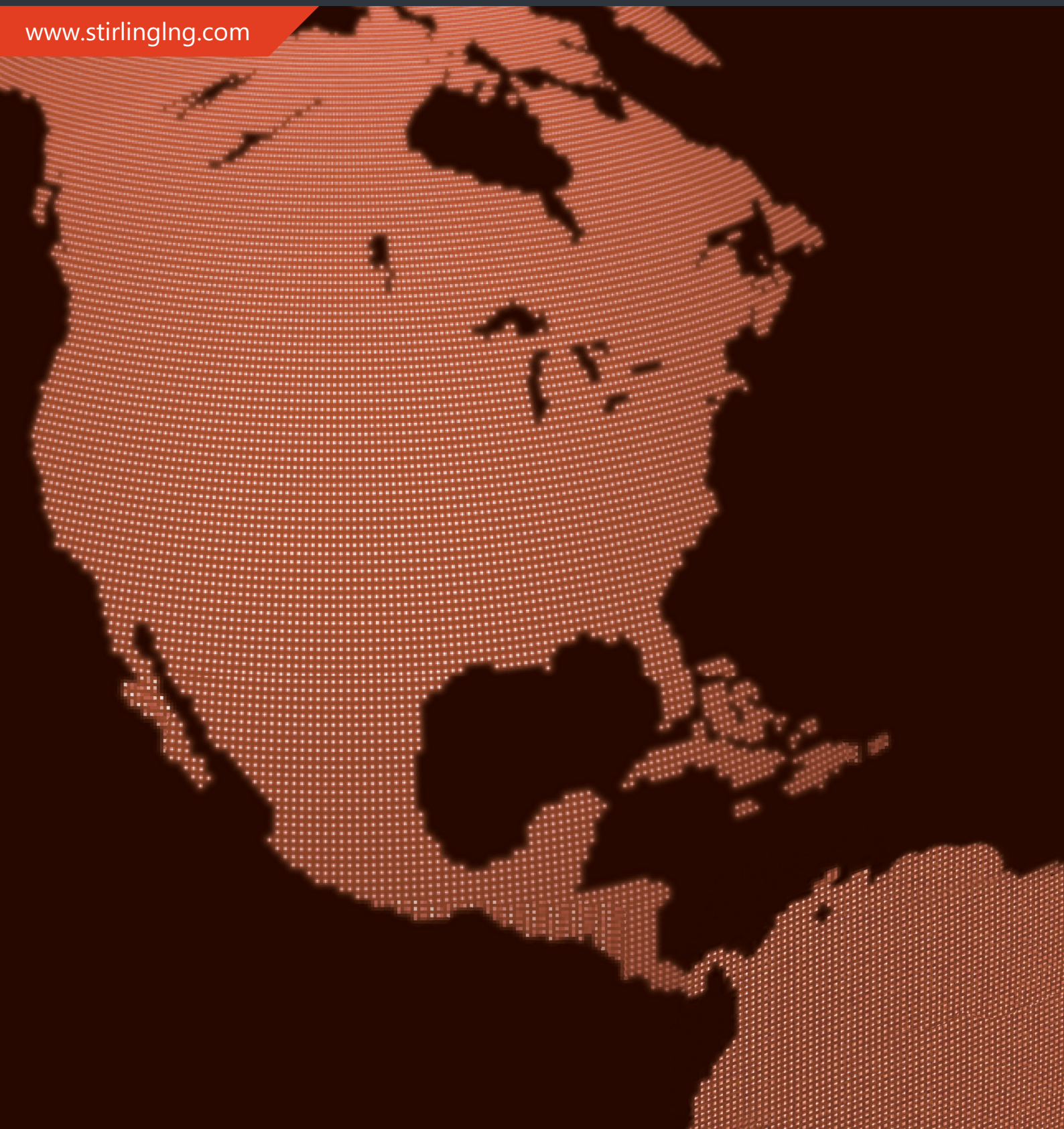


American LNG

Overview of LNG in the Americas

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AMERICAS MARKET INSIGHT

The purpose of this report is to illustrate the state of the LNG market in the Americas, identifying the key drivers of supply and demand. Stirling LNG is committed to providing high-level insights into the LNG market in key regions and countries and our analysts are constantly monitoring the evolution of the medium to long-term market.

We advise on developing a portfolio strategy for the purchase of LNG contracts and identify the risks and opportunities on the purchase of such contracts by region.

