# WESTERN AUSTRALIA LNG PROFILE – March 2024

**Global LNG trade**



Mt = Million tonnes.

Source: International Group of LNG importers (GIIGNL).

* Global liquefied natural gas (LNG) trade rose 4.5% (16.9 million tonnes) to 389.2 million tonnes in 2022.
* Global LNG trade grew by a compound annual rate of 5.1% over the 10 years to 2022.
* Most LNG trade is through long and medium‑term contracts (contracts with a duration of longer than four years).
* In 2022, long and medium‑term contracts accounted for 65% (254.4 million tonnes) of global LNG trade while spot and short‑term contracts accounted for 35% (134.8 million tonnes) of global LNG trade.

**Major global LNG exporters: 2022**



Mt = Million tonnes.

Note: GIIGNL measures the volume of LNG trade from the importing country’s point of view, which is generally lower than the volume reported by the exporting country as some LNG is boiled off during shipping. As such, the volume of Australia’s LNG exports as reported by the ABS is lower than that reported by GIIGNL.

Source: International Group of LNG importers (GIIGNL) and WA Department of Jobs, Tourism, Science and Innovation.

* Qatar, Australia and the United States are the three largest LNG exporters in the world, together accounting for 60% of global LNG exports in 2022.
* Western Australia is the largest LNG exporter in Australia and by itself accounted for 12% of global LNG exports in 2022. The remaining balance of Australia’s LNG exports are from projects in Queensland and Northern Territory.
* Qatar was the largest global LNG exporter in 2022. After more than doubling its LNG export capacity between 2008 and 2011, Qatar’s annual LNG exports have ranged from 75 to 80 million tonnes since 2012.
* The United States LNG exports have increased from less than 3 million tonnes in 2016 to 75 million tonnes in 2022 as a number of new projects became operational. The United States accounted for around half of the increase in LNG exports between 2021 and 2022.

**Major global LNG importers: 2022**



Mt = Million tonnes.

Note: LNG import volumes are net of any re‑exports of LNG.

Source: International Group of LNG importers (GIIGNL).

* The composition of LNG trade by importing country changed significantly in 2022. With pipeline gas supply from Russia restricted, Europe imported much more LNG, while many countries in Asia imported less LNG as the demand surge in Europe led to higher LNG prices across the world.
* Asia was still the largest LNG importing region in 2022, accounting for 65% (251.9 million tonnes) of global LNG imports. However, Asia’s LNG imports in 2022 were 8% lower than in 2021.
* Europe’s LNG imports increased by 60% in 2022 and its share of global LNG imports increased from 20% in 2021 to 31% in 2022.
* The Americas (3%) and the Middle East and Africa (2%) made up the balance of global LNG imports in 2022.
* The three largest LNG importing countries in 2022 – Japan, China and South Korea – were all in Asia. The largest LNG importer in Europe was France, whose volume of LNG imports in 2022 was more than double that of 2021.

**Major LNG importers in Asia1**



1 12-month rolling total. Mt = Million tonnes.

Source: WA Department of Jobs, Tourism, Science and Innovation estimates based on data from CEIC China Premium Database; Japanese Ministry of Finance; Korean Customs Service; Indian Ministry of Commerce and Industry; and EnergyQuest, LNG Report (Monthly).

* China’s LNG imports increased significantly between 2016 and 2021 as part of its strategy to increase the share of natural gas in its energy mix. However, there was a large fall in China’s LNG imports in 2022, as overall gas demand fell and more gas was sourced from pipeline imports and domestic production. LNG import volumes increased in 2023 and early 2024: in the 12 months to January 2024, China’s LNG imports were 73.2 million tonnes, 18.2% more than in the 12 months to January 2023.
* Japan imported 65.4 million tonnes of LNG in the 12 months to January 2024, 9.2% less than in the 12 months to January 2023. Japan’s LNG demand has fallen in recent years, largely in line with the fall in its overall energy demand.
* South Korea imported 44.4 million tonnes of LNG in the 12 months to January 2024, 4.1% less than in the 12 months to January 2023.
* India tends to substitute LNG imports for domestic production when LNG prices are high. As such, India’s LNG import volumes fell in 2022, but increased in 2023 and early 2024 after LNG prices fell. In the 12 months to January 2024, India’s LNG imports were 22.8 million tonnes, 13.8% more than in the 12 months to January 2023.

**Asia LNG prices**



mmBTU = Million British thermal units.

Note: The North Asia LNG spot price is the front month price at the end of the reference month. The chart shows the Sling North Asia price to October 2019 and the JKM price from November 2019.

Source: World Bank, Commodity Markets (Monthly); EnergyQuest, LNG Report (Monthly) .

