B09

CSG to LNG — a 10 year retrospective of Queensland's LNG industry

Jon Thomas
Department of Natural Resources, Mines and Energy

Queensland Government

CSG to LNG
a 10 year retrospective of Queensland's LNG industry

A decade on from the submission of project initial advice statements (IAS) to Queensland Government agencies in 2008, this paper analyses the journey to development of three integrated coal seam gas (CSG) to liquefied natural gas (LNG) mega-projects currently delivering gas and LNG to domestic and international markets.

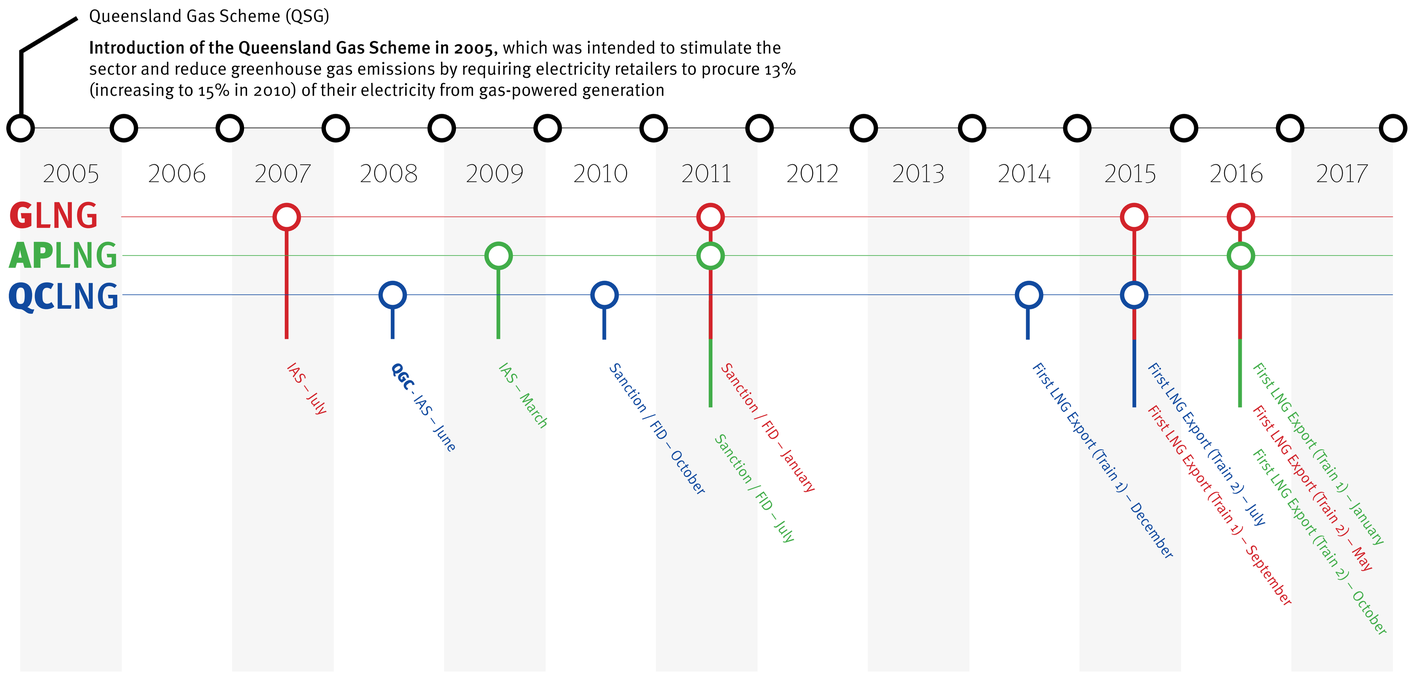
The process from development concept to operating asset is reviewed from a number of perspectives including: project rationale; regulatory approvals; project description, and project delivery.

Project delivery is further considered in terms of the upstream (gas field appraisal and development), and midstream (pipeline delivery and construction of LNG facilities on Curtis Island).

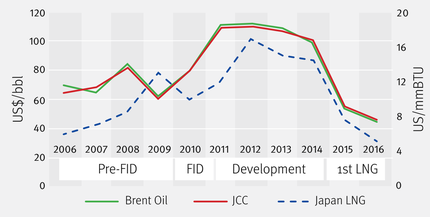
The delivery of global first CSG to LNG is discussed, using a sample of contemporary integrated LNG projects—with particular focus on project execution during significant volatility in global oil, gas, and LNG markets.

