Methodology note

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G20 coal subsidies

Tracking government support to a fading industry

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Cover photo: A truck is loaded with coal in an open cast mine being overseen by an Australian construction company. Credit: Chris Stowers © Panos.

Introduction

Every year since 2009, Group of 20 (G20) countries have reiterated a commitment to eliminate inefficient fossil fuel subsidies (G20, 2009; 2018). In 2016, G7 leaders suggested a deadline of 2025 to meet it (G7, 2016). Several G20 governments have also made commitments to end their public finance for coal and coal-fired power, both at home and overseas. All G20 countries (except the US) are party to the Convention on Biological Diversity (Aichi Target 3), which commits them to phasing out environmentally harmful subsidies, including those to fossil fuels, by 2020.

However, G20 governments continue to provide significant amounts of support for production and consumption of fossil fuels, including coal. This report aims to track each G20 country's progress in phasing out subsidies to the production and consumption of coal, including to coal-fired power.

This methodology note provides information on: the definition of subsidies; sources and data used; the scope of research; specific activities and stages of coal production and consumption covered; and examples of types of support measures, projects and investments. Detailed data, sources and calculations are provided in individual country data sheets, available through the country-brief webpages. These can be accessed at **odi.org/g20-coal-subsidies**.

Defining subsidies

In its 'Agreement on subsidies and countervailing measures', the World Trade Organization (WTO) defines a subsidy as (paraphrased): any financial contribution by a government, or agent of a government, that confers a benefit on its recipients in comparison to other market participants (WTO, 1994: Article 1). This definition has been accepted by the 164 WTO Member States including all G20 countries, and encompasses the following subsidy categories:

a. direct transfer of funds (e.g. budgetary transfers, grants, loans and equity infusion), and potential direct transfers of funds or liabilities (e.g. loan guarantees)
b. government revenue that is otherwise due, foregone or not collected (e.g. fiscal incentives, such as tax expenditures)
c. government provision of goods or services other than general infrastructure, or purchase of goods, below market value
d. income or price support.

This report focuses on a subset of the categories (a), (b) and (c) in the WTO definition, grouped as:

1. fiscal support (budgetary transfers and tax expenditures)
2. public finance[1] (e.g. loans, insurance and guarantees), often at below-market value
3. state-owned enterprise (SOE) investment that is often carried out at below-market value.

We have not included information under category (d) of the WTO definition in this analysis due to limitations of comprehensive data around income and price support. However, these subsidies must be significant in the G20. For example, the International Energy Agency (IEA) estimates that subsidies

1 The Organisation for Economic Co-operation and Development (OECD) estimates that the subsidy element of loans provided by governments – i.e. the revenue foregone because the governments provide such credit support below market value – can constitute up to 20% of their face value (OECD, 2018). However, such estimates are not reported. Instead, this report uses the data on the principal amount disbursed for direct loans or loan guarantees under the category of public finance.

through below-market prices for electricity consumers in China, Mexico and Russia in 2018 constituted subsidies of US$24.9 billion, US$13.5 billion and US$14.3 billion, respectively (IEA, 2018), with a big proportion of electricity for this consumption coming from coal-fired generation.

Sources of support

Fiscal support (national and subnational)

Description
Fiscal support is provided by national and subnational governments through budgetary transfers (e.g. direct spending on research and development (R&D) for coal mining), and tax expenditures (e.g. reduced rates or exemptions from value-added tax (VAT) or carbon taxes on the use of coal).

Source and years
For all countries, the source of information for fiscal support was the OECD Inventory of Support Measures for Fossil Fuels database (OECD, 2019). This database includes information retrieved from the IEA on government energy technology R&D budgets (IEA, n.d.). Data was obtained on 23 May 2019, so any changes made after that date are not reflected in our analysis.

The annual fiscal support provided for coal production is the total amount of fiscal support provided by the government, through budget transfers and tax expenditures in 2016 and 2017, divided by two to obtain annual average estimates.

Public finance

Description
Public finance for coal is where governments provide support, and take on liability, for coal and coal-fired-power production[2] – either via financial institutions they own outright or in which they hold a majority stake (50% or more). These majority publicly owned financial institutions include bilateral development banks, development finance institutions and export credit agencies.

They provide public finance in the form of grants, loans, insurance and guarantees both domestically and internationally, often at below market value. Investments by public finance institutions are backed by the government through direct investment using public funds and through creditworthiness.

