

## As World Sours on Coal, Top Producer Indonesia Tries to Sweeten It at Home

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*With consumption, travel and commuting all suppressed due to the COVID-19 pandemic, researchers from the Global Carbon Project calculate [carbon dioxide emissions fell a record 7%](#) in 2020. One key driver was lower demand for fossil fuels, including coal, the consumption of which is expected to fall by [8%](#) this year — the largest drop since the end of World War II.*

For many in Indonesia's government, this is no reason to celebrate. Coal is the country's largest export, and the pandemic has severely impacted Indonesia's coal industry. The country, which in 2019 was the world's [biggest thermal coal exporter](#), has seen demand drop in key export markets including China and India. Domestic consumption is also at risk, as electricity demand from coal-fired power plants drops, exacerbating [existing concerns around overcapacity](#).

The Indonesian government's solution? Support the coal industry, in part by building local demand through a new technology: coal gasification, turning solid coal into the liquid fuels methanol and dimethyl ether (DME) that can replace imported liquefied petroleum gas (LPG).

"The Indonesian coal industry is trying to secure their market domestically," said **Andri Prasetyo**, program manager with Trend Asia, a Jakarta-based NGO. "The coal gasification conversation is coming up because global coal demand is decreasing."

Coal industry advocates and proponents in the Indonesian government say gasification plans will benefit the economy by enabling the use of more domestic energy, preserving jobs and investment in the coal industry. However, critics have raised concerns about the environmental and climate impacts of this coal-based technology, and question the wisdom of government spending on a project with questionable economic viability.



A worker operates an excavator at an open pit-coal mine in Samboja, East Kalimantan, Indonesian Borneo. Image by Kemal Jufri/Greenpeace.

### **Coal gasification plans attracting major players, big investments**

Converting coal into a liquid fuel is not new. In fact, this technology has been around for more than a century. It was a key energy source in Europe before World War II, but was largely replaced by petroleum and natural gas since the 1940s.

It has really only been since the turn of the millennium, after coal electricity generation peaked in Europe and the U.S., that the global coal industry began pushing gasification. To date, large-scale coal gasification exists only in coal-rich but LPG-poor China, but even there it has fallen out of favor due to persistent high costs and [growing climate concerns](#). South Africa also has a small gasification industry that provides fuel for domestic use.

In Indonesia, coal gasification plans are quite far along. State-owned coal miner PT Bukit Asam is looking to build a gasification plant that would start operation in 2023 or 2024, while the country's largest private coal miner, PT Bumi Resources, plans to invest more than \$1 billion into a similar facility. In June, a U.S.-based company, Air Products, announced it was [investing \\$2 billion](#) in what it calls a "world-scale" project in Bengalon, in East Kalimantan province, in partnership with two other private coal giants: PT Bakrie Capital, part of the Bakrie Group that also controls Bumi Resources, and PT Ithaca Resources.

"Air Products will be the owner/operator taking coal and selling methanol back to PT Bakrie Capital," said **Ian Reid**, a combustion technology specialist at the IEA Clean Coal Centre, an industry-supported program under the auspices of the International Energy Agency. "Air Products own the Shell and [General Electric] gasification technologies, which represent the majority of gasification installations worldwide."

It is unclear how emissions or waste from coal gasification plants will be regulated. In 2020,

Indonesia passed two sweeping pieces of legislation which included clauses seen as highly favorable to extractive industries. A revision to the coal and mineral mining law was passed in May with [strong support](#) from the Indonesian Coal Mining Association. It makes it easier for the industry to extend permits, quadrupled the maximum size of traditional mining zones, and allowed permissions for mining activities in river- and seabeds.

For gasification proponents, however, the biggest and most beneficial change came with the passing of the highly controversial [omnibus law on job creation](#) in October. Alongside clauses that lessened requirements for environmental impact assessments, weakened land rights, and eliminated an existing 30% minimum forest area requirement, were regulations that eliminated royalties for coal destined for downstream value-added domestic use — like gasification. The change means less revenue for both Jakarta and local governments, but provides a windfall for miners, and cost savings for gasification plants.

