Australia’s gas trilemma: prices, exports and emissions

Introduction

Australia has put gas at the centre of its economic recovery plan from COVID-19. The Australian Government has announced a ‘gas-fired recovery’ under which low cost gas would underpin the revitalisation of Australia’s gas-based manufacturing sector and drive economic growth. These announcements come against the backdrop of Australia becoming the world’s largest LNG exporter; a development which has come at the cost of higher domestic gas prices for consumers on Australia’s east coast.

The Government’s gas-fired recovery plan seeks to reduce domestic gas prices by unlocking new gas supplies, and considers policies that would redirect potential export gas to the domestic market. Much hinges on the Beetaloo Sub-basin — an undeveloped and potentially world class gas resource, described as the ‘hottest play’ in the OECD. The focus on unlocking new gas supplies, however, is not without challenges. Emissions from Australia’s gas sector are significant. Australia faces a gas trilemma of simultaneously trying to reduce domestic gas prices, support its LNG exporters, and manage gas sector emissions.¹

This paper provides an update on recent market and policy developments affecting Australia’s LNG exporters. It is divided into three sections. Section 1 discusses recent rises in domestic gas prices and the Government’s policy response. Section 2 details the Government’s plan for a gas-fired recovery. Section 3 discusses Australia’s climate targets and emissions from the gas sector.

Domestic gas prices and policy responses

Australia’s LNG sector

Australia was a major centre in the global LNG investment boom of last decade. Between 2009 and 2012, final investment decisions were taken for seven Australian LNG projects — valued at over US$200 billion — bringing the total number of LNG projects in the country to 10 (Figure 1). LNG projects were established in each of Australia’s three domestic gas markets.² Three new projects were established in Queensland (QLD) in Australia’s east coast market, three in Western Australia (WA) in the western gas market, and one in the Northern Territory (NT) in the northern gas market. The projects

¹ In this paper, gas sector emissions are those associated with gas and LNG production, and exclude emissions from gas consumption in the industrial, residential and electricity sectors.
² The western gas market is physically separated from the east coast and northern gas markets. A small volume of gas began to flow between the east coast market and the northern gas market in 2019 via the Northern Gas Pipeline.
were plagued by delays and cost overruns during their construction, due to unexpected rises in both labour and materials costs as well as the Australian dollar.³

These LNG projects began operations between 2015 and 2019 and have made Australia one of the ‘big three’ LNG exporters, alongside Qatar and the United States. In 2020, Australia shipped 78 Mt of LNG, with Australian LNG export volumes remaining relatively resilient to the impacts of COVID-19.⁴

Figure 1: Australia’s ten LNG projects

![Diagram showing Australia’s ten LNG projects](image)

Notes: NSW – New South Wales, VIC – Victoria, SA – South Australia, QLD – Queensland, WA – Western Australia, TAS – Tasmania

Source: Department of Industry, Science, Energy and Resources 2021, Resources and Energy Quarterly: March

**East coast gas prices**

The three LNG projects established in Australia’s east coast gas market (Figure 2) were unique in the history of the LNG industry: they were the first to utilize coal seam gas (CSG) as a feedstock, represented a massive development in a historically small and isolated domestic gas market, and relied on gas resources controlled by a number of state governments.⁵ The projects were also unusual in that they were sanctioned on the basis of Proved and Probable Reserves (2P), rather than more commercially certain Proved Reserves (1P).⁶ Bethune (2018) describes how there was ‘enormous optimism (possibly irrational exuberance)’ surrounding the potential of east coast gas resources.

The ramp up of LNG exports from Australia’s east coast gas market triggered a domestic gas crisis over 2017 and 2018.⁷ Domestic gas prices, historically AU$3-4/GJ (US$2-3/MMBtu), increased sharply

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with some sellers offering gas at over AU$20/GJ (US$16/MMBtu). In early 2017, the Australian Energy Market Operator (AEMO) projected a domestic gas shortage for the east coast gas market, partly as a result of the new LNG export facilities, potentially leading to blackouts and industrial closures. AEMO’s projections added to concerns about the security of electricity supply already heightened by a state-wide blackout in South Australia six months earlier that had affected 1.75 million people.

The Australian Government responded by creating a mechanism to restrict gas exports in the event of a projected gas shortfall. This Australian Domestic Gas Security Mechanism (ADGSM) has never been triggered; rather, industry-led solutions – whereby the three LNG exporters on Australia’s east coast have committed to meeting any shortfall in the domestic market – have been negotiated. The Government also began considering options for a ‘prospective’ national gas reservation scheme which would apply to new projects but respect existing investments.