Queensland Gas Scheme (QSG)

Introduction of the Queensland Gas Scheme in 2005, which was intended to stimulate the sector and reduce greenhouse gas emissions by requiring electricity retailers to procure 13% (increasing to 15% in 2010) of their electricity from gas-powered generation



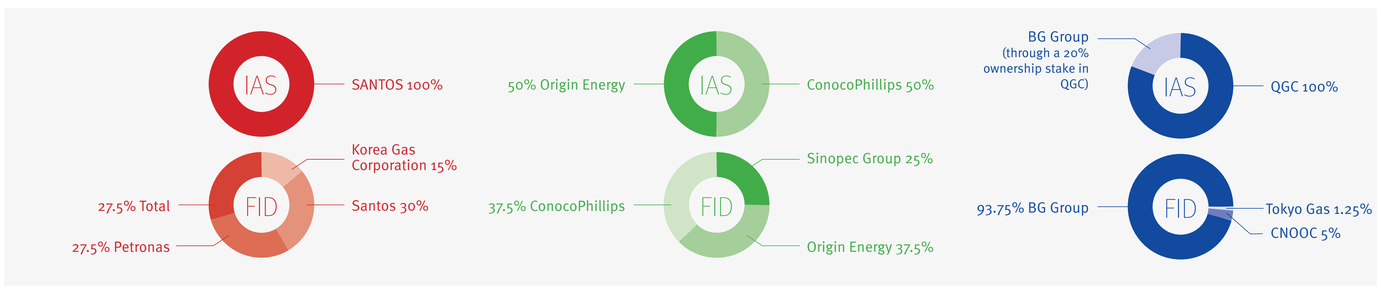
The chart below shows the price of LNG (which is indexed on the international oil price, shown here as the Brent Crude price) at key stages in the development of the Queensland CSG–LNG projects. The projects reached Final Investment Decision (FID) at a time in which oil, and therefore LNG prices were rising. Prices began to fall quite dramatically as all three projects entered the development stage. This has posed significant challenges for the Queensland CSG–LNG industry, particularly in terms of further gas development over the short-term.



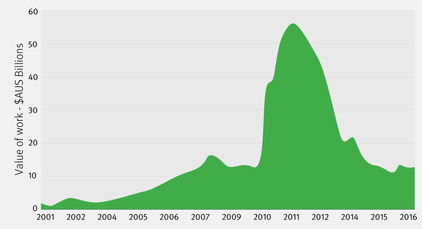
Brent Crude, Japanese Crude Cocktail (JCC) and LNG prices.
Source: Plattshttps://www.spglobal.com/platts/en

PROJECT PARTNERS

The novel nature of the world first CSG to LNG developments required a "learning by doing" approach which drove the projects evolution. All three proponents mitigated the inherent risks of mega project delivery by partnering. Strategic partnering satisfied several requirements including technical and operational expertise, capital investment and integration into the global LNG value chain.



The Queensland CSG–LNG projects represent the largest concentration of capital invemstment in Australia's history. The chart below shows that from late 2010, engineering expenditure in Queensland increased dramatically due to each of the projects entering into the construction phase of their development.



Queensland planned engineering and non-residential construction.
Source:ABShttp://www.abs.gov.au/.

