

Report

Study on Indonesian Coal Sector: Status, Subsidies, and Source of Financing

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1. Introduction

Driven by the falling cost of renewable energy and enhancing global effort to prevent catastrophic climate change, some countries around the world are undergoing energy transition. One of the first steps of this process is the shifting away from fossil fuels production and consumption, especially coal. The trend is reflected in the current global investment of the power sector, where the final investment decisions of coal-fired power plants have been on the decline since 2015. However, there is still a need to accelerate the investment away from fossil fuel (coal) towards low carbon technology if the world is to stay in line with the sustainability goals (IEA, 2019).

One of the key policies to meet Paris Agreement goal and accelerate the investment shift is to remove the fossil fuel subsidies altogether (Jewell et al., 2018; Erickson et al., 2020). In general, there is an agreement by the governments worldwide that such steps are necessary. As an example, back in 2009, Indonesia along with other G20 countries, have already made commitment on phasing-out the subsidies for fossil fuels. However, the progress has been slow and fossil fuel subsidies remain in place. Even one decade after the commitment, the G20 countries continue to provide at least USD 63.9 billion annually for the production and consumption of coal. Moreover, about three-quarters of the subsidies are given to coal-fired power production (Gencsu et al., 2019a). Additionally, the G20 countries continue to finance over 50 GW of Coal-Fired Power Plants (CFPPs) since 2013 (Energiewende Team, 2019).

This report aims to understand the development of the coal sector and map the subsidies and finance given to the coal sector in Indonesia. Informing and increasing the understanding of the related stakeholders of the subsidies and finance for the coal sector would contribute to the discussion on how to meet the commitment of Indonesia on the Paris agreement and, in particular, phasing out fossil fuels (coal) subsidies as well. The term subsidy in the report will adopt the World Trade Organization (WTO) which defines subsidy as any financial contribution provided directly by the government or any public body or indirectly through a private body or a government entrusted funding mechanism (WTO, 2006). Furthermore, the financial contribution could come in the following forms:

- a) Direct transfer of funds, including potential transfers (e.g., loan guarantees)
- b) Foregone revenues that are otherwise due
- c) Goods and services provided by the government other than general infrastructure and/or government purchases
- d) Any form of income or price support

The report also uses the Overseas Development Institute (ODI) approach of grouping the subsidies by the activities receiving the subsidy, as follow (Gencsu et al., 2019a):

- 1) Coal production: including exploration, mining, coal processing, research and development (R&D) for coal mining and coal transportation
- 2) Coal fired-power production
- 3) Coal consumption: including direct consumption of coal and coal fired power

Lastly, the report also maps the coal sector financing in Indonesia, especially towards the CFPPs, which continue to come in contrary to the global trend.

2. Coal Sector Development in Indonesia

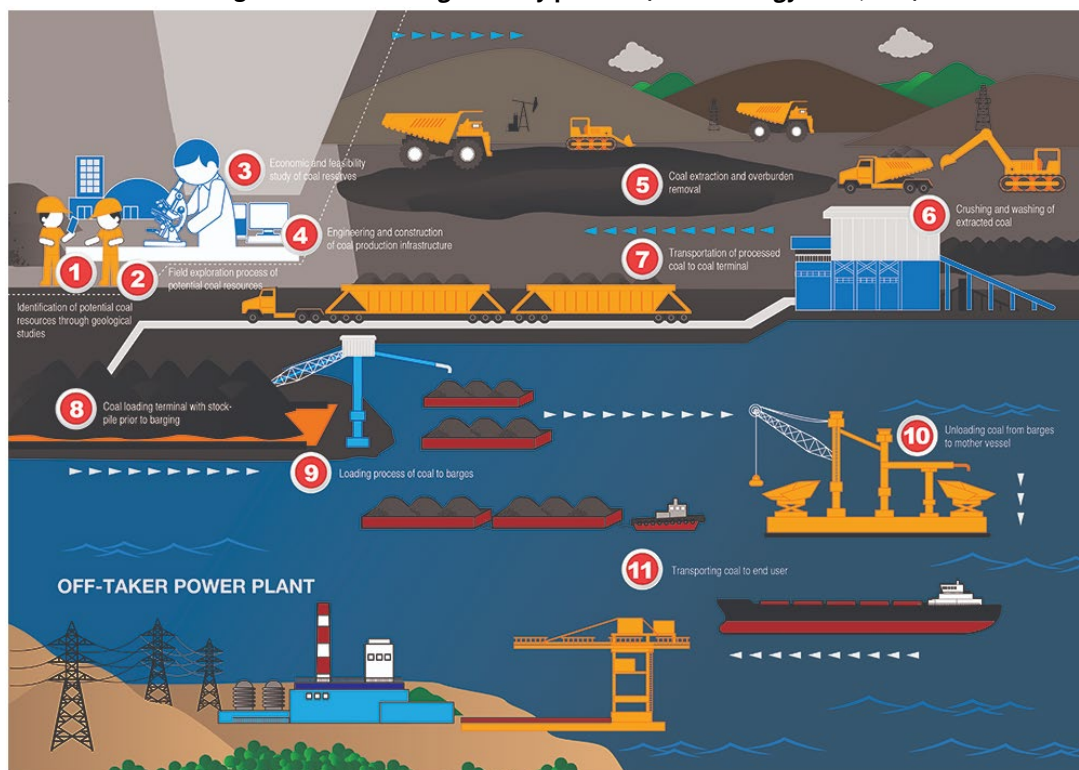
2.1. Coal Mining Industry Development

Indonesia's coal resources and reserves consist of thermal coal of low and medium quality. At the end of 2019, Indonesia held 37.6 billion ton of reserves, of which 14.4 and 20.3 billion tons are low and medium quality coal, respectively. About 96% of the reserves are concentrated in the four provinces, namely East Kalimantan, South Sumatra, North Kalimantan, and South Kalimantan. As for the potential of coking coal in Indonesia has not been explored yet (Arinaldo, 2020).

For the last decade, most of the coal produced is being exported with a share of between 80-88% of total production. More than half of Indonesian coal export goes toward China and India and the remain is distributed to east and southeast Asia countries. The Coal-Fired Power Plant (CFPP) are the main consumers of both domestic consumption as well as exported ones. Indeed, in addition to its relatively cheap price, Indonesia's coal characteristic makes it attractive to be blended with other coal in order to meet the standard of CFPP operation (Arinaldo, 2020).

Indonesia is currently the fourth largest coal producer after China, India, and USA (IEA, 2020). The country has also remained the top steam coal exporter ever since surpassing Australia back in 2005 (Indonesia-investment.com, 2018). Indonesia's coal export has the largest growth among the top coal exporter for the last 30 years, bringing Indonesia to retain 31.7% share of total coal export globally in 2019 on a tonnage basis followed by Australia and Russia (27.4% and 15.1% shares of coal export, respectively) (IEA, 2020). Being the largest steam coal exporter, Indonesia is vulnerable to the change in steam coal demand which is largely affected by the CFPP growth. The illustration of coal mining industry business process is shown below in Figure 1.

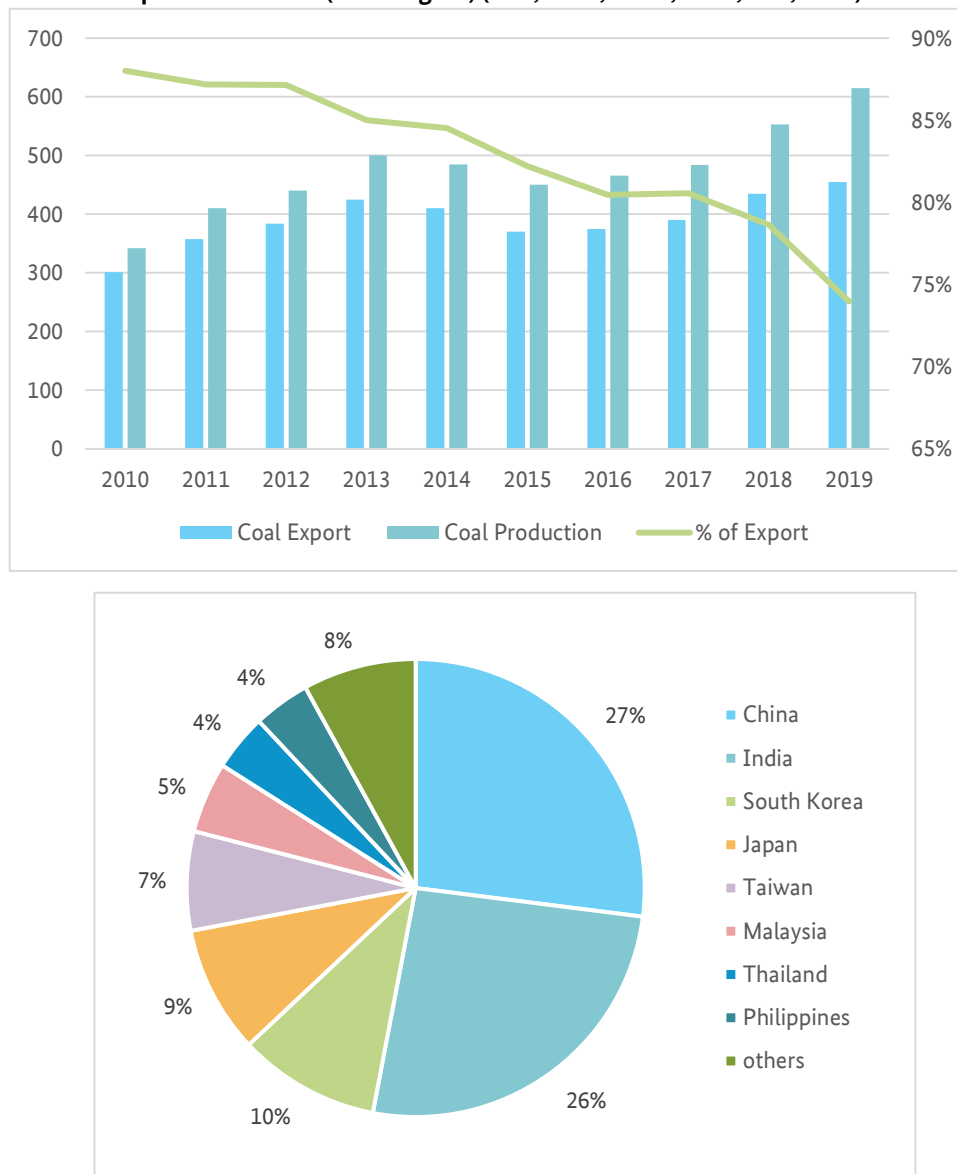
Figure 1. Coal mining industry process (Indikaenergy.co.id, n.d.)



The very first activity in coal mining business process is the identification of potential coal resources and reserves through geological studies. After that, feasibility study is carried out to see whether the coal reserves

are technically and economically feasible to be mined. If the result is positive, it will undergo the mine development process, land clearing and overburden removal, coal getting, and coal processing (coal crushing and coal washing). About 99% of Indonesia coal production is done through surface mining (Sasaoka, et.al. 2015). The viability of the surface mining itself depends on the economics of the overburden removal. The open pit mining is the most used methodology for surface mining in Indonesia where a pit is created by removing the topsoil and overburden covering the coal seam, before extracting the coal. The coal would then be transported to the port and delivered to the final consumer (e.g. CFPP) via barge and/or mother vessel. At the end of the mining process, the reclamation and revegetation should be done on top of the pit.

