Country brief

Czech Republic
France
Germany
Greece
Hungary
Italy
Netherlands
Poland
Spain
United Kingdom

Cutting Europe's lifelines to coal

Tracking subsidies in 10 countries

Laurie van der Burg

Germany

Key findings

Transparency – subsidy reporting

Rating: very good

- Germany is transparent about most subsidies, thanks to biannual reporting by the government in the Subventionsbericht der Bundesregierung.
- Germany is also participating in a fossil fuel subsidy peer review process (with Mexico), as part of the G20 countries' longstanding commitment to phase out subsidies.

Coal mining – subsidy phase out

Rating: good

- Germany's leadership on phasing out support to hard coal mining (set in 2007, with a 2018 deadline) has led the EU to establish the same deadline in 2010.
- Germany's phasing out of coal mining subsidies to uncompetitive coal mines has led to a shift away from coal mining.

Coal fired power – subsidy phase out

Rating: very poor

- As recently as 2015, Germany introduced a new subsidy to coal-fired power. It will pay operators for placing their power stations on standby in a 'capacity reserve' until 2021, when they are to be decommissioned. A planned new capacity reserve is currently under investigation by the European Commission (European Commission, 2017)

1. Trends in the production and use of coal in Germany

Germany is the European Union's (EU) biggest producer and user of coal. It has significant coal mining operations, and remains the world's largest producer of lignite (OECD, 2015).[1] The production of hard coal is now declining as a result of the gradual phasing out of long-term financial support from the government, without which it is no longer profitable. Germany agreed to end subsidies to uncompetitive hard coal mining by 2018 in 2007, a commitment that was subsequently adopted at EU level in 2010 (German government, 2007; European Union, 2010).

Despite a rapid and significant increase in the share of renewables in electricity generation over recent years and the government's objective to generate 80% of electricity from renewables by 2050, coal remains Germany's main source of electricity generation, accounting for almost half (42%) of power generation in 2015 (AG Energiebilanzen, 2016). However, coal is not economically favourable, as renewables, overcapacity and a reduction in power demand have pushed down wholesale electricity prices (Gray, 2015). Utilities have shut about 18% of Germany's hard coal-fired capacity since 2011 (Zha and Morrison, 2016).

To meet its objective of a 62-61% reduction in greenhouse gas emissions by 2030 compared to 1990 levels, Germany will need to phase out coal-fired power, but it is lagging behind other European countries that have recently made commitments to do so (Matthes et al., 2017; Federal Ministry for the Environment, Nature Conservation, Building and Nuclear Safety, 2016).[2] Germany is on course to fail several of its key energy transition targets for 2020, partly because of high coal-fired power emissions. A Climate Action Plan, tabled by Environment Minister Barbara Hendricks, setting emission reduction targets for individual sectors of the economy, including for power, has been designed to help Germany achieve its climate targets. According to Hendricks, the plan implies a coal exit, but it omits a timeline for the phasing out of coal-fired power (Amelang, 2016).

Even without a clear government plan for ending coal-fired power, the premature closure of coal-fired power plants is likely to accelerate due to a combination of factors, including a decline in profitability, an increase in litigation, technical complications with boiler casings and strong local public opposition (Zha and Morrison, 2016; Pöyry, 2013). New hard coal-fired power plants that have entered operation on the basis of investment decisions taken between 2007 and 2009 have led to significant financial losses for utilities and are unlikely to recoup their investment costs (Littlecott, 2016; Schulz & Schwartzkopff, 2015). As a large number of utilities are either wholly or partially owned by municipalities, their budgets are also affected (OECD, 2013). In addition to the increasing financial and economic risks of coal-fired power in Germany, coal is a major source of greenhouse gas emissions and air pollution, posing a threat to the environment and public health. In 2015, it accounted for 28% of total greenhouse gas emissions in Germany, or 280mt of CO2 (Matthes et al., 2017). These are by far the largest coal power emissions in Europe and are twice as high as coal power emissions in Poland (Sandbag, 2016). In 2013, coal-fired power in Germany had an estimated health cost that ranged between €6.1 and €11.8 billion, causing more than 4000 premature deaths (Schaible et al., 2016).

2. Status of subsidies to coal and coal-fired power in Germany

As part of the G20 group, Germany has repeated its commitment to phase out fossil fuel subsidies every year since 2009. In addition, Germany – together with almost 40 countries and hundreds of companies and organisations – signed a communiqué at the negotiations for a global climate agreement in Paris in 2015. This statement called on countries to eliminate inefficient fossil fuel subsidies (FFFSR, 2015). A year later, as part of the G7, Germany called on all countries to end fossil fuel subsidies by 2025. The European Commission has furthermore repeatedly called on EU Member States to end environmentally harmful subsidies, including those to fossil fuels, by 2020.

