



Photo: Tom-Kichi

GAS IS A BAD DEAL FOR ASIA

Asia is one of the few remaining growth markets for gas. The fossil fuel industry and its proponents are pushing to develop \$379 billion of gas terminals, pipelines and power plants in Asia over the next decade (see Figure 1). Roughly three-quarters of all Liquefied Natural Gas (LNG) import terminals in development globally are planned for Asia.¹ This aggressive buildout ignores a simple truth.

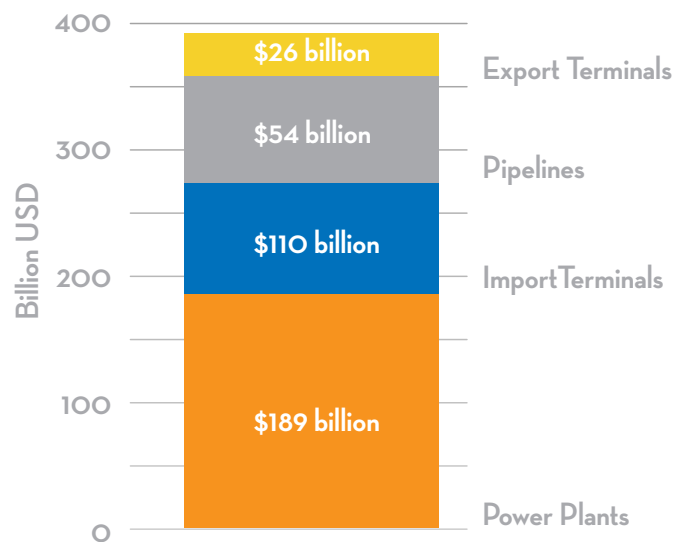
Renewable energy is cheap and getting cheaper. Solar is already the cheapest new source of energy in China, India, Thailand and Vietnam. Renewables will become the cheapest way to supply electricity across Asia before the end of this decade. Together with advanced grid devel-

Top 10 Countries for Asia Gas & LNG Buildout

Country	Proposed Infrastructure Cost (Billion USD)
CHINA	130.5
VIETNAM	58.6
INDONESIA	31.8
INDIA	29.5
THAILAND	19.9
BANGLADESH	16.5
SOUTH KOREA	16.1
PHILIPPINES	14
JAPAN	13
MYANMAR	12.3

Source: Global Energy Monitor

Figure 1: Planned Asia Gas & LNG Infrastructure



Source: Global Energy Monitor

opment and management, as well as increasingly cheaper storage, renewables can provide an affordable, stable backbone for a clean energy economy.

Locking in new gas infrastructure now, just as technology and policy innovation in the energy market is accelerating and climate policies are tightening, risks building a wall against the adoption of clean energy. It threatens to burden governments and electricity consumers with expensive long-term contracts they cannot afford.



LONG-TERM CONTRACTS ARE A RISKY BET

Locking in gas supply for decades to come is particularly risky as governments and institutions move to restrict fossil fuels and shifting climate policies spur the rapid development of clean energy.

Gas infrastructure projects are expensive, often costing billions of dollars. To attract the capital to get them built, companies must secure long-term contracts for the majority of a project's capacity. For LNG export projects, these contracts often require companies to purchase a specified amount of LNG annually for 20 years or more. Many of these contracts are take-or-pay, where buyers are committed to paying for gas, whether they use it or not.

LNG contracts are often linked to regional gas prices at the supply end, and therefore expose customers to global supply and demand dynamics. The recent spike in gas prices has exposed the inherent volatility of the LNG trade and highlights the risk of committing to gas as a long-term energy source.²

Contract costs are often passed onto electricity customers via utility companies through capacity payments, power purchasing agreements, or other arrangements negotiated with government regulators.³ Companies rely

Figure 2: 20-Year LNG Contracts Lock in Profits for Corporations and High Electricity Prices for Consumers