Figure 2. Indonesia's coal production and share of export from production (upper figure) and Indonesia's coal export destination (lower figure) (BPS, 2019; Arif I, 2020; IEA, 2020)



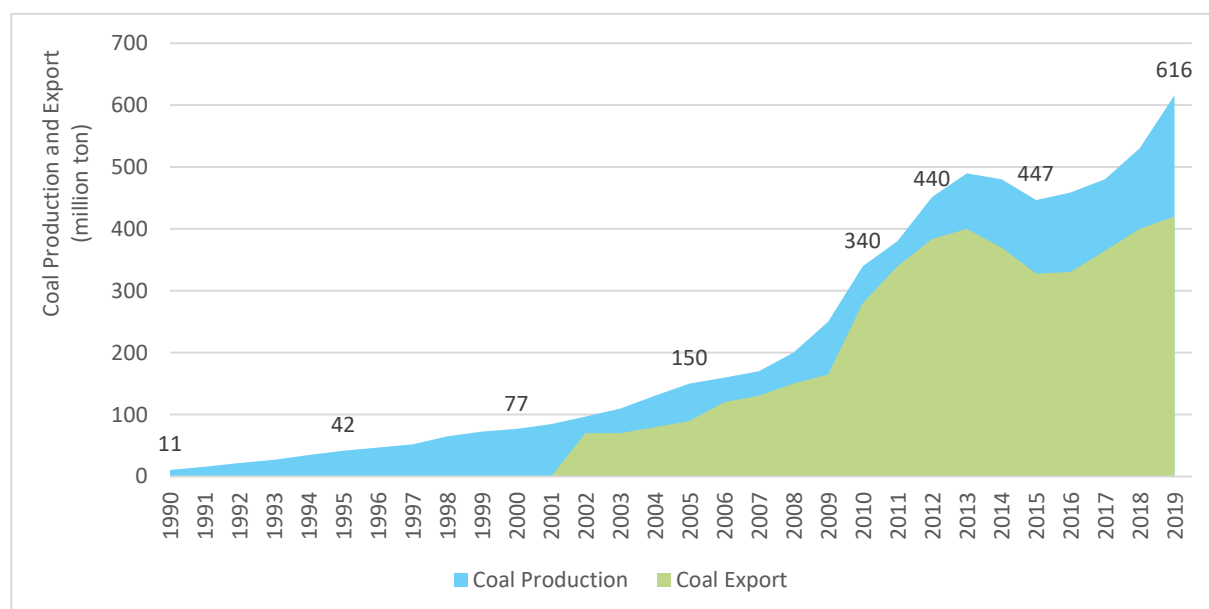
Coal industry development in Indonesia started with the stipulation of Foreign Investment Law No. 1/1967 and Mining Law No. 11/1967. The laws allowed for foreign investment to flow into the industry and the issuance of the first mining permit, called *Kuasa Pertambangan* (KP) (Budiono & WSR, 2017).

By 1981, Presidential Decree No. 49/1981 which stipulates the royalty and taxes for the specific Coal Contract of Work / *Perjanjian Karya Pengusahaan Pertambangan Batubara* (CCoW/PKP2B) was issued. Between 1981-1989, the first generation of CCoW/PKP2B was issued for ten companies based on the

regulation. The contract mentioned that the royalty and tax were nailed down which means that it would not change during the period of the contract regardless of the change in government tax regime.

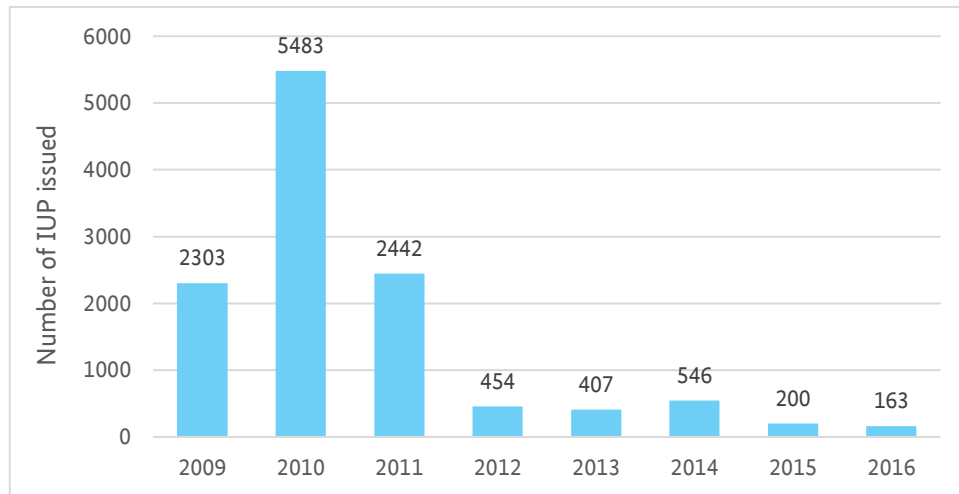
The second generation of CCoW/PKP2B with a total of 18 companies emerged between 1994-1996, followed by the third generation with a total of 113 companies between 1997-2000 (Budiono & WSR, 2017). The second and third generation have different contract regimes with the first generation. The second generation would follow the prevailing law and its contract was based on Presidential Decree No.21/1993 while the third generation would follow the law applied during the sign of the contract (*lex specialis*) and the contract was based on Presidential Decree No.75/1996 (Prakoso, 2016).

Figure 3. Indonesia coal production and export. Export data is taken from BPS which is only available from 2002 (BP, 2020; BPS, 2019, DG Mineral and Coal MEMR, n.d.)



With the establishment of the PKP2B, Indonesia started to ramp up the coal production. The coal production had grown from around 10 million tons in 1990 to about 73 million by 1999 (about 7 times). Even after the Asian financial crisis in the late 1990s, the coal production continued to increase. Emerging economies have driven demand for commodities including coal. As a result, both Indonesia's coal production and export has increased by five times between 2000-2012 (Fiyanto, 2014). After the end of the New Order government regime, Indonesia has prepared for a shift from a centralized governance system to a more decentralized structure. The greater authorities were given to the municipalities and districts, bypassing the provinces. The mining permit issuance also fell to the district's government. The new Mining Law No. 4/2009 has legalized this authority by bestowing the district's government authority to give the Mining Business Permit (*Izin Usaha Pertambangan/IUP*). This has triggered rapid increases in the number of mining permits after 2009. The number of mining permits increased ten times from 900 before 2009 to more than 10,000 permits after the Mining Law (Agustinus, 2016). About 40% of the new IUP is for coal mining with a total concessions area of 16.2 million Ha (Budiono & WSR, 2017).

Figure 4. Number of IUP issued between 2009-2016 (quitcoal.info, 2018)



In 2011, the central government attempted to do reconciliation of the mining permits and categorized the permits into Clean and Clear (CnC) and non-Clean and Clear (non-CnC) status (Budiono & WSR, 2017). In 2014, the government issued Law No. 23/2014 on Local Government. Although not specifically governing the mining sector, this law has assigned the energy and mineral resources sector, including coal, under the authority of the central or provincial government. That means the district government could no longer issue mining permits. Instead, they could only provide recommendations to the provincial/central government to issue or not to issue mining permits. In the same year, the Corruption Eradication Commission (KPK) was also requested to do coordination and supervision for the mining industry problem. By November 2017, the number of coal mining with the status of non-CnC has fallen to 795 IUPs from a total of 2572 active IUPs (quitcoal.info, 2018)

The Mining Business Permit boom after 2009 was also the cause of sudden increase in coal production. The rise of emerging economies (particularly China and India) has triggered commodity boom leads to the high growth of coal demand which support the growth of the coal producer, including the new small-scale producers (IUP holders) which has recently obtained their permits. However, the production of small-scale coal producers (IUP holders) is very price sensitive. They tend to ramp up production (and export) when the coal price is high and scale down the production when the price is low. Some of these small-scale producers were even forced to close when the coal price declined to the lowest level after the commodity boom period between 2013-2015 (Arinaldo & Adiatma, 2019).

The Mining Law No. 4/2009 also stipulated that all the CCoWs/PPK2B should be adjusted to comply with it within one year. However, it was only in 2018 the amendment of all the CCoWs is finalized. There are problems emerged during the negotiations which has put the process delayed such as the renegotiations of the VAT reimbursement (Cahyafitri, 2014).

The revised Mining Law has been approved by the House of Representatives (DPR) in May 2020. The government mentioned that the revised law will help the development of downstream mining industries as well as the simplification of permit process. There are critics that the revised mining laws are approved in haste and have been of the benefit to large coal mining companies whose contracts are going to end in 2020-2021 (Harsono, 2020).

2.2. Coal Fired Power Plant Development

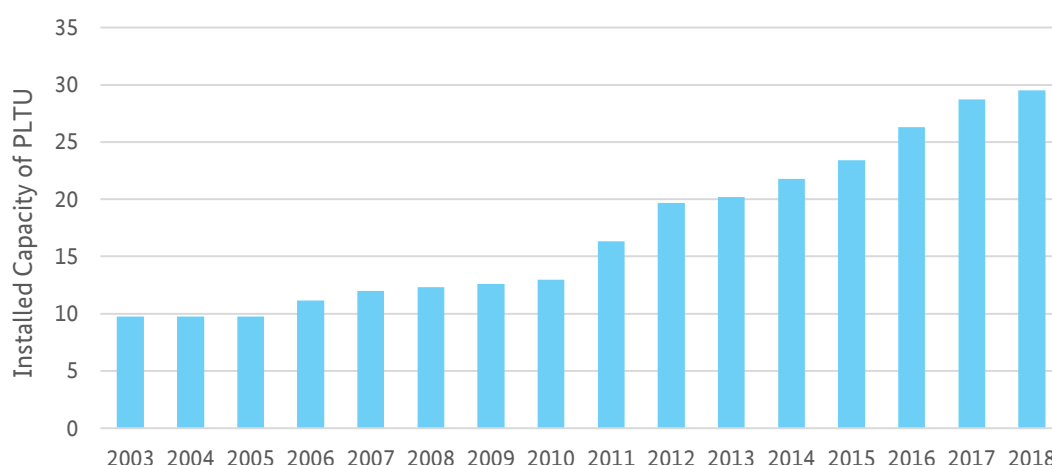
In 1985, the first CFPP started to produce electricity for Indonesia. Between 1985-2007, coal power generation has grown by 14.2% per year. By the end of 1990s, coal power generation had overtaken oil and gas as the largest source of power generation. Perusahaan Listrik Negara (PLN) maintained a 90% share of

installed capacity during the period up to Asian financial crisis of 1998. The share of Independent Power Producer (IPP) began to increase afterwards, although PLN still managed to maintain 80% share up to 2007 (Sambodo & Oyama, 2010).

