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Cutting Europe's lifelines to coal

Tracking subsidies in 10 countries

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Greece

**Key findings****Transparency – subsidy reporting****Rating: poor**

- The Greek government does not publish an overview of country's coal subsidies.

Coal mining – subsidy phase out**Rating: good**

- Lignite mining activities by the Public Power Corporation (51% government owned) are taxed at 0.5% of turnover, and these revenues are used to support local communities in mining regions.

Coal fired power – subsidy phase out**Rating: very poor**

- Two new lignite-fired power units are proposed for development in Greece. Financial support is being provided for the construction of the Ptolemaida V unit through the Public Power Corporation (51% government owned), with financial support for the Meliti II unit to be decided.
- Greece also subsidises coal use by households and (select) industry, as well as through the capacity remuneration mechanism.

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

For decades, Greece has relied on lignite mining and lignite-fired coal plants to power its mainland, while the islands are served primarily by oil (Grigoriou, 2015).

Greece's coal mining activities are centered on domestic lignite resources in the north and south of the country (World Energy Council, 2017). In 2014, total proven reserves were equivalent to three million tonnes (Million Tonnes of Oil Equivalent (Mtoe)), with total lignite production equivalent to 48 Mtoe (BP, 2015; World Energy Council, 2016). Apart from a small proportion of privately mined lignite, the majority of lignite mining is carried out by the 51% government owned Public Power Corporation (PPC) (World Energy Council, 2017; Mantzaris, 2017). In 2015, domestic coal reserves were supplemented with coal imports that met 0.6% of Greece's total primary energy supply (Euracoal, 2017).

For the majority of its mainland electricity production, Greece depends on 13 ageing lignite power units, or six lignite plants, which are some of the most polluting stations in Europe (Sarmadi, 2015; Neslen, 2016; Mantzaris, 2017; Greek Energy Press, 2017). Since 2010, 913 MW of lignite-fired capacity has been retired from seven plants (the Megalopoli I and II, Ptolemaida I, II, III and IV and LIPTOL plants) (Mantzaris, 2017).

In recent years, over 3.7GW of planned coal-fired capacity in Greece has been cancelled, with any new lignite-fired power assets at risk becoming stranded (Global Plant Tracker, 2016). However, Greece's current government has recently proposed the development of two new lignite units, which are estimated to cost approximately €2.4 billion, even though it is unlikely that these will be economically viable without government support (see section below) (Neslen, 2016; WWF, 2013). These are the 660MW mega unit at the Ptolemaida V plant, which is under construction, and the 450MW Florina (Meliti II) unit, for which the PPC recently signed a Memorandum of Understanding with the Chinese construction company CMEC (Neslen, 2016; EU Energy Press, 2016). The new lignite assets are estimated to emit approximately 7 million tonnes of CO₂ a year once operational (Neslen, 2016). Analysis by WWF (2016) has deemed that clean energy alternatives would create more jobs than the new lignite units.

Following the breakdown of a lignite unit at Kardia power plant, Greece's total capacity is estimated at 3.6GW (Greece Energy Press, 2017, Malathrona, 2017). It is estimated that the country will have to shut down a large part of its remaining lignite power capacity by 2030 because of ageing plants as well as European Union (EU) pressure from the application of the new ETS Directive and the Industrial Emissions Directive (Global Plant Tracker, 2016; Mantzaris, 2017).

The Government's prioritisation of new coal-fired production capacity has been accompanied by declining

budget and regulatory support for solar PV and wind power production. Regardless, there is a rising trend in renewables in Greece and 2016 was the first year that renewables surpassed lignite in their share of electricity production (The Independent Power Transmitter Operator (IPTO), 2016). Whilst lignite's share collapsed to 29% (or less than 15 TWh), renewables, including large hydropower resources, reached 30% of electricity production (IPTO, 2016). Natural gas was the third largest contributor with 24% of electricity production, with the remaining demand covered by imports – mainly from Bulgaria (IPTO, 2016).