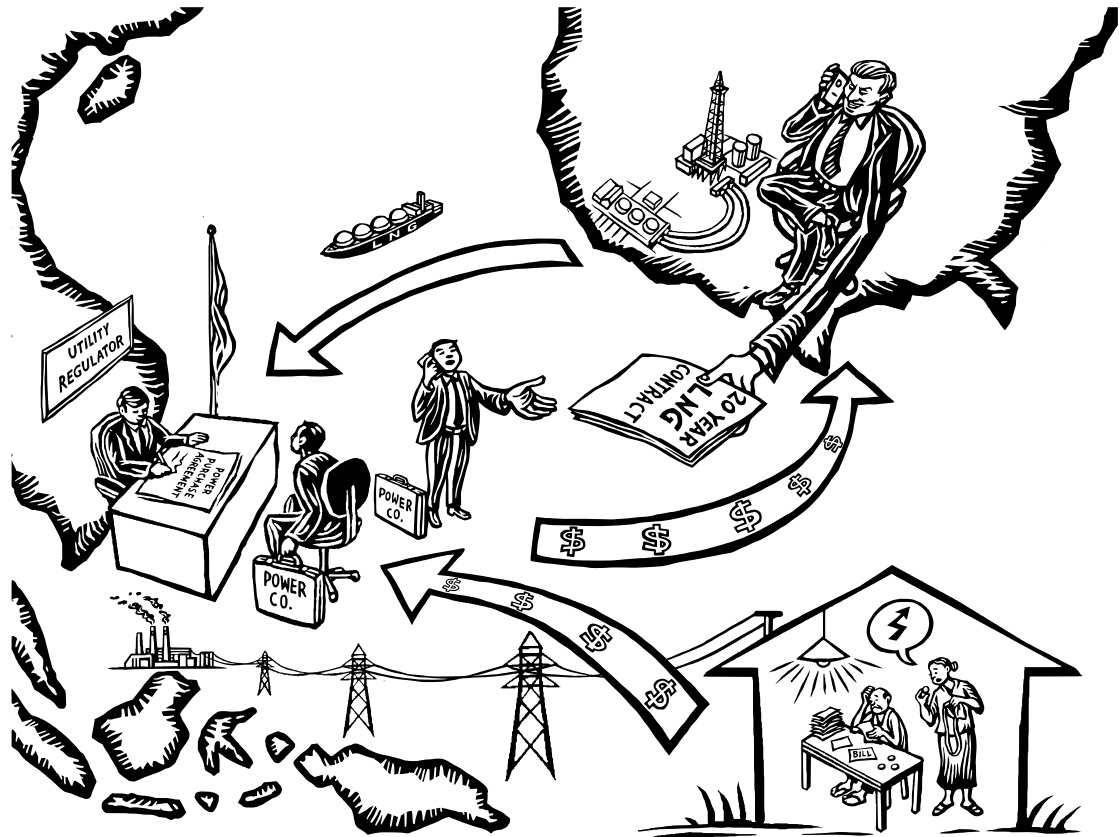


Illustration: Haris Ichwan

on these long-term commitments to provide an assured market for large, capital-intensive projects.

Countries like Bangladesh, Pakistan, and Indonesia are facing overcapacity in the power sector that existed before the COVID crisis. Coal and gas plants have been utilized at levels below 50, and in some cases below 40 percent.⁴ Much of this is the result of inflated projections for economic growth and therefore power demand.

When power plants are underused, consumers and taxpayers are often left stranded with the costs. Through capacity payment contracts, power plant owners are paid not just for providing electricity, but for having capacity available. In March 2021, Khurram Husain wrote about Pakistan's overcapacity problem:

JAPAN'S RUSH TOWARDS LNG HAS LEFT COMPANIES STRANDED



Photo: Thossaphol

Following the 2011 Fukushima tsunami and nuclear meltdown, Japanese utilities turned to coal and signed a flurry of long-term LNG contracts to compensate for the shutdown of nuclear reactors across the country. As a result, contracted LNG supply jumped from 3.4 million tons per year in 2010 to 18.1 million tons in 2012, with additional contracts signed in subsequent years. Many of these contracts, signed by companies like JERA and Kansai Electric, run through the early 2030s and beyond.