The Asian economic crisis has also impacted PLN's ability to add new installed capacity due to two reasons: the huge depreciation of rupiah against the US dollar which increases the fuel cost and the rising contract cost with the IPP (Sambodo & Oyama, 2010). The condition has made PLN incapable to make investments for the needed additional installed electricity capacity. In 2002, the government issued Law No. 20/2002 which introduced an electricity market in Indonesia and allowed private participation in the generation and retailing of electricity. However, the law has been deemed unconstitutional and the previous Electricity Law No. 15/1985 came into effect once again. As a result, there were not many investments in the power sector between 1999-2004 (PwC, 2013).

In order to increase participation of the private sector and other entities (beside PLN) in the electricity sector and accommodate the demand for decentralization of electricity authority, the government issued Government Regulation No. 3/2005. The Electricity Law No. 30/2009 further strengthened the aforementioned regulation (Sambodo & Oyama, 2010). The government also introduced an acceleration for electricity infrastructure program which instructed PLN to construct a 10 GW coal power plant with government support in 2006. The similar program was introduced in 2010 which now will involve the private sector participation. The summary of government electricity infrastructure program is given below.

Figure 5. Installed capacity of CFPP 2003-2018. (DG Electricity - MEMR, 2009-2019)



i. Fast Track Program (FTP) 1 (2006)

Stipulated under Presidential Regulation No. 71/2006, the government assigned PLN to construct 10 GW of CFPP which is delayed in completion. As of November 2018, 9647 MW of the power plant is already operational with 280 MW is still under construction while 48 MW is cancelled (PLN, 2019). The operational CFPP has an equivalent capacity factor (CF) of 68.6% in 2016 (Pramudya, 2018). Most of the CFPP under this program is built through cooperation with Chinese enterprises.

PLN mentioned three main reasons which cause the delay of the FTP-1 program completion which are: land availability, shortage of case, and delays in loan disbursement (Adam & Sambodo, 2015).

ii. Fast Track Program (FTP) 2 (2010)

The program, which is stipulated under Presidential Regulation No. 4/2010, has a total installed capacity of 17,458 MW consisting of 10,520 MW CFPP, 4,855 MW geothermal, 1,803 MW hydro, and 280 MW gas fired power plant. As of November 2018, around 755 MW of power plants are already operating while the condition of the rest of the power plants is unknown and not mentioned in Electricity Supply Business Plan (RUPTL)(PLN, 2019).

iii. 35,000 MW Program (2016)

This program is stipulated by Presidential Regulation No. 4/2016 and amended by Presidential Regulation No.14/2017. PLN will build about 29% of the 35 GW capacity planned in the program. About 19.8 GW of the program are CFPP with 17.6 GW will be provided from the IPP (PLN, 2019). Up until August 2020, 8.38 GW of the power plant is already in operation, 19.07 GW is in construction phase, 6.53 GW has signed PPA, and 1.56 GW is in the procurement and planning phase (Abdila, 2020) PLN has re-evaluated the above programs and redistributed the allocation into 35,000 MW and 7,000 MW programs. Some power plants in the FTP 2 are included in the 35,000 MW program while the rest that are not included in the program are bundled into a 7,000 MW program which consist of the remaining FTP 1 program, part of FTP 2 and regular power plant development of PLN. Commercial Operational Date (COD) targets of both programs are adjusted accordingly to the electricity demand growth.

The private sector participation has increased ever since, and PLN has projected the IPP participation will continue to grow in the coming power sector development. The increased private sector participation is important to cope with the increase of electricity demand in the coming years.

3. Potential Subsidies for the Indonesian Coal Sector

3.1. For Coal Production

3.1.1. Exemption of export tax on coal

The export of coal can only be conducted by companies (whether CCoW or IUP/IUPK) listed in *Eksportir Terdaftar Batubara*/Limited Coal Exporter (ET). Since the first regulation on export tax has been published through Government Regulation No. 35/2005 and MoF Regulation No. 214/2008, the coal export has never been imposed with export tax, unlike other raw commodities (crude palm oil, wood, rattan) or other mineral commodities (e.g. raw metal ore and concentrate are subject to 20% export tax based on MoF regulation 75/2012).

However, by 2015, the Government of Indonesia has imposed an income tax of 1.5% on export of coal through the stipulation of MoF Regulation No. 107/2015. The CoW and CCoW companies are specifically exempted from this income tax. The regulation is still in effect until present day after being updated to the MoF Regulation No. 34/2017. Further research and data are needed to quantify this subsidy, especially for the CCoW which is exempted from export tax compared to other entities.

3.1.2. Import Duty of Capital Equipment

Based on the contract, all the CCoW are exempted from import duty for their import of capital goods. For the first generation CCoW, the import duty is exempted for the period of the contract, while for the second and third CCoW the import duty will be exempted or received a reduced rate up to the tenth year of the operating period of the mining (PwC, 2015).

According to the MoF Regulation No. 176/2009, the mining service industry could submit requests to the Investment Coordinating Board (BKPM) to be included in the master list and be exempted from the import duty. Thus, the mining service contractor, IUP/IUPK holder or the second and third generation CCoW should be able to apply for this facility. Otherwise, depending on the type of good (normal or luxury goods), the normal import duty of Indonesia could range between 0-450%.

Table 1. Import duty facility for mining companies

Mining Industry	Import Duty for Capital Goods
First Generation CCoW	Exempted
Second Generation CCoW	Exempted and reduced rate up to the tenth year of mining operating period
Third Generation CCoW	Exempted and reduced rate up to the tenth year of mining operating period
IUP/IUPK	Could apply for BKPM master list
Mining service contractor	Could apply for BKPM master list

An access to the BKPM master list would help to identify which coal companies have applied and used this incentive. Furthermore, an analysis of the coal mining companies is needed to identify the amount of capital spent on imported goods.

3.1.3. Preferential royalty rate and failure to collect the royalty

The royalty rate is calculated from the share of value of coal sales. The coal benchmark price is used as the floor price. Whenever the coal is sold at lower price than the benchmark one, the benchmark price is used for the royalty calculation. If the price is higher than the benchmark one, then the selling price is used (PwC, 2019b).

There is a potential subsidy for the IUP holders as they received a fairly lower royalty rate compared to the CCoW. According to the Government Regulation No. 9/2012, the royalty rate is between 3-7% which are further grouped by the calorific value of the coal being produced. The government has been looking to increase this royalty rate for IUP of coal but has been delayed on many occasions. One of the attempts to equalize the difference in royalty rate is to the export tax imposed since 2015 as explained above (Attwood et al., 2017).

Table 2. Royalty rate for coal production

Mining Industry	Import Duty for Capital Goods
First Generation CCoW	Exempted
First Generation CCoW	13.5 %
Second Generation CCoW	13.5%
Third Generation CCoW	13.5%
IUP (open pit mines)	3% for < 5100 kcal/kg coal (low-rank coal) 5% for 5100-6100 kcal/kg coal (medium-rank coal) 7% for >6100 kcal/kg coal (high and very high rank coal)

Potential subsidy could be estimated by comparing the production volume and coal quality of the IUP holder and calculating the difference between the value of applying royalty rate 13.5% with the rate based on existing regulations.

3.1.4. Preferential Value Added Tax (VAT) rate

Since April 1985, the Indonesian tax system has been reformed and obliged companies to pay a Value Added Tax (VAT) of 10% for every goods and services purchased from third parties. However, there are six companies from the first generation CCoW which had signed the contract before the enactment of this reformed tax system (Attwood et al., 2017). These six coal companies (PT Arutmin Indonesia, PT Kendilo BHP Coal Indonesia, PT Kaltim Prima Coal, PT Kideco Jaya Agung, PT Adaro Indonesia, and PT Berau Coal) paid for sales tax instead for every purchase of goods and services with a lower rate between 2-5% (PwC, 2019b). Thus, it could be considered that the six companies have potentially received subsidies compared to other coal mining companies.

There has been a dispute between the first generation and third generation CCoW with the government over the obligation to pay VAT. The first generation CCoW were holding off the royalty payment of IDR 21.85 trillion to the government (Directorate General of Mineral and Coal of MEMR) since they have overpaid VAT to about the same amount between 2008-2012. Their reason being that the overpaid VAT have not yet been reimbursed by the government, even though they have no obligation for the relatively new VAT system due to their nailed down contract (Jati, 2016). The government proposed to set off the VAT reimbursement by setting off the royalty (Abdullah et al., 2017).

Table 3. Tax rate for goods and services purchased from third party

Mining Industry	Tax rate for goods and services purchased from third party	
	Sales Tax	Value Added Tax
First Generation CCoW	2-2.5% on domestic services from contractors. 0-5% on goods	-
Second Generation CCoW	-	10%
Third Generation CCoW	-	10%
IUP	-	10%

In another case, the third generation CCoW claimed that any input VAT which they are obliged to pay should be creditable/refundable with the output VAT. However, since the stipulation of VAT Law No. 18/2000 and the Coal and Mineral Law No. 4/2009, coal that is directly mined and sold has no added value and therefore exempted from the VAT. The government's point of view of the dispute is that since coal has no output VAT, thus the input VAT is not creditable. The third generation CCoW pointed out that the VAT rules should refer to the previous version of the law when the contract is signed due to their *lex specialis* status (Yunianto, 2015).

Despite the dispute, it is clear that the first generation CCoW have a privilege of a relatively lower rate of VAT (sales tax). Thus, estimating the subsidy received by these companies might need a detailed analysis of the purchasing expenditure of the companies ever since their contract sign date.

3.1.5. Preferential dead rent and failure to collect the rent

The dead rent is the rate that the mining companies need to pay annually to the government which is based on a fixed rate (depending on the stages of the mining operations) times the land area. The first and the third generation CCoW (with its nailed down and *lex specialis* contract status respectively) are subject to a lower dead rent based on their contract. The IUP/IUPK is stipulated by Government Regulation No. 9/2012.

Table 4. Dead rent for coal industries

Mining Industry	Dead Rent (USD/ha/annum)				
	General Survey	Exploration	Feasibility	Construction	Operation
First Generation CCoW	0.01-0.03	0.08-0.2	0.2	0.2	1
Second Generation CCoW	0.05-0.1	0.2-0.7	1	1	2-4
Third Generation CCoW	0.025-0.05	0.1-0.35	0.5	0.3	1.5-3
IUP	-	2	-	-	4

KPK has reported that there are numbers of IUP which have arrears of dead rent. The total number of IUP with arrears between 2013-2015 reached 6,812 IUPs (total coal and mineral IUPs) and the value of the unpaid dead rent was IDR 2.07 trillion. One of the reasons is there are many IUPs with the non-CnC status which make it hard for the government to collect the rent (Abdullah et al., 2017). Estimating the potential subsidies could be done through collecting the land area of all the CCoW and comparing it to the IUP's dead rent

standard. Furthermore, data of the IUP's arrears over the dead rent can be collected and will add to the total potential subsidy value.

3.1.6. Corporate Income tax allowance for coal gasification and liquefaction

Government provided a 30% reduction in domestic corporate income tax (5% reduction annually for 6 years) which is calculated based on the investment capital made for the specific business fields. There is a number of business fields that were deemed eligible by the first regulation stipulated by Government Regulation No. 1/2007. The investment capital for coal gasification was included in the eligible business starting with the first revision of the Government Regulation No. 62/2008. Furthermore, the coal liquefaction was also included by the second revision of the Government Regulation No. 52/2011 with additional terms that the investment is made on particular provinces. The latest revision of the Government Regulation No. 78/2019 has expanded the eligible business field to also include coal upgrading/briquetting and coal-fired power generation which use coal gasification or liquefaction as fuels.

