>Totals</b>						
Total public finance (\$ m)						3,735

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

Note: N/A indicates data was not publicly available at the time of publication.

barrels of oil equivalent (mboe) annually (Table 3). ExxonMobil, ConocoPhillips, Chesapeake, Anadarko and Chevron, all headquartered in the US, were the top five producers by volume of combined oil and gas production. Oil production is more concentrated than gas production, with ConocoPhillips accounting for nearly 6.5% of production and Chevron and ExxonMobil each accounting for nearly 6% of US oil production in 2014.

It is notable that a number of the world's vertically integrated 'supermajor' oil and gas companies that are headquartered in the US are also major players in the US market, across upstream, midstream and downstream oil and gas activities. These companies include ExxonMobil, ConocoPhillips and Chevron.

One of the biggest US subsidies benefiting the upstream oil and gas industry is the intangible drilling oil and gas deduction, described in the section on national subsidies, worth an average of \$2.6 billion annually between 2013 and 2014.

### Private midstream/downstream oil and gas companies

As of 1 January 2015, approximately 46% of US oil refining capacity was concentrated among five companies, detailed in Table 4 (EIA, 2015d).

The US downstream oil and gas sector receives substantial subsidies. One of the largest of these is the benefit conferred by 'last-in, first-out' (LIFO) accounting, described in the section on national subsidies. This subsidy averaged nearly \$1.1 billion between 2013 and 2014.

For the midstream oil and natural gas sector, pipelines also benefit substantially from subsidies in the form of

industry-specific favourable tax treatment. Tax exemptions through the MLP structure also benefit many oil and gas pipelines, which benefit from the ability to recover 'phantom' taxes through regulated rates charged to customers (Koplow, 2013). The total of MLP-related subsidy was estimated at \$3.9 billion annually between 2013 and 2014, with a portion of that flowing to midstream oil and gas.

### Private coal companies

More than 90% of coal production in the US is bituminous and sub-bituminous coal (split roughly evenly between the two), with lignite and anthracite accounting for 7.8% and 0.2% of US coal production in 2013 respectively (EIA, 2015e).

In 2013, for the first time in two decades, total US coal production was below 905 million tonnes. The share of US coal that is exported has remained roughly steady over the past several years, at between 11% and 12% of production (ibid.).

The top four US coal producers are also headquartered in the US (Table 5). The market capitalisation of these companies has declined precipitously in recent years as the prospects for coal in the US diminish: the market capitalisation of these four companies stood at just \$1.2 billion in mid-2015, compared to \$22 billion in 2010 (*The Economist*, 2015).

Major subsidies to the upstream coal industry include the failure to designate the Powder River Basin as a coal-producing region, costing an average of \$1.1 billion per year, as well as direct spending in the form of treasury

**Table 3: Top private upstream oil and gas producers in the US, 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
ExxonMobil	United States	181	186	47	43	13,620	14,340	1,638	1,071
ConocoPhillips	United States	194	205	20	20	10,034	11,381	2,188	1,347
Chesapeake	United States	72	75	38	35	7,935	7,659	-339	81
Anadarko	United States	102	133	29	31	9,145	10,775	-432	-340
Chevron	United States	184	188	15	15	11,900	11,007	1,161	1,895
BP	United Kingdom	139	152	19	19	8,624	8,575	2,170	2,677
Devon Energy	United States	98	123	23	22	7,682	7,497	-1,061	101
EOG Resources	United States	134	173	14	14	8,766	10,533	27	255
BHP Billiton	Australia	69	109	17	18	7,915	7,181	-1,872	1,063
Southwestern Energy	United States	3	12	25	28	3,427	3,791	-796	-296

Source: Rystad Energy, 2015.

contributions to the Black Lung Disability Trust Fund, which averaged \$304 million per year.

### Private electricity companies (fossil fuel-based)

From the perspective of electricity generation, the US power sector is made up of a mix of publicly owned utilities, investor-owned utilities, non-utility generators, electric cooperatives, and a few federal power agencies. In terms of total generation, investor-owned utilities and non-utility generators (also called independent power producers) are the dominant players. As of 2013, investor-owned utilities and non-utility generators made up a combined 79% of generation in the US, producing roughly equal amounts of electricity (American Public Power Association, 2015). The US generated 4 TWh of electricity in 2014, of which 39% was from coal, 27% from natural gas, 19% from nuclear, 6% from hydropower and 7%

from other renewables including wind and solar (EIA, 2015f).

The electricity sector was responsible for 31% of US greenhouse gas emissions in 2013 (EPA, 2015b), more emissions than any other sector of the economy. The US Environmental Protection Agency has released a final ‘Clean Power Plan’ rule that aims to cut greenhouse gas emissions from existing power plants.

Producers of electricity from fossil fuels benefit from several US subsidies, including a favourable amortisation period for pollution control technologies on coal-fired power plants, estimated to be worth \$400 million annually. Likewise, a credit for investment in ‘clean coal’ facilities also cost an average of \$190 million annually over the 2013–2014 period, alongside a carbon dioxide sequestration credit worth an average of \$80 million annually.

**Table 4: Private companies operating in the US downstream oil and gas sectors**

Company	Refinery locations	Capacity (million barrels per day)
Valero	Texas, Tennessee, Louisiana, California, Oklahoma	1.96
ExxonMobil	Texas, Louisiana, Illinois, California, Montana	1.86
Marathon Petroleum	Louisiana, Texas, Kentucky, Illinois, Michigan, Ohio	1.73
Phillips 66	Louisiana, Texas, New Jersey, Oklahoma, California, Washington, Montana	1.61
Motiva	Texas, Louisiana	1.08

Source: EIA (2015d).

**Table 5: Top 5 private coal producers by production and profit in the US, 2013–2014**

Company	Headquarter country	Coal production (in country) – thousand tonnes, 2013	Percentage of total US coal production, 2013	Profit (from country operations, if possible) (varying metrics)	Countries in which the company operates producing assets (if global profit)
Peabody Energy	United States	166,264	18.6	\$814 million (2014 adjusted EBITDA) *	United States, Australia
Arch Coal	United States	118,147	13.2	\$280 million (2014 adjusted EBITDA)	United States
Cloud Peak Energy	United States	77,740	8.7	\$202 million (2014 adjusted EBITDA)	United States
Alpha Natural Resources	United States	77,053	8.6	\$498 million (2014 adjusted EBITDA)	United States
Rio Tinto Group	United Kingdom	56,154	6.3	US coal production not disaggregated in earnings reports	

Source: EIA (2015e).

Notes: \* EBITDA refers to earnings before interest, taxes, depreciation, and amortisation.

## 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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