Despite these various commitments, Germany adopted a new coal subsidy measure in 2015, in the form of capacity payments for lignite plants. This subsidy scheme replaced earlier plans to introduce a climate levy that would penalise polluters, with the aim of reducing the use of coal power. A planned new capacity reserve is currently under investigation by the European Commission (European Commission, 2017). In addition, Germany has significantly increased subsidies to the use of coal for industrial processes, through tax breaks for energy intensive industries. These grew fivefold, from €30 million a year in 2006 to about €150 million a year in 2014 (OECD, 2015). This increase in support for coal stands in contrast with Germany's efforts to gradually phase out subsidies that support the socially acceptable phasing out of hard coal mining by 2018, as well as early retirement payments to unemployed hard coal miners by 2027 (see the list of subsidies below). The combined aid to North Rhine Westphalia, although it is being gradually phase out, has an annual estimate of €1.86 billion. This subsidy is not primarily used to support the transition away from coal mining. Instead, it is primarily used to support the sale of hard coal from German coal mines to electricity and steel producers.

While not a focus of this study, Germany also continues to support coal both domestically and internationally through public finance.[3] Between 2007 and 2015, it provided $9 billion for coal in the form of direct finance, guarantees and technical assistance, along with aid for coal power, coal mining and related projects (Chen et al., 2016). Although Germany has restricted international

development finance to coal-fired power, it has not restricted development finance to coal mining or export finance for coal plants, which benefits German companies involved in the construction of coal plants like Siemens (Bast et al., 2015).

3. Germany's coal subsidy measures explained

Annual average coal subsidies (see table): €3202 million

The breakdown below provides a chronological overview of Germany's historic, continuing and new subsidies. The historic subsidies are not included in the annual average estimate of coal subsidies as these have been phased out:

- **Miners bonus** (historic: 1956 to 2008): This measure, first introduced in 1956, offered miners a targeted income-tax deduction, making wages in the coal-mining industry more attractive. The aim was to increase hard-coal production in Germany. The miner's bonus was phased out in 2007, with payments ending in 2008. Between 2005 and 2008, an annual average of €14.5 million was provided under this subsidy measure (OECD, 2015). It has since been phased out and is therefore not included in the table below.
- **Re-adaptation Aid Art. 56 ECSC** (historic: 1960 to 2006): This measure was introduced in 1960 to help workers affected by the decline of Germany's hard-coal, ore and steel industry. It was used for training programmes and allowances to support the workforce in transitioning into new sectors. Payments from the Federal Government ceased in 2006 (OECD, 2015). In 2005 and 2006, the government spent an annual average of €875,000 on re-adaptation aid. As this subsidy ended in 2006, it has not been included in the table below.
- **Manufacturers privilege** (continuing: 1930 onward): Since 1930, this measure has exempted manufacturers of energy products (e.g. refineries) from paying energy taxes for their use of coal, natural gas and petroleum products. A 2011 report on German subsidies concluded that the measure was harmful to the environment, but it has nonetheless been maintained to meet the EU's competition guidelines (UBA, 2011). The cost of this subsidy, in the form of foregone taxation averaged €9.8 million a year between 2005 and 2014. In 2014, the German government lost €10.9 million in tax revenue because of this subsidy (OECD, 2015).
- **Early Retirement Scheme** (ending: 1972 to 2027): The government provides older, unemployed hard-coal miners with early retirement payments for a maximum of five years or until they become eligible to claim their pensions. In some cases, payments are earmarked for covering health insurance for those still working in the sector in North Rhine-Westphalia and Saarland. This scheme was first introduced in 1972 and will be phased out by 2027 (OECD, 2015).
- **Royalty exemptions and reductions for hard coal and lignite mining** (continuing: 1982 onward): Although federal guidelines have set royalty rates for resource extraction at a minimum of 10%, states are free to deviate from this rate. For example, the state of North Rhine-Westphalia, which produces 90% of German hard coal, maintains royalty rates of 0% and justifies this on the basis of the former legislative situation ("Alte Rechte"), as most mines received their licenses prior to 1982. Additionally, the majority of states that produce lignite do not levy royalties on this (OECD, 2015).
- **Lignite remediation programme** (continuing: 1990 onward): The German government and lignite states have provided significant financial support to the rehabilitation of lignite-mines in the territory of the former GDR (east Germany) since 1990 (OECD, 2015). This support will continue to be provided until at least 2022. In 2012, the government reached an agreement on continued financing for the rehabilitation of lignite mining sites, with a focus on watershed management, between 2013 to 2017. Under the agreement, more than €1.2 billion will be provided by the federal government and the Länder. Since 1990, the lignite states have spent more than €9.3 billion on lignite mining rehabilitation (OECD, 2015).
- **Exemptions from water-tax on water used for lignite mining** (continuing: 1998 onward): In most federal states, a fee must be paid to extract ground water. Lignite mining uses large amounts of this, especially for the clearance of the lignite. Lignite mining companies in most federal states are exempted from paying this water extraction fee. This exclusion is an indirect subsidy to the mining industry (OECD, 2015).
- **Free emission allowances under the EU ETS** (Continuing: 2005 onward): Under the European emissions trading scheme, CO2 emission allowances are allocated, free of charge, to installations in the industrial sector. As a result, the operators of the installations are able to continue emitting CO2 at no cost, under the allowances allocated to them. This regulation also benefits coal consumption, such as in the steel industry (UBA, 2014). This support cannot be quantified.
- **Energy tax relief for energy intensive processes** (continuing: 2006 onwards): This measure, which was introduced in 2006 following the revision of the Energy Tax Act, exempts certain energy-intensive processes and techniques from the energy tax. These exceptions are available to certain processes in the steel and chemical industries, extractive industries and the glass, ceramic, brick, cement and lime industries. The subsidies provided for the use of coal in energy intensive processes, in the form of energy tax relief, have increased fivefold between 2006 and 2014, from €30 million to about €150 million (OECD, 2015).