“It shows how powerful the coal industry is, to influence public policy and regulations. They successfully revised the mineral and coal law and the omnibus law,” Prasetyo said. “It’s a grand policy to help the coal industry survive and generate profits.”

There is potentially more. Indonesia’s parliament is currently debating a [new and renewable energy law](#), with the goal of helping expand alternative energies to help meet Indonesia’s Paris Agreement commitments. But the concern is exactly how “new” is defined.

“Coal gasification is considered part of new energy,” Prasetyo said. “The discussion is not focusing on wind and solar, but on coal gasification and nuclear.”



Coal barges on the Mahakam river in Samarinda, East Kalimantan. Image by Kemal Jufri/Greenpeace.

## The clean coal debate

These regulatory changes, and the government's robust support for coal gasification plans, have raised concerns that Indonesia will be further locked into its dependence on coal, leading to increased greenhouse gas emissions and the ongoing devastation of landscapes in coal-mining regions of the country.

"This coal gasification project is dangerous," Prasetyo said. "It will make it harder for Indonesia to achieve its Paris Agreement commitments, will have no significant benefit for the economy, and will harm the environment because it will result in more coal exploitation."

Coal advocates say the technology has improved in recent years, and that gasification should be considered a "next generation clean coal technology," for which both pollution and greenhouse gas emissions would be limited.

"Gasification can meet the pollution criteria of clean coal use with available technologies, even though more process steps are involved for product purification than in petroleum or gas installations," Reid said. He added he hopes to see this technology used in the Kalimantan facility.

Others are more skeptical that gasification can ever be made clean. Even if the plant itself has pollution control technology, there are numerous venues for leakage due to the long journey that coal must take from mining to gasification, and then all the downstream applications such as chemical plants and vehicles.

"The only way that it would have zero climate impact if there was zero methane leakage from the coal mine, and everywhere that the fuel is combusted there was carbon capture and sequestration, and that was 100 percent effective," said **Jonathan Buonocore**, a coal, climate and public health expert at the Harvard T.H. Chan School of Public Health.

**Ghee Peh**, an energy finance analyst at the Institute for Energy Economics and Financial Analysis (IEEFA), a U.S.-based think tank, agrees, saying the technology is inherently dirty.

"You're crushing 4.5 tons of coal, pressuring it, and eventually you're going to burn it," Peh said. "How can that not have a CO2 impact? It's just a really bad idea for the environment."

Economically, the plan could also be incredibly costly, requiring significant government subsidies to make the gasification plants cost-effective, and investment in ensuring that downstream chemical plants can accept coal-based fuels in place of LPG. A [recent analysis](#) from the IEEFA estimated that the Bukit Asam plant would lose \$377 million per year and result in consumers spending more for less energy. And that is beyond the infrastructure costs.

"It's insane the amount of money they are going to need," said Peh, who conducted the analysis. "\$2 billion for the plant, and then another \$1 billion to convert downstream plants, and then the market will be loss-making every



year.”



Aerial view of the PT Borneo Indobara coal mine in South Kalimantan, part of Indonesian Borneo. Image by Daniel Beltran/Greenpeace.

## Exploring the options

Peh said he would ideally like to see an open discussion, based on the economic and environmental facts, about whether or not coal gasification is a feasible energy source for Indonesia and if government investment would not be better used to support the country’s nascent renewable energy sector.

“Indonesia as a nation does not necessarily have to go down this route,” he said. “Its people deserve an open discussion about all these options.”

Prasetyo agreed, saying there’s a lot of opportunity to redirect Indonesia away from coal dependence toward a more decentralized, sustainable energy future.

“The decrease of coal prices should be the moment when the government shifts to renewable energy,” he said. “Instead, when coal is facing pressure internationally, they are trying to secure the domestic market.”

At this stage, though, the priorities of the government, and President Joko Widodo, who in October [ordered an acceleration of the coal derivative industry](#), seem to be on making an old energy new, and not on joining neighbors India, China, Vietnam or Thailand in shifting toward renewables.

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