Asia Petrochemical Industry Conference 2016

Country Report

From

Singapore

Prepared by:

Singapore Chemical Industry Council Limited (SCIC)

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Singapore

Country Report - Singapore

Facts on Singapore

a. Land and Climate

Total Land Area:	715.8 sq km. Comprising one main island and a number of islets scattered off its north-east and south.
Climate:	Singapore is an equatorial country with relatively uniform temperature, high humidity and abundant rainfall.
Average Daily Temperature:	25.1 – 31 degree Celsius
Time:	GMT +8 Hours

b. People

Total Population: (2015)	5.5 million
Population Density: (2015)	7,697 per sq km
Population by Race:	Chinese (74.3%) Malays (13.3%) Indians (9.1%) Others (3.3%)
Official Languages:	English (Language of Administration) Chinese (Mandarin) Malay (National Language) Tamil

c. Government

Singapore is a republic with a parliamentary system of government based on the Westminster model.

The organs of state comprise:

The Executive: Head of State and Cabinet

Head of State:	President Tony Tan Keng Yam, - elected in 2011 (The President is elected for a fixed term of 6 years)
Cabinet:	Led by the Prime Minister, Mr Lee Hsien Loong (since 12 Aug 2004)

Parliament

Parliament is elected by general election every five years. The first sitting of Parliament was held on 8 Dec 1965. The first general election for Parliament was held on 13 Apr 1968.

The Judiciary: The Supreme Court and the Subordinate Courts

The Judiciary is one of the three constitutional pillars of government along with the Legislature and the Executive. As an Organ of State, the Judiciary's function is to independently administer justice. The Judiciary is safeguarded by the Constitution.

d. Economic Indicators

Currency:	Singapore Dollar (SGD) which is divided into 100 cents
Money Supply:	$160.45 billion (as of 2015)
Official Foreign: Reserves	$350.99 billion (as of 2015)

Overview of Singapore's Economy in 2014

Year	GDP at 2010 Market Prices (S$ M)	% Growth
2012	354,937.3	3.7
2013	371,531.5	4.7
2014	383,643.6	3.3
2015	**391,348.5***	**2.0***

Overview of Manufacturing Sector Performance in 2015

Year	Total Output (S$ M)	% Growth
2012	300,702.8	5.3
2013	290,476.0	- 3.4
2014	303,889.0	4.6
2015	**282,978.9***	**-6.8***

** Figures are provisional at the time of printing. All statistics indicated above have been extracted from the Singapore Department of Statistics*

Overview of Chemical Cluster Performance in 2015

The Singapore chemical cluster comprises the Petroleum, Petrochemicals and Specialties sub-sectors.

The chemical industry's output in 2015 registered a lower output of $81.04 billion, a decrease of 21.3% from S$103 billion in 2014.

The chemical cluster still continued being one of the key contributors within the manufacturing sector, contributing about 28.6 % to the overall manufacturing output in 2015.

Year	Chemical Cluster Output (S$ Bn)	% Growth
2012	102.06	5
2013	97.11	- 4.9
2014	103	34.1
2015	**81.04***	**-21.3**

** Figures are provisional at the time of printing. All statistics indicated above have been extracted from the Singapore Department of Statistics*

Chemical Industry Sectoral Performance in 2015

Petroleum

Petroleum sector contributed an output of S$32.91 billion in 2015 as compared to S$46.48 billion in 2014 due to the low crude situation.

Petrochemicals

The petrochemicals sector output is recorded as S$34.41 billion in 2015

Specialties

The specialties sector output is recorded as S$9.46 billion in 2015

	2012	2013	2014	2015
	Value (S$Bn)	Value (S$Bn)	Value (S$Bn)	Value (S$Bn)
Petroleum Sector	57.40	51.32	46.48	**32.91***
Petrochemical Sector	32.96	34.58	41.76	**34.41***
Specialties Sector	9.78	9.37	9.92	**9.46***