* Average LNG import prices in Asia generally move with the oil price (with a lag of three to four months) as the bulk of LNG supply in Asia is made through long‑term supply contracts with prices linked to the oil price. As such, average LNG import prices increased in 2021 and 2022, and then fell in 2023.
* The average LNG import price to Japan was US$14.31 per mmBTU in January 2024, 29% lower than in January 2023.
* LNG spot trade is used to alleviate short‑term deviations from expected demand and supply. As such, the LNG spot price is subject to more volatility.
* LNG spot prices have been particularly volatile over the past two years. Restricted natural gas supply led to higher demand for LNG in Europe in 2022, which flowed through to much higher Asian LNG spot prices. However, milder winter weather in Northeast Asia subdued LNG demand and a settling of global LNG trade has contributed to the LNG spot price falling below the contract price. At the end of January 2024, the JKM front month price was US$9.53 per mmBTU.

**Australia’s LNG exports**



Source: Based on data from ABS 5368.0 International Trade in Goods and Services, Australia (Monthly).

* The volume of Australia’s LNG exports in January 2024 was 7.0 million tonnes.
* In the 12 months to January 2024, the volume of Australia’s LNG exports was 80.8 million tonnes, 1.3% lower than in the 12 months to January 2023.
* The monthly value of Australia’s LNG exports fell in the first half of 2023, reflecting average LNG prices coming down from their peak in late 2022. In January 2024, the value of Australia’s LNG exports was $6.3 billion.
* In the 12 months to January 2024, the value of Australia’s LNG exports was $72.0 billion, 22.4% lower than in the 12 months to January 2023.

**Western Australia’s LNG export capacity**



Note: Pluto Train 2 is expected to be operational in 2026.

Source: WA Department of Jobs, Tourism, Science and Innovation based on published information.

* Western Australia has an established and reliable LNG export industry. The State’s first LNG project, the North West Shelf, will mark 35 years of LNG exports in 2024.
* Western Australia currently has five operating LNG export projects. The North West Shelf, Pluto, Gorgon and Wheatstone projects all source gas from the Carnarvon Basin and have onshore LNG trains in Western Australia’s Pilbara region. The Prelude project is a floating LNG vessel located in the Browse Basin offshore Western Australia.
* Western Australia’s current total LNG export capacity is 50 million tonnes a year.
* In November 2021, a final investment decision was made for a second LNG train for the Pluto project with a capacity of 5 million tonnes a year. Pluto Train 2 is expected to begin exporting LNG in 2026.

**Western Australia’s natural gas reserves and resources as at November 2023**

|  |  |  |
| --- | --- | --- |
| Basin | Reserves (petajoules) | Contingent resources (petajoules) |
| Carnarvon | 45,730 | 22,886 |
| Browse | 17,152 | 18,554 |
| Bonaparte | 4,116 | 8,662 |
| Perth | 1,555 | 604 |
| Canning | - | 260 |

Note: Reserves and resources are categorised by probability or likelihood of recovery. Reserves refer to 2P reserves that are proved (90%) and probable (50%) while contingent resources refer to 2C resources (best estimate of contingent resources). Bonaparte Basin figures refer to Australia’s share of reserves and resources.

Source: EnergyQuest, Energy Quarterly (December 2023).

* Western Australia’s LNG projects are underpinned by large, conventional gas reserves in the Carnarvon and Browse Basins, which provide LNG buyers with security of supply.
* Western Australia also has onshore shale and tight gas resources in the Canning, Carnarvon and Perth basins.
* In the four quarters to December 2023, petroleum exploration expenditure in Western Australia was $484 million. This was 46% of total petroleum exploration expenditure in Australia over this period.

**LNG shipping duration: days**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | China  (Shanghai) | Japan  (Tokyo) | Korea  (Incheon) | India  (Gujarat) |
| Western Australia | 8 | 7 | 8 | 9 |
| Queensland | 8 | 9 | 9 | 14 |
| Qatar | 14 | 12 | 13 | 2 |
| United States | 20 | 22 | 21 | 21 |
| Nigeria | 23 | 22 | 23 | 15 |

Note: Days shipping is based on a vessel at maximum speeds of 19.5 knots.

Source: WA Department of Jobs, Tourism, Science and Innovation based on information from Shipscene and the International Group of LNG Importers (GIIGNL).

* Western Australia’s LNG projects are located relatively close to Asia, comparing favourably (with the exception of India) to the shipping distances from Qatar.
* The shipping distance from Western Australia’s projects to Japan is around 3,400 nautical miles or about 8 days travel, with similar shipping distances to South Korea and China.
* The expansion of the Panama Canal in 2016 shortened the trade route for LNG exports from the US to Asia. However, shipping to Asia from the US Gulf Coast still takes more than twice the time of shipping from Western Australia.