Even where public funds are not deployed directly from government budgets, the high credit ratings of publicly owned financial institutions, and their willingness to invest in the sector linked to government objectives, can reduce the risk to parallel private investors. This often drives private investment in fossil fuel production that would not otherwise occur, regardless of the loan terms, and this leverage effect is the fundamental rationale for public investment in a number of sectors (to act or invest in areas where the private sector is reluctant to do so).

Our analysis includes a number of majority government-owned financial institutions which effectively operate as commercial banks. While their activities are commercially run, the projects they finance are still included in our analysis as a form of government support, for the reasons described above.

2 Our analysis has not identified any public finance for consumption of coal. While there may be cases where public finance supports consumption of coal (e.g. through support for district heating projects which use coal-fired power), this is extremely uncommon and is not included in any of the data we have found.

However, it must be noted that despite being majority government-owned, they operate predominantly as commercial entities rather than as banks driven by government policy (in contrast to the bulk of international public finance for coal described below, which is delivered through policy-driven institutions); this in part accounts for the high levels of public finance for coal mining and coal-fired power domestically in India in particular, though it offers another lever for the government to accelerate the transition away from coal.

Sources and years
For all countries, this report uses the information made publicly available by majority government-owned financial institutions. This data can be found in Oil Change International's (OCI) 'Shift the subsidies' database (OCI, 2019), which includes information provided by public finance institutions, from the Infrastructure Journal Global database (IJ Global, 2019), and in the Natural Resources Defense Council's (NRDC) 'Power shift' report database (Chen and Schmidt, 2017).

The annual amount of financing provided by public finance institutions for coal projects is calculated as the total amount of public finance provided for any relevant project whose financing was agreed in 2016 and 2017, divided by two (i.e. across the two years), to obtain annual average values.

For the India study, data was instead obtained from a recently published paper which reviews various national data sources and presents aggregate support (Worrall et al., 2018). For more details, see the India country study and data sheets, available at **odi.org/g20-coal-subsidies/india**. This means that we are able to report a more accurate picture of the total amount of finance provided in India. However, it also means that country comparisons must be made with caution, as the level of data coverage and reporting varies greatly between countries.

SOE investment

Description
A number of G20 countries support fossil fuel production through one or more majority SOEs[3] The wide variety of ways in which SOEs function can have a range of impacts on government budgets, with a number of SOEs depending on budgetary transfers to remain in operation (IMF, 2013; Sdralevich et al., 2014). Majority government ownership of SOEs provides a degree of effective control and government involvement in decision-making and financing, often on conditions more favourable than market terms. While this will vary by country and institution, the impact is nonetheless significant.

Sources and years
The WTO definition of a subsidy includes 'government provision of goods and services other than general infrastructure, or purchase of goods, below market value' (see above under 'Defining subsidies'). Unfortunately, limited publicly available information on government transfers to SOEs (and vice versa), and on how investment is distributed within the vertically integrated[4] structure of many SOEs, makes it challenging to identify the specific concessional sub-component of SOE investment that constitutes a subsidy. As a result, this report provides data on total capital expenditure investment by SOEs in coal and coal-fired power production (where this information is made

3 Our analysis has not identified any SOE investment for consumption of coal. While there may be cases where SOEs support consumption of coal (e.g. through providing coal at low prices for consumption by employees), this is difficult to identify and/or quantify, and therefore is not included in our analysis.

4 Vertical integration is where the supply chain of a company is owned by that company.

available by the company). Where this information was not available but information was available on investments in a specific coal and coal-fired power project, we have included this total instead (to demonstrate the minimum amount of support they provide). This information was sourced mainly from annual reports of the SOEs for 2016 and 2017, with the amounts divided by two to obtain annual average values.

Scope

Timeframes and annual averages: This report provides average annual values for G20 government support to coal and coal-fired power production and consumption. Based on the availability of the latest most comprehensive data, annual averages have been calculated for 2016 and 2017. The values are provided in current prices and are not adjusted for inflation in view of the short timeline.

Financial years: As different countries have different financial years, data is presented for the year with which most of the months of the financial year overlapped. For countries where the financial years run from July to June, following OECD convention, data are allocated to the starting calendar year. For example, data covering the period July 2016 to June 2017 are allocated to 2016.

Exchange rates: The exchange rates used to convert local currencies to US dollars for 2015, 2016 and 2017 are average annual values from the US Internal Revenue Service (IRS) for all countries except Indonesia, where exchange rates provided on the X-rates website were used (X-rates, 2019).

