Keeping the coal burning

With coal increasingly becoming a pariah in the energy mix, producers claim CCS technologies can help redeem the much-maligned fuel source.

By **Jesus Alcocer**

Carbon capture and storage (CCS) technologies, which are currently able to eliminate up to 90% of the CO_2 emissions of power plants, could keep coal companies thriving in a world that is increasingly intolerant of high-emissions energy production.

Public opinion and international accords like the Paris Agreement, which requires nations to report their greenhouse gas production and take efforts to reduce it, are forcing countries to move away from fossil fuels.

As government and public opinion shift to renewables, coal is set to decrease as a proportion of overall energy, from 37% today to 27% in 2040, said Benjamin Sporton, chief executive of the World Coal Association (WCO).

Members of the WCO, including BHP Million and Glencore, account for 20% of coal power production globally.

Last year, China announced a plan to invest nearly US$400 billion (12.6 trillion baht) in renewable energy sources and discard plans to build 85 coal power plants. Also in 2017, 20 countries agreed to phase out coal by 2030 at the COP23 climate talks in Bonn, Germany, said the World Economic Forum.

According to petroleum giant BP, renewables will represent close to 14% of energy sources by 2040. But Mr Sporton said renewables will make up 35% of energy at that time, assuming the relevant international agreements are respected.

While demand for coal will slow down, it will keep increasing in absolute terms, especially in developing countries. The US and Europe are clearly moving away from the commodity, and demand in China has plateaued and will stay constant for the foreseeable future. In India and Southeast Asia, however, coal-generated power is set to double in the next few years.

CCS technologies may help coal remain a socially acceptable form of energy generation, even as the concerns over greenhouse gas emissions simmer.

Coal accounted for 44% of CO_2 emissions in 2015, according to the World Economic Forum. CCS technologies would allow power plants to capture, condense, and store CO_2 underground in aquifers or oil and gas fields. CCS has environmental as well as commercial applications: the gas pumped into oil and gas fields can then be used to "re-energise" those fields, making it easier to extract the commodities.

There are two full-sized plants in the world that employ CCS technology: Boundary Dam in Canada and Petra Nova in Texas. In both cases, the technology captures around 90% of the CO_2 in the streams in which it is installed, at a cost of $100 per tonne captured. The technology

is installed only in selected modules at the facility. Some technologies under development are expected to eliminate more than 96% of emissions.

CCS can be installed in old plants, although structural changes might have to be made at the existing facilities. Plants built today can be designed to integrate the technology in the future, when its price drops. Mr Sporton said we can expect to see widespread adoption of CCS between 2030-40.

The technology is expensive: the Boundary Dam solution represented an investment of about C$1.3 billion (32 billion baht). In general, the technology investment can be recouped in 20-30 years, but it may not make financial sense to retrofit plants due to retire in 10 years or less with it, said Mr Sporton.

CCS-produced power is still largely unaffordable in developing countries, but steps are being taken to address this challenge. In India, there are ongoing trials that will allow companies to remove CO2 for a cost of US$30 per tonne, a price that is feasible for developing economies.

But Mr Sporton said this cheaper technology still has to be adapted to bigger plants (more than 100 times larger than the one used for the prototype), which will "require several steps of engineering development".

"A lot of people asked me if the Paris Agreement was the beginning of the end of coal," he said. "At the time of signing, 19 countries committed to using low-emission coal technologies as part of their Paris Agreement pledges, and a couple of others have since added that to their commitments."

Coal companies posted one of their best years in 2017, a year into the Paris Agreement. Switzerland-based Glencore increased its net profit 400% year-on-year in 2017. The operating profit for Australia-based BHP Billiton doubled, and its volumes increased by almost one-fifth. The profit increase has been driven in part by high commodity prices as well as growing demand from Asia-Pacific.

Governments in developing countries are making assessments in regard to their target growth levels and available resources.

"Renewables are a feel-good technology, and I understand why people are pushing towards them. But we cannot often meet those targets just through renewables," said Mr Sporton. "I don't see it as an either-or situation, between coal and renewables, but rather adding a little bit of everything."

The price of CCS-produced power will be comparable to that produced by renewables until 2030, and in some cases cheaper depending on the relative availability of resources, he said.

In Southeast Asia, where gas resources are depleting, pumping CO2 into deposits to extract larger quantities of gas or oil could pay for some of the development of CCS technology as well, said Mr Sporton.

In the case of Thailand, the government is still pushing for the development of coal. According to WCO, coal accounts for 22% of power in Thailand, the second-largest source after natural gas. Projections indicate coal's share of power will increase to 30% by 2030, the organisation said.

Just last week it was announced two power plants in southern Thailand (one in Songkhla and one in Krabi) would be delayed more than nine months amid protests that questioned the environmental and health impact assessments (EHIAs) conducted for the projects. The implementation of technologies that could lower the environmental footprint of these projects could help the government mitigate public concerns, and push forward with its energy production plan.

Even as the technology develops, some industry players have accused WCO of promoting an excessive reliance on CCS, to the detriment of renewable technologies. Last December the *Wall Street Journal* reported that BHP Billiton, the largest coal producer in the world, threatened to leave the organisation over the association's call for Australia to abandon its clean energy targets, and promote the use of lower-carbon coal.

Mr Sporton said he never stated Australia should abandon its clean energy targets, and that he would be meeting with BHP in two weeks to talk about the disagreement.

"We hope they remain a member, but we will have to wait and see," he said.

"What we have always advocated is policy parity. That is, treating low-emission coal the same as other technologies. If countries are putting policy mechanisms in place to encourage clean energy, they have to recognise that CCS is part of that too."

Motorists wear face masks while driving in Bangkok. The issue of clean air has been a critical one in the coal debate.
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