It is worth noting that a taxpayer who has already obtained this incentive is not able to utilize other tax facilities (e.g. tax holiday as regulated in MoF Regulation No. 150/2018) (PwC, 2019b). To quantify the subsidy, data of the coal industry which obtained the incentive as well as its financial performance report need to be collected and analyzed.

3.1.7. Preferential corporate income tax rate and failure to collect the tax

As explained above, the corporate tax rate of the second generation CCoW as well as the IUPs are regulated by the prevailing law. The current corporate income tax rate is set at 22% for 2020 and 2021 and will be further reduced to 20% by 2022 with the stipulation of the recent Government Regulation in Lieu of Acts No. 1/2020. The companies could also receive a further 3% cut in the corporate income tax if at least 40% of the company's stock are listed in the Indonesian Stock Exchange.

Even before the recent change in regulation, the second generation CCoW and IUP have already enjoyed a lower rate of 25% compared to the first generation (45%) and third generation (30%) (PwC, 2019b). However, as the first generation CCoW contract is coming to an end in 2020-2021 and if they obtain permit extension, the status will be changed to IUPK in which the corporate income tax would follow the prevailing law.

The KPK's coordination and supervision has also found indication that there have been failures in collecting the corporate income tax especially from the IUP in 12 provinces between 2012-2012. The amount of corporate income tax deposited between that year was far below the gross product of the IUPs. In Central Kalimantan, for example, the deposited corporate tax only amounted to 0.7% of the gross product of the IUPs in the province. Three main causes of this failure are that there are IUPs which reported different addresses to the tax office, IUPs that did not file the tax report and even IUPs which have yet to obtain a Tax Identification Number (NPWP) (Abdullah et al., 2017). The failure to collect the tax is a foregone government revenue and could be considered a potential subsidy especially to the IUPs.

3.1.8. Exemption of the regional tax

There are a number of regional taxes that a mining company might be liable to pay. The tax rate is determined by the regional government where the coal industries are located. However, the first generation CCoW contract allows them to be exempted from these taxes (PwC, 2019b). Some examples of the relevant regional taxes are given below. Note that the actual rates of the taxes may vary for different regions/provinces.

Table 5. Relevant regional taxes for coal mining industries (PwC, 2019b)

Type of regional taxes	Maximum Tariff
Taxes on motor vehicles & heavy equipment	10%

Title transfer fees on motor vehicles, above-water vessels and heavy equipment	20%
Tax on motor vehicle fuel	10%
Tax on collection and utilization of surface water	10%
Catering	10%
Tax on street lighting	10%
Tax on groundwater	20%
Duty on the acquisition of land and building rights	5%

To estimate the subsidy given, a historical regime of the relevant regional taxes may need to be collected. Furthermore, the relevant expenditures which are subject to the regional taxes might need to be extracted and analyzed from the annual financial report of the first generation CCoW.

3.1.9. Failure to collect land and building tax for coal mines

By the end of 2012, the land and building tax for coal mines would consider the land, building and the coal mining activity in each mining area as regulated by PER-32/PJ/2012. However, it was reported that the value of coal was not included in the tax between 2012-2015. The updated regulation PER 47/PJ/2015 contained a more specific calculation. The unquantified value of coal in the land and building tax can be considered as foregone revenue of the government and thus it is considered as subsidy for coal companies (the second and third generation CCoW (Attwood et al., 2017).

3.1.10. Above-market price for coal supplied to mine-mouth coal power plant

The government has been actively involved in determining the price of coal for mine-mouth CFPP. In 2011, the government published PER 1348.K/30/DJB/2011 which has given 25% percent profit margin above the coal production cost for coal with calorific value below 3,000 kcal/kg supplied to the mine mouth CFPP. This is a direct incentive for coal producers as the relatively unfavourable coal in the market can be sold with a guaranteed 25% profit.

The MEMR Regulation No. 10/2014 expanded the coal price and the coal price was not limited to specific coal calorific value anymore. The profit margin was then changed to a range between 15-25% by MEMR Regulation No. 9/2016.

However, the ministry has again changed the regulation later that year (MEMR Regulation No. 24/2016) due to the concerns of PLN and IPP of the relatively high coal price and a number of stalled mine-mouth CFPP projects (Attwood et al., 2017). The latest regulation now allowed for negotiations between the mine-mouth coal power plant owner and the coal mine producers of the coal price. However, the profit margin range of 15-25% rule still remained. Thus, the subsidy in the form of above-market price setting for coal supplied to mine-mouth coal power plants could still be considered applied here.

3.1.11. Research and Development support for coal industry

MEMR operates a Centre for Research and Development of Mineral and Coal Technology whose works involve research on the coal downstream industries such as the coal gasification, briquette; provide laboratory services such as coal and peat characteristic; and support coal bed methane exploration. This could be considered subsidy in the form of services and goods delivery to the industries (Attwood et al., 2017). Number of subsidies can be estimated by analyzing how much funding the research centre received from the government and then used to support coal activities.

3.1.12. Failure to collect fund and conduct a proper reclamation and post-mining activity

The Coal and Mineral Law No. 4/2009 stipulated that as a prerequisite for getting the mining permit (IUP), a coal mining company would need to allocate a specific amount of fund for reclamation and post mining activity purposes. The fund amounts are set by the regional government and should be put in a joint account of the IUP and the regional government. However, in 2014, there are 1,325 and 186 IUPs which did not fulfil these obligations (Abdullah et al., 2017).

Even after the coordination and supervision led by the KPK, there is not much improvement in the reclamation fund collection. Lack of clear data of the responsible IUPs has been one of the causes for this slow progress.

3.2. For Coal Fired Power

3.2.1. Government loan guarantee

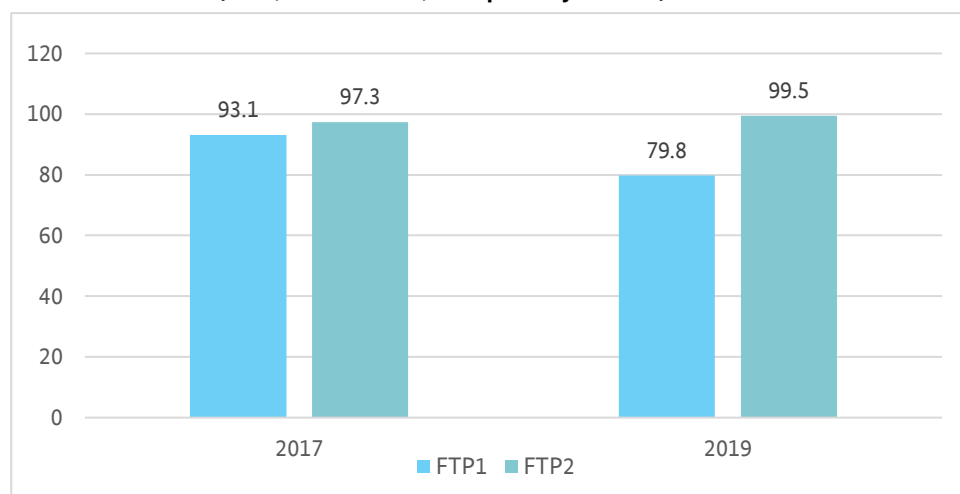
Since PLN has been impacted by the 1998 Asian financial crisis, there has not been much increase in the electricity installed capacities afterwards. Therefore, the government launched the FTP 1 in 2006 to accelerate the deployment of electricity installed capacity and to catch up with the increasing demand of energy (electricity). The Presidential Regulation No. 71/2006 assigned PLN to develop a 10 GW CFPP by the end of 2009. Furthermore, based on the Presidential Regulation No. 86/2006, the government provides a loan guarantee to the program which means the risk of loan default will be at the government instead of the loan provider/creditor.

The government guarantees allow PLN to seek out a better loan rate and increase the chance of obtaining the loans from creditors. The government guarantees could allow PLN to use less equity for the same investments and thus allowing PLN to reallocate equity for making other investments (Attwood et al., 2017).

A similar approach and support were taken by the government with the FTP 2 as stipulated by the Presidential Regulation No. 4/2010. The second FTP involved IPP in the deployment of gas, coal, geothermal and hydro power plants. The Ministry of Finance Regulation No. 139/2011 governed the process of giving government loan guarantee for IPPs in the FTP 2 program (PwC, 2013).

As of the second quarter of 2017, the government has signed 36 (all CFPP) and 12 (4 of which are CFPP) government guarantee letters for the power plant in the FTP 1 and FTP 2 program respectively. The total government guarantee provided for FTP 1 program amounted to IDR 93.1 trillion, while the coal plant in FTP 2 is USD 7.03 billion (equivalent to about IDR 97.3 trillion) (MoF, 2017). In 2019, some of the guarantee for the FTP 1 program has matured, leaving about IDR 80 trillion left (MoF, 2019).

Figure 6. Total government loan guarantee for coal power plants in FTP 1 and FTP 2 program (MoF, 2017 & 2019; Compiled by Author)



The 35 GW program (Presidential Regulation No. 4/2016) was also given the loan guarantee for PLN's own project (similar to FTP 1). The guarantee scheme is detailed in MoF Regulation No. 130/2016. The government loan guarantee can now be given to any PLN's proposed project (subject to MEMR approval) which would then be processed for final approval by MoF. The loan guarantees are the subsidies in the form of potential transfer of funds to the PLN's fund lender.

3.2.2. Guarantee of business viability (take or pay)

The business viability guarantee is eligible for IPPs which have signed a PPA contract with PLN. The MoF Regulation No. 139/2011 regulated the first business viability guarantee which was then amended and replaced several times (MoF Regulation No. 225/2013, No. 173/2014, No. 130/2016, and No. 135/2019).

PLN will need to propose the power plant project which will need the guarantee to the MoF before tendering it to the IPPs. After getting the principle agreement from the MoF, PLN can move on with the tendering and PPA process with IPPs. The guarantee will be given at the same time of the PPA signing. Since the stipulation of the MoF Regulation No. 130/2016, in the case where PLN cannot meet its financial obligations as written in the PPA, the government will cover the PLN obligation through the Public Service Obligation (PSO) mechanism.

The MEMR Regulation No. 10/2017 (later amended by MEMR Regulation No. 49/2017 and No. 10/2018) on the PPA principle regulated that the PLN is obliged to buy the electricity from the IPPs based on the Availability Factor (AF) or Capacity Factor (CF) as written in the PPA. Therefore, this is a potential form of subsidy as the business viability guarantee almost completely shifted the off-taker risk from the IPP to the government. Thus, it is a potential transfer of funds to the IPP from the government. Note that the regulation excludes the intermittent renewable, less than 10 MW hydro, waste power plant, and biogas power plant from this principle.

