Global Energy Monitor

BRIEFING: AUGUST 2024

Southeast Asia's not so young coal plants

RETIRING THE ASEAN COAL FLEET BY 2040

Effective decarbonization of the global energy sector will require the replacement of fossil fuel power plants with clean energy alternatives such as solar and wind power, with many analyses finding that coal plants in particular should be retired by 2040. For the Association of Southeast Asian Nations (ASEAN), the 2040 coal phaseout target raises concern that the region's coal fleet will be too young to reasonably retire by that date. Yet by 2040 the average age of existing coal plants in the ASEAN region will be 28, beyond the average lifetime of many power purchase agreements (PPAs) and not far from the current global average retirement age of 36. Younger coal plants can be profitably retired by 2040 or sooner under the right policy conditions. Thus, the larger risks to a coal to clean transition in the ASEAN region are adding new coal plants and extending the lifetime of existing plants through costly retrofits.

2040 Coal Phaseout

According to the Intergovernmental Panel on Climate Change (IPCC) and the International Energy Agency (IEA), coal power generation should be phased out by 2040 to keep global warming below 1.5°C.

The 2040 coal phaseout date has raised concerns within some countries that their coal fleet will be too young for retirement by 2040, including countries in the ASEAN region.

This argument assumes that most coal plants will still be fairly new by 2040, before the anticipated financial benefits have been realized.

Yet as shown in Table 1, by 2040 the average age of existing coal plants in the ASEAN region will be 28 years old, not far from the current global average retirement age for coal plants of 36 years. Nearly 60% will be 25 years or older, beyond the average length of the power purchase agreements (PPAs) for many coal plants.

TABLE 1. Age of coal plants in the ASEAN region by 2040

Age in 2040	Percentage of plants	Capacity (GW)
Under 20 years	17%	19.6
20-24 years	27%	30.5
25-29 years	25%	28.3
30+ years	32%	36.6

Source: Global Coal Plant Tracker, July 2024

By 2040 less than 20 gigawatts (GW) of existing coal power capacity in the ASEAN region will be under 20 years of age. Under the right policy conditions, these plants could meet the criteria for a profitable transition to renewable energy. This is supported by recent IEEFA analysis demonstrating that a phaseout of coal in Southeast Asia is not only sound on economic grounds, but also on the grounds of energy security, grid reliability, and environmental sustainability.

Retiring young coal plants

Generally it is assumed that the older a plant is, the cheaper it will be to retire, because investment costs have been recouped.

Yet according to another recent analysis by IEEFA, coal power plants as young as 15 years of age could be profitably retired as early as 2030-2035, under the right policy and financing framework. The report indicates that there could be as many as 800 coal-fired units with the right conditions to make this switch, many of which are located in Southeast Asia.

This transition requires effort to be put into developing and structuring agreements that replace private coal power purchase agreements (PPAs) with new, renewable energy PPAs. The PPA arrangement for renewable capacity then makes it possible to raise enough debt and equity to finance the full costs of the transaction, including covering the remaining equity value of the coal plant. Analysis indicates that the cost of such a transition would not increase wholesale power prices, should policy and other conditions be suitable.

Similarly, RMI recently found that coal transition mechanisms such as blended finance loans and managed transition vehicles can help facilitate the early termination of coal power PPAs with little to no increased costs for consumers. According to Transition Zero, the early termination of coal PPAs would be particularly profitable in Indonesia, given that coal PPAs effectively fund reserve margin capacity in the country far above what is needed to meet power demand.

Ending new coal plants

Many Southeast Asian countries have adjusted their long-term power system plans in line with a just and cost-effective energy transition, with proposed coal plant capacity in

the ASEAN region decreasing 90% since 2014. This drop has helped make a coal to clean transition in the ASEAN region possible, as any new coal plants added create a larger pool of young plants to retire by 2040.

Still, about 15 GW of coal power capacity is proposed in the region and another 15 GW is in various stages of construction. Cancelling these plants and establishing an immediate moratorium on new proposals will help the ASEAN region avoid stranded assets and unnecessary financial burdens.

Plus, calling off all coal capacity under development would cap the "Under 20 years" ASEAN coal fleet at current projections for operating plants (19.6 GW), significantly reducing the capacity in the youngest age profile in 2040.

In addition, restricting financing for costly coal plant retrofits that extend the life of coal plants without meaningfully reducing emissions – such as schemes for 20% co-firing with ammonia – would help direct funds toward a truly coal to clean transition.

Background on Global Energy Monitor

Global Energy Monitor (GEM) develops and shares information in support of the worldwide movement for clean energy. By studying the evolving international energy landscape and creating databases, reports, and interactive tools that enhance understanding, GEM seeks to build an open guide to the world's energy system. Follow us at www.globalenergymonitor.org and on Twitter @GlobalEnergyMon.

GEM data serves as a vital international reference point that is being used by agencies including: Intergovernmental Panel on Climate Change (IPCC), International Energy Agency (IEA), United Nations Environment Programme (UNEP), U.S. Treasury Department, and the World Bank. Furthermore, industry data providers such as Bloomberg Terminals and the Economist, and academic institutions like University of Oxford and Harvard University draw on this data.

About the Global Coal Plant Tracker

The Global Coal Plant Tracker provides information on coal-fired power units from around the world generating 30 megawatts and above. It catalogs every operating coal-fired generating unit, every new unit proposed since 2010, and every unit retired since 2000. The map and underlying data is updated bi-annually, around January and July. Around April and October, partial supplemental releases also cover updates to proposed coal units outside of China.

MEDIA CONTACTS

Christine Shearer
Research Analyst
christine.shearer@globalenergymonitor.org
+1-714-514-1889

Lucy Hummer
Researcher
lucy.hummer@globalenergymonitor.org
+1-717-571-9790