But Japanese LNG demand is set to decline due to a combination of declining electricity demand, nuclear restarts, and increasing renewable energy capacity. Many utilities are now stranded with LNG supply they don't need. In 2019, Japanese utilities resold about 4.5 million tons of LNG. Bloomberg New Energy Finance (BNEF) estimates that over-contracted supply will quadruple by 2025.

Japanese companies are investing in LNG import capacity and gas power plants in Southeast Asia, in part, to help offload this excess contracted LNG supply. The Japanese government is supporting these companies through its \$20 billion pledge to expand LNG markets in Asia. While framed as helping countries with energy transition, Japan's push to expand LNG is largely motivated by corporate interests.

This example serves as a warning to companies entering into long-term take-or-pay contracts. As climate change accelerates and clean energy technologies surge in response, the coming decades are likely to see far more innovation, disruption and volatility in the power sector, than the past decade did.⁶ Locking into long-term contracts during the next 10 years is clearly risky business.

Source: BNEF, Japanese Electric Utilities' LNG Procurement Strategies: Tackling the Oversupply, April 2021.

With the projected growth of capacity payments against surplus power, in the years to come the subsidy bill will rise even more sharply, making it unaffordable for the government and putting it in the unenviable position of having to hike power tariffs even further. This will burden consumers more, fuelling inflation and pricing Pakistani exports out of global markets.⁵

Locking in long-term gas supply and gas-fired power generation capacity can be risky at the best of times. But the climate crisis is accelerating evolving policies and technology development. Therefore, the risk of gas plants and LNG terminals becoming stranded assets within the timeframe of contracts being signed today is greater than ever.



RENEWABLE ENERGY IS CHEAPER THAN GAS AND GETTING CHEAPER

The cost of utility-scale wind and solar power generation has fallen dramatically in the past decade (see Figure 3). Utility-scale solar or onshore wind are now the cheapest sources of new power supply in countries that account for more than two-thirds of the global population and 91 percent of global power generation.⁷

For all Asian countries for which data is currently available, electricity will be cheaper from a new utility-scale solar or wind plant than from a new gas combined cycle (CCGT) plant within the next five years (see Figure 4).

- Solar is already the cheapest source of electricity in China, India, Thailand and Vietnam.
- In the Philippines, Malaysia and Indonesia, electricity from a new solar plant will be cheaper than from a new gas plant by 2022.
- Wind will be cheaper than gas in Japan by 2024, followed by solar in 2026.
- Wind and solar will both cross this threshold in South Korea in 2025.

So in all of these countries, which form the bulk of Asian power demand, a new renewable energy plant will produce cheaper electricity than a new gas plant by 2025. Just over three years from now.

In addition, solar and wind plants will soon produce electricity cheaper than existing gas and coal plants based on the running costs of those fossil fuel plants alone.⁹ This means that electricity will soon be cheaper from a solar

or wind plant that is still paying off the capital to build it, than from a debt free fossil fuel plant liable only for operating and maintenance costs.

In fact, before the expiration of a typical 20-year LNG contract signed today, electricity from a new solar plant will be the cheapest form of energy in all countries, including countries where coal is very cheap.⁸ This is already the case in China and India.

This data makes clear that locking in hundreds of billions of dollars of infrastructure for importing and distributing gas for electricity generation is highly risky for Asian electricity customers. Renewables are already able to generate electricity more cheaply in many countries.