3.2.3. Guarantee for foreign exchange risk

The difference in volatility of the currency value where the revenue of a project is coming from with currency of the liability could introduce an additional layer of risk. This foreign exchange risk would inevitably add to the total project cost. The Government of Indonesia has agreed to take on the foreign exchange risk of certain IPP such as the 2 GW Central Java coal power plant/PLTU Batang. The foreign exchange risk could potentially increase the cost of debt by up to 9% (Alex Doukas, 2017). About 80% of the USD 4.3 billion financing for the Central Java coal power plant is coming from debt from foreign financial institutions mostly Japanese investors e.g. Japan Bank for International Cooperation/JBIC (World Bank, n.d.). This foreign exchange guarantee from the government is a potential subsidy in the form of potential transfer of funds to the IPP.

Based on the Ministry of State-Owned Enterprise (MSOE) Regulation No. 9/2013, every SOE will need to identify and manage the market risks i.e. interest risk, foreign exchange risk, commodity risk, and equity risk. The regulation further stated that the hedging facilities needed to manage the risks would be obtained from the SOE financial institutions. As a follow up, PLN has signed a USD 950 million hedging facility with three SOE banks in 2015 (The Jakarta Post, 2015). The hedging facility would help PLN in reducing the foreign exchange risk of the debt PLN owed to the foreign financial institutions and operational expenditures in foreign currency.

3.2.4. Support through PPP program & guarantee from IIGF

The electricity infrastructure project is one of the projects that can be conducted under a Public Private Partnership (PPP) scheme. The PPP scheme is regulated under the Presidential Regulation No. 67/2005, which is then replaced by Presidential Regulation No. 38/2015. The PPP project would obtain support of the

government in the form of land acquisition (which will be carried out by the government), government guarantee, prevailing tax incentives (under different regulation) and even direct fund support for the construction from the government (viability gap fund).

At the end of 2009, the government established the Indonesian Infrastructure Guarantee Fund (IIGF) through Government Regulation No. 35/2009, which will provide guarantees for infrastructure development with a PPP scheme. The guarantee will be given through PT Penjaminan Infrastruktur Indonesia (PII). So far, only the 2 GW Central Java Power plant is developed using the PPP scheme (PwC, 2019a).

3.2.5. Exemption from import duty of capital equipment

Based on the MoF Regulation No. 66/2015, any business entity in the power sector is eligible to obtain an import duty exemption to the import of capital equipment. These entities, as stipulated in the regulations, include PLN, any IUPTL holder in a specific business area, IPPs holding PPA with PLN, and IPPs holding PPA with the IUPTL holder in a specific business area (PwC, 2019a). Similar to the import duty process in the mining industry, the companies would first need to apply for the BKPM master list. The following Table 6 shows the capital equipment which a company can obtain an exemption from and its standard duty rate.

Table 6. Relevant import duty rate of capital equipment in the power sector (PwC, 2019a)

Import Duty	Capital Equipment
up to 5%	Turbines
up to 10%	Boiler furnaces, transformers, electricity transmission cables, steel

3.3. For Coal Consumption

3.3.1. Domestic Market Obligation (DMO) for coal

Through the MEMR Regulation No. 34/2009, the government regulates that a certain amount of coal production must be allocated for the domestic consumption. Starting from 2011, the MEMR publishes a decree/regulation annually which stipulates the minimum percentage of DMO for coal to be fulfilled. The MEMR Regulation No. 17/2010 governed the Coal Benchmark Price (Harga Patokan Batubara/HPB) of which formula is defined in the PER 515/DJB/2011. To determine the HPB, a Coal Reference Price (Harga Batubara Acuan/HBA) is used.

Between 2011-2017 (except for 2016), the government set up a certain volume of coal (in ton) to be supplied for domestic consumption. Starting from 2012, the DMO volume allocation is specific for each coal producer listed in the regulation. However, in 2018 and 2019, the DMO allocation was set at a percentage of 25% for all mining companies.

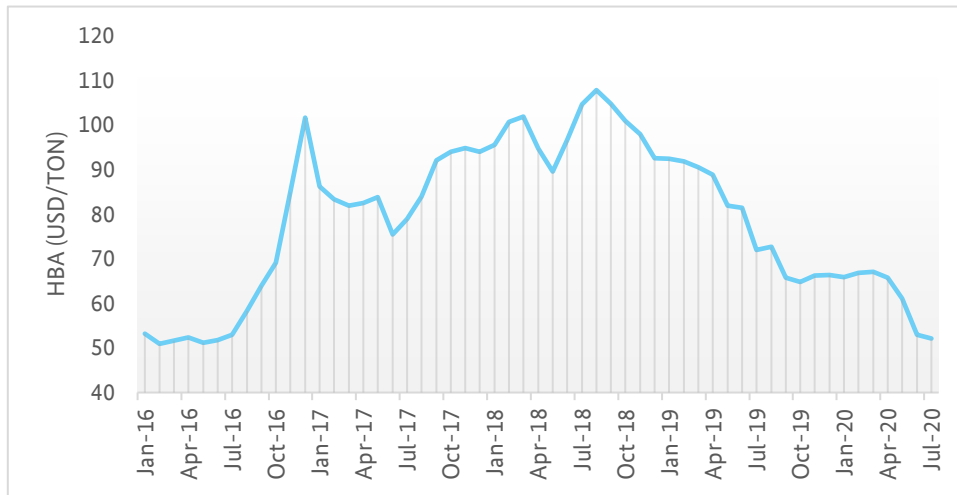
The DMO policy guarantees supply for domestic industry especially CFPP which have been the largest thermal coal consumers. During the implementation, coal producers find difficulties to meet the set DMO target. The unmatched coal specification between what is being produced by the coal producers and what the coal consumers need (mainly what PLN needs for CFPP) was claimed to be the main reason. By 2018, MEMR introduce a new mechanism which allow a transfer of DMO quota between coal producers. The transfer quota negotiation will be conducted on a business to business basis (Mulyana, 2018).

DMO could be considered as a subsidy for coal consumption as there is a certain guarantee for the domestic consumption. The guarantee of supply could have reduced the risk for domestic industries (including PLN) and might affect the operational cost. Another point of view for DMO as subsidy is the foregone revenue from the coal export tax of 1.5% (Attwood et al., 2017).

3.3.2. Price cap for coal used in the domestic electricity generation

In March 2018, the government released MEMR Decree 1395/MEM/2018 which put a ceiling price limit for coal reference price (HBA) for the domestic CFPPs at 70 USD/ton. Based on the regulation, the ceiling price will be applied for 2018-2019.

Figure 7. Coal reference price January 2016–August 2020 (DG Mineral & Coal, MEMR, 2020)



MEMR stated that the regulation is issued to keep the electricity price at the same level (MEMR, 2018). On the other hand, the coal reference price has been increasing since mid-2017. The increase in coal price has pushed the electricity generation cost higher than before, especially with about 57% of the electricity generation at the time coming from CFPPs. Thus, as a follow up to the commitment made by the government of not increasing electricity price until the end of 2019, the government put a cap on the coal price for electricity to help suppress the increase in electricity generation cost. This regulation has helped PLN to reduce their operating cost and save IDR 18-20 trillion in 2018 alone (Amelia, 2018).

Note that since September 2019, the HBA has been below 70 USD/ton, which means that there is a price difference between coal for domestic electricity generation and the coal reference price in the market. Despite the declining trend of the coal market price, the government continued its coal price cap policy with the MEMR Decree 261/MEM/2019 which will be in effect throughout 2020.

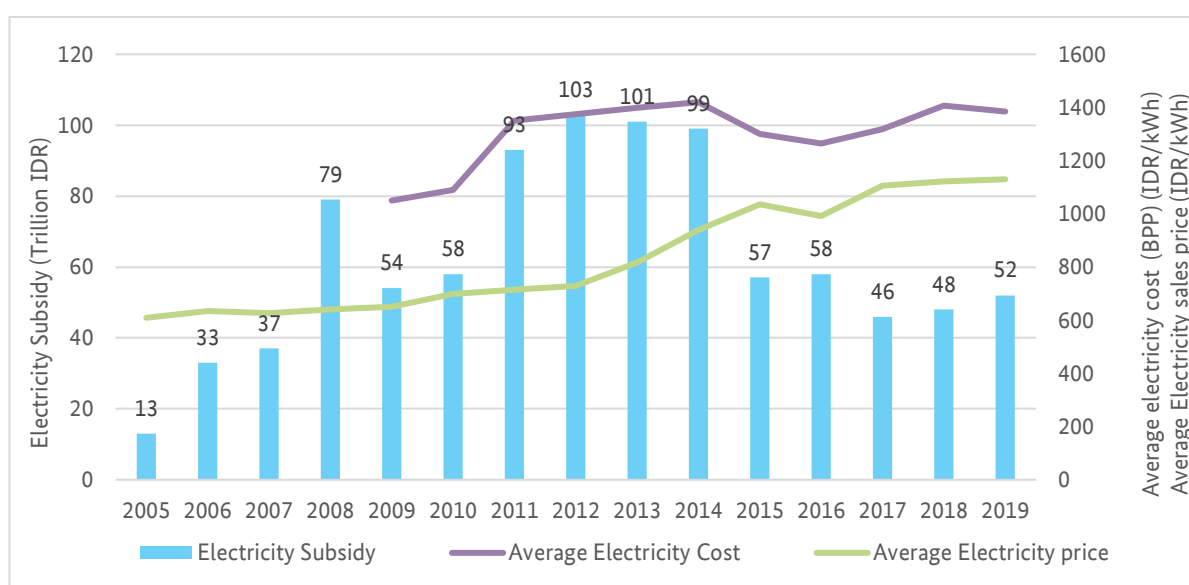
One of the approaches to estimate the subsidy is to identify the difference between the market coal price with the price cap between March 2018–August 2019 and the amount of coal consumed during the same period (and possibly the coal quality as well).

3.3.3. Electricity subsidy

Based on the Electricity Law No. 30/2009, the electricity price is subject to political intervention. Both the central and regional governments have the authority to propose the electricity price. The proposed electricity price will still need to obtain approval from the parliament (House of Representative of Republic of Indonesia/DPR or Regional House of Representative /DPRD).

Historically, electricity has been subsidized by the government since the electricity price does not follow the economic rationale. In 2012, the electricity subsidy even reached IDR 103 trillion. In the following years, there has been an increase of electricity price from the government which has managed to reduce the amount of electricity subsidy to half in 2015. PLN has managed to slow down the electricity generation cost increase which resulted in a relatively stable amount of electricity subsidy after 2015.

Figure 8. Year-on-year electricity subsidy, average electricity cost, and average electricity sales price (PLN Statistic, n.d.)



The electricity subsidy can be considered as a subsidy to increase consumption of electricity, and thus fuel for electricity generation. To estimate the amount of subsidy given to the electricity generation from coal, the annual electricity subsidy could be multiplied by the share of electricity generation from CFPPs.

As a state-owned enterprise, PLN was also mandated to do a public service obligation (PSO). There is electricity provided by PLN with the intention of serving the public interest. For that service, the government compensated PLN with a certain PSO margin. The PSO margin has been increased from 5% in 2009 to 8% in 2010-2011 before being reduced to 7% from 2012 (PwC, 2019a). This is another potential form of subsidy as it will drive electricity consumption and, in the end, coal consumption for power generation.