This amount refers to a regular tax rate of €0.33 per Gigajoule, which is the EU minimum tax rate.

- **Energy tax exemption for power generation (continuing: 2006 onward):** For a long time, coal – unlike other heating fuels such as heating oil and natural gas – remained untaxed in Germany. This continues to be true in terms of the greater part of the coal used for power generation and steel. With effect from 1 August 2006, the German government abolished the taxation of the fossil fuels gas and oil used for power generation, which means that none of the fossil primary fuels in this sector are subject to taxation (UBA, 2014). In 2015, the exemption for coal had a financial volume of €153.2 million, plus €0.86 million for the use in CHP (calculated with the minimum tax rate of €0.33 per Gigajoule) (Destatis, 2016).
- **Research and development budget for coal (continuing: data available for 2007 to 2010 and 2012-2013):** According to IEA data, the German government spent an average of €15.8 million a year between both 2007 and 2010 and 2012 and 2013 on research, development and demonstration (IEA, 2016).
- **Combined aid in North Rhine Westphalia (ending: 2008 to 2018):** In 2007, the federal government, state of North Rhine-Westphalia and German hard coal corporation RAG AG, agreed on this 10-year funding package to support a socially acceptable phase-out of the hard coal industry. This aid package (Zuschüsse für den Absatz deutscher Steinkohle zur Verstromung und an die Stahlindustrie sowie zum Ausgleich von Belastungen infolge von Kapazitätsanpassungen) replaced and combined previous support programmes for Germany's hard-coal industry. In particular, it substituted the support provided through the Fifth Power Generation Act and Adjustment Aid to RAG (Storchmann, 2005). It has also provided general support by way of significant federal and state annual payments, which are due to expire at the end of 2018, in accordance with EU rules. The aid package serves two primary purposes: 1) to support the sale of hard coal from German coal mines to electricity and steel producers, and 2) to pay for capacity adjustments in decommissioned mines. In addition, 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). Of a significant share of this aid it can thus be said that it supports the continued operation of hard coal mines, instead of being allocated to transitioning away from coal mining. The German hard coal corporation RAG AG matches this government funding with a much smaller amount.
- **Electricity tax exemptions (continuing):** Different electricity price reductions, such as electricity tax exemptions, also benefit electricity consumption from coal-fired power generation. Furthermore, power generation from coal and coal mining use subsidised electricity themselves, which is exempted, such as that from the Renewable-Energies-Surcharge (Erneuerbare-Energien-Gesetz (EEG)). In 2013, lignite mining received an exemption of €67.7 million, due to the "Besondere Ausgleichsregelung" (FÖS, 2015). When marked as "consumption of own production", further credits for the electricity consumption of coal mining of around €60 million are possible (FÖS, 2015).
- **Capacity reserve payments (New: 2016 to 2020):** This scheme, agreed in 2015, will pay the operatowrs of eight lignite plants (total 2.7GW), owned by RWE AG, Vattenfall AB and Mitteldeutsche Braunkohlegesellschaft mbH, for placing their power stations on standby in a 'capacity reserve' until 2021, when they are to be decommissioned. The reserve will be entirely made up of brown coal-fired power and will cost the government an estimated €1.6 billion between 2016 and 2020. The capacity reserve was introduced after the initial plans for a climate levy penalising heavy polluters were dropped in the face of opposition from energy utilities, trade unions and local politicians (Littlecot, 2016). RWE, Germany's second largest electricity producer and ardent opponent of the climate levy, enjoyed a 6.4% jump in its share prices after it was announced that brown coal would be included in the scheme (van der Burg and Whitley, 2016). As a result of the new subsidy, utilities will now be paid for keeping their most damaging brown coal plants on standby, instead of being fined for polluting (which would have been the case under the proposed climate levy). This approach sets a dangerous precedent, and increases the risk that other utilities will seek compensation for shutting down prematurely (Littlecott, 2016). A planned new capacity reserve is currently under investigation by the European Commission (European Commission, 2017). The annual support to coal is estimated at €230 million (European Commission, 2016).