**Domestic gas price index1 by market (% change2)**



1 Output prices of the domestic gas extraction industry. Original series.2 Change from same quarter of previous year.

Source: Based on data from ABS 6427.0 Producer Price Indexes, Australia (Quarterly).

* The WA Domestic Gas Policy requires LNG exporters to make gas available to Western Australian consumers, equivalent to 15% of their LNG exports. This policy has helped stabilise domestic gas prices in Western Australia relative to Australia’s East coast market.
* The price of domestic gas extraction in Western Australia increased 18% between the December quarters of 2020 and 2023. Over the same period, the price of domestic gas extraction in the East coast market increased by 83%.
* The lower price increases in Western Australia indicates that domestic supply has largely been sufficient to meet demand. The larger price increases and the more volatile pattern in prices in the East coast market have been due to oil and LNG prices in international markets flowing through to domestic gas prices, and a limited supply response during periods when domestic demand is stronger.

**Western Australia’s LNG sales**



Mt = Million tonnes. ^ Includes condensate, crude oil, LPG and domestic gas.

Source: WA Department of Mines, Industry Regulation and Safety, Resource Data Files.

* The volume of Western Australia’s LNG sales in 2022‑23 was 49.7 million tonnes, 7% higher than 2021‑22.
* Much higher average LNG prices led to a significant increase in the value of Western Australia’s LNG sales over the past two financial years. The value of Western Australia’s LNG sales increased by 47% to $56.3 billion in 2022‑23.
* Higher LNG prices have also contributed to LNG accounting for a higher share of Western Australia’s mineral and petroleum sales. In 2022‑23, LNG accounted for 22% of Western Australia’s total sales of minerals and petroleum ($254.1 billion), compared to 8% in 2020‑21.
* Western Australia’s LNG projects also produce condensate and liquefied petroleum gas (LPG), mostly for export markets, and supply the majority of Western Australia’s domestic gas.

**Western Australia’s LNG sales by market**



Mt = Million tonnes. ^ 2022 includes India, Indonesia, Kuwait and Netherlands; 2023 includes Brunei, India, Indonesia and Kuwait.

Source: EnergyQuest, LNG Report (July 2021 to June 2023).

* Japan was Western Australia’s first LNG customer in 1989 and remains the state’s largest customer. Western Australia accounted for around 28% of Japan’s LNG imports in 2023.
* In 2006, Western Australia became the first jurisdiction in the world to export LNG to China via the North West Shelf’s contract with Guangdong Dapeng LNG. Western Australia accounted for around 13% of China’s LNG imports in 2023.
* Of Western Australia’s total LNG exports in 2023:
  + Japan accounted for 40%
  + China accounted for 21%
  + South Korea accounted for 13%
  + Taiwan accounted for 12%
  + Thailand accounted for 5%.

**Western Australia’s LNG production by company: 2022‑23**



Mt = Million tonnes.^ Includes Kufpec, CNOOC, PE Wheatstone, Tokyo Gas, Inpex, Kansai Electric, Kogas, Osaka Gas, Kyushu Electric, CPC and Jera.

Source: EnergyQuest, Energy Quarterly (September 2023)

* In 2022‑23, Chevron (34%), Woodside (23%) and Shell (16%) accounted for the largest shares of Western Australia’s LNG production.
* Chevron has a 1/6th share of the North West Shelf project and is the operator and largest stakeholder in the Gorgon and Wheatstone projects.
* Woodside is the operator of the North West Shelf project. Woodside’s share of the North West Shelf project increased from 1/6 to 1/3 following its merger with BHP’s oil and gas portfolio in 2022. Woodside also has a 90% share and is the operator of the Pluto project, and has a 13% share of the Wheatstone project.
* Shell has a 1/6th share of the North West Shelf project, a 25% share of the Gorgon project and is the operator and largest stakeholder of the Prelude floating LNG project.