Lignite-fired power in Greece is not only increasingly uneconomic, but also creates high social and environmental costs – with coal power emissions in the country estimated to be twice those in France and Portugal (Sandbag, 2016). In terms of its proportion of total power emissions, Greece is the fourth largest emitter from coal production in Europe (Sandbag, 2016). In 2015, coal-fired emissions accounted for 31% total CO₂ emissions in Greece, equivalent to 29mt of CO₂e (Sandbag, 2016). These emissions create a health cost estimated at €1.6 billion and have caused over 550 premature deaths in 2013 (Schaible et al., 2016).

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

As a Member State of the European Union (EU) and thus part of the G20, Greece has repeated its commitment to phasing out fossil fuel subsidies every year since 2009. In 2016, as a continuing EU member and therefore part of the G7, the country called on all nations to end fossil fuel subsidies by 2025. The European Commission (EC) has furthermore repeatedly called on EU Member States to end all environmentally harmful subsidies, including those to fossil fuels, by 2020.

Despite these commitments, Greece continues to provide high subsidies to coal, while plans for phasing out this support are lacking. At the national level, the majority of financial support to lignite is provided through the capacity remuneration mechanism. This provides support to lignite power plants in exchange for the ability to produce electricity, equivalent to €40,423 per MW of electricity production in 2013 and totaling €149 million in support of lignite power plants that year (Capros, 2014).

Greek government support is also provided in the form of an excise tax refund for energy products that are used within the EU (including coal), which are estimated at a total of €1.3 million annually for coal 2006-2014 (Organisation for Economic Co-operation and Development (OECD), 2016), while an excise tax exemption is granted to consumers in the use of coal and coke. However, estimates for this measure are missing from the OECD Fossil Fuels Database (OECD, 2016).

The two new lignite power units, Ptolemaida V and Meliti II, which are likely to be uneconomic without

government support, are receiving new subsidies through the PPC. The PPC has provided a €400 million to begin construction of the Ptolemaida V unit and it is likely it will need to meet some of the remaining €1.4 billion in costs (Neslen, 2016; Mantzaris, 2017). This unit is also being underwritten by a €739 million loan from a consortium led by KfW-Ipex, the German export bank, under the guarantee of the German Export Credit Agency Euler Hermes (PPC/DEI, 2013; Mantzaris, 2017). A memorandum of understanding has meanwhile been received for the Meliti II unit, signed between the PPC and CMEC (a Chinese construction company) in September 2016 (EU Energy Press, 2016). However, it is not clear what financial support – if any – the Meliti II unit will receive from the PPC (Mantzaris, 2017).

In addition, the PPC and the Greek government have made efforts to receive free emission allowances, under the EU Emissions Trading Scheme (ETS) Article 10c derogation, to support the operation of the Ptolemaida V and Meliti II unit – equivalent to between €1.8 and €2.5 billion in the fourth phase of the ETS (Neslen, 2016; Mantzaris, 2017). Positively, the European Parliament Environment Committee (ENVI) has recently rejected these efforts – a decision supported by Members of European Parliament at the European Parliament plenary in 15 February 2017 (European Parliament, 2017). (Moreover, Greece's exception for an Article 10c derogation is not included in the document of the Council of the Environment Ministers, with which the Council will enter the forthcoming tripartite negotiations with the European Parliament and the European Commission (Mantzaris, 2017).)

European Parliament amendments have granted Greece access to the Modernisation Fund (28 February 2017) (Council of the EU, 2017). Fortunately, this fund cannot be used for lignite plant retrofits, as energy infrastructure investments cannot exceed the 450g CO₂e per kWh limit (Mantzaris, 2016). In the text of the European Council, the use of funds can only be earmarked for the co-financing of decarbonisation of the electricity supply in the Greek islands (Council of the EU, 2017).

Some positive price signals have been introduced, targeted at the PPC's coal power production and mining, although these are undermined by the continued subsidies to coal. A lignite levy introduced in 2012 charges the PPC €2 per MWh for electricity generation by lignite power plants (OECD, 2016). Meanwhile, the PPC is charged a tax earmarked for local communities where mining takes place, equivalent to 0.5% of PPC's turnover (OECD, 2016).