4. Opportunities to phase out coal subsidies in Germany

Germany is transparent about most subsidies, thanks to biannual reporting by the government in the Subventionsbericht der Bundesregierung. The country has plans for a gradual phasing out of subsidies to hard coal mining dating back to 2007, and has adopted restrictions to development finance to coal-fired power. More recently, Germany has agreed to follow China and the United States in undergoing a peer review of its fossil fuel subsidies under the G20 peer review process. Because it holds the G20 presidency in 2017 and has taken initial steps to limit support to coal, Germany is well placed to take international leadership in phasing out fossil fuel subsidies, including those to coal and coal-fired power. To take this opportunity, Germany will need to adopt a clear timeframe

and process for phasing out its substantial remaining national coal subsidies, which cost the government budget an average of €3.2 billion a year. Germany should aim to end these subsidies, alongside public finance to coal, no later than 2020. In addition, Germany should avoid the introduction of new subsidies to struggling utilities and coal mine operators.

Table 1. Existing and new measures that support coal

Measure	Subsidy type	Subsidy category	Fuel	Annual average (€ millions)	Year(s) for which estimate calculated	Source
Manufacturers privilege	Tax expenditure	Refining or processing	Lignite	9.8	2005-2014	OECD (2015)
Early retirement scheme	Budgetary support	Transition support	Lignite	176.1	2005-2014	OECD (2015)
Royalty exemptions and reductions for hard coal and lignite mining	Tax expenditure	Coal mining	Lignite, Hard coal	332.8	2005-2014	OECD (2015)
Government expenditure on the rehabilitation of lignite mining sites	Budgetary support	Decommissioning and rehabilitation	Lignite	239.4	2005-2014	OECD (2015)
Exemptions from water-tax on water used for lignite mining	Tax expenditure	Coal mining	Lignite, hard coal	52.1	2005-2014	OECD (2015)
Free emissions allowances under the EU ETS	Budgetary support	Industry	Coal consumption, e.g. in the steel industry	Not applicable	Not available	UBA (2011)
Energy Tax Relief for Energy Intensive Processes	Tax expenditure	Industry	Anthracite, lignite, coke oven coke, gas coke, BKB and other bituminous coal	128.8	2006-2014	OECD (2015)
Energy tax exemption for power generation	Tax expenditure	Coal-fired power	Anthracite, lignite, coke oven coke, gas coke, BKB, other bituminous coal	154.1	2015*	Destatis (2016)
RD&D Budget for coal	Budgetary support	Research and Development	Coal	15.8	2007-2010, 2012-2013	IEA (2016)
Combined aid in North Rhine Westphalia	Budgetary support	Coal mining	Coal	1863.3	2005-2014	OECD (2015)
Electricity tax exemptions	Tax expenditure	Coal-fired power	Coal	Not available	Not applicable	FÖS (2015)
Capacity reserve payments (new)	Budgetary support	Capacity mechanism classification	Bituminous coal; coke oven coal	230.0	2016-2020**	European Commission (2016)

**In 2015, the exemption for coal had a financial volume of €153.2 million, plus €0.86 million for the use in CHP (calculated with the minimum tax rate of €0.33 per Gigajoule) (Destatis, 2016).*

***It is estimated that €1.6 billion in total 2016-2020 is allocated through the capacity reserve.*

Notes

1 Lignite, often referred to as brown coal, has a relatively low-energy content and causes the highest CO2 emissions per ton when burned.

2 The UK has committed to phasing out coal-fired power by 2025. Meanwhile, France will shut down all its coal plants by 2023, and Finland and Denmark have announced plans to phase out coal by 2030. The Netherlands and Spain are also shutting down old coal plants but have yet to set out a comprehensive phase-out plan for their remaining coal plants.

3 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 majority state-owned domestic banks.

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For the purpose of this country study, subsidies to coal include: direct spending, tax expenditure and other support mechanisms (e.g. capacity mechanisms). Where information is available, estimates for all of these categories are included in the national subsidy total for each country and in the Country Studies. The policy brief provides a more detailed discussion of the methodology used for the country studies. The authors welcome feedback on both this country study and the policy brief to improve the accuracy and transparency of information on coal subsidies.

A data spreadsheet summarising coal subsidies data for the 10 European countries reviewed is available at odi.org/coal-subsidies/Europe.

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