# WESTERN AUSTRALIA LNG PROFILE – November 2021

**Global LNG trade: Calendar years**



Mt = Million tonnes.

Source: International Group of LNG importers (GIIGNL) (Annual).

* Global liquefied natural gas (LNG) trade rose 0.4% (1.4 million tonnes) to 356 million tonnes in 2020.
* Global LNG trade has grown by a compound annual rate of 4.9% over the past 10 years.
* Most LNG trade is through long and medium‑term contracts (contracts with a duration of longer than four years).
* In 2020, long and medium‑term contracts accounted for 60% (214 million tonnes) of global LNG trade.
* The share of LNG trade through spot and short‑term contracts is growing, accounting for 40% (142 million tonnes) of global LNG trade in 2020 – the highest share on record.

**Major global LNG exporters: 2020 calendar year**

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Mt = Million tonnes.

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

* Australia is the largest global LNG exporter, accounting for 21.8% of global LNG exports in 2020.
* Western Australia accounted for 12% of global LNG exports and 57% of Australia’s LNG exports in 2020.
* Qatar is the second largest global LNG exporter, accounting for 21.7% of global LNG exports in 2020. Qatar was the world’s largest LNG exporter from 2006 to 2019.
* The United States accounted for 13% of global LNG exports in 2020. The United States’ share of global LNG exports is increasing as new projects become operational.

**Major global LNG importers: 2020 calendar year**



Mt = Million tonnes.

Source: International Group of LNG importers (GIIGNL) (Annual).

* Asia is the largest importer of LNG globally. In 2020, Asia accounted for 71% (254 million tonnes) of global LNG imports. The five largest LNG importers in 2020 were all from Asia: Japan, China, South Korea, India and Taiwan.
* Europe (23%), the Americas (4%) and the Middle East and Africa (2%) made up the balance of global LNG imports in 2020.
* Japan was the largest LNG importer in 2020 with imports of 74 million tonnes. Japan’s LNG imports peaked at 89 million tonnes in 2014.
* China was the second largest global LNG importer in 2020. China’s LNG imports have grown from 20 million tonnes in 2015 to 69 million tonnes in 2020 at a compound annual rate of 28%.

**Western Australia’s LNG export capacity: Calendar years**



Note – Additions to LNG export capacity reflect the start-up of LNG trains during a particular year.

Source: WA Department of Jobs, Tourism, Science and Innovation based on company investor information (announcements, reports and presentations).

* Western Australia has an established and reliable LNG export industry. The State’s first LNG project, the North West Shelf, marked 30 years of LNG exports in 2019.
* Western Australia currently has five operating LNG export projects: the North West Shelf, Pluto, Gorgon, Wheatstone and Prelude. The total export capacity of these five projects is 50 million tonnes of LNG 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 LNG projects are located close to Asia, comparing favourably to the shipping distances from Qatar (with the exception of India).
* Shipping from Western Australia to Asia takes less than half the time of shipping from the US Gulf Coast to Asia.

**Western Australia’s natural gas reserves and resources as at August 2021**

|  |  |  |
| --- | --- | --- |
| Basin | Reserves (petajoules) | Contingent resources (petajoules) |
| Carnarvon | 44,094 | 39,547 |
| Browse | 16,308 | 19,943 |
| Bonaparte | 4,769 | 13,568 |
| Perth | 1,166 | 1,369 |

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 (September 2021).

* 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.
* The WA Domestic Gas Policy requires LNG exporters to make gas available to Western Australian consumer’s equivalent to 15% of their LNG exports.

**LNG and natural gas pipeline prices: Months**



mmBtu = Million British thermal units. bbl = Barrels.

Source: World Bank, Commodity Markets (Monthly).

* The low operating costs of Western Australia’s LNG projects allows them to maintain supply as prices vary.
* LNG prices in Asia generally move with the oil price (with a 3-month lag) because most of Asia’s long-term LNG supply contracts have prices linked to the oil price. This differs from gas prices in the United States and Europe that respond to the regional gas market.
* The LNG import price to Japan was US$12.4 per mmBtu in October 2021, 100% higher than in October 2021.
* The average LNG import price to Japan in 2020‑21 was US$7.9 per mmBtu, 22% less than in 2019-20.

**Western Australia’s LNG sales: Financial years**



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

Source: WA Department of Mines, Industry Regulation and Safety, Resource Data Files (Bi-Annual).

* The volume of Western Australia’s LNG sales in 2020-21 was 42.4 million tonnes, 4.7 million tonnes less than in 2019-20. The fall was largely due to maintenance limiting production volumes on some of Western Australia’s LNG projects during 2020‑21.
* The value of Western Australia’s LNG sales fell 41% to $15.8 billion in 2020-21. The fall was due to lower production volumes and lower average LNG prices during 2020‑21.
* In 2020-21, LNG accounted for 8% of Western Australia’s total sales of minerals and petroleum ($209.6 billion).
* 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: Financial years**



Mt = Million tonnes. ^ Includes Malaysia, Mexico and United Arab Emirates in 2019-20.

