

EXECUTIVE SUMMARY

Financial Supports for Coal and Renewables in Indonesia

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Key Findings

- This report shows that the “true cost” of coal, including subsidies¹ and externalities, is considerably greater than the cost of renewable energy.
- The report identifies 15 subsidies to Indonesia’s coal industry. It was possible to quantify seven of these. In 2015, subsidies to coal production were estimated to be worth approximately IDR 8.5 trillion (USD 644 million). In 2014, this figure was estimated at IDR 12.4 trillion (USD 946 million). Due to a lack of data and inability to quantify all subsidies, current estimates for coal are considered to be in the lower range.
- Subsidies to coal are significantly larger than subsidies to renewables. In 2015, renewables received an equivalent of roughly USD 133 million in subsidies, a considerable increase from around USD 36 million in 2014.
- From 2010 to 2015, renewables received a cumulative total of USD 179 million. This is far less than the amount of subsidies provided for coal through the export tariff exemption alone, totalling USD 719.6 million from 2012 to 2015.
- The report demonstrates that subsidies to the coal industry are associated with significantly higher external costs than renewable energy. Subsidies to coal drive and lock in these externalities, whereas subsidies to renewable energy do not.
- The report provides strong evidence that, from a “true cost” perspective, the overall goal of Indonesia’s energy policy should be to increase the share of renewable energy while reducing the share of coal.

¹ See below as well as Sections 1.1 and 3 of [the full report](#) for discussion of the applied definition of the term “subsidies” as it is used in this report.



Executive Summary

Electricity generation remains a key issue for Indonesian policy-makers. Millions of households are still without access to electricity, and large investments are needed to supply reliable power for households and industries across the country.

Coal has become an increasingly central part of Indonesia's power plans and is expected by the government to continue to play a significant role in the decades to come. In 2014, coal accounted for 31 per cent of Indonesia's primary energy mix, up from 17 per cent in 2004. In 2025, the government expects coal to meet around 30 per cent of Indonesia's primary energy demand. In 2050, projections estimate coal to account for 25 per cent of Indonesia's primary energy mix.

While this would see the total share of coal in the energy mix decline slightly, the projected growth in total energy consumption implies a large expansion in coal power production. This is also reflected in the government's near-term plans to rapidly expand power production by 35 gigawatts (GW), with more than 20 GW of this amount to come from coal (Sanchez, Toft, Bridle, & Lontoh, 2016).

Nevertheless, concerns over the environmental impact of coal use and a desire to expand access to energy as quickly and cost-effectively as possible have created pressure to adopt cleaner forms of energy production.

Despite its negative impact, Indonesia's coal industry and electricity sector have access to subsidies that can lock in coal use for the coming decades. By contrast, renewable energy is often perceived as too expensive to build on a large scale. However, such opinions are usually not based on an assessment of the true costs of generating electricity from renewables, which can be competitive with or even lower than coal. This is especially true when taking account of negative externalities such as air pollution and greenhouse gas emissions.

This report provides an estimate of subsidies to coal and renewables in Indonesia. It also considers the cost of externalities in order to make a comparison of the true costs associated with electricity generation from coal and renewable energy respectively.

Use of the Term “Subsidy” in This Report

The term “subsidy” is used in Indonesia mainly to refer to supports provided directly to the people of Indonesia or lowering the price of a commodity, such as gasoline or diesel. Supports to industry are not commonly considered as subsidies. This differs from international definitions of the term, which can be applied in cases where companies receive supports, in addition to individuals. In this report, the research team has applied the international definition of subsidy to attempt to identify policies and other situations where industry is receiving, or has access to financial supports for coal and renewable energy. With that in mind, all references to the term subsidy in this report refer to the international, not Indonesian context and definition of the term. Further information on the definition of the term “subsidy” in this report is outlined in Section 1.1 and Section 3.



Subsidies to Indonesia's Coal Industry

In order to assess the true cost of coal, the report includes an inventory of subsidies to coal in Indonesia. The inventory identifies 15 policies considered to provide a subsidy to the coal industry.

The inventory identified a total value of USD 946.1 million (IDR 12.4 trillion) subsidies to coal in 2014 and USD 644.8 million (IDR 8.5 trillion) subsidies in 2015. At the time of publication, this inventory of subsidies to coal is believed to be the most detailed review ever undertaken in Indonesia. The findings challenge the conventional wisdom that coal is a cheap and unsubsidized source of energy.

As it was not possible, due to a lack of data, to quantify all identified subsidies, the total value of coal subsidies is likely to be an underestimate.

Subsidies to Renewable Energy in Indonesia

The report also provides an inventory of subsidies to renewable energy. The major subsidy to the renewable energy industry is the support provided through the feed-in tariff (FiT) system. Renewables subsidies are quantified based on a price-gap analysis in order to compare a reference price for electricity generation and the value of the FiT paid to each generator type. The subsidy is equal to the difference between the reference price and the FiT price.

In addition to the FiTs, the renewable energy industry can receive support through the Geothermal Fund, the DKE fund and the corporate income tax exemptions awarded by the Pioneer Industries program to renewable energy technologies.

It should be noted that the government of Indonesia has taken action to assist in reducing the cost of renewable energy in Indonesia. Regulation 12/2017 regulates the price of electricity purchased for various technologies including solar, wind, biomass, geothermal and other energy sources (Solar & Off-Grid Renewables Southeast Asia, 2017). It is possible that subsidies for renewable energy will be eliminated with this shift. With this in mind, the energy estimation should be considered in terms of how the sector has operated in the past. While it is still too early to predict how the sector will behave under the new regime, looking historically does provide some perspective and allows for comparison against coal power in Indonesia.