3.3.4. Ceiling tariff for mine-mouth coal-fired power plant

MEMR Regulation No. 3/2015 has set up the first ceiling tariff for PLN to purchase from the mine-mouth coal power plant in the early 2015. PLN would not need to obtain approval from the MEMR whenever the electricity purchasing price is based on this ceiling tariff. However, this ceiling price is relatively high compared to the basic cost of generation (BPP) in 2015, especially considering that the mine-mouth CFPP has relatively lower cost of operation due to lower fuel transportation cost.

Table 7. Comparison of ceiling tariff with BPP. (MEMR, 2015; Ciptaningtyas, 2017)

Ceiling tariff for Mine-Mouth Coal Fired Power Plant	100 MW	150 MW	300 MW	600 MW
	cent USD/kWh			
MEMR Regulation No. 3/2015	8.2089	7.6520	7.1862	6.9012
National BPP 2015	7.45			
MEMR Regulation No. 19/2017	75% of national or regional BPP (whichever is lower)			
MEMR Decree No. 1772/2018 (national BPP 2017)	7.66			

In early 2017, MEMR replaced the regulation with MEMR Regulation No. 19/2017. The mine-mouth coal power plant ceiling tariff is now set relative to the basic cost of generation (BPP) of the national or regional. Thus, the mine-mouth tariff should be able to lower the average BPP. The idea of the mine-mouth ceiling

tariff is to be able to utilize low rank coal for electricity generation (and therefore increasing coal consumption). In the latest RUPTL 2019-2028, there are about 5.69 GW of mine-mouth coal power plants planned for COD between 2021-2028. About 4.67 GW will be in Sumatera while the rest will be in Kalimantan.

The ceiling tariff for mine-mouth coal plants is a potential subsidy in the form of price support. Note that the same principle was not applicable between early 2015-early 2017 as the ceiling tariff is relatively higher than BPP. During that period, the price support is potentially received by the IPP/owner of the mine-mouth coal plant.

3.3.5. VAT exemption for coal sales

As explained above, since the stipulation of the VAT Law in 2000, unprocessed coal is exempted from VAT. With the typical VAT rate of 10%, this could be considered as subsidy for the coal consumers in Indonesia. However, as there is a dispute over the interpretation of this law (see preferential VAT section above) a clear and consistent implementation of the law is necessary (Attwood et al., 2017).

3.4. Coal Subsidy Summary

There is a lack of data in determining the value of the identified potential coal subsidies. Furthermore, note that some subsidies identified above, especially in the coal production, cannot be summed linearly due to its implementation objective from the government. For example, the 1.5% export tax on coal for the IUP holders was stipulated by the government to make up the difference of government revenue coming from the lower rate of royalty for the IUP compared to the CCoW companies. In this case, the export tax on coal received by the IUP could be viewed to decrease the subsidies coming from the reduced rate of royalty the IUP got compared to CCoW. Therefore, a careful consideration has to be given when calculating these subsidies. There are literatures which have attempted to quantify some of the coal subsidies in Indonesia. The inventory of Indonesian coal subsidies identified are as follows:

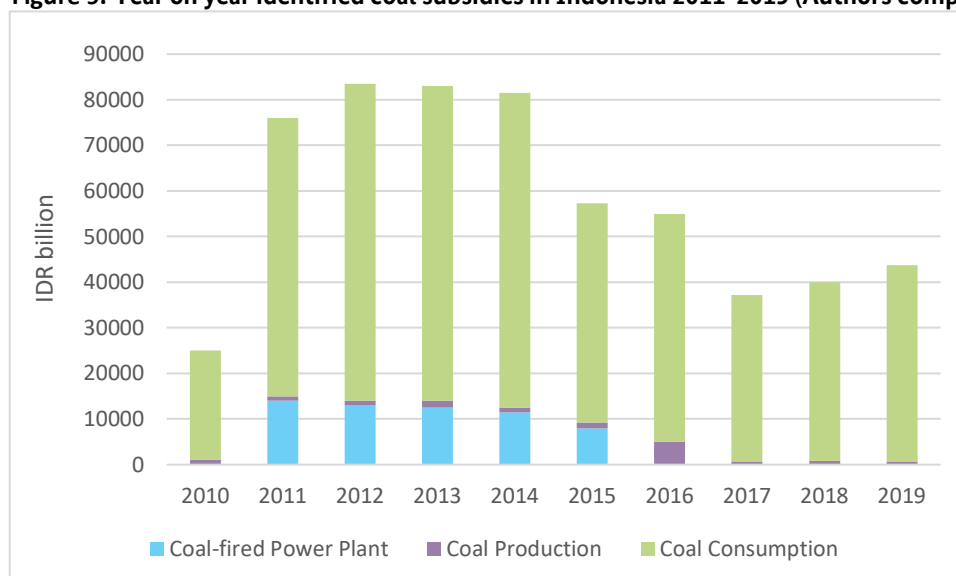
Table 8. Inventory of coal subsidies identified in Indonesia (OECD.stat, n.d.; OECD, 2019; Attwood et. al., 2017; Doukas, 2017; Gencsu et. al., 2019; Authors compilation)

Group	Subsidy	Subsidy Type
Coal Production	Exemption of export tax on coal	Foregone revenues that are otherwise due
	Import duty of capital equipment	Foregone revenues that are otherwise due
	Preferential royalty rate and failure to collect royalty	Foregone revenues that are otherwise due
	Preferential value added tax rate	Foregone revenues that are otherwise due
	Preferential dead rent and failure to collect the rent	Foregone revenues that are otherwise due
	Exemption of regional tax	Foregone revenues that are otherwise due
	Failure to collect land and building tax for coal mines	Foregone revenues that are otherwise due
	Above-market price for coal supplied to mine-mouth coal plant	Any form of income or price support
	Research and development support for coal industry	Goods and services provided by the government other than general infrastructure and/or government purchases
	Failure to collect fund and conduct a proper reclamation and post-mining activities	Goods and services provided by the government other than general infrastructure and/or government purchases
Coal-fired power plant	Government loan guarantee	Direct transfer of funds, including potential transfers
	Guarantee of business viability	Direct transfer of funds, including potential transfers

Group	Subsidy	Subsidy Type
	Guarantee for foreign exchange risk	Direct transfer of funds, including potential transfers
	Support through PPP program and IIGF guarantee	Direct transfer of funds, including potential transfers
	Exemption from import duty of capital equipment	Foregone revenues that are otherwise due
Coal consumption	Domestic market obligation for coal	Foregone revenues that are otherwise due
	Price cap for coal used in domestic electricity generation	Any form of income or price support
	Electricity subsidy	Direct transfer of funds, including potential transfers
	Ceiling tariff for mine-mouth coal power plant	Any form of income or price support
	VAT exemption on coal sales	Foregone revenues that are otherwise due

Between 2010-2019, the quantified subsidies given to the coal sector has ranged between IDR 24-74 trillion. The majority of the subsidies are coming from the electricity subsidy, particularly since coal retains the highest share of electricity generation over the years.

Figure 9. Year on year identified coal subsidies in Indonesia 2011-2019 (Authors compilation)



However, there are lots of unquantified subsidies which should increase the figures further, especially the CFPPs where the government guarantee and business viability have yet to be identified fully. Most of the unidentified subsidies are linked with the PPA and or contracts which are usually not available publicly. Moreover, the assumption used in quantifying risk in government guarantees might be undervalued and thus, higher subsidies could be considered.

3.4.1. Coal power plant emission standard & externality

The combustion of coal, predominantly used as fuel for power generation, could potentially raise another cost related to the social and environmental impact. The coal combustion process would release sulphur dioxide (SO₂) and nitrogen oxides (NO_x) into the air which will then lead to the formation of particulate matter (PM_{2.5}) and surface ozone. The particulate matter could cause respiratory and cardiovascular disease which results in premature mortality while the surface ozone would harm the ecosystem and public health (Koplit et al., 2017).

In 2015, Greenpeace and Harvard study showed that the existing CFPPs in Indonesia could potentially cause the premature death of 6,500 people annually. Every 1,000 MW added capacity for the 2015 existing capacity would increase this impact by 600 more people every year. The number would further rise to 23,800 premature deaths annually if the 35 GW program is to be completed (Greenpeace, 2015). Adding to that number is the potential environmental impacts of coal such as the water pollution, coal ash contamination and the additional potential social and economic impact caused by the pollution (e.g. reduced income for farmers & fishermen around the CFPP such as what have been claimed by the farmers around Cirebon's CFPP (Wardani, 2017). The latter case is usually caused by the lack of monitoring for Environmental Impact Analysis (AMDAL) during the CFPP planning and construction.

The emission standard for CFPPs in Indonesia is relatively less stringent even compared to the other developing countries (e.g. China and India). The latest Regulation of Ministry of Environment and Forestry (MoEF) No. 15/2019 has increased significantly the emission standard though still about two times lower than the other countries with major CFPP fleets. Additionally, the regulation also puts carbon dioxide and mercury measurement mandatory for CFPPs.

Table 9. Comparison of CFPP emission standard (Singh 2017 and Ministry of Environment and Forestry)

Emission Parameter	MoEF Regulation No. 21/2008		MoEF Regulation No. 15/2019		China	India	USA
	Existing CFPP	Planned after regulation	Existing CFPP	Planned after regulation	New Plant (after 2012)	New Plant (after 2017)	New Plant (after 2005)
	mg/Nm ³						
Sulphur Dioxide (SO ₂)	750	750	550	200	100	100	160
Nitrogen Oxides (NO _x)	850	750	550	200	100	100	117
Particulate Matter (PM)	150	100	100	50	30	30	22.5
Mercury (Hg)	-	-	0.03	0.03	0.03	0.03	0.001-0.006
Opacity	20%	20%	-	-			

However, the implementation of the MoEF Regulation No. 15/2019 would potentially increase the CFPP cost of generation. There has been resistance from the Indonesian Independent Power Producer Association (APLSI), claiming that the regulation would inhibit investment in the power sector. Capital investment for CFPP could raise by USD 228/kW just for installing equipment needed to meet the SO₂ standard (Irfany, 2018). PLN even asked for the relaxation of implementation date for the regulation. Otherwise the current PLN cost of generation could increase by IDR 104 per kWh (about 0.7 cent USD/kWh) and potentially the electricity subsidy would also rise by IDR 10.7 trillion (about 700 million USD) (Prasetyo, 2020).

The CFPP investment so far has been made with less attention towards the emission standard and impact, resulting in a relatively lower investment needed. However, there will be additional social and environmental costs borne by society with no relation to the plant in the first place. Some of this cost might be related to the government expenditure, i.e. in running a public health facility. Although there might be a possible subsidy in the form of increased government spending for goods and service, it is hard to estimate with current available data. Another approach that could be done is to calculate the potential avoided cost by

the CFPP if the emissions control equipment is not to be installed following the regulation. However, the potential cost in this case might be undervalued. Indonesian Coal Sector Finance

4. Indonesia Coal Sector Finance

4.1. Global trend in coal financing

Globally, the growth of coal power plants has been in a declining trend in the past decade, driven primarily by the coal plants retirement in the US and EU. These retirements, however, have been insufficient to bring down the total installed capacity of coal plants, since there is a still significant growth in China, India, and other countries (mainly Asian). This declining trend is expected to continue with coal plants under construction and pre-construction also declining in the past 5 years, including in China, India, and Southeast Asia. Coal power generation, on the other hand, dropped by 3% in 2019, reducing the average utilization factor to 51% (Shearer et al., 2020). This situation indicates the declining prospects of coal power plants in the near future.