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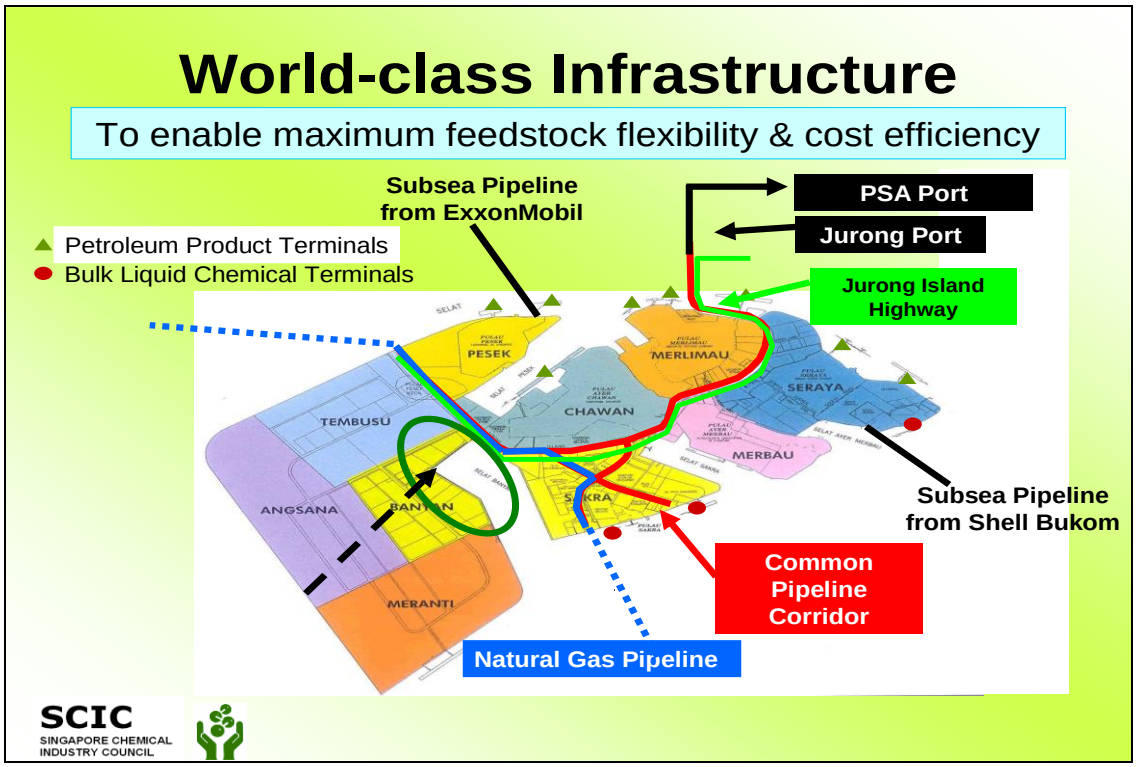
Location of Petrochemical Plants in Singapore – Jurong Island

Jurong Island is located on the western coast of Singapore. It is home to leading petrochemical companies as well as third party service providers of utilities, tankages and terminalling facilities, warehouses, maintenance and repair centres.



Singapore firmly believes in the permanence of the outsourcing trend. Today, companies on Jurong Island are able to outsource non-core manufacturing operations like utilities, waste treatment, logistics and storage and terminalling. This translates to lowering of fixed capital investments by 10-15%, hence generating a better return on capital employed.

Jurong Island will be developed into a chemical transshipment centre for the region. 80 hectares of land has been designated for the logistics hub (Banyan Logistics Node) for the movement of bulk chemicals. Companies can also export bulk solids using Singapore's main port (PSA) which is less than 10 kilometres away.

Companies can also work with the Institute of Chemical Engineering & Sciences (ICES), located in Jurong Island itself, in areas ranging from basic chemical R&D (eg. catalysis) to process optimisation.

The Island is getting ready for the future with the Jurong Island Version 2.0 (JIv2.0) initiative. As Singapore gears itself for the increasing global competition, JIv2.0 is set to transform Singapore's petrochemicals hub with future-ready solutions. This initiative adopts a "whole-of-government" effort to enhance Jurong Island's competitiveness as well as sustainability by strengthening robustness of the current system, achieving a higher level of resource optimisation, and developing industrial optionality.

Key Developments in 2015/2016

The following are some developments that will further strengthen the growth of the Singapore chemical industry over the next few years:

- Lanxess

  On 27 August 2015, German chemicals company Lanxess opened a 200 million euro (S$318.5 million) plant in Jurong Island, one of the largest investments made by the firm worldwide.

  The neodymium butadiene rubber facility, which produces synthetic rubber that can increase fuel efficiency and performance in tires, is the German company's second plant in Singapore. It has a production capacity of 140,000 metric tons a year, and will generate about 100 highly skilled jobs, which will be largely filled by locals.