National and subnational coverage: With regard to fiscal support measures, our data includes measures provided at national and subnational level. Fiscal support measures at subnational level are captured in the OECD database, and are therefore included within the estimates. It must be noted that it is difficult to gather information on subnational support, which means it is likely that some of these measures have been overlooked. There are also SOEs that exist at the subnational level, including those established by municipal, state and provincial governments. The investment by these SOEs would have an impact on the level of overall support provided within a G20 country. However, due to the challenges of data access, they are not included within the estimates of SOE investment.

Externalities: The definition of subsidies we have used (the WTO definition) does not include the externalities arising from use of fossil fuels, such as the cost of air pollution to healthcare systems. Some argue that quantifying and presenting these costs provides a more accurate picture of the total cost to governments – or the revenue foregone – due to use of fossil fuels. The International Monetary Fund (IMF), for example, provides such estimates, which are made up of prices warranted by supply costs, environmental costs and revenue considerations (IMF, 2019).

Activities

The G20 support to coal reviewed has been further categorised in terms of its role in supporting the following four activities (see also Figure 1). Examples of the types of measures and projects captured under each activity are provided in Table 1.

1. **Coal production**: including exploration, mining, coal processing, R&D (coal mining) and coal transport

Support for coal production includes fiscal support measures (i.e. tax breaks and budgetary support), public finance and SOE investment in coal mining, processing and transportation.

2. **Coal-fired power production**: including capacity mechanisms, biomass co-firing, R&D (including for carbon capture and storage) and wider coal-fired power production

Support for coal-fired power production includes fiscal support measures, public finance and SOE investments made for production of coal-fired electricity and power. Support is also provided by G20 governments towards coal-fired heat generation, as well as co-generation of power and heat. Some examples of these measures are included in the OECD database and therefore are also included in our calculations.

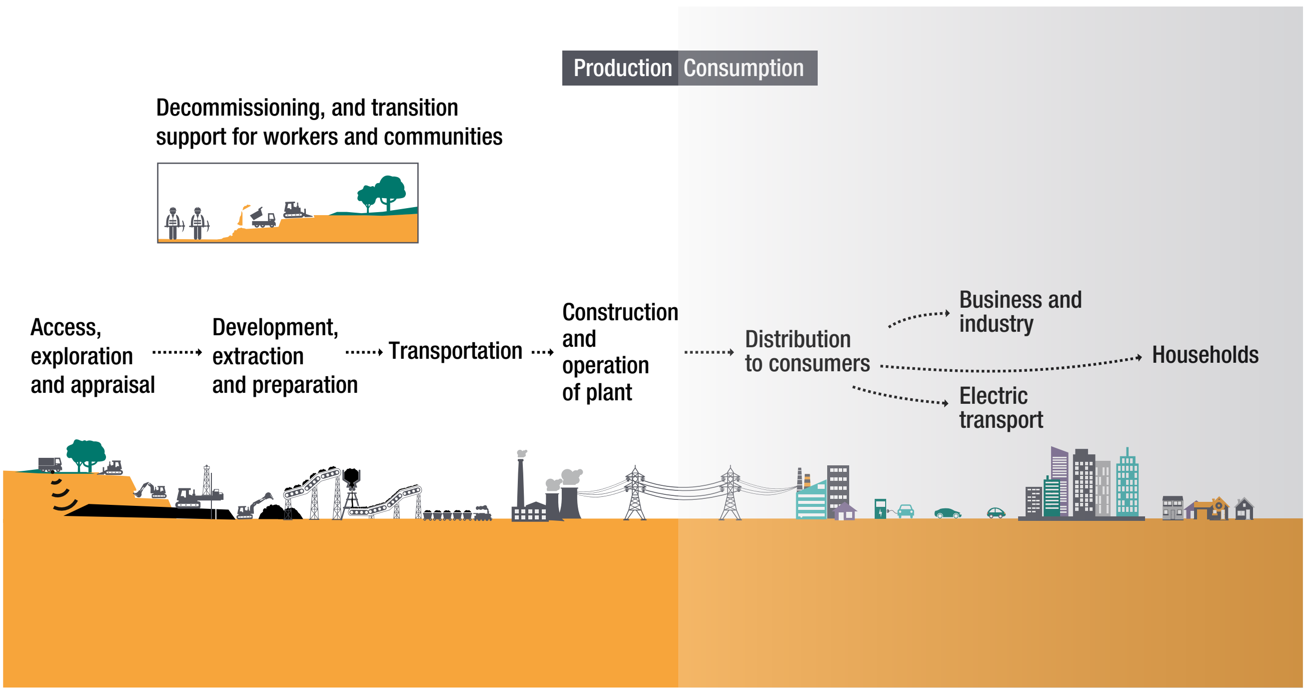
A number of measures or projects (including fiscal support, public finance and SOE investment) were identified as for coal production *and* coal-fired power, with no information on the amount allocated to each stage. These include, for example, investments of SOEs which have coal mining and coal-fired power arms (e.g. utility companies). In such cases, the support is counted under coal-fired power production for the sake of simplicity when presenting totals. This is noted in each case in the country data sheets.