Unlike on the west coast, where gas prices remain relatively low, gas prices on Australia’s east coast are a politically charged issue. Large industrial gas users have frequently argued that domestic gas prices are above international prices, and LNG producers have been accused of creating a gas shortage. Gas producers and LNG operators contend that the days of low gas prices are long over and that higher prices reflect the rising cost of production, and that long-term domestic contract prices need to be higher than Asian LNG spot prices to justify the development of new resources.

Australia’s competition watchdog – the Australian Competition and Consumer Commission (ACCC) – has been firmly on the side of consumers, noting that domestic consumers are paying above export parity and that ‘LNG producers have not provided an adequate explanation as to why this is the case, or why we should accept it’.

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East coast LNG imports

These ongoing difficulties have led to Australia potentially importing LNG into the southern part of its east coast gas market (Figure 2).

Two key factors are driving the momentum behind LNG imports. First, gas production in the southern part of the east coast gas market is expected to decline and fall short of southern demand, as a result of declining production from established gas fields, primarily offshore Victoria. Second, transporting gas via pipeline from the northern part of the east coast gas market to the south is costly. Australia is a large country and ‘a land of long skinny gas pipelines’. As such, LNG imports could be cost competitive with domestic gas being piped to the southern markets from the north.

There are currently five LNG import projects under consideration, proposed at various locations across the southern part of the east coast gas market – New South Wales, South Australia and Victoria. It is

Figure 2: Australia’s east coast gas market

Source: Ledesma and Drahos 2018


unlikely that all five projects will proceed given their combined capacity could exceed total gas demand in the southern states. But analysts have suggested that two projects are likely to go ahead, with LNG imports of up to four Mtpa – a significant volume but small compared to Australia’s exports of around 80 Mtpa.

In May 2021, the Australian Government committed AU$39 million (US$30 million) to fund four priority gas infrastructure projects, including the Port Kembla gas-fired power station. The power station should help advance the Port Kembla LNG import project in New South Wales – the most progressed of the five import projects – by providing a source of demand for LNG imports.

LNG imports could be shipped in from abroad, but in-country LNG imports are also an option, as occurs in Indonesia. In-country LNG imports would involve shipping LNG from Western Australia or the Northern Territory to the east coast. It remains to be seen which of these options (overseas or in-country imports) is the most cost-effective way of bringing gas into Australia’s east coast market.

If LNG import projects go ahead, Australia would be exporting gas from the northern part of the east coast market, while simultaneously importing gas into the southern half. This is often cited as a sign of how Australia’s gas market has failed. However, the long-term contracts underpinning Australia’s east coast LNG projects – under which prices are linked to the oil price – were signed at a time of high prices, while LNG contracted or purchased on the spot market now could potentially be imported at lower prices. As a result, Australia could potentially export LNG at a higher price than it imports LNG. In short, a certain economic logic underpins this seemingly unlikely scenario.

COVID-19 and a gas-fired recovery

Origins

In response to the COVID-19 pandemic, the Australian Government announced a ‘gas-fired recovery’ under which low cost gas would underpin the revitalisation of Australia’s gas-based manufacturing sector and propel economic growth. The announcement came against the backdrop of gradually declining gas demand in the east coast gas market as a result of rising prices, primarily in power generation but also amongst industrial customers.

The origins of Australia’s gas-fired recovery can be traced back to before Australia’s first wave of COVID-19 had taken hold. Prior to 2020, the debate over climate and energy policy in Australia had centred around coal, with the key focal point being the Adani Group’s Carmichael coal mine in Queensland. In late January 2020, against the backdrop of Australia’s devastating summer of bushfires, the Prime Minister delivered a wide-ranging address that struck a new tone on climate and energy.

‘There is no credible energy transition plan for an economy like Australia in particular, that does not involve the greater use of gas as an important transition fuel … Sweating our existing coal fired power generation assets will only take us so far. Gas can help us bridge the


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gap while our investments in batteries, hydrogen and pumped hydro energy storage bring these technologies to economic parity with traditional energy sources. So right now, we’ve got to get the gas.\textsuperscript{24}

A month after the Prime Minister’s address, COVID-19 infections in Australia began to rise. Case numbers were quickly brought under control and, in late April, Australia’s Energy Minister began promoting the idea of a ‘gas-fired recovery’ from COVID-19.\textsuperscript{25} The new emphasis on gas was interpreted by some commentators as an effort to carve out an energy policy that stepped back from supporting coal,\textsuperscript{26} and avoided the politics of ‘coal versus renewables’.\textsuperscript{27}