Despite the gloomy future of coal, financial institutions have not backed out from financing the coal industry. From January 2014 to September 2017, the global commercial banks have financed at least USD 600 billion for CFPP developers and almost half of it occurred after the signing of Paris Agreement in 2015. Of that number, more than 80% was in the form of underwriting, 13% corporate lending, and only 5% was for project lending (banktrack.org, 2017). The majority of these commercial banks are from Asian countries, led by China (60%), Japan (8%), and India (7%). However, several western countries are also involved, with banks from the US, UK, France, and Germany contributing to 5%, 4%, 2%, and 2% of the USD 600 billion coal financing, respectively.

Over the past few years, more banks have been showing their intention to move away from the coal industry. Currently, over 100 financial institutions have pledged to stop investing in coal mining and/or coal power plants (IEEFA, n.d.), although many of the plans are only for partial divestment. For instance, some banks exclude coal plants with ultra-supercritical technology from their divestment plan. Shearer et al. (2020) stated that no Australian, European, and US commercial banks provided direct project financing for coal plants for any construction starting in 2019.

However, despite these growing pledges, it appears that these financial institutions are still involved with coal activities. BankTrack analyzed 35 top private commercial and investment banks from Canada, China, Europe, Japan, and the US (Kirsch et al., 2019). Between 2016-2019, these 35 banks have invested USD 54.5 billion on 30 top coal mining companies and USD 138.5 billion on 30 top coal power companies, which also include some of the banks with divestment pledges. The analysis from Kirsch et al (2019) suggests that most commitments are still considered as weak due to the loopholes in their policies. The Chinese and Canadian banks are among the worst in terms of coal investment restriction policies. European banks in general have better policies to restrict coal investment. French banks, in particular, have adopted strong policies which include phasing out financing to companies with coal activities or expansion plans.

Other than the commercial banks, public financial institutions are also involved in coal projects over the world, most notably from China and Japan. The figure below shows the amount of public finance mobilized annually to fund international coal projects (90% of which are CFPPs) that are identified by Gencsu et al. (2019b).

These funds were channelled to different countries, with Pakistan, Bangladesh, Indonesia, and Vietnam becoming the largest recipients, as shown in Figure 4. Contrary to the massive funding to international coal projects, the report did not find similar funding to domestic coal projects by these public financial institutions.

Figure 10. Public finance for coal and CFPP by providing countries (2016-2017 annual average)

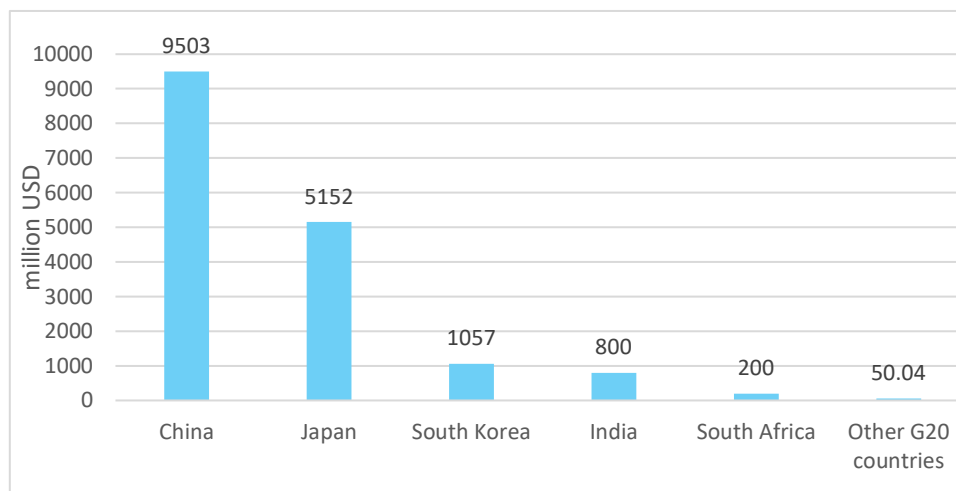


Figure 11. Recipients of public finance for coal and coal-fired plant (2016-2017 annual average)

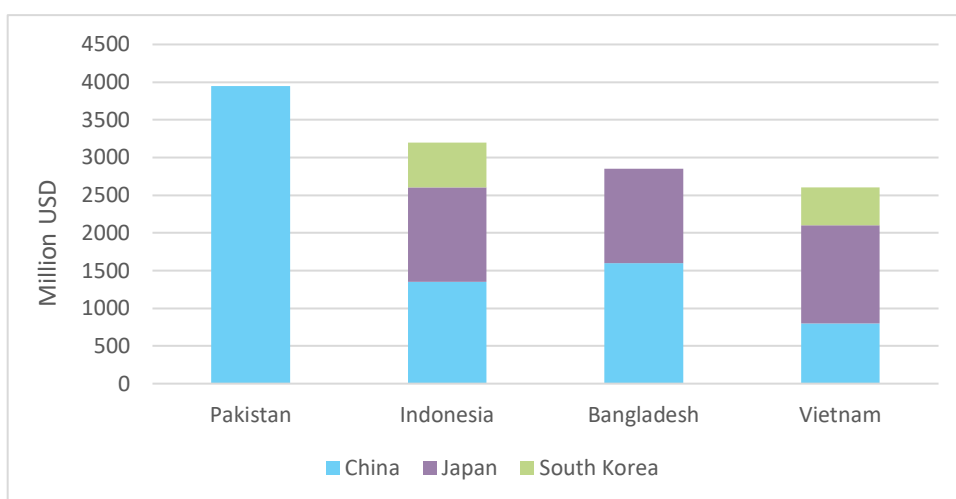
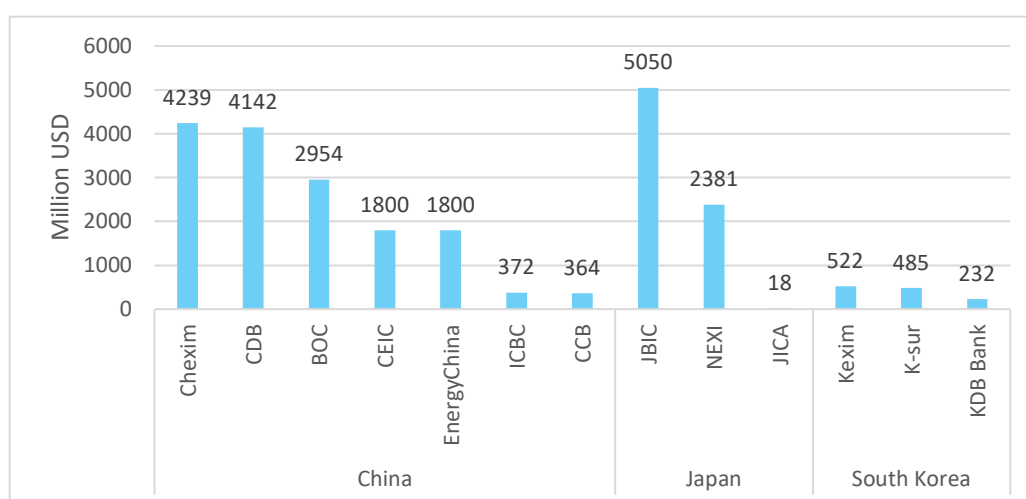


Figure 12. Public finance for CFPP by providing institution/countries between 2013-2019 (in million USD)



4.2. Financing in Indonesia's coal power projects

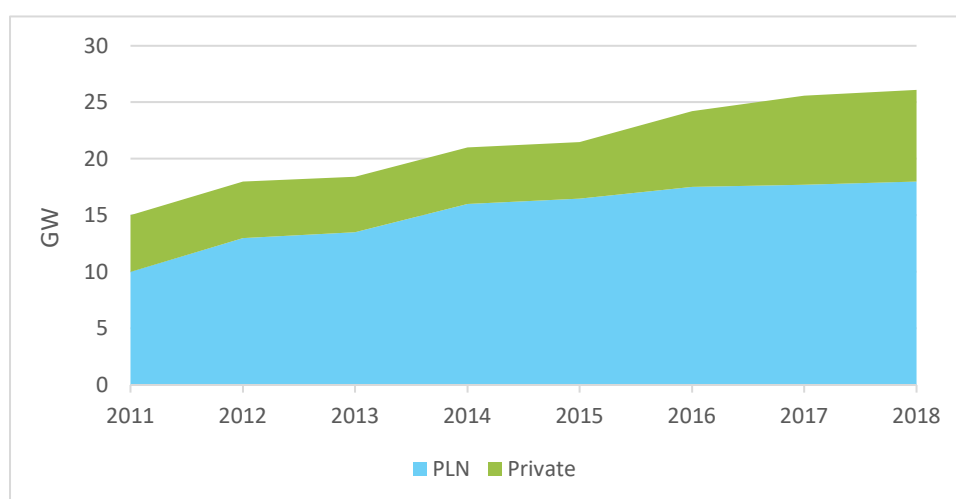
Financing for coal power plants in Indonesia in the past decade has been dominated by foreign financial institutions, most notably from China and Japan, but also from other countries to a lesser extent. Market

Forces study on 22 coal power projects, with a total of USD 17.1 billion debt and 13.1 GW installed capacity, over 2010-2017 found that only 2 projects were financed by Indonesian banks, covering only 2% of the total value (*Market Forces*, n.d.). 45% of the USD 17.1 billion debt were provided by foreign export credit agencies, 34% by foreign commercial banks, and 19% from foreign bilateral development banks.

This fund mobilization goes hand-in-hand with the expansion of their engineering companies to international markets. The shift towards cleaner energy in their domestic market has forced the coal power plant constructors and owners from China, Japan, and South Korea to look for other markets with less stringent emission standards, one of which is Indonesia. The study by Market Forces indicated that the coal power financed by foreign banks are usually owned (sponsored) by companies and built by contractors from the financing countries (*Public Finance to Indonesian Coal*, n.d.). For 15 plants with Chinese ownership or contractor involvement investigated, 85% of the financing were from Chinese banks. 90% of the financing for 5 plants with Japanese owners or contractors came from Japanese banks.

Most of the CFPPs in Indonesia are owned by PLN, the state-owned utility company, as shown in figure below. However, it is expected that the share of IPP-owned CFPPs will increase. Among the CFPP planned in RUPTL 2019-2028, 4.9 GW will be owned by PLN, 20.9 GW by IPP/PPU, and another 1.2 GW has not yet been allocated. These planned CFPPs include the ones from the FTP 1 and 2.