Moreover, renewable energy will be able to replace existing gas and coal capacity at a similar or lower cost long before the expiration of 20 year LNG contracts signed today. For countries such as Bangladesh and Pakistan that are planning gas expansions and are not in this analysis, the situation is likely to be very similar.^{9,10}

Variability of wind and solar is not a barrier, practically or financially, to replacing coal and gas with clean energy. Additional investments in storage and grid management can enhance grid systems and provide reliable clean energy at a lower cost than gas. Many countries can invest

in wind and solar today, while taking advantage of declining costs for storage and other supplemental technology later this decade.¹¹

Figure 3: Global Utility-Scale Wind & Solar Costs Have Dramatically Declined

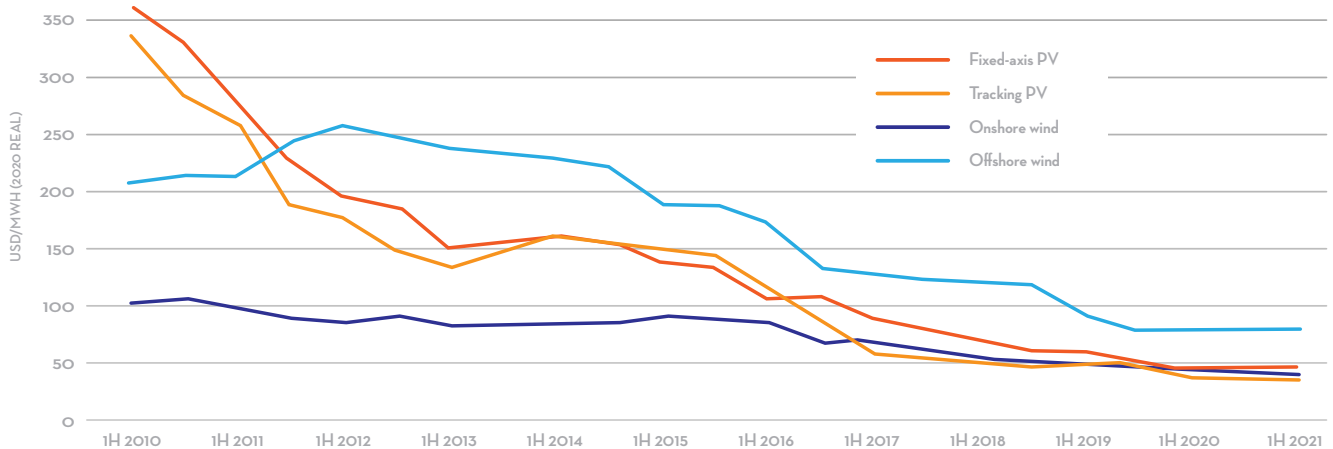
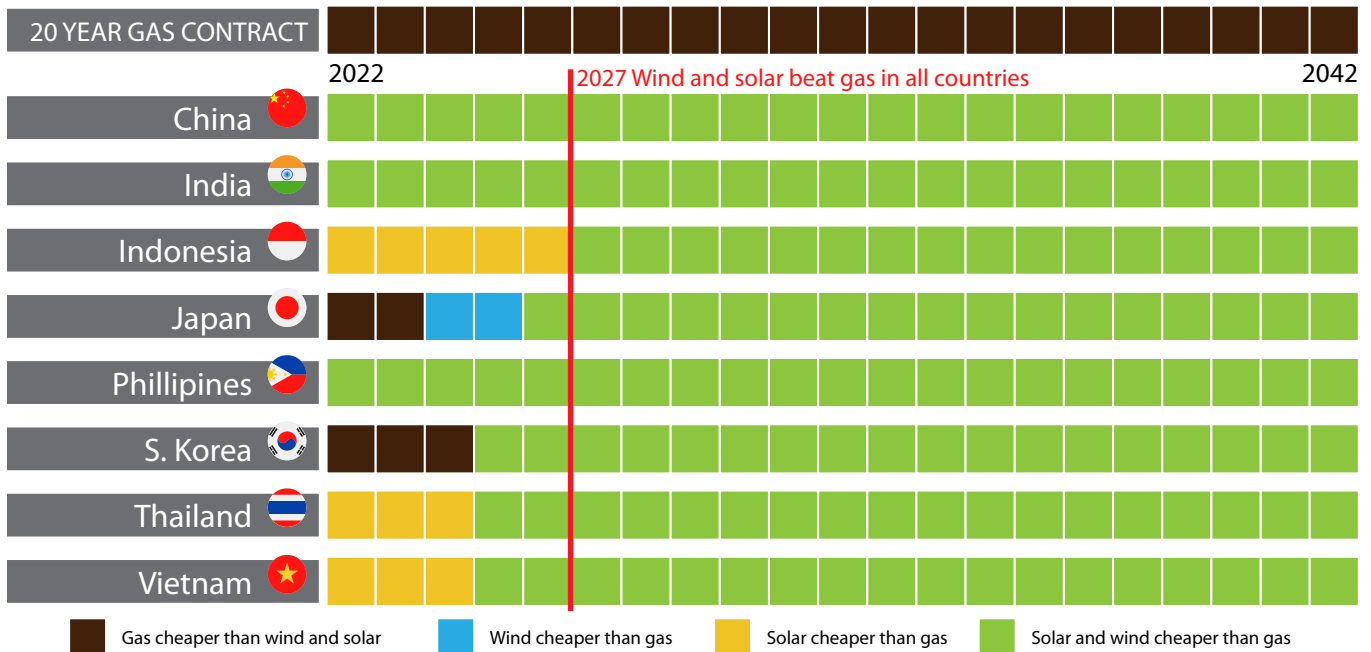