INTRODUCTION

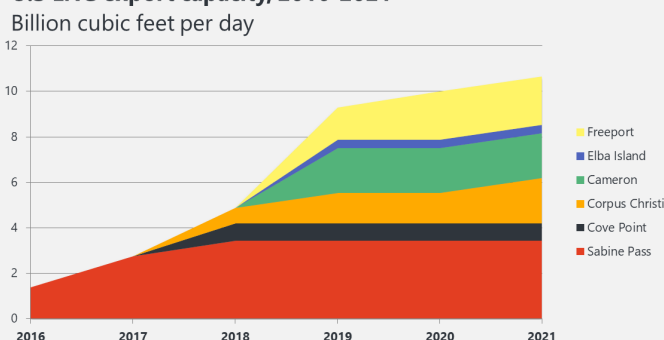
The North America LNG market features the US as the major player and only current exporter in the region and has been characterized by rising production levels which have increased the region's export capability. As of the end of 2019, over 80 million tonnes per annum (mtpa) of liquefaction capacity had recently been added or was under commissioning or construction in North America. Canada LNG is the only non-US project in the region, expected to start operations in 2024-2025. Stirling LNG expects that the start-up of new liquefaction trains will drive up export levels, providing support to Henry Hub prices in the medium term.

South America, on the other hand, is a tale of two halves. On the supply side, Peru continues to export robust quantities of LNG to Europe and Asia. However, there are no firm plans to develop any further significant export terminals here or elsewhere in the South America region. On the demand side, Chile, Argentina and Brazil continue to import robust quantities of LNG, with Brazil in particular looking to increase its import capability significantly over the coming two years.

US OUTLOOK

In 2016, the US became a net exporter of LNG. In 2018, the country exported 21 million tonnes (mt) of LNG, accounting for 6.6% of the global market share, while still importing 1.5 mt. In that year, the US ranked as the fourth largest LNG exporter in the world after Qatar, Australia and Malaysia. The Energy Information Administration (EIA) has forecasted that the start-up of all planned US liquefaction trains will increase the country's export capacity to 8.9 billion cubic feet per day (bcf/d), equivalent to 91 billion cubic meters per annum (bcm/a) by the end of 2019, easily surpassing Malaysia as the third largest exporter in the world. Production levels outpaced domestic consumption for the second consecutive year in 2018. Stirling LNG expects US exports to increase steadily as new liquefaction trains start operations.

U.S LNG export capacity, 2016-2021



Source: EIA

US LNG IMPORTS

Despite the abundance of cheap LNG, the US has no Jones Act-qualified LNG carriers. Under the 1920 Jones Act, shipments between two US ports must be executed by US-flagged carriers. Therefore, LNG imports from existing export terminals in Texas and Louisiana cannot take place due to the lack of US-flagged LNG tankers. As a result, Massachusetts regasification facilities must import LNG from outside the US. In 2018, the US imported 2.1 mt of LNG, with almost all of it coming from Trinidad & Tobago.

NEW US LIQUEFACTION TERMINALS

In 2018, the US had the world's fifth largest LNG liquefaction capacity. The start-up of the Sabine Pass export terminal was a major source of incremental growth in capacity, which increased by 5.6 mt to 24.6 mt. The utilization rate of existing US liquefaction facilities was 96%. In addition, the US now has 66 mtpa of liquefaction capacity recently commissioned, under construction or successfully sanctioned (table below).

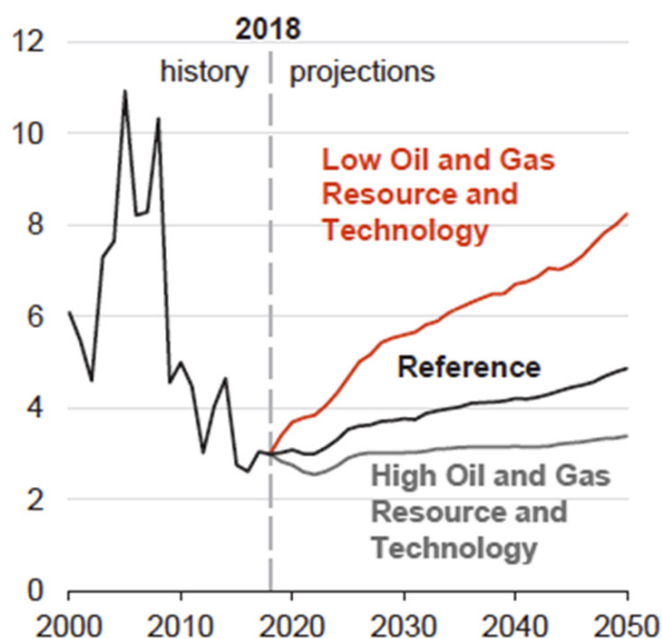
NEW US LIQUEFACTION FACILITIES

	Project	Start-up Year	Nameplate Capacity (mtpa)
Operating	Cameron T1	2019	4.0
	Corpus Christi T1	2019	4.5
	Corpus Christi T2	2019	4.5
	Freeport T1	2019	5.1
	Sabine Pass T5	2019	4.5
Commissioning	Cameron T2	2020	4.0
	Cameron T3	2020	4.0
	Elba Island T1-6	2020	1.5
	Elba Island T7-10	2020	1.0
Construction	Corpus Christi T3	2021	4.5
	Freeport T2	2020	5.1
	Freeport T3	2020	5.1
	Golden Pass T1	2025	5.2