  Extracted from Singapore EDB website

- Solvay

  On 10 July 2015, Belgian specialty chemicals company Solvay opened a S$50 million alkoxylation plant on Jurong Island, which is its third and largest in Asia. The plant will complement existing facilities in India and China

  The plant produces special alkoxylate surfactants, which give liquids certain characteristics such as cleansing or emulsifying properties. They are used in agrochemicals, coatings, and oil and gas, or for home and personal care product. The large scale plant receives ethylene oxide, a key raw material, via a dedicated pipeline from Shell and can produce up to 50,000 tonnes of surfactants a year.

  Extracted from Singapore EDB website

- Total

  On 3 July 2015, French oil major Total opened its new lubricant oil-blending plant in Singapore, which is its largest in the world. Fully operational by October, the plant will double Total’s lubricant production here, and increase its regional capacity by 30 percent.

  The two-storey facility is part of the Singapore Lube Park, Total’s joint venture with oil majors Shell and Sinopec. This unique, synergistic

concept allows Singapore to optimise land use, while companies save cost through shared operations.

The new facility replaces Total's two existing plants in Singapore, and has the capacity to produce 310,000 metric tons per year of lubricants for automotive, industrial and marine applications mainly for the ASEAN market. It will also supply for its customers in China and India certain products that are not manufactured locally.

Extracted from Singapore EDB website

- Clariant

  On 10 June 2015, Swiss specialty chemicals company Clariant unveiled its Consumer Care Competence Centre in Singapore. Situated at the International Business Park, the centre is Clariant's fifth application development centre in Asia Pacific but its first to focus on sensorial testing for personal and home-care products.

  The centre includes an application lab, and aims to better align its products with customers in the Asia Pacific region.

  Extracted from Singapore EDB website

- Evonik

  On 8 May 2015, German specialty chemicals company Evonik Industries, unveiled its expanded oil additives plant on Jurong Island.

  With this expansion, Evonik will be producing 40 per cent of its global product portfolio in Singapore, transforming it into the largest of its five additive plants worldwide. To cater to production capacity that will nearly double, Evonik has increased the size of its local workforce by 20 per cent. In addition, Evonik has improved automation in the Jurong Island plant, which it expects to help reduce energy consumption and waste by 10 to 20 per cent.

  Extracted from Singapore EDB website

- Celanese

  On 28 April 2015, New York-listed chemicals gaint, Celanese Corporation, has begun construction of a vinyl acetate ethylene (VAE) emulsions production unit at its acetyls facility on Jurong Island.

The unit that is expected to begin production by mid-2016, will be the third VAE investment by Celanese in Asia. The Singapore plant will support not only the Southeast Asia market, but also other Asia Pacific countries including India, Australia and New Zealand.

Extracted from Singapore EDB website

- **Jurong Island Rock Cavern (JRC) Project**

Jurong Rock Cavern (JRC) is an innovative initiative driven by JTC to increase underground oil storage capacity on Jurong Island. JRC will comprise an oil storage complex to be built at subterranean depths beneath the seabed of Banyan Basin. Upon completion, the underground caverns will have a potential storage capacity of close to 3 million cubic metres catering specifically to liquid hydrocarbons like crude oil, condensates and diesel oil.

Phase 1 of the JRC consists of 8km of tunnels and 5 caverns housing a total of 9 storage galleries. The caverns were built using a technique that drills and blasts sedimentary rock. For greater stability, the inner walls were lined with rock bolts. Two of its access shafts and start-up tunnels have been completed in 2009 and the project is now moving on to the construction of the tunnels, caverns and associated facilities.

Phase 2 of the project will double the facility's storage capacity. GK-JCPL Consortium, a Jurong International partnership with French engineering firm Geostock, was awarded the contract to provide basic engineering design and construction management services for the Caverns and its associated facilities. Jurong International is responsible for many of the heavy infrastructure and engineering projects associated with Jurong Island, including its initial formation via reclamation and joining together of seven islands.

The completion of the first two caverns will yield a capacity of 0.48 million m^3. The entire facility with a capacity of 1.47 million m^3 of oil storage space will be made available to the oil storage industry. At 27m high, 20m wide and 340m long, the caverns stand as tall as a 9-storey building.

The caverns provide strategic storage for better fuel security. It also gives Singapore a competitive advantage to attract more investors.

JRC is a milestone project for JTC and marks the next phase in the evolution of Singapore's petroleum and chemicals industry.

