Landscape of Coal in Indonesian Economic & Power Sector
The political economy of Indonesia put coal as a commodity

Trading commodity (export) and source of revenues at national and sub-national level

Energy source for power generation, the cheapest among fossil fuel generation

Source: Petromindo 2018
Energy transition would impact the global and domestic coal demand, the coal industry sunset is coming.

Global energy transition is happening due to fast declining price of renewables (solar & wind).

Global coal fleet has been declining since 2018. The net coal power plant capacity change in the first half of 2020 decreased by 2.9 GW.

Given that the bulk of coal demand is coming from the power sector, the decline in coal power capacity would inevitably lead to the reduction in coal used.

Source: www.carbonbrief.org
Indonesia domestic coal consumption is rising, largely on the back of expansion of coal power plants fleet

The domestic coal consumption has nearly doubled between 2014-2019. The coal power plant and cement industries are the two largest industries consumer

The domination of coal consumption from coal power plants continue, as more than 70% of coal consumption is coming from the sector by 2019. According to the latest RUPTL 2019-2028, this trend will carry on

Majority of Indonesia’s coal production is being exported. China and India are the major coal importer.

Indonesia is the top coal exporters in the world with more than 30% share by 2018, followed by Australia.

China and India shares 56% of Indonesian coal export. The import demand for these major coal importers dictates Indonesia coal export volume and, to some extent, coal price.

Competition of the International market is fierce due to shrinking market size but increase number of global players involved.
China, as the largest Indonesian coal importer, has reached solar grid parity. This would impact the country’s growth of coal power capacity and coal demand. Solar has reached 100% grid parity (user-side grid parity/GPIu). Cost of generating solar electricity is cheaper than purchasing price from the grid in all China cities. It is profitable (IRR > 8.54%) to build distributed solar PV generation in about 83.72% of the cities in China. The IRR could reach higher than 20% in about 10% of China’s cities.

With solar becoming cheaper than coal, energy transition is happening in China. China’s coal demand could plunge in the near future, and the China’s coal mining industry production and coal import would decline.

Source: taken from Yan et.al. (2019)
2030 as the tipping point: renewables will outcompete coal power plants globally

By 2030, it will be more expensive to operate coal power plants than building new renewables in almost all region in the world.

In Indonesia, the levelized cost of solar is becoming cheaper and is projected to beat coal by 2029. By 2030, about 73% of coal capacity has higher long run operating cost than building renewables.

Source: carbon tracker initiative (2018)
Contrary to the national economy, coal mining contributes a large share in coal producing region’s economy. Thus, the economy growth of these provinces are closely aligned with the coal industry situation.

About 2-2.7% of Indonesian GDP of coming from coal mining. The figure is totally different when observing a specific region economy. For example, the coal mining GDP shares are 35% and 20% for East and South Kalimantan Provinces respectively.

With the large share of economy coming from the coal industry, often the economic growth depends on the coal industry situation. For example, the East Kalimantan province experience a contraction in economic by the year 2015-2016 when coal demand plunge and coal price is low.

Source: BPS (2020)
Paris Agreement and the Future of Coal-Fired Power Plants in Indonesia
Energy sector is projected to be the largest source of GHG emission by 2030, yet the sector’s GHG mitigation target is not ambitious enough.

Energy sector is the largest contributor to GHG emission in 2030. Under current NDC, although energy sector has reduced its emission by 19% and 24% against BAU, it is still a threefold increase against 2010 GHG emission level.

Climate Action Tracker (CAT), an independent climate analytic organisations, categorized Indonesia NDC unconditional target as highly insufficient and the conditional target as insufficient. An ambitious increase in climate change target is needed to comply with the Paris Agreement.

Source: NDC & CAT
Reducing power sector emission by significant number holds the key for Indonesia to achieve ambitious climate change target

In 2015, power sector shares the highest GHG emission (~40%), much higher than transport (31.5%). Moreover, coal power plant contributed ~70% of emission from power sector (or about 28% of total GHG emission from the energy sector).

Increasing mitigation action in power sector, especially aimed towards coal power plants, is inevitable.

Source: MEMR GHG inventory
More than 60% of the coal fired power plants in Indonesia are of less than 10 years old

However, most of Indonesian coal power plants fleet are relatively young. This young coal fleet faced the risk of being stranded in the coming years.

Stopping the construction of new coal power plants is crucial and should be implemented as soon as possible.

Source: RUPTL 2019-2028, news article, www.sourcewatch.org
Implementing key policies (moratorium of new coal power plant and early coal power retirement) could put Indonesia back on track in achieving the Paris Agreement target.

Combination of moratorium of new coal power plants (2021 at the latest) and early retirement policies (after 20 years of operation) could put Indonesia as the role model in increasing ambition of the GHG emission reduction in the power sector.

The phase-out policies need to be clear to give the correct signal to all related stakeholders.

Source: IESR analysis
Coal Transition Strategy in Indonesia
Lessons learned from global coal transition that the transition process is time-consuming and could affect a number of different stakeholders

<table>
<thead>
<tr>
<th>Item</th>
<th>UK</th>
<th>Canada, Ontario</th>
<th>Canada, Alberta</th>
<th>Germany</th>
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</table>
| Drivers                    | ● The declining economics of coal due to surge of gas and renewables power plant  
● Climate change  
● Carbon tax                      | ● Air pollution; Smog                                             | ● Change of government and political will                                 | ● Better renewable economy  
● Climate change                  |
| Enabling Conditions        | ● Liberalized power market  
● Availability of competitive gas  
● Carbon tax mechanism            | ● Clear government policy on coal phase-out                      | ● Clear government policy on coal phase-out  
● Availability of gas resources  
● Carbon tax                      | ● Renewable development  
● Liberalized power market  
● Clear government policy on coal phase-out  
● Impaired economic profitability of coal plants |
| Transition Policy Focus    | ● Region  
● Coal Workers  
● Communities                               | ● Coal Power Companies  
● Utility                                        | ● Coal Power Companies  
● Coal Workers  
● Communities                                 | ● Region  
● Coal Workers  
● Coal Power Companies  
● Electricity User                        |
| Strategy Applied           | ● Regional economy regeneration                                       | ● Engagement with stakeholders                               | ● Engagement with stakeholder                                                  | ● Engagement with stakeholders  
● Regional economy regeneration |

Source: IESR analysis
Indonesian specific strategy need to be crafted which accommodate the aspirations of coal industry’s different stakeholders

There are a few key points that can be done to pave the coal transition strategy:

- Intensify the dialogue and align the various interests
- Establish an independent commission
- Detail the transition strategy for each region and district
- Strategy need to consider long-term goals but flexible
- Decide on the need for the short-term transition strategy (e.g. co-firing coal with biomass)
- Generate additional source of fund
Thank you
Indonesia’s Coal Resources & Reserves are of steam coal and concentrated in the islands of Sumatra and Kalimantan.

- Indonesia coal resources are mainly consist of thermal/steam coal. The reserve is concentrated in Kalimantan and Sumatera. Potential of coking coal is unexplored yet.

- To be more precise, 96% of the coal reserves are located in only four out of 34 provinces, namely East Kalimantan, South Sumatera, North Kalimantan, and South Kalimantan.

Source: Badan Geologi 2019, Arif I 2020; RUKN 2019-2038