Figure 4: Renewable Energy Will Be Cheaper Than Gas Long Before the Expiration of a Typical LNG Contract



RENEWABLE ENERGY THREATENS TO STRAND GAS & LNG INVESTMENTS

Renewable energy, together with storage and advanced grid management systems, are rising stars in the energy sector. As climate impacts intensify, governments and companies are increasingly committing to more renewable energy. Growing economies of scale are lowering prices and raising efficiencies. Meanwhile, gas technology is stagnant, and the cost of gas is widely projected to increase.

Industry proponents claim that gas is a partner to renewable energy, however, the operation of renewables is in direct conflict with gas. As more renewable energy is available to an electricity grid, large gas plants are called upon to supply power less often. This means that the utilization rate for many gas plants is at risk of falling below the level at which they are economically viable. If this happens with gas plants that are tied to long-term LNG import contracts, electricity customers and government treasuries will be saddled with paying for electricity capacity they will never use.

HOW WIND & SOLAR IMPACTS GAS PLANT UTILIZATION

The vast majority of gas plants currently planned for Asia are Combined Cycle Gas Turbine (CCGT) plants. In Thailand, Vietnam and Indonesia, where the majority of Southeast Asia’s gas plants are currently planned, 95 percent of planned capacity is CCGT.¹² CCGT is generally used for large, centralized power generation, with typical installation capacities above one gigawatt. For gas plant operators, it is optimal to run these plants at least 60 percent of the time.¹³ Otherwise, these plants have higher costs per unit of electricity produced, higher maintenance costs, and more pollution per unit of electricity produced.¹⁴

A major factor is the cost and time required to ramp up turbines from an idle state. As renewable energy is increasingly prioritized on grids due to its zero fuel cost, CCGT plants are forced to stop and start or remain spin-

ning in standby. This is not a cost-effective or efficient mode of operation for CCGT plants.

If grid operators prioritize the use of CCGT plants over renewables to fulfill contracts, more expensive and polluting energy will be used. In this way, locked-in gas capacity undermines renewable energy rather than complements it.

As the proportion of renewables increases in national energy systems, the utilization rates of gas plants will further decline. Once constructed and connected to the grid, wind and solar plants have low operation and maintenance costs and zero fuel costs. These plants will be prioritized on grids because their energy is essentially free. CCGT plants tied to expensive imported LNG will be used less, and their utilization rates will eventually fall below an economically viable level.

However, if electricity customers are contractually committed to these gas plants, they will either continue to operate at the expense of climate goals, or they will be paid to remain idle. Either way, electricity customers lose.