\textbf{The National COVID-19 Coordination Commission (NCCC)}

As Australia’s Energy Minister began advocating a gas-fired recovery, work on what form it might take was already underway. The Government had established an industry-led COVID-19 recovery taskforce in late March – the NCCC – and gas was a key focus.\textsuperscript{28} A leaked draft report from the NCCC’s manufacturing taskforce, led by Andrew Liveris the former head of the Dow Chemical Company, argued that gas could help revitalise Australian manufacturing.\textsuperscript{29}

The report proposed price targets for domestic gas and a ‘three phase’ journey towards low gas prices.\textsuperscript{30} The first phase would involve lifting the moratoria on unconventional onshore gas in Victoria and loosening the strict regulatory regime in New South Wales, the establishment of a ‘forward looking’ gas reservation scheme for the east coast and Northern Territory, and the fast tracking of new gas developments, such as the Beetaloo Sub-basin in the Northern Territory. The second phase — which would aim to reduce gas prices to AU$7/GJ (US$6/MMBtu) — would see the government take an active role in strategic pipeline developments and consider tax incentives for priority infrastructure. The third phase, which would aim to reduce prices to AU$4/GJ (US$3/MMBtu), would aim to attract foreign investment in gas-using industries and coordinate gas and hydrogen development.

The ideas behind some of these proposals would be reflected in the Government’s gas-fired recovery plan.

\begin{itemize}
  \item \textsuperscript{24} Prime Minister of Australia (2020a). ‘Address, National press club’, 29 January, \url{https://www.pm.gov.au/media/address-national-press-club}
  \item \textsuperscript{29} Hewett, J. (2020). ‘ANZ charts climate course through political storms’, 29 October, \url{https://www.afrc.companies/energy/an-z-charts-climate-course-through-political-storms-20201029-p569tj}
\end{itemize}
Gas-fired recovery plan

In September 2020, the Prime Minister announced a range of initiatives as part of the Government’s plan for a gas-fired recovery.31

A key focus of the Government’s gas-fired recovery plan is developing new gas supplies. The government is targeting five ‘strategic basins’ with large but undeveloped gas resources, starting with the Beetaloo Sub-basin in the Northern Territory, the North Bowen and Gaililee basins in Queensland, and the Cooper and Adavale basins across South Australia and Queensland.

The Beetaloo Sub-basin is a significant prospect and has been described as the ‘hottest play’ in the OECD.32 The basin has prospective shale gas resources of over 200,000 PJ (5,000 Bcm) and the Government is hoping it can deliver a shale gas revolution that mirrors the one seen in the United States.33 The Beetaloo Sub-basin is still in the exploration and appraisal phase. The Government is aiming to bring forward large-scale commercial decisions for the development of the Beetaloo’s resources to 2025 and has announced funding for exploration and infrastructure in the region.34

The Northern Territory government also wants the Beetaloo Sub-basin’s shale gas resources developed. The Northern Territory government lifted a moratorium on hydraulic fracturing in 2018 and has plans to see the Territory’s capital Darwin become both a large-scale LNG export hub and a gas-intensive manufacturing hub.35 The Beetaloo Sub-basin could support increased LNG exports from the Territory if developed. One possibility is an expansion of the 8.9 Mtpa Ichthys LNG project, where there is room for four more LNG trains, or an additional train at the 3.7 Mtpa Darwin LNG project. Assuming the capacity of new trains matched existing ones, these brownfield expansions could add up to 21.5 Mtpa of additional export capacity.

The Government’s gas-fired recovery plan also entails working with the state and territory governments on deals for new gas supply. The Government has struck a deal with New South Wales for 70 PJ (1.8 Bcm) of additional gas production36 and with South Australia for 50 PJ (1.3 Bcm) of supply by 2023.37

The plan’s upstream initiatives are accompanied by a focus on transport. The Government has released an interim National Gas Infrastructure Plan that identifies several infrastructure priorities for Australia’s gas market, including pipeline capacity expansion, additional storage capacity, and an LNG import terminal.38 The Government has promised to step in and invest in gas infrastructure if the private sector does not.39

Australia’s plan for a gas-fired recovery also seeks to address the issue of high domestic gas prices. The Government reiterated its commitment to considering options for a prospective national gas reservation scheme as part of the plan. There is some precedent for such a scheme. Western Australia

already requires LNG export projects to reserve the equivalent of 15 per cent of their LNG production for the domestic gas market.\textsuperscript{40} The Government is also using other levers, brokering an industry-led code of conduct between gas producers and consumers to guide price negotiations,\textsuperscript{41} and asking the Australian competition watchdog – the ACCC – to review its LNG netback price calculation that serves as a benchmark for what domestic consumers should be paying.

