



G20 subsidies to oil, gas and coal production: Germany

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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 Germany's production subsidies** is available at:
<http://www.odi.org/publications/10072-g20-subsidies-oil-gas-coal-production-germany>

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Country Study
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Background

Germany is Europe's second largest energy producer after France, and its largest energy consumer (Eurostat, 2015; EIA, 2015). It has become increasingly reliant on imports to meet the majority of its energy demand as a result of the country's dwindling domestic oil and gas reserves and its accelerated nuclear phase-out in response to Japan's 2011 Fukushima Daiichi nuclear disaster (EIA, 2015). As part of the country's commitment to the *Energiewende* (energy transition), following the adoption of the Renewable Energy Act (*Erneuerbare-Energien-Gesetz*, EEG) in 2000, Germany has some of the strongest renewable energy policies in the world.¹ This has enabled a substantial increase in the share of renewables in the production of electricity from 6.6% in 2000 to 34% in the first half of 2015, most of which has replaced phased-out nuclear capacity (Burger, 2015).

In spite of Germany's success in boosting renewable energy production, the country is still the EU's second largest coal producer after Poland (Eurostat, 2015). Moreover, the German government continues to provide subsidies to the coal industry. Most of these subsidies are targeted at enabling the socially acceptable closure of mines, with those subsidies directed to hard coal mining, as agreed in 2007, scheduled to be phased out by 2018 (OECD, 2013). This limit for phasing out subsidies to uncompetitive coal mines was subsequently adopted at EU level in 2010 (OECD, 2013; Commission Decision, 2010).

Domestic oil and gas production in Germany from conventional sources is relatively limited though the nation has significant refining capacity. Shale gas activities in Germany have been limited to date. However, an emerging legal framework seems to be designed to enable shale gas exploration (reserves are estimated at 0.7 to 2.3 billion cubic metres), with extraction potentially beginning by 2019 (Nelsen, 2015). As the legislative process is still underway, it is uncertain whether this will happen.

In addition to continued national subsidies for the coal sector, the government recently announced plans for capacity payments to 2.7 GW of lignite-fired power stations until 2021, when these plants are to be shut down (Schlandt, 2015). These payments are being introduced despite the fact that the grid is thought to be sufficiently supplied until 2020 (ENTSOE, 2015).

Germany's utilities are struggling to adapt to the fundamentally changing conditions in the electricity market away from centralised production and distribution to low-carbon, renewable-based power generation. They have – as a result of dwindling wholesale electricity prices

caused by over-capacity, falling demand and an increasing share of low-marginal cost renewables in electricity production – faced significant losses. The largest utility, E.ON, reported a record annual loss of \$4 billion in March 2015. Although a significant amount of new coal-fired power plant capacity was planned to come on line between 2012 and 2015, additional challenges to the industry, including court proceedings, technical complications and strong local public opposition led to the abandonment of many of the planned projects (Pöyry, 2013). Very few new coal developments are in the pipeline, and the ones that are face delays.

In an effort to minimise losses from their power plants, RWE and E.ON filed a claim against the German government's decision to force the closure of eight nuclear power plants while also lobbying for the introduction of capacity payments for fossil fuel-fired back-up generation capacity.

National subsidies

Over the last four decades substantial subsidies have been directed to hard coal and brown coal. These amounted to \$538 billion between 1970 and 2014 (for comparison, subsidies to renewables were estimated at \$130 billion over the same period) (Küchler and Wronski, 2015). The German hard coal industry would be largely uneconomic without this support (Anderson, 2014).

As part of a 10-year package to provide funding for a socially acceptable phase-out of the hard coal industry, the federal government and the state of North Rhine-Westphalia together provided national subsidies worth \$1.4 billion in 2013 and \$1.5 billion in 2014 (BmF, 2014), with the German hard coal corporation RAG AG matching this funding with a much smaller amount.² Further, both the local and federal government have agreed to cover the cost of liabilities if the sales of assets do not cover the decommissioning costs (OECD, 2013).

In addition, the government provides early retirement schemes to unemployed hard-coal miners and health insurance for those still working in the sector in North Rhine-Westphalia and Saarland (*Anpassungsgeld für Arbeitnehmer des Steinkohlenbergbaus*). These support measures were worth \$151 million in both 2013 and 2014, and this programme too is planned to be phased out by 2018 (BmF, 2014).