3. Greece's coal subsidy measures explained

Annual average coal subsidies (see table): €151 million

The breakdown below provides a chronological overview of Greece's existing and new coal subsidies.

- **Excise tax concessions for the use of coal and coke (continuing: dates missing):** These concessions provide consumers with energy tax concessions on the use of coal and coke energy. This reduces the cost of coal-related energy consumption among Greek energy consumers. The EU Energy Taxation Directive imposes a minimum rate of €0.3 per gigajoule of energy for consumer (non-business) end users. (European Commission, 2016)
- **Excise tax refund for fuels used in the production of energy products for intra-EU use (continuing: 2001 onward):** This provides Greek manufacturers of energy products with excise tax refunds for the consumption of fuel, therefore subsidising their energy usage. This includes forgone excise tax on lignite, as well as crude oil, natural gas and refinery feedstocks. However, the refund is subject to manufacturers outputs being sold within the EU market. The concessions were introduced following the introduction of national legislation, Act 2960/2001 (Greece Budget Line 31222; OECD, 2015).
- **Capacity remuneration mechanism (continuing: 2006 onward):** This measure rewards large thermal (including lignite) and hydropower stations that are able to provide capacity on demand. This support was equivalent to €40,423 per MW of production for lignite power plants in 2013. A total of €149.3 million was awarded to the PPC for these in 2013. (Capros, 2014)
- **Government support for new lignite production capacity (new: 2016 onward):** The 51% government owned PPC is supporting the development of two new lignite-fired units in Greece. It has already provided €400 million to begin construction of the Ptolemaida V unit, and is likely to need to also meet some of the remaining costs of the €1.4 billion project (Neslen, 2016; Mantzaris, 2017). A memorandum of understanding has been signed between the PPC and CMEC (Chinese construction firm) for the Meliti II unit – estimated to cost €1 billion – which includes the development of corresponding lignite mines (Mantzaris, 2017). However, the distribution of the funds among PPC, CMEC and the Greek investors remains unclear.

4. Opportunities to phase out coal subsidies in Greece

Greek government efforts to meet the commitments to end fossil fuel subsidies should focus on phasing out the existing support provided under a) the capacity remuneration mechanism, b) coal tax exemptions to energy product manufacturers and c) energy consumers (see above; OECD, 2015).

New financial support to the two new lignite-fired units, Ptolemaida V and Meliti II, through the 51% government owned PPC needs to be withdrawn. These investments are not likely to be economically viable, considering the unfavourable European legislative environment for investments in new lignite power (see above analysis) and the use of highly polluting lignite in Greece.

Support to lignite power capacity is undermining the operation of an open market in Greece's electricity sector. The Government should seek to pursue broader energy supply and investment policies to improve opportunities for cleaner energy technologies to support future electricity sector capacity – particularly given the higher potential for job creation (WWF, 2016).

Efforts to privatise the Greek energy sector have been advocated, including the PPC (Stearns, 2012). The Greek government should continue to pursue such efforts in order to promote an open energy market in Greece, which may also help to overcome the PPC's reliance on traditional lignite-fired power production.

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
Excise tax on the use of coal and coke	Tax expenditure	Households	Hard coal	Not available	Not applicable	OECD (2015)
Excise tax refund for fuels used in the production of energy products for intra-EU use	Tax expenditure	Industry	Lignite	1.3	2006-2014	OECD (2015)
Capacity mechanism	Budgetary support	Capacity mechanism	Lignite	149.3	2013	Capros (2014)
PPC (51% government owned) support for new lignite production capacity (new)	Budgetary support	Coal-fired power (other)	Lignite	Not available*	Not applicable	Neslen (2016)

*€400 million has been provided to for the construction of the Ptolemaida V unit by the PPC, with further support yet to be decided. Some of the €1 billion cost of the Meliti II unit may be allocated to coal mining efforts in Greece.

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This country study is a background paper for the policy briefing *Cutting Europe's lifelines to coal: tracking subsidies in 10 countries*.

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 here: odi.org/coal-subsidies-Europe.



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