	Project	Start-up Year	Nameplate Capacity (mtpa)
Pre-FID	Golden Pass T2	2025	5.2
	Golden Pass T3	2026	5.2
	Freeport T4	2023	5.0

Stirling LNG expects that additions in liquefaction capacity will contribute to supporting Henry Hub prices in the medium term, although continued plentiful supply from shale gas production will limit upside potential. In its reference case, the EIA sees Henry Hub prices below \$4/Mmbtu until the mid-2030s (chart below).³

HENRY HUB PRICE SCENARIOS



Source: EIA

US-CHINA TRADE WAR & US/EU LNG COOPERATION

FIDs on LNG export infrastructure by investors will depend on future off-take contracts and destination opportunities. The Chinese government has set ambitious targets for LNG in its energy mix, which is desired to reach 10% by 2020. Stirling LNG expects that a favourable US-China trade deal could pave the way for increasing supplies of American LNG to the Chinese market.

In Europe, EU-US strategic cooperation in the gas sector has been considerably strengthened. Between July 2018 and February 2019, EU imports of LNG from the US increased by 272%.

CANADA

Currently Canada has 14 mtpa of LNG liquefaction capacity under construction (table below). Moreover, Canadian proposed liquefaction capacity amounts to 211 mtpa. FIDs will depend on a variety of investment considerations. The greenfield locations characterising many proposed developments have driven up cost estimates due to the need for further infrastructure developments to connect the production locations to terminals on the coast. Nevertheless, Stirling LNG expects that planned trains in British Columbia will benefit from proximity to the Pacific Ocean and the shorter shipping distances to Asia (compared with Atlantic coast projects), thus avoiding the Panama Canal.

NEW CANADA LIQUEFACTION FACILITIES

	Project Name	Start-up Year	Nameplate Capacity (mtpa)
Construction	LNG Canada T1	2024	7
	LNG Canada T2	2025	7

SOUTH AMERICA

The LNG market in South America is a story of both supply and demand. On the supply side, the largest exporter is currently Peru which, in 2018, exported 3.5 mt (4.8 bcm) of LNG, mainly to Europe and Asia Pacific. Peru has been exporting stable levels of LNG since 2011.

On the demand side, the largest importers in the region are currently Chile, Argentina and Brazil which, between them, imported 7.8 mt (10.8 bcm) of LNG in 2018. Brazil's power market contains a high degree of hydro capacity which is dependent on rainfall to generate. Hence in years where rainfall in Brazil is low, more gas-fired back up generation is required, increasing Brazil's demand for LNG imports. Brazil's reliance on gas as part of its power sector diversification strategy is underscored by its investment in two additional import terminals (table below) which, when completed, will nearly double its import capacity from 9.8 mtpa to 19.0 mtpa.

NEW BRAZIL IMPORT FACILITIES

	Project Name	Start-up Year	Import Capacity (mtpa)
Construction	Sergipe FSRU	2020	3.6
	Port of Acu FSRU	2021	5.6

CONCLUSION

This report has shown that the Americas is a vibrant region of LNG infrastructure development activity. Exploiting its domestic gas production boom, the US continues to steam ahead with its build out of export terminals with at least 20 mtpa of export capacity coming online in 2019 alone and significantly more capacity in the development pipeline. Meanwhile, Canada is set to join the global export market in the coming years as it seeks to exploit its west coast proximity to the Asian market. On the demand side, Brazil is looking to double its import capacity in the next two years as it diversifies its power sector away from reliance on hydro generation.

In addition to the Americas, we also provide detailed LNG analysis in other key regions including Asia Pacific, Europe, Sub-Saharan Africa and MENA.

In addition to advising on the portfolio construction for the purchase of medium to long term LNG contracts for off-takers, the firm also advises on project finance on oil and gas infrastructure projects. For further information, please visit www.stirlinglng.com.

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ABOUT STIRLING INFRASTRUCTURE

Stirling LNG is a division of Stirling Infrastructure Partners. Stirling LNG performs three key functions:

Buying and selling LNG on behalf of off-takers and LNG suppliers on short, medium and long-term contracts. The firm provides purchase and sales solutions to finance these contracts.

Arranging capital for gas infrastructure and advising on the acquisition and disposal of upstream, midstream, and downstream oil and gas assets.

Arranging capital for major oil & gas companies and project sponsors. The firm specialises in financing the development of new and existing gas power plants and gas infrastructure. This includes both floating and on-land assets.

DISCLAIMER

This document has been prepared for information purposes only and does not represent advice. Stirling LNG can provide advice on a case-by-case basis depending on a specific project and requirements of our client.

For further information please contact:

Stirling Infrastructure Partners Limited
84 Brook Street
London
W1K 5EH

Tel: +44 (0)20 7629 3030

contact@stirlinginfrastructure.com

www.stirlinglng.com



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