Under the lignite remediation programme (*Braunkohlesanierung*) the federal government and states together provide support for the rehabilitation of more

1 Including a plan to decarbonise the electricity sector by 2050, while phasing out nuclear power by 2022.

2 The German hard coal corporation (RAG AG), the state of North Rhine-Westphalia and the federal government in 2007 agreed to provide support that would be gradually reduced from \$2.3 billion in 2009 to \$1 billion in 2018. The government accounts for by far the biggest share of the funding. Between 2014 and 2019 the federal government, the state of North Rhine-Westphalia and RAG AG account for total maximum subsidies of \$8.2 billion, \$1.5 billion and \$244.9 million respectively (BMW, 2015b).

than 200 mines in 31 lignite mining areas. Federal and state government support for 2013 and 2014 were estimated at an average cost of \$305 million per year (BmF, 2012).

Because of limited domestic conventional oil and gas resources and virtually all coal deposits already being identified, Germany does not have any major national subsidies aimed specifically at fossil fuel exploration (Bast et al., 2014). Nonetheless, in 2014 the government did spend \$10 million on an exploration programme budgeted within energy and environment spending, with the aim of incentivising the exploration for EU-listed critical raw materials, including coking coal (*Explorationsförderprogramm*) (BmF, 2014; DERA, 2015). As it is unclear what portion of this exploration programme is specifically targeted at fossil fuels, it is not included in the total national subsidies estimate.

Government budgetary support to research, development and deployment (RD&D) in the oil, gas and coal industry in Germany has increased in recent years and stood at \$44 million in 2013 and at \$46 million in 2014 (IEA, 2015). Of this funding, \$22 million and \$8 million were allocated to research into carbon capture and storage (CSS) technology in 2013 and 2014, respectively. By comparison, Germany spent \$397 million on RD&D of renewable energy sources and \$248 million on RD&D in energy efficiency (IEA, 2015).

In terms of foregone revenue, royalty exemptions provide another significant subsidy to Germany's coal industry. Although federal guidelines set royalty rates for hard coal extraction at 10%, states are free to deviate from this rate. The state of North Rhine-Westphalia, which produces 90% of German hard coal, maintains royalty rates of 0%. Royalty exemptions for the mining of hard coal and lignite amounted to \$70 million and \$351 million, respectively, in 2014 (Küchler and Wronski, 2015). Although now phased out for hard coal mining activities in North Rhine-Westphalia, water used in mining activities is still partly exempted from taxation for lignite mining (*Wasserentnahmeentgelte*) at a value of \$29 million in 2014 (ibid.).

In terms of subsidies to inputs in the energy production process (for example, in a power station or an oil refinery), the 'manufacturers' privilege' (*Herstellerprivileg*) exempts coal, natural gas and petroleum products from the energy tax. This subsidy was worth \$383 million in both 2013 and 2014 (BmF, 2014).

Combined, national subsidies to fossil fuel production in Germany amounted to \$2.8 billion (€2.2 billion) per annum over the years 2013 and 2014 (see Table 1).

State-owned enterprise investment

We are not aware of any state-owned enterprises (SEOs) operating in the oil, gas and coal industries (either upstream or downstream). However, there are many smaller electricity and gas distribution companies that are

wholly or partially owned by municipalities with those electricity companies having an electricity generating capacity of 23 GW (OECD, 2013). Many utilities that were privatised during the 1990s have been renationalised in recent years (Schlandt, 2015).

Although a full analysis of investment by these (partially) municipality-owned utilities could not be completed, a notable example of a state-owned utility with fossil fuel generation capacity is EnBW, which is 98%-owned by a collection of municipalities in Baden-Württemberg (EVN, 2015). EnBW produced 59 TWh of electricity in 2013, 87% of which was from fossil fuels (EnBW, 2014).³

Public finance

Domestic

One instance of domestic public finance for fossil fuel infrastructure was identified. In this case, KfW lent \$86 million to the German utility Stadtwerke Düsseldorf to finance a 596 MW capacity combined heat and power, combined cycle natural gas-fired power plant. A summary is listed in Table 2 while transaction details are provided in the accompanying spreadsheet. Due to a lack of transparency on the part of German public finance institutions, there may be many other transactions not included here.

International

While phasing out subsidies to its domestic hard coal industry, Germany continues to finance fossil fuel production overseas through numerous entities: its export finance bank (KfW IPEX), development finance agency (KfW Entwicklungsbank), KfW subsidiary DEG, and trade credit insurance company (Euler Hermes). Unfortunately, such financing in Germany is highly opaque and data are not readily available through either KfW and Euler Hermes annual reports or other government publications meaning the following totals are likely to be underestimates. The annual average finance provided for fossil fuel production by both KfW and Euler Hermes over this period is nearly \$2 billion per year. This financing supported fossil fuel production in the following countries: Singapore, Jordan, Norway, Brazil, Saudi Arabia, Israel, India, United Arab Emirates, Russia, Kosovo, China, Greece, Switzerland, Kazakhstan, Australia and Viet Nam. A detailed breakdown is provided in the attached spreadsheet while a summary is provided in Table 2.