The Government's gas-fired recovery plan also has an emphasis on gas market reform. The Government's vision is for an Australian Gas Hub at Wallumbilla in Queensland, which would adapt the features of the Henry Hub model in the United States to the Australian context. The aim is to deliver an open, transparent and liquid gas trading system so that prices at Wallumbilla are a 'truly effective price benchmark' for the east coast gas market.\textsuperscript{42}

The Government has also been active in trying to push gas into Australia's National Electricity Market. In September 2020, the Government set a target of 1000 megawatts of new dispatchable electricity generation capacity to replace the Liddell coal-fired power station before its closure, and said it would intervene if this capacity was not delivered by the private sector.\textsuperscript{43} In May 2021, the Government announced that it would direct the Commonwealth-owned Snowy Hydro to build an AU$600 million (US$460 million) gas-fired power station in Kurri Kurri in New South Wales.\textsuperscript{44}

### Emissions, gas and climate policy

#### Gas sector emissions in Australia

The Government's plan for a gas-fired recovery has led to criticism from several quarters, including a number of thinktanks, civil society groups and members of the scientific community.\textsuperscript{45} At the centre of these criticisms lie concerns over the gas industry's climate impacts.

Emissions from Australia's gas sector\textsuperscript{46} have doubled over the past five years and now constitute a significant proportion of Australia's total GHG emissions – around 53 Mt CO2-e in 2020 or 10 per cent of the national total.\textsuperscript{47} Australia's LNG export industry accounted for about two-thirds (68 per cent) of Australia's gas sector emissions, at 36 Mt CO2-e in 2020. The majority of this was CO2 from the


The focus of this paper is on emissions from Australia’s LNG exporters and other gas producers. As such, I define gas sector emissions to include emissions from the fugitives sector and the energy subsector of the stationary energy sector. Emissions from electricity use in LNG production are also included. I do not include emissions from the use of gas by manufacturers, miners or residential users. I also do not include gas use in electricity generation (such as in the National Electricity Market). Emissions from the combustion of Australian gas exports overseas are also excluded.


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Combustion of gas to drive compressors (18 Mt CO2-e) or to generate electricity onsite (6 Mt CO2-e), with fugitive emissions (methane and CO2) the remaining 12 Mt CO2-e. Figure 3 shows Australia’s gas sector emissions have risen sharply since the recent wave of LNG projects began operations between 2015 and 2019.

Gas sector emissions will likely remain an ongoing challenge for Australia. As Figure 3 shows, gas sector emissions are expected to rise from current levels, finishing the decade at 58 Mt CO2-e in 2030. Rising gas emissions are expected to be partly offset by the carbon dioxide injection project at the Gorgon LNG facility in Western Australia, which will abate around 3.4 Mt CO2-e a year when operating at full capacity.

Australia is projected to meet its 2030 emission reduction target with the use of previous overachievement or under a high low-emissions technology uptake scenario, and is otherwise forecast to fall just short.48

Rising emissions in the gas sector add to the abatement task in other sectors. While some gas sector emissions might be offset if gas replaces a higher emissions fuel source in electricity generation, only a small proportion of Australian gas production is used in the electricity sector. In 2020, only five per cent of gas production in the eastern gas market was used in electricity generation.49 In the western gas market, where electricity demand is far smaller and the LNG export industry far larger, only around three per cent of gas produced is used in electricity generation.50

Figure 3: Australia’s gas sector emissions

Notes: Author’s estimates for LNG electricity emissions before 2020 based on LNG export data, and interpolation for forecast years between 2020, 2025 and 2030.
Source: Department of Industry, Science, Energy and Resources 2020, Australia’s emissions projections

Beyond 2030, the challenge of gas sector emissions may become more acute as the global shift towards net zero emissions accelerates. Australia’s new LNG projects have expected lifespans of 30-40 years or longer, meaning much of Australia’s existing LNG fleet could operate until mid-century and potentially beyond.51

New gas developments could add to emissions. The development of the Northern Territory’s shale gas resources, centred around the Beetaloo Sub-basin, would lead to an estimated increase of 5-39 Mt CO2-e depending on the scale of production.52 The emissions intensity of Australia’s LNG exports could also lift in coming decades because higher CO2 content gas fields are likely to be developed as backfill for some of Australia’s LNG plants.53