Note: Information extracted from JTC website

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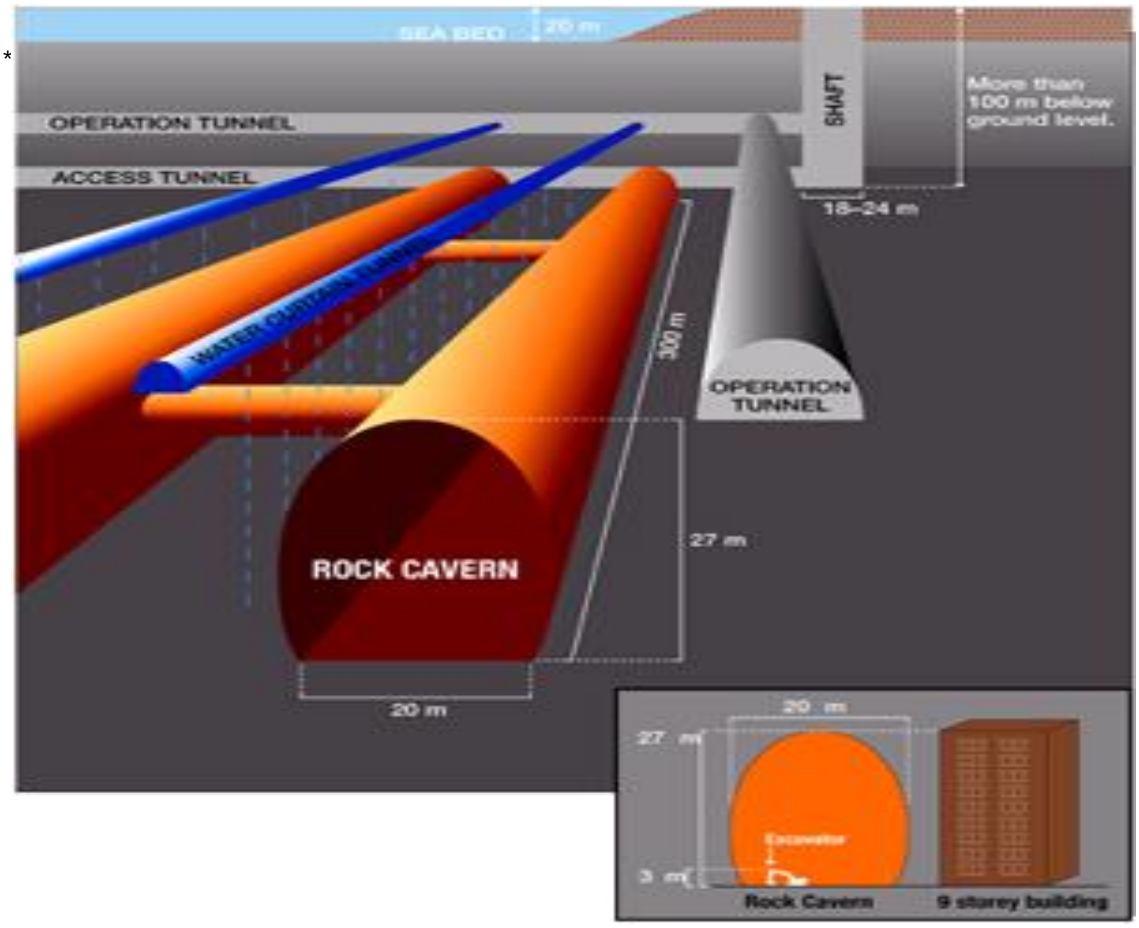

General Matters and Raw Materials Committee

Production Capacities of Products

Product	Total Production Capacity (tpa)*
ETHYLENE	3,960,000
PROPYLENE	1,770,000
BUTADIENE	455,000
BENZENE	1,278,000
TOULENE	382,000
XYLENES	1,704,000

Total Import of Main Products by Value

PRODUCT	2015
	Value($K)
ETHYLENE	67,422
PROPYLENE	85,504
BUTADIENE	26
BENZENE	542,191
TOLUENE	36,125
XYLENES	11,910

Total Export of Main Products by Value

PRODUCT	2015
	Value($K)
ETHYLENE	408,731
PROPYLENE	41,567
BUTADIENE	42,770
BENZENE	650,585
TOLUENE	370,978
XYLENES	880,210

Total Import of Main Products by Quantity

PRODUCT	2015
	Qty (Tons)
ETHYLENE	44,025
PROPYLENE	77,341
BUTADIENE	1
BENZENE	555,988
TOLUENE	40,665
XYLENES	10,283

Total Export of Main Products by Quantity

PRODUCT	2015
	Qty (Tons)
ETHYLENE	274,353
PROPYLENE	43,560
BUTADIENE	55,566
BENZENE	759,883
TOLUENE	390,627
XYLENES	813,753