Publicly available information suggests that financing by the national development agency (*Deutsche Gesellschaft für Internationale Zusammenarbeit*, GIZ) is mostly geared towards energy efficiency and renewable energy projects rather than to fossil fuel production (GIZ, n.d.). However,

3 Total of brown coal, hard coal and gas. 'Other' thermal generation not included.

Table 1: Germany'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
Royalty exemptions/ reductions for hard coal and lignite	Tax exemption	Coal	Extraction	N/A	421	421
Manufacturers' privilege: exemption from energy tax on fuel products used as inputs by refineries and power plants	Tax exemption	Unclassified (energy inputs for energy products)	Refining, electricity generation	383	383	383
Combined aid in North Rhine-Westphalia (Hard coal phase-out)	Direct spending	Coal	Production (phase-out)	1,419	1,495	1,457
<i>Braunkohlesanierung</i> : government spending on rehabilitation of lignite mining sites	Direct expenditure	Coal	Rehabilitation	305	305	305
Early retirement scheme	Direct expenditure	Coal	Production (phase-out)	151	151	151
Other national subsidies (see Data Sheets)				44	75	74*
Totals						
Total national subsidies (\$ m)						2,791
Total national subsidies (€ m)						2,187

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

Note: *When data is not available for both 2013 or 2014, the two-year average is based on the data for one year only.

like the other institutions, a lack of transparency prevents concrete identification of where this funding is targeted.

Germany also contributed an annual average of \$848 million to fossil fuel production in 2013 and 2014 through its shares in the World Bank Group, European Bank for Reconstruction and Development, European Investment Bank, Asian Development Bank, Inter-American Development Bank and African Development Bank, which range from 1.9% to 16.1% depending on the institution.

In December 2014, the German government amended its policy on financing coal-fired power plants, differentiating between development finance and export finance. While development finance through KfW Entwicklungsbank will no longer be available for the construction of new coal-fired power plants or the upgrading of decommissioned coal plants, no restrictions have been put on finance for coal mining. Although ostensibly being subject to stricter lending terms, export finance through KfW IPEX (which currently accounts for the bulk of finance provided to coal-fired power projects) and credit guarantees through Euler Hermes may, moreover, continue to be used to support coal plants (Neuwirth, 2015; KfW, 2015). According to parliamentary questions in March and July 2015, Euler Hermes is considering guarantees for coal projects in 15 countries. These guarantees may also be restricted if all OECD countries agreed to such restrictions. However, thus far OECD members have failed to reach agreement on this topic.

Private companies

Private upstream oil and gas companies

Total oil and gas production fell from 83 million to 73 million barrels of oil equivalent (mboe) between 2013 and 2014. Approximately three quarters of production was by ExxonMobil (United States), Shell (Netherlands) and LetterOne Group (Luxembourg) with Wintershall (Germany) and GDF Suez-owned ENGIE (France) responsible for almost all of the remaining production.

Private midstream/downstream oil and gas companies

Although Germany has only limited domestic oil and gas reserves, it has a significant refining capacity spread over 14 refineries and a number of companies with split ownership (Table 4).

Private coal companies

Hard coal mining is on the decline in Germany with all mines set to close by 2018 when subsidies to hard coal mining are planned to be phased out. In 2012, the Ibbenbüren, the Ruhr and the Saar coal fields all produced hard coal for the dominant industrial player, Deutsche Steinkohle AG (100% owned by RAG Aktiengesellschaft). However, the annual capacity of 14.6 million tonnes fell by at least 10% over the year with the closure of West mines and mines in Saarland (Anderson, 2014). Indeed, in 2013,

Table 2: Germany'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	Multiple or unspecified fossil fuels	Total fossil fuel finance 2013 & 2014	Annual avg. fossil fuel finance
Domestic							
KfW	-	-	-	86	-	86	43
Subtotal domestic	-	-	-	86	-	86	43
International							
Euler Hermes	85	1,017	703	250	36	2,091	1,045
KfW	-	400	300	546	71	1,316	658
Multilateral development banks	1	69	386	1,240	-	1,696	848
Subtotal international	85	1,486	1,388	2,036	107	5,103	2,551
Totals							
Total public finance (\$ m)							2,594
Total public finance (€ m)							2,032

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

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

Company	Headquarter Country	Oil and gas production (in country) (mboe)		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
ExxonMobil	United States	26	22	468	439	621	486
Shell	Netherlands	19	17	309	301	432	359
LetterOne Group	Luxembourg	17	15	200	211	594	483
Wintershall	Germany	11	10	206	196	430	335
ENGIE (GDF SUEZ)	France	9	8	222	222	257	186
Vermilion Energy	Canada	1	1	23	15	30	22
Internationale Tiefbohr GmbH	Germany	0	0	6	4	0	1

Source: Rystad Energy, 2015.