**Western Australia’s LNG projects and associated developments1: as of 5 April 2024**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Project | Stakeholders | Capex  ($b) | Capacity (Mtpa) | Start of  operations | Details |
| North West Shelf  Trains 1-5 | Woodside (33.33%)  BP (16.67%)  Chevron (16.67%)  MIMI (16.67%)  Shell (16.67%) | 34.0 | 16.9 | September 1989 | The North West Shelf is a five‑train LNG project located within the Burrup Strategic Industrial Area in Western Australia’s Pilbara region. Trains 1 and 2 began in 1989, Train 3 in 1992, Train 4 in 2004 and Train 5 in 2008.  In November 2023, Woodside announced it would be shutting down one of the North West Shelf’s older trains in 2024. |
| Pluto  Train 1 | Woodside (90%)  MidOcean Energy (5%)  Kansai Electric (5%) | 15.0 | 4.9 | April 2012 | Pluto is currently a single train LNG project located within the Burrup Strategic Industrial Area in Western Australia’s Pilbara region.  In November 2021, a final investment decision was made to backfill and expand the Pluto LNG project with gas from the Scarborough fields (see Scarborough and Pluto Train 2 below). |
| Gorgon  Trains 1-3 | Chevron (47.3%)  ExxonMobil (25%)  Shell (25%)  Osaka Gas (1.25%)  MidOcean Energy (1%)  JERA (0.417%) | 55.0 | 15.6 | March 2016 | Gorgon is a three‑train LNG project located on Barrow Island in Western Australia’s Pilbara region. Gorgon exported its first LNG cargo in March 2016. Trains 2 and 3 began production in October 2016 and March 2017 respectively.  In June 2023, Chevron announced first production from Gorgon Stage 2, which will help maintain gas supply to the Gorgon project through eleven additional wells in the Gorgon and Jansz‑lo fields. |
| Wheatstone  Trains 1-2 | Chevron (64.14%)  KUFPEC (13.4%)  Woodside (13%)  PE Wheatstone (8%)  Kyushu Electric (1.46%) | 40.0 | 8.9 | October 2017 | Wheatstone is a two‑train LNG project located within the Ashburton North Strategic Industrial Area in Western Australia’s Pilbara region. Train 1 began production in October 2017 and Train 2 began production in June 2018. |
| Ichthys  Trains 1-2 | Inpex (66.245%)  Total (26%)  CPC (2.625%)  Other2 (5.13%) | 27.23 | n.a. | October 2018 | Ichthys is a two‑train LNG project located in Darwin, sourcing gas from the Browse Basin. Western Australia’s share of the project’s capital expenditure was around 50%. The Ichthys project exports condensate directly from a floating production, storage and offloading facility located offshore Western Australia. |
| Prelude  Floating LNG vessel | Shell (67.5%)  Inpex (17.5%)  KOGAS (10%)  CPC (5%) | 19.6 | 3.6 | June 2019 | Prelude is a floating LNG project located in the Browse Basin. Prelude also produces up to 1.3 million tonnes of condensate a year and 0.4 million tonnes of LPG a year. The vessel is expected to operate at the Prelude gas field for 25 years and will also source gas from other fields (see Crux below). |
| Waitsia Stage 2  Development | Mitsui E&P (50%)  Beach Energy (50%) | 1.3 | n.a. | 2025 | Waitsia Stage 2 involves further development of the Waitsia gas field, including a production facility capable of producing 250 terajoules of gas a day. The Waitsia Joint Venture has an agreement to enable Waistia gas to be tolled and processed through the North West Shelf facilities to produce up to 7 million tonnes of LNG.  In April 2024, Beach Energy announced that first gas from the project would be delayed to 2025. |
| Jansz‑lo Compression | See Gorgon | 6.0 | n.a | 2026 | In July 2021, Chevron announced it would build and install a 27,000 tonne floating field-control station, a 6,500 tonne subsea compression infrastructure and a 135‑kilometre submarine power cable from the Jansz‑lo gas field to the Gorgon project’s three LNG trains and gas plant on Barrow Island. |
| Scarborough and Pluto Train 2 | *Scarborough Gas Fields*  Woodside (90%)4  LNG Japan (10%) | 16.0 | 5.0 | 2026 | The Scarborough development involves a resource of 11.1 trillion cubic feet of gas with an offshore floating production unit capable of providing feed gas to produce 8 million tonnes a year of LNG plus domestic gas. The onshore development involves a new LNG train, modifications to Pluto Train 1 to allow it to process up to 3 million tonnes a year of LNG from Scarborough gas and a new domestic gas plant capable of producing 225 terajoules of gas a day. |
| *Pluto Train 2*  Woodside (51%)  Global Infrastructure Partners (49%) |
| Crux | Shell (82%)  SGH Energy (15%)  Osaka Gas (3%) | 3.5 | n.a. | 2027 | In May 2022, Shell announced it would proceed with the development of the Crux gas field in the Browse Basin offshore Western Australia, which will be connected to the Prelude floating LNG vessel via a 160 kilometre pipeline. |

Mtpa = million tonnes per annum. Capex = Capita expenditure. n.a. – not applicable.

1: Major projects under construction or committed only. 2: Comprises the following companies: Tokyo Gas (1.575%), Osaka Gas (1.2%), Kansai Electric (1.2%), JERA (0.735%) and Toho Gas (0.42%). Inpex has exercised its pre-emptive rights to acquire Tokyo Gas’s interest. 3. Western Australia’s share of total capital expenditure. 4: Woodside has entered into a sales and purchase agreement with JERA that includes the acquisition of an interest in the Scarborough gas fields of 15.1%.

Source: EnergyQuest, Energy Quarterly; WA Department of Jobs, Tourism, Science and Innovation; and company investor information (announcements, reports and presentations).