Rising to the challenge: prospects for reducing global coal power generation

Chris Littlecott & James Hawkins, E3G
1 August 2019

chris.littlecott@e3g.org
Summary: global trends are positive, so governments can act with confidence

The challenges:
- Stop building new coal power plants by 2020.
- Curtail current coal capacity – and plan to phase out.
- End subsidies for fossil fuels.
- Tax pollution, not people.

Status report:
- Construction of new coal power plants is slowing and concentrated in Asia. Many countries could commit to no new coal construction by 2020.
- Coal power generation is in decline in Europe and North America. PPCA members developing national policies.
- China, Japan, and South Korea are still providing significant finance for coal power plant construction.
- Carbon pricing in the UK and Europe has helped secure a rapid reduction in coal power generation, aided by investment in renewable energy.
All data in the following charts are taken from the July 2019 update of the Global Coal Plant Tracker database produced by Global Energy Monitor. Summary tables are available for numbers of power plants and size (capacity) of coal generation.

Capacity figures are in gigawatts (GW).

References to ‘Pipeline’ or projects ‘under development’ refer to power plants categorised as being at stages prior to operation:

- Coal use is highly concentrated: the top 10 countries for coal power generation and projects under development account for ~85% of capacity in each case.
- China alone is home to half of global coal capacity and construction. India and the USA complete the top three coal users.
- Most of the following charts exclude these three countries for presentation purposes – all countries need to act to reduce coal use, not just the largest.
- Slide 4 provides an overview of global distribution by region. Slides 5-7 break this down by country. Slides 8-13 look at different dynamics among groups of countries.
Overview of global coal capacity

China is home to half the world’s coal power generation. It is currently still adding new coal power plants, but the economics of these plants is poor due to overcapacity and low utilisation rates. China had previously set an intended cap of 1,100GW of coal capacity by 2020, but this is at risk of being breached. China is however looking to accelerate the retirement of relatively older and smaller power plants.

The OECD & EU28 are collectively home to a quarter of world coal power generation. New coal construction in the OECD is limited to Japan, South Korea and Turkey - and slowing in each case.

India has the world’s third largest fleet of operational coal power plants and has a pipeline of proposed new projects. But over recent years cancellations have increased, the economic case for coal has declined, and India is now adding more renewables than coal each year.

The USA currently has the second largest fleet but is continuing to see a rapid retirement of older power plants. There are no new coal power plants under development in the USA.

Outside of China and India, the remaining coal plant development pipeline is concentrated in South East Asia, Bangladesh, Pakistan, and South Africa.
European countries are retiring coal plants and planning to phase out. UK retirements are now larger than remaining operational capacity.

Indonesia, Turkey, Vietnam and Philippines have the largest project pipelines – but also a high rate of cancellations.

Japan and South Korea have large operational capacities and new coal plants under construction – but dynamics are shifting away from coal.
Some stand out countries with limited current coal capacity are considering substantial increases: e.g. Pakistan, Bangladesh.
Countries with very little coal capacity, typically as a minor share of electricity sector.
These countries currently have no new coal power generation projects under development beyond those currently under construction. This makes them prime candidates for committing to no new coal power generation by 2020.
Countries with no operational coal power generation but with projects in pipeline

These countries have no coal power plants in operation, making them prime candidates for committing to no new coal power plants and leapfrogging over coal to clean energy. However funding for coal projects by China is a shared experience in many countries, with Japan and South Korea also active in providing coal finance.

**Egypt** has a pipeline of 13GW, compromising just 3 massive coal projects, including the mega 6.6GW Hamarawein plant which faces significant delivery risks. In contrast, Egypt is now home to the world’s largest solar park and has announced it will support the deployment of solar energy in seven African countries.

**UAE** has a 2.4GW coal power plant under construction, its first (and likely last).

The coal pipeline in **Kenya** is a single project – the controversial and expensive Lamu plant. This proposed project was recently halted before construction by a legal decision.
Top coal project pipeline risk locations (after China and India)

- Turkey still has 34GW of coal proposals, but has commissioned only 12% of its proposed capacity since 2010.
- Vietnam, Indonesia, Thailand, and Pakistan have all scaled back plans for coal in their future national energy plans.
- The pipeline in each of Egypt, Russia, and Mongolia is dominated by a large coal plant proposal that is reliant on Chinese financing.
- Japan, South Korea, and Taiwan have all seen a fall in projects under development, with no new large proposals since 2015.
- Bangladesh and the Philippines have either maintained or grown their planned new coal projects, but require costly new or expanded infrastructure to import coal.
- President Duterte of the Philippines has called for the fast-tracking of renewables to reduce national dependency on coal imports.
Remaining countries with projects in the development pipeline

The scale of these proposed coal projects tends to be small. Many of these countries could readily shift away from new coal projects, with access to energy being expanded more quickly through construction of renewables.

These countries are candidates for committing to **no new coal by 2020**.

China, Japan, and South Korea can help deliver this by restricting coal finance and committing to supporting the development of clean alternatives to coal in these countries.
Curtailing coal power plant use: Powering Past Coal Alliance Members

Members of the Powering Past Coal Alliance are retiring coal plants and planning to phase out coal power generation by target dates. They are also committed to sharing their experience internationally:

Proposed projects have been officially cancelled or shelved through lack of progress over the past decade instead of entering construction. This chart also tracks retirements of existing power plants since 2010.
Moving away from coal: OECD & EU28 (not including PPCA members)

Analyses identify that OECD & EU28 countries should phase out coal by 2030 to deliver on Paris Agreement goals.

Germany, Slovakia, Spain, and Chile are all in the process of developing phase out plans.

Many EU member states are considering potential coal phase out timelines as part of their National Energy and Climate Plans.

Among the OECD, only Japan and Turkey still have a pipeline of projects. South Korea is considering whether it completes the construction of units or converts them to gas. The government in Australia is pro-coal but utility companies do not want to build new coal power plants.