RAG reported mining 7.5 million tonnes and total sales of \$2.7 billion (RAG Aktiengesellschaft, 2014). Profits from these sales were not directly available.

As of 2014, three companies dominated lignite mining for power generation, all of which extract from large, opencast mines (Anderson, 2014). RWE Power AG holds mines with a total annual capacity of 105 million tonnes,

producing 94 million tonnes in 2014 (DEBRIV, 2015). In both 2013 and 2014 Vattenfall Europe Mining AG mined 63 million tonnes of lignite and has plans to extend two of its mines as well as developing three new mines (DEBRIV, 2015; Vattenfall, 2014). Vattenfall's parent company, however, is investigating the sale of all of its German lignite business given its significant contribution to the company's

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

Company	Refinery locations	Capacity (million barrels)
Deutsche Shell AG	Godorf, Hamburg and Grasbrook	256
Raddinerie Heide GmbH (Klesch & Co. SA, 100%)	Heide	35
Esso Deutschland GmbH (ExxonMobil Central Europe Holding GmbH, 100%)	Karlsruhe and Ingolstadt	245
Ruhr Oel GmbH (Petróleos de Venezuela S.A., 50% and BP Gelsenkirchen GmbH, 50%)	Gelsenkirchen	215.5
BAYERNOIL Raddineriegesellschaft mbH (OMB AG, 45%; Ruhr Oel GmbH, 25%; AGIP Deutschland GmbH, 20%; Deutsche BP AG, 10%)	Neustadt-Donau	145

Source: Anderson, 2014

Table 5: Top coal producers by production and profit in Germany, 2013–2014

Company	Headquarter country	Coal production (in country)	Profit (from country operations, if possible) (varying metrics)	Countries in which the company operates (if global profit)
RAG Aktiengesellschaft	Germany	7.5 million tonnes of hard coal	Unknown. Sales of \$2.7 billion	Germany (with advisory roles elsewhere)
RWE Power AG	Germany	93.6 million metric tonnes of lignite across group (98.3 MMT in 2013)	Unknown. Integrated across countries and industries.	Germany, Netherlands, UK, Turkey
Vattenfall Europe Mining AG	Germany (Group: 100% owned by Swedish government)	63 million tonnes in 2013 and 2014.	Unknown. Integrated industries.	-
MIBRAG	Germany	20.9 million tonnes in 2014	Unknown. Integrated across industries.	-

Source: Anderson, 2014; DEBRIV, 2015; RAG Aktiengesellschaft, 2014.

greenhouse gas emission (GHG) impact (although if purchased by another entity this would not impact global GHG emissions) (Vattenfall, 2015). Finally, Mitteldeutsche Braunkohlengesellschaft mbH (MIBRAG) produced 21 million tonnes in 2014 (DEBRIV, 2015; Anderson, 2014). Almost all lignite mines transfer lignite directly to power stations. A much smaller amount of lignite is mined as a raw product for the chemical industry by ROMONTA GmbH (DEBRIV, 2015).

Private electricity companies (fossil fuel-based)

Germany's power industry is dominated by four major players: RWE, E.ON, Vattenfall and EnBW. In an attempt to adapt to the *Energiewende*, E.ON has decided to split its business in two in 2016, with the new E.ON keeping all debts, focusing on renewables and smart grids and

transferring its fossil fuel and hydro assets to a new, almost debt-free company, Uniper (Schlandt, 2015; Schwartzkopff et al., 2015). In response to proposed legislation that would make parent companies in Germany responsible for nuclear decommissioning and clean-up (Thomas, 2015), E.ON recently decided also to keep its nuclear assets rather than transferring these to Uniper.

Vattenfall, which is owned by the Swedish government, has taken a different approach on account of attempts to limit its CO₂ emissions. In 2013, 81% of the company's electricity production in Germany was generated using lignite. Despite concerns from the German government, recent changes in the market appear favourable for Vattenfall's prospects for selling its lignite mines and power stations (Clark, 2014; Pollard, 2015).

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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