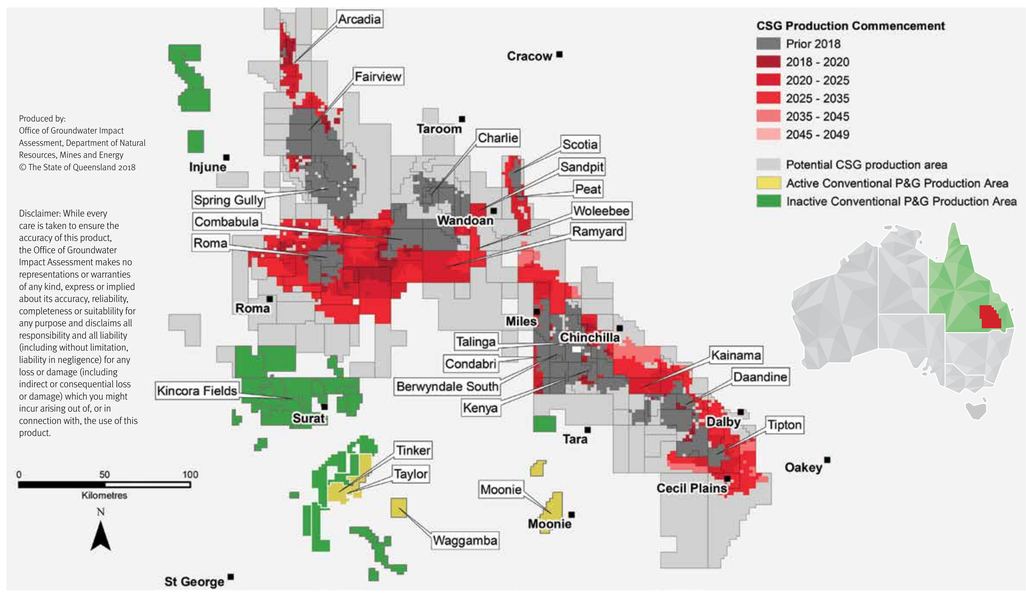
KEY PROJECT EVOLUTION INFORMATION

All three projects included a single vertically integrated operation of upstream onshore gas field development; mid-stream large diameter buried steel export pipeline; and downstream LNG trains, with ship loading facilities. Over time from the IAS to the commissioning of the LNG trains, the performance of upstream developments informed the size of the downstream requirements, which resulted in a revision of the number of planned trains.

Project		Upstream	Downstream
GLNG	IAS	• Operated Surat Basin • Other supply options	• 1 Train (3.0 to 4.0 mtpa)
	Delivered	• Operated Surat Basin • 3rd party	• 2 Trains (total 7.8 mtpa)
APLNG	IAS	• Operated Surat Basin	• 4 Trains (total 16.0 mtpa) • Trains 2 & 3 post 2015
	Delivered	• Operated Surat Basin	• 2 Trains (total 16.0 mtpa)
QCLNG	IAS	• Operated Surat Basin	• 3 Trains (total 12.0 mtpa) • Train 3 contingent on gas reserves
	Delivered	• Operated Surat Basin	• 2 Trains (total 8.5 mtpa)

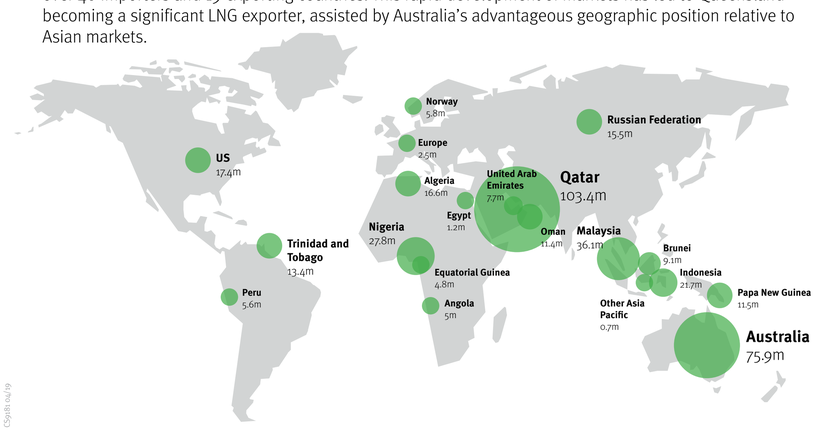
FIELD DEVELOPMENT

The figure below illustrates the current and forcast development footprint of the CSG fields in the Surat Basin. The footprint has changed over the life of the projects as sweet spots have been developed and progressive step-out of gas field development has occurred. The figure also shows the total area currently held under tenure that is not yet in the development scenario. Further exploration and appraisal is likely required to determine the commerciality of these undeveloped areas.



TOP 20 EXPORTERS TO THE ASIA-PACIFIC REGION 2017

In 2000 the global LNG trade consisted of 11 importing and 12 exporting countries. By 2017 there were over 40 importers and 19 exporting countries. This rapid development of markets has led to Queensland becoming a significant LNG exporter, assisted by Australia's advantageous geographic position relative to Asian markets.



This 10 year retrospective of the delivery of the global first CSG to LNG has examined the evolution of Queensland's gas industry from the Initial Advice Statements to a world leading LNG exporter. Whilst this study draws no specific conclusions, the development journey is not yet complete. It is expected that the CSG to LNG industry in Queensland will continue to mature as the local and global market conditions evolve.

Queensland Government

CS9518 04/19