Coal Dynamics in Indonesia
Towards a just energy transition

Fabby Tumiwa
Cape Town, 27 February 2019
National Energy Policy

Coal in Primary Energy Mix
- 2025: min. 30%
- 2050: min. 25%

from KEN 2014

Coal in Primary Energy Mix
- 2025: 205.3 Mton (30%)
- 2050: 438.8 Mton (25.3%)

Coal Export
- Max. 400 Mton from 2019.
- If domestic need > 400 Mton, export stop (app. 2046)

from RUEN 2017

Electricity Power Supply Plan
- 27.1 GW new CFPP until 2028 (from total planned 56.4 GW)
- OR
- 48% CFPP from total installed capacity by 2027

from RUPTL 2019-2028

National Energy Plan
- 2025: max. 50%
- 2037: max. 48%

from Draft RUKN 2018-2037
Coal in Energy Mix

% Primary Energy Mix 2017

- Coal: 30.3%
- Gas: 21.3%
- Oil: 42.1%
- Renewable: 5.2%
- Hydropower: 3.5%
- Geothermal: 1.5%
- Biofuel: 1.2%

Remarks:
- Exclude Biomass
- Oil including Crude oil, petroleum product and LPG
- Coal including coal and briquette
- Gas including natural gas and LNG
- Biofuel; Liquid biofuel (biodiesel)

% Electricity Mix 2017

- Coal: 58.1%
- Gas: 21.9%
- Oil: 7.4%
- Hydro: 7.3%
- Renewable: 0.2%
- Geothermal: 5.0%

Remarks:
- Other Renewables including wind, solar and waste to energy PP
Coal Domestic Consumption

- Most of the coal produced in Indonesia is exported (about 80%)
- MEMR Regulation No. 34/2009 on Domestic Market Obligation (DMO) mandates coal companies to allocate a certain percentage of its production for national use
- The DMO realization has consistently failed to achieve its set target

- Major domestic coal consumers are coal fired power plant (CFPP) while cement and fertilizer industry consumes most of the rest
- The cement and fertilizer industry is expected to grow in the coming years
- However, given the current state of power sector development, CFPP growth will still dictate domestic coal consumption
Coal Production

Factors that has led to coal over production:

- The over-licensing of new mines
  
  In 2017, the total coal production exceeded the production plan approved by MEMR by almost 50 million tons. It was caused by the overproduction of Provincial IUP holders, which in aggregate produced almost twice of their initial plans. A large number of IUP holders might have made actual monitoring of production more difficult for the provincial governments.

- The coal market price
  
  The increasing price of coal has affected production as the coal mining company increase its production in response to gain profit. At the same time, government is seeking for solution to balance trade deficit and as a result has increased coal production cap in 2018 by 100 million ton.
Around 80 percent of Indonesia’s domestic coal production being exported to several countries, placing Indonesia at the 2nd position as the coal exporter country in 2017. Most of Indonesia coal is exported to China and India. Coal demand in China is forecasted to decline beginning in the early 2020s, as result of saturated heavy industry growth and government campaign to replace coal with natural gas or renewables in power generation. IEA forecasted that India thermal coal import will decrease, as the government of India released several policies to reduce dependence on imports.
Geopolitical situation of the global coal market has a strong influence over coal production and export in Indonesia. Some illustration:

- Government of China policy and regulation on coal mining industry and coal domestic price can affect the volume of coal export from Indonesia.
  - About 69% of China coal import is steam coal
  - Indonesia supply 58% of the steam coal import demand or 40% of total import demand from China
  - China government has concerned over the impact of coal import to their domestic coal mining industry and major downstream industries of coal (steel, cement, fertilizer etc). Policies and regulations can change according to China needs
Coal Trade (3)

- Recent China coal import ban (or slow custom policy) from Australia at Port Dalian may trigger increased export from other coal exporting country.
  - No such ban (or slow custom policy) imposed on Indonesia and Russia
  - 46% of Australian coal export to China is coking coal
  - About 20% of total Indonesia export is coking coal (coalmint.com 2019). Indonesia has the resources to fill the market.
  - Indonesian coal mining company could see China ban for Australia coal import as an opportunity to increase production and export.

- With the aim to reduce emission, South Korea has prioritized low sulphur thermal coal from Russia*.
  - Coal import from Russia has increased by 12% in 2018 compared to 2017.
  - With tight limits on coal sulphur content, the coal import from Russia is expected to continue to increase
  - In the contrary, coal import from Australia and Indonesia has experienced a decline

PLN’s Coal Consumption Forecast (2019-2028)

- Based on PLN RUPTL 2019-2028, PLN coal consumption will increase from 97 million Ton in 2019 to 153 million Ton in 2028
- The annual coal consumption growth rate is 5.2%
We have calculated the LCOE of different generation technologies in Indonesia with the financial and technological data obtained provided by the National Energy Council.

By 2020 LCOE of hydro, geothermal and solar power plant is already on par with ultra-super critical (USC) coal power plant.

By 2050 solar power plant is the cheapest source of electricity.

The calculation have not taken into account:
- Cost of externalities
- Faster declining cost of wind and solar from the global market
For years, PLN’s demand growth forecast of electricity is higher than the actual.

Actual average demand growth in Java-Bali System 2012-2017 is 4.9% p.a. PLN estimated >6%

Average demand growth of Sumatra System 2012-2017 is 5.8% PLN estimated 9.2%
Potentially 13 GW (mostly thermal power plant) under current plan is not needed and could turn into stranded asset in the near future.
Prospect of coal transitions in Indonesia

- From current Indonesia energy policy standpoint, coal is seen as strategic resources:
  - Main export commodity, source of local revenues for provincial and district government, job creation
  - Cheapest source of electricity and;
  - Source of co-product for industrial feed stocks (i.e. syngas, methanol)

- Shifting the current paradigm could be driven by:
  - Improve economics of renewable energy technologies
  - Deployment of distributed generation (solar + batteries)
  - Reducing demand for coal in major export target countries (China, India, SEA)
  - Development of clean energy industry at domestic
Thank You!

Address:
Jalan Tebet Barat Dalam VIII
No. 20B
Jakarta Selatan 12810
Indonesia

Phone : +62 21 22323069
       +62 21 8317073
Fax   : +62 21 22323860
Email : iesr@iesr.or.id
Website : www.iesr.or.id