The IEA’s recent Net Zero by 2050 report54 has highlighted the need to rapidly reduce gas consumption, and halt the development of new gas extraction projects, in order to limit global warming to 1.5°C. Modelling of a 1.5°C compatible decarbonisation trajectory for Australia points to similar challenges. Under Climate Action Tracker’s 1.5°C scenario for Australia, Australia’s LNG exports start declining from 2030, reaching zero by 2050.55 In addition, all LNG facilities in Western Australia are equipped with carbon capture and storage (CCS) from 2023 onwards and renewable energy virtually replaces the use of natural gas in powering the LNG production process by 2035.

**Australian climate policy**

The main policy in Australia for managing emissions from the gas sector is the Safeguard Mechanism. Under the Safeguard Mechanism, Australia’s largest industrial emitters (those with direct emissions of more than 100,000 t CO2-e per annum) are required to keep their emissions below their respective baselines. The Safeguard Mechanism applies to all 10 of Australia’s LNG facilities.56 At present the Safeguard Mechanism is not likely to reduce emissions in the industry sector because baselines under the mechanism are set too high and do not decline over time.57

The Australian Government has recently agreed to establish a ‘below-baseline crediting arrangement’ under the Safeguard Mechanism to encourage industrial facilities to reduce emissions.58 Under the change, industrial facilities that realise emissions reductions below their baseline from ‘transformative’ (i.e. not business-as-usual) abatement projects will be credited, with the government a purchaser of emissions.

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The extent to which this policy change incentivizes LNG projects to pursue transformative abatement projects remains to be seen.

More broadly, the Australian Government has advocated a ‘technology over taxation’ approach to emissions reductions. Carbon pricing in Australia is politically contentious, with attempts to enact a carbon tax or emissions trading scheme having contributed to the demise of a number of Australian Prime Ministers.

Relevant for Australia’s gas industry is that, as part of its technology over taxation approach, the Government has been increasing support for CCS and hydrogen. The Government has identified CCS and clean hydrogen (green or blue) as two of five ‘priority technologies’ to target for investment and has set ‘stretch goals’ for the cost of these technologies, such as clean hydrogen for under A$2 (US$1.50) per kilogram.

A number of new policy initiatives to support CCS projects have been launched. The Government has established an AU$50 million (US$39 million) Carbon Capture, Use and Storage (CCUS) Development Fund, and is providing AU$15 million (US$12 million) to support Australian gas producer Santos’ Moomba CCS project. Another AU$264 million (US$203 million) in funding has been made available for CCS and CCUS hubs, with a number of potential hubs identified in large gas and LNG producing areas. CCS projects will soon be eligible to receive funding through the Emissions Reduction Fund – the vehicle through which the Government purchases abatement from businesses, landholders and households in the form of Australian carbon credit units. The Government has also called on companies to nominate offshore acreage they want to explore for greenhouse gas injection and storage locations, as part of a Greenhouse Gas Acreage Release.

**Australian LNG industry initiatives**

Australia’s LNG industry is looking at three interlinked approaches to decarbonisation: CCS, hydrogen and carbon neutral LNG.

Australia’s gas industry sees CCS as a key technology for reducing emissions. The head of Australian gas producer Santos has argued that Australia could be a ‘carbon storage superpower’ based not only on biological carbon sequestration, but geological sequestration in depleted oil and gas reservoirs. Santos has plans to develop a CCS project at Moomba in South Australia that could sequester 1.7 million tonnes of CO2 per year.

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Santos is also considering re-purposing the soon-to-be-depleted Bayu-Undan gas fields – which support LNG exports from the Darwin LNG project – as a CCS project. A CCS project at Bayu-Undan could take up to 10 million tonnes of CO2 per year, including from fields nearby that are being developed as backfill for the Darwin LNG plant.67 Meanwhile, Woodside is considering CCS options for the US$20 billion Browse project that would provide gas for the North West Shelf LNG plant.68

A number of LNG exporters are investigating using CCS and gas to produce ‘blue hydrogen’, while others are also looking at green hydrogen. Woodside has noted its hydrogen business would complement, rather than substitute for, its LNG business, with hydrogen involving separate facilities based in separate locations.69