Table E1. Summary of Renewable Energy Subsidies in Indonesia

	2015
Subsidies through FiTs	USD 126.4 million
Pioneer Industry Tax Exemptions	USD 6.4 million
Geothermal Fund	Not Quantified
DKE Fund	Not Quantified
Total	USD 132.8 million

Externality Costs

In addition to the direct costs that subsidies to coal and renewable energy generators imply, there are large indirect social, economic and environmental costs and benefits to the population.

The cost to society of air pollution and the cost of carbon emissions both add to the cost of electricity generated from coal. It is estimated that the total external cost, using examples derived from an international literature review (see section 6), will be equal to approximately USD 6 cents per kWh.

External costs of this magnitude influence the economics of coal expansion plans, and policy-makers should consider them carefully.

Comparing the True Costs of Coal and Renewable Energy

Finally, the report compares the cost of electricity generation from coal and renewable energy, including the cost of subsidies and externalities. The report highlights subsidies as one of the key tools used by governments to implement energy policy. The allocation of subsidies therefore provides a good indication of governmental priorities. Table E2 highlights the total amount of subsidies identified for coal and renewable energy in absolute terms and per-unit terms.

The table shows that total subsidies to the coal industry are far nearly five times greater than the subsidies to the renewable energy industry. This shows that in absolute terms the coal industry receives far more support than the renewable energy industry. However, Indonesia generates more electricity from coal than renewable energy, so on a per-unit basis the subsidy to renewable energy and coal is similar.

Table E2. Electricity generated and subsidy costs in 2015

	RENEWABLE ENERGY		COAL
	2015		2015
Electricity Generated (GWh)	25,197		130,508
Total Subsidy Costs (USD million)	133		664
Subsidy cost per unit (USD per kWh)	0.0055		0.0049

Considering these estimated levels, can subsidies to coal and renewables be considered justified?

There are several common justifications for energy subsidies often put forward by policy-makers.

First, subsidies can be designed to promote a particular industry and create employment; subsidies to both coal and renewable energy create jobs in those sectors. Second, subsidies are a tool to drive energy sector investment to meet government targets; subsidies to renewable energy and coal could both be justified by these criteria.

However, the report finds that the key difference between subsidies to renewable energy and subsidies to the coal industry is that renewable energy is associated with significantly lower environmental and health externalities compared to coal.

One method of building externalities into the decision-making process is to compare the external costs alongside the costs of subsidies and generation costs. Figure E1 shows a comparison of the costs of coal and renewable energy, including an assessment of the monetary cost of environmental and health externalities.

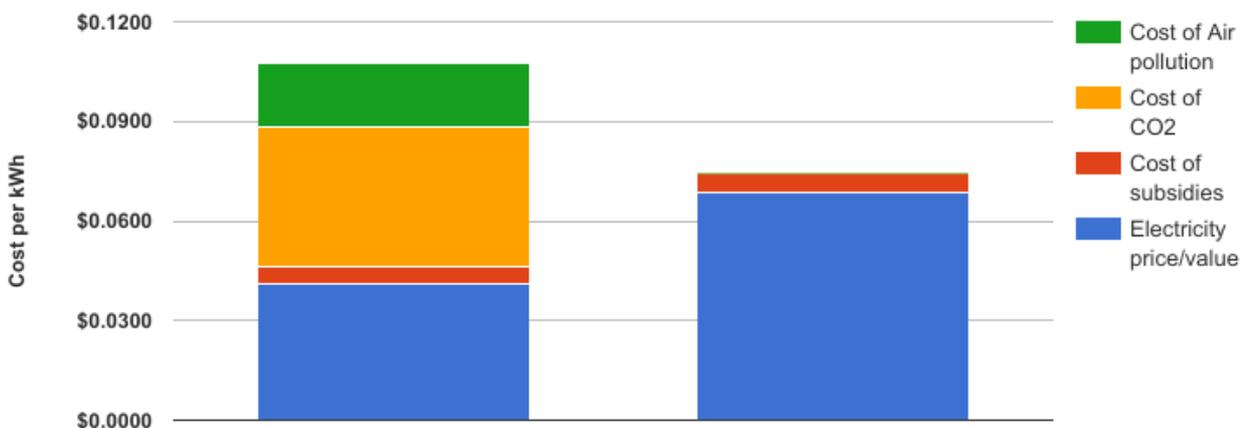


Figure E1. Comparison between the costs of coal (left) and renewable energy (right) – cost per kWh

Source: Authors' calculations.



Figure E1 illustrates that the true cost of coal—including, subsidies and externalities—is considerably greater than the cost of renewable energy. Put another way, subsidies that support the deployment of renewable energy may increase short-term financial costs, but also lead to the generation of electricity that effectively reduces air pollution and CO₂ emissions, reducing the cost to society over the longer term.

In conclusion, when generation costs and subsidies are considered on a per-unit basis, coal appears to be the cheaper form of electricity generation. However, when the cost to society of air pollution and CO₂ emissions are taken into account, the “true cost” of coal is significantly greater than the cost of renewable energy. This full cost of energy should be considered both in terms of future expansion of generation, and in terms of whether the current subsidy system could be reformed to lead to better environmental outcomes.

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