CONCLUSION

A massive buildout of gas and LNG infrastructure threatens to lock Asia into an expensive and polluting energy source. The huge capital required for this buildout is dependent on long-term contracts that lock governments and citizens into paying for gas whether they use it or not.

The timing could not be worse. Renewable energy is already cheaper than fossil fuels in many countries, and is only getting cheaper. Many countries have already overbuilt power generation capacity and do not need to commit to more. Now is the time to step back and focus on a commitment to clean and affordable renewable energy.

ENDNOTES

- 1 Rozansky, Robert, Global Energy Monitor. [Asia's Gas Lock-In Proposed Gas Infrastructure Expansions Are Poor Investments For The Region—And The World](#), October 2021.
- 2 Jessica Jaganathan, Reuters, [APPEC Asian LNG prices set to spike more this winter on low inventories](#), 28 September 2021.
- 3 See 'Charging and credit issues' in: Dentons [The Development & Financing of LNG-to-Power Projects](#), 24 November 2017.
- 4 Simon Nicholas, Institute for Energy Economics and Financial Analysis, [Pakistan Risks Locking in Long-term Overcapacity & Expensive Power](#). September 2020.
- 5 Husain, Khurram, [Analysis: Pakistan pays heavy price for excess power generation capacity Third Pole](#), 10 March 2021.
- 6 Bond, Kingsmill, Arunabha Ghosh, Edward Vaughan, and Harry Benham. [Reach for the sun: The emerging market electricity leapfrog. A Carbon Tracker-CEEW report. London: Carbon Tracker](#), 14 July 2021.
- 7 [Bloomberg New Energy Finance](#), 1H 2021 Levelized Cost Of Electricity report. LCOE calculates an average unsubsidized lifetime cost per unit of electricity produced from different technologies based on the cost of financing, building, operating, maintaining, and fueling the plant.
- 8 Where the LCOE of building new solar or wind is compared with existing gas and coal plants, just the running costs, labor, maintenance and fuel (and carbon price where applicable), are included for the fossil fuel plants. This is a very low bar. In reality, plants built recently, or over the next few years, will still be paying off capital. It should be noted that the projections show the cost of running existing gas plants generally rises overtime whereas in many cases the cost of coal remains low and sometimes declines. This is likely due to the abundance of domestic coal resources in many countries (whereas gas is mostly imported), and the expected impact of declining global coal use on coal prices. Carbon pricing or other mechanisms to restrain coal use could impact this and essentially render coal plant use less attractive relative to new build renewables.
- 9 IEEFA, [New power and energy master plan must be designed in Bangladesh's interest not Japan's](#), 24 May 2021.
- 10 World Bank, [Renewable Energy is the Future for Pakistan's Power System](#), 10 November 2020.
- 11 International Institute for Sustainable Development, [Step Off the Gas: International Public Finance, Natural Gas, and Clean Alternatives in the Global South](#), June 2021.
- 12 Yeoh Jun Jie, Bloomberg New Energy Finance, [Uncertain Role for Gas in Southeast Asia Power Transition](#), 29 July 2021. Subscription Only
- 13 Stockman, Lorne, Oil Change International, [Burning the Gas Bridge Fuel Myth: Why Gas is not Clean, Cheap, or Necessary](#), May 2019
- 14 Welch, Michael and Andrew Pym, [Improving the Flexibility and Efficiency of Gas Turbine-Based Distributed Power Plants](#), 14 September 2015

ADDITIONAL RESOURCES

[Oil Change International gas webpage](#)

Global Energy Monitor, [Asia's Gas Lock-In 2021: Proposed Gas Infrastructure Expansions are Poor Investments for the Region - and the World](#), 2021.

International Institute for Sustainable Development, [Step Off the Gas: International Public Finance, Natural Gas, and Clean Alternatives in the Global South](#), June 2021.

Center for Energy, Ecology, and Development, [Philippine Fossil Gas Landscape](#), July 2021.

Institute for Energy Economics and Financial Analysis, [Gas and LNG Price Volatility To Increase in 2021: Buyer Beware](#), January 2021.