Australia’s LNG industry has recently shipped a number of carbon neutral LNG cargoes – LNG where emissions from the production, transportation and/or consumption of the gas have been offset through the use of carbon credits.70 Shell shipped Australia’s first cargo of carbon neutral LNG and has acquired Select Carbon – a company that develops land-based carbon sequestration projects to generate carbon credits which are purchased by the Australian Government or sold in other markets.71 Australian gas producer Santos and Japanese trading giant Mitsubishi are considering opportunities for carbon-neutral LNG shipments as part of a 10-year contract for LNG supply from Santos’ Darwin LNG plant.72

There have been a number of concerns raised about carbon neutral LNG and its potential to contribute to the global decarbonisation challenge. At present, there is little transparency around how the emissions footprint of carbon neutral LNG cargoes are calculated and no global methodological standard for doing so.73 Reporting and verification systems for carbon neutral LNG cargoes are also currently lacking.74 In addition, there are concerns about the quality of carbon credits being utilised to offset emissions and whether they represent genuine emissions reductions.75 Finally, there are questions about whether carbon neutral LNG can be scaled to play a major role in meeting global climate objectives.76

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Conclusions

Australia faces a gas trilemma of keeping domestic gas prices low, supporting its LNG exporters and managing emissions from the gas sector. This trilemma entails trade-offs between different objectives. Increasing gas production could help lower domestic gas prices and support exports but adds to Australia’s abatement task, with the possible exception of gas use in electricity generation. A prospective national gas reservation scheme could lower domestic gas prices but would likely have some impact on LNG exports. Many policies that reduce emissions add to the cost of gas for both domestic consumers and exporters (for example, carbon pricing). The competing pressures of the trilemma are particularly acute in Australia’s east coast gas market.

To date, a key focus of Australia’s approach to its gas trilemma has been to support expanding gas production with a view to bringing down domestic gas prices. The Australian Government has announced a gas-fired recovery from the COVID-19 pandemic, and state and territory governments (like the Northern Territory) have been looking to develop their gas resources.

The Australian Government is also keeping the option of a prospective national gas reservation scheme on the table as a way of managing domestic price pressures, but to date has favoured less interventionist methods such as negotiations with east coast LNG exporters and monitoring of the gas market by Australia’s competition watchdog. Meanwhile, there is a growing push from the Australian Government and the Australian gas industry towards CCS as a way of managing gas sector emissions, and hydrogen and carbon neutral LNG are increasingly being looked at.

A combination of measures could put downward pressure on gas prices, and even unlock further gas for export. Much hinges on the development of the Beetaloo Sub-basin and its world class shale gas resources. However, expanding gas production will mean that pressure will continue to build on the third element of Australia’s trilemma: managing emissions from natural gas. The challenge of reconciling Australia’s climate targets with its status as a major LNG exporter is only likely to intensify as global efforts to reduce emissions accelerate in coming years.

Against this backdrop, Australia now looks to be on the verge of becoming a small-time LNG importer. LNG imports may play a modest role in helping to address all three pressures of Australia’s gas trilemma by offering lower cost gas to domestic consumers, freeing up gas for export and offshoring emissions. Nevertheless, managing the competing pressures of the trilemma will remain a challenge for Australia for decades to come.

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Conversions

1 Mt = 54.4 PJ

1 Mt = 1.361 Bcm

1 Bcm = 39.971 PJ

1 MMBtu = 1.055 GJ

Conversions from AU$/GJ to US$/MMBtu at a AUD/USD 0.77 exchange rate

Glossary

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<th>Abbreviation</th>
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<tr>
<td>ADGSM</td>
<td>Australian Domestic Gas Security Mechanism</td>
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<td>AU$</td>
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<td>AEMO</td>
<td>Australian Energy Market Operator</td>
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<td>ACCC</td>
<td>Australian Competition and Consumer Commission</td>
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<td>Bcm</td>
<td>Billion cubic metres</td>
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<td>CCS</td>
<td>Carbon capture and storage</td>
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<td>CCUS</td>
<td>Carbon capture use and storage</td>
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<td>CO2</td>
<td>Carbon dioxide</td>
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<td>CO2-e</td>
<td>Carbon dioxide equivalent</td>
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<td>CSG</td>
<td>Coal Seam Gas (also known as coal bed methane)</td>
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<td>GJ</td>
<td>Gigajoule</td>
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<tr>
<td>LNG</td>
<td>Liquefied natural gas</td>
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<td>MMBtu</td>
<td>Million of British thermal units</td>
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<td>Mt</td>
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<td>Mtpa</td>
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<td>NCCC</td>
<td>National COVID-19 Coordination Commission</td>
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<td>OECD</td>
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