Figure 13. Indonesia's coal power plant capacity by ownership (PLN, 2020)



As a state-owned enterprise, PLN received funding from various sources. Urgewald Global Coal Exit List (GCEL) listed 41 commercial banks that provided financing to PLN, with a total of USD 23.1 billion, in which USD 10.9 billion is in the form of loan and the rest as underwriting. It does not identify, however, whether the loans are project specific or not. The banks with major lending contributions include Bank Mandiri, Bank Rakyat Indonesia (BRI), and Bank Negara Indonesia (BNI). Meanwhile the Hongkong and Shanghai Banking Corporation (HSBC), Citigroup, Bank Mandiri, and Standard Chartered are among the main underwriting providers. This number does not include the lending obtained from public financial institutions, which has supported the coal power plant projects in recent years. In addition, there are also more than 140 institutions acting as PLN's bondholders with a total amount of USD 3.6 billion (*Urgewald GCEL*, n.d.).

In addition to that, PLN also receives funding from the government through equity participation, which amounted to USD 2.5 billion over the 2013-2019 period. PLN also received indirect loans through the two-step loans, in which, the lending financial institutions provide loans to the government, which then pass the fund to PLN.

PLN built almost 10,000 MW of CFPP for the FTP 1. In total, PLN received USD 6.5 billion (IDR 90 trillion) loan facility for the FTP 1 projects. The loan for these projects came from two main sources: Chinese banks (61%) and local banks (39%) (Shalati & Simanjuntak, 2019). One exception is the CFPP Rembang project, which also received lending from Barclays Capital, a British investment bank, together with China Development Bank.

Table 10. Loans received by PLN for the FTP¹ CFPP projects

Source	Creditor	Maximum loan facility (IDR million)
Foreign	Export-Import Bank of China*	21,074,880
	Bank of China Limited*	19,799,840
	China Development Bank*	10,620,960
	Barclays Capital and China Development Bank	3,647,940
Domestic	Bank Negara Indonesia*	7,652,540
	Bank Rakyat Indonesia*	7,208,740
	Bank DKI*	6,996,920
	Bank Mega	5,983,740
	Bank Central Asia	3,024,840
	Bank Bukopin	2,667,840
	Bank Mandiri*	1,922,480

*) public financial institutions

For the second FTP, PLN is responsible for building 3,800 MW CFPP, while IPPs are responsible for another 6,720 MW CFPP. Three of the PLN's projects are financed by Exim Bank of China, one by Japan International Cooperation Agency (JICA) (so far for engineering services, with the rest of the projects are awaiting official request¹), and 1 by BGK (Polish state-owned bank). Meanwhile, the creditors for the IPP projects in FTP 2 are dominated by Japanese and Korean banks, which also resembles the ownership of the power plants, as laid out in Table 11. Less significantly, private banks from other countries such as ING (Netherlands), DBS (Singapore), and HSBC (UK) also contributed to the projects. The numbers listed in this table do not include corporate loans that are obtained by the IPPs. For example, JPMorgan Chase provided a corporate loan to Indika Energy, which is one of the sponsors of PT Cirebon Energi Prasarana.

Table 11. Loans for FTP 2 CFPP projects

Recipient	Creditors	Amount (USD million)
PLN ²	Export Import Bank of China (3 projects)	746.2
	Bank Gospodarstwa Krajowego (Poland)	80.8

¹ https://sekitan.jp/jbic/wp-content/uploads/2019/11/201911_Indramayu_factsheet_eng.pdf

² Shalati & Simanjuntak, 2019

Recipient	Creditors	Amount (USD million)
	Japan International Cooperation Agency	15.2
Cirebon Energi Prasarana (CEPR) ³	Japan Bank for International Cooperation (JBIC) Export–Import Bank of Korea (Kexim)	730.8 417.6
- Marubeni Corporation (35%)	Commercial banks (insured by NEXI and KEXIM)	
- Samtan (20%)	Bank of Tokyo-Mitsubishi UFJ	155.68
- IMECO (18.75%)	Mizuho Bank	155.68
- Korea Midland Power (10%)	Sumitomo Mitsui Banking Corporation	155.68
- JERA – a joint venture between Tokyo Electric Power and Chubu Electric (10%)	ING Bank	124.55
- Indika Energy (6.25%)		Total : 1,740
Bhumi Jati Power ⁴ Sumitomo Corporation – 50% Kansai Electric Power Co – 25% PT United Tractors (Astra Group) – 25%	Japan Bank for International Cooperation (JBIC) Commercial banks : Mitsubishi UFJ Trust and Banking Mizuho Bank Mitsubishi UFJ Financial Group Norinchukin Bank OCBC Bank Sumitomo Mitsui Banking Corporation Sumitomo Mitsui Trust Bank	1,677 1,677
PT Tanjung Power Indonesia ⁵ Adaro Power - 65% KEPCO - 35%	Bank of Tokyo-Mitsubishi (BTMU) DBS Bank HSBC Korea Development Bank (KDB) Mizuho Bank Sumitomo Mitsui Banking Corporation	409
PT Graha Power Kaltim ⁶ (PLN subsidiary)	Domestic banks BNI BRI Bank Mandiri Indonesia Exim Bank	IDR 2.4 trillion
PT Tanjung Jati Power Company ⁷ Bakrie and Brothers - 20% YTL Jawa Energy (Malaysia)- 80%	Undisclosed	N/A

In addition to the FTP 1 and FTP 2 program, The Global Coal Public Finance Tracker has identified another USD 19.2 billion public money from China, Japan, and South Korea loaned to CFPP projects over the 2013-

³ <https://www.marketforces.org.au/research/indonesia/cirebon-2/>

⁴ <https://www.marketforces.org.au/research/indonesia/tanjung-jati-b-unit-5-6-expansion-tjb2/>

⁵ https://www.gem.wiki/Tabalong_power_station

⁶ <https://www.beritasatu.com/faisal-maliki-baskoro/ekonomi/332804/pltu-kaltim-dapat-pendanaan-rp-24-t;>
https://www.gem.wiki/Kaltim_FTP2_power_station

⁷ <https://investor.id/market-and-corporate/konsorsium-bakrie-brothers-cari-pendanaan-us-22-miliar>

2019 period. This includes USD 3 billion that was invested in the CFPP built to supply electricity in the Indonesia Morowali Industrial Park (IMIP).

It is also expected that the foreign creditors will be financing several CFPP projects currently planned. Among these prospective projects are already listed in Global Coal Finance Tracker (n.d.), which involve financing from predominantly China, but also Japan, South Korea, and Germany, as listed in Table 12. These financing plans have attracted protests and criticism in both Indonesia and the countries of origin (Gokkon, 2020; Piven, 2019).

Table 12. CFPP approaching financial closure in Indonesia and its financing source as identified by Global Coal Finance Tracker.

CFPP	Capacity (MW)	Source of Financing
Java 9-10, Suralaya	2,000	South Korea, China, Germany
Jambi	1,200	China
Indramayu 4	1,000	Japan
Morowali industrial park phase 4	700	China
Amman Mineral phase 2	300	China
Celukan Bawang Expansion	660	China
Tanjung Jati A (FTP2)	660	China
Bataan Coal Plant	600	China
Banten BSE	600	China
Nagan Raya 3 & 4	400	China

In summary, it can be concluded that the foreign financial institution holds a significant share for CFPP investment in Indonesia and (Foreign Direct Investment/FDI, particularly from China, Japan and South Korea. However, note that the divestment trends of global financial institution continue. Development from Japan and South Korea, which had made major investment in the past, are the most notable as recently the Mizuho financial group and Sumitomo Mitsui group has declared to pull out from financing coal power projects while the South Korean lawmakers are debating bills which will banned coal overseas investment (Pearl, 2020).

5. Conclusion

- 5.1. Indonesian coal sector development has been growing strong ever since the commodity boom period from the early 2000s which has been driven by the accelerated growth of developing and emerging economies. The decentralization law has also contributed to the sudden boom of IUP which resulted in uncontrolled production after 2009.
- 5.2. A number of potential subsidies are given to the coal sector. Some of these potential subsidies are coming from the different contract regime between different generations of CCoW as well as IUPs. The exact number is unknown due to lack of transparency in reporting from government or corporate accounts. In the future, the government must develop regular reporting on all type of subsidies provided to energy sector, particularly on the production side.
- 5.3. The CFPP also started to grow, kickstarted by the 10 GW fast track program in 2006. The government support played a key role through providing a guarantee for the PLN (starting from FTP 1) and IPP as well (starting from FTP 2 onwards). The government has also provided more support through the PPP program, although only one project so far is utilizing the scheme (Central Java CFPP).
- 5.4. The amount of identified and quantified subsidies given to the coal sector so far amounted to between IDR 24-74 trillion between 2010-2019. However, these have yet included a number of potential subsidies which will need further studies to be quantified. Thus, the aforementioned value might be an underestimation of the real value given to the sector.
- 5.5. Despite the declining trend of global coal power capacity, the financing of coal in Indonesia is still going strong. Financial institutions from China, Japan, and Korea are still the main source of funds for CFPP investments in the country. The government guarantee and business viability guarantee have allowed CFPP investments in the Indonesia to flow in, contrary to the global trend

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Annex

There are a number of studies and database which have tried to identify and quantify or at least estimate the subsidies provided to the coal sector. These studies are as follow:

- Overseas Development Institute report 2019. *G20 coal subsidies: Tracking government support to a fading industry.*
- International Institute for Sustainable Development report 2017. *Financial supports for coal and renewables in Indonesia*
- Oil Change International & Auriga report 2019. *PRIVATE GAIN, PUBLIC RISK: GUARANTEES AND CREDIT ENHANCEMENT FOR COAL-FIRED POWER PLANTS IN INDONESIA*
- Organisation for Economic Co-operation and Development report 2019. *Indonesia's effort to phase out and rationalise its fossil-fuel subsidies.*
- Stats.oecd.org (n.d.). Fossil fuel support – IDN.

From the studies and database above, we have summarized estimated coal subsidies in the following table. The detailed methodology on estimating the subsidies could be found in the studies previously mentioned (including the electricity subsidy methodology). It should be noted that most of the identified subsidies in this report are yet able to be estimated or quantified, therefore, improving the transparency of data of the coal sector is mandatory to be able to give a more accurate estimate for the subsidies figures.

Table 13. Summarized estimated coal subsidies from other studies (OECD.stat, n.d.; OECD, 2019; Attwood et. al., 2017; Doukas, 2017; Gencsu et. al., 2019; Authors compilation)

[illegible]

Group	Subsidy	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	Remarks
	a proper reclamation and post-mining activities											
Coal-fired power plant	Government loan guarantee	735.6	925.2	955.6	890.4	776.4	758.8	585.6	420.4	285.4	187.6	4% of debt from FTP 1 projects only (Doukas, 2017)
	Guarantee of business viability											
	Guarantee for foreign exchange risk							4437.0				9% of debt from CJPP (Doukas, 2017)
	Support through PPP program and IIGF guarantee											
	Exemption from import duty of capital equipment	0.0	3.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	stats.oecd.org
Coal consumption	Domestic market obligation for coal	45.1	9428.8	6644.9	6606.8	8179.1	8688.0	9347.5	10289.7	11326.9	12468.6	stats.oecd.org
	Price cap for coal used in domestic electricity generation											
	Electricity subsidy	23435.9	41194.1	52700.9	52082.1	51934.6	30129.1	31695.8	26579.3	27952.7	30050.6	from PLN statistic (proportionate to coal share of generation, have not included the PSO margin)
	Ceiling tariff for mine-mouth coal power plant											
	VAT exemption on coal sales											