Finally, for state-owned utility companies where information was not available on the amount of their investments in coal-fired power (versus other sources), we calculated the portion of the support going to coal by using the percentage of coal in their power mix. All such calculations are explained in the notes columns of the country data sheets.

3. **Coal consumption:** including direct consumption of coal and of coal-fired power by households, and industry and business

This includes fiscal support measures for consumption of coal and coal-fired power other than for its use for coal-fired power generation (or where a specific measure is for co-generation of power and heat). While it is conceivable that there is public finance and SOE support for coal consumption (e.g. public finance for district heating which is coal-fired, or SOE support for consumption of coal

Figure 1 Stages and sectors of coal production and consumption



Source: authors' own, based on Bast et al. (2015).

by employees at preferential rates), our analysis did not identify any such measures. Therefore, the findings presented in this paper for coal consumption are through fiscal support measures only.

4. **Support for transition away from coal**: decommissioning and rehabilitation, and support for workers and communities

This activity category includes fiscal support measures for the closing down of mining sites, and for supporting workers and communities in their transition away from these activities. Of course, it was not possible to discern whether such activities always corresponded to a transition away from coal for that country. For example, decommissioning and rehabilitation often take place without any clean transition as a normal process of cleaning up sites, including for depleted mines. In the absence of further evidence, all such measures are included in the 'transition support' category.

Finally, a number of measures, projects and SOE investments are across multiple activities, or do not have sufficient information to allocate them to one activity. These are captured under a 'multiple or unclear' category, and are included in only the overall totals (and not activity totals). The only exception is support for coal production and coal-fired power production, as covered above, which is included under coal-fired power production.

Table 1 Examples of the fiscal support measures, public finance and SOE investment provided to the production and consumption of coal

Coal production	Budget support for research, development and demonstration (RD&D) for coal exploration technologies and processes
	Budget support and SOE investment on mine-development activities
	Tax deductions for investment in mine-development mining equipment
	Concessional loans from national development banks to coal exploration and mining companies
	Tax exemptions related to the transport of coal
Coal-fired power production	Grants and tax breaks for the construction of plants for heat and electricity generation
	Relief on property taxes and charges for land, water use and pollution for coal-processing facilities and power plants
	Capacity payments to coal-fired power plants
	Fiscal support for co-firing of biomass with coal
	Investment by SOEs in plant construction, operation and modernisation (domestically and internationally)
Support for consumption of coal (and coal-fired power)[i]	Energy tax relief for energy-intensive processes (share of coal-fired power)
	Tax relief for specific processes regarding coal-fired power consumption
	Energy tax breaks for household coal-fired heating and electricity
	VAT, carbon tax and other tax relief (reduced tax rates or exemptions) on the consumption of coal-fired electricity
	Direct coal aid to poor families
Support for transition away from coal	Early retirement payments and severance packages for coal miners through government budgets
	Support to workers and communities through government budgets
	Government assumption of liabilities or spending on field and mine decommissioning and severance packages for former employees
	Tax deductions or SOE responsibility for costs associated with coal-mine closure

[i] This includes all types of consumption of coal except for use in power and heat generation, as these are included in 'coal-fired power production' (listed under 'Activities').

Source: Authors' own

Data gaps

As outlined above, G20 governments have made commitments to phase out fossil fuel subsidies. The first step in achieving these objectives is to clearly identify and estimate current subsidies, including through processes such as the G20 peer reviews.

Unfortunately, transparency of information on all types of government support to fossil fuels, along with accountability for phasing out those to coal, remains limited. Overall, our analysis of subsidy reporting demonstrates the significant gap in G20 countries in terms of their reporting on subsidies (including those to coal). The United Kingdom (UK) government goes even further in its lack of transparency and explicitly denies that it provides any subsidies to fossil fuels, based on its specific interpretation of the subsidy definition (UK Parliament, 2017a; 2017b), although the UK's fossil fuel subsidies have been documented by international institutions including the OECD and IMF. Across the analysis for all G20 countries, numerous fiscal support measures identified were not able to be quantified in the Inventory of Support Measures for Fossil Fuels database (OECD, 2019a), while coal-related activities of some public finance and SOE investments were identified, but were not quantified either.

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