Source: EnergyQuest, LNG Report (July 2020 to June 2021)

* Japan was Western Australia’s first LNG customer in 1989 and remains the state’s largest customer. Western Australia accounted for 28% of Japan’s LNG imports in 2020.
* 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 20% of China’s LNG imports in 2020.
* Of Western Australia’s total LNG exports in 2020-21:
  + Japan accounted for 48%.
  + China accounted for 29%.
  + South Korea accounted for 10%.
  + Taiwan accounted for 8%.
  + Singapore accounted for 4%.
  + India and Thailand accounted for 1% each.

**Western Australia’s LNG production by producer:**

**2020-21 financial year**



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

Source: EnergyQuest, Energy Quarterly (September 2021)

* In 2020-21, Chevron (33%), Woodside (19%) and Shell (14%) 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 has a 1/6th share of the North West Shelf project and a 90% share of the Pluto project and is the operator of both of these projects. Woodside also 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 at 30 November 2021**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Project | Stakeholders | Capex2  ($b): | Capacity (Mtpa) | Start of  operations | Details |
| North West Shelf  Trains 1-5 | Woodside (16.67%)  BHP (16.67%)  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 began in 1992.  Train 4 began in 2004.  Train 5 began in 2008. |
| Pluto  Train 1 | Woodside (90%)  Tokyo Gas (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%)  Tokyo Gas (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.  Train 2 began production in October 2016.  Train 3 began production in March 2017. |
| 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 commenced LNG production in October 2017.  Train 2 commenced LNG production in June 2018. |
| Ichthys  Trains 1-2 | Inpex (66.245%)  Total (26%)  CPC (2.625%)  Tokyo Gas (1.575%)  Osaka Gas (1.2%)  Kansai Electric (1.2%)  JERA (0.735%)  Toho Gas (0.42%) | 27.2^ | n.a. | October 2018 | Ichthys is a two‑train LNG project located in Darwin, sourcing gas from the Browse Basin offshore Western Australia. Western Australia’s share of the Ichthys project’s total capital expenditure is around 50%.  While Ichthys exports LNG from the Northern Territory, condensate is exported 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 offshore Western Australia. Prelude also produces up to 1.3 million tonnes of condensate a year and 0.4 million tonnes of LPG a year. The vessel will operate at the Prelude gas field for 25 years. |
| Gorgon Stage 2  Development | See Gorgon | 5.1 | n.a. | 2022 | In April 2018, Chevron announced the second stage of the Gorgon project, which will help maintain gas supply to the project. Stage 2, nearing completion, is the drilling and connection of eleven additional wells to the Gorgon and Jansz‑lo fields. |
| Julimar-Brunello Phase 2  Development | Woodside (65%)  KUFPEC (35%) | 2.7 | n.a. | 2022 | The Julimar and Brunello fields feed 2.1 trillion cubic feet of gas to the Wheatstone LNG plant. Phase two of the project to tie-back the Julimar field to the existing Brunello subsea infrastructure was is preparing for cold commissioning and start‑up. |
| Greater Western Flank Phase 3 and Lambert Deep  Development | See North West Shelf | 1.0 | n.a. | 2022 | The Greater Western Flank Phase 3 and Lambert Deep gas projects involve the drilling and subsea tieback of new production wells to the existing infrastructure of the North West Shelf. FID was in January 2020, with the project 63% completed as at 30 September 2021, |
| Waitsia Stage 2  Development | Mitsui E&P (50%)  Beach Energy (50%) | 0.8 | n.a. | 2023 | Waitsia Stage 2 will involve further development of the Waitsia gas field, with more wells and a new production facility capable of producing 250 terajoules of gas a day. The Waitsia Joint Venture has an agreement to enable up to 7 million tonnes of LNG of Waitsia gas to be tolled and processed into LNG through the North West Shelf facilities between the second half of 2023 and the end of 2028. |
| Jansz-lo Compression | See Gorgon | 6.0 | n.a | 2026 | In July 2021, Chevron announced it will build and install a 27,000 tonne floating field-control station, 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 (73.5%)  BHP (26.5%) | 16.0 | 5.0 | 2026 | The Scarborough development involves a resource of 11.1 trillion cubic feet of gas with the 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 the construction of 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 with capacity of 225 terajoules a day. |
| *Pluto Train 2*  Woodside (51%)\*  Global Infrastructure Partners (49%)\* |

Mtpa = million tonnes per annum. n.a. – not available or not applicable. FEED = front-end engineering and design: FID = final investment decision. ^ Western Australia’s share of total capital expenditure. \* Shares upon formal completion of the transaction between Woodside and Global Infrastructure Partners, which is expected to occur in January 2022. 1 Major projects under construction or committed only. 2 Capital expenditure.

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