Import/export data indicated above have been generated from the reports by Statlink, IE Singapore

Polyolefins Committee

Production Capacities of Products

Product	Total Production Capacity (tpa)
POLYETHYLENE	1,070,000
POLYPROPYLENE	1,085,000

Total Import of Main Products by Value

PRODUCT	2015
	Value($K)
POLYETHYLENE	1,569,730
POLYPROPYLENE	636,641

Total Export of Main Products by Value

PRODUCT	2015
	Value($K)
POLYETHYLENE	2,648,230
POLYPROPYLENE	1,585,825

Total Import of Main Products by Quantity

PRODUCT	2015
	Qty (Tons)
POLYETHYLENE	861,792
POLYPROPYLENE	359,813

Total Export of Main Products by Quantity

PRODUCT	2015
	Qty (Tons)
POLYETHYLENE	1,517,329
POLYPROPYLENE	950,034

Import/export data indicated above have been generated from the reports by Statlink, IE Singapore

Styrenics Committee

Production Capacities of Products

Product	Total Production Capacity (tpa)
STYRENE	940,000

Total Import of Main Products by Value

PRODUCT	2015
	Value($K)
STYRENE	1,347
POLYSTYRENE	14,436

Total Export of Main Products by Value

PRODUCT	2015
	Value($K)
STYRENE	1,120,689
POLYSTYRENE	65,687

Total Import of Main Products by Quantity

PRODUCT	2015
	Qty (Tons)
STYRENE	866
POLYSTYRENE	5,120

Total Export of Main Products by Quantity

PRODUCT	2015
	Qty (Tons)
STYRENE	764,962
POLYSTYRENE	37,134

Import/export data indicated above have been generated from the reports by Statlink, IE Singapore

Synthetic Fiber Raw Materials Committee

Production Capacities of Products

Product	Total Production Capacity (tpa)
ETHYLENE GLYCOL	902,000
ETHYLENE OXIDE	65,000

Total Import of Main Products by Value

PRODUCT	2015
	Value($K)
ETHYLENE GLYCOL	159,929
ETHYLENE OXIDE	1,675

Total Export of Main Products by Value

PRODUCT	2015
	Value($K)
ETHYLENE GLYCOL	1,297,342
ETHYLENE OXIDE	13

Total Import of Main Products by Quantity

PRODUCT	2015
	Qty (Tons)
ETHYLENE GLYCOL	133,812
ETHYLENE OXIDE	328

Total Export of Main Products by Quantity

PRODUCT	2015
	Qty (Tons)
ETHYLENE GLYCOL	1,147,022
ETHYLENE OXIDE	0.037

Import/export data indicated above have been generated from the reports by Statlink, IE Singapore

Chemicals Committee

Production Capacities of Products

Product	Total Production Capacity (tpa)
ACETONE	180,000
ACETYLENE	693,500
PHENOL	310,000
BISPHENOL – A	230,000

Total Import of Main Products by Value

PRODUCT	2015
	Value($K)
ACETONE	7,195
ACETYLENE	527
PHENOL	6,454
BISPHENOL – A	15,460

Total Export of Main Products by Value

PRODUCT	2015
	Value($K)
ACETONE	128,222
ACETYLENE	1,017
PHENOL	129,827
BISPHENOL – A	94,509

Total Import of Main Products by Quantity

PRODUCT	2015
	Qty (Tons)
ACETONE	7,361
ACETYLENE	23
PHENOL	4,027
BISPHENOL – A	2090

Total Export of Main Products by Quantity

PRODUCT	2015
	Qty (Tons)
ACETONE	158,689
ACETYLENE	523
PHENOL	104,079
BISPHENOL – A	60,536

Import/export data indicated above have been generated from the reports by Statlink, IE Singapore

About the Singapore Chemical Industry Council Limited

The Singapore Chemical Industry Council, or SCIC, is the official body representing companies from the chemical industry in Singapore. Its membership composition comprises key MNCs, SMEs, Logistics & Service Providers as well as Traders.

SCIC was officially formed under the umbrella of the former Singapore Manufacturers Association on 8th May 1979 by a group of 17 manufacturers. It was incorporated as an independent entity on 28 June 2007.

SCIC was appointed in April 2011 by SPRING Singapore - National Standards body to manage the National Chemical Standards committee & its technical committees

SCIC is also the national administrator of the Responsible Care initiative, endorsed by the International Council of Chemical Associations, to promote the spirit, principles and practices of Responsible Care to the Singapore Chemical Industry.

Through advocating Responsible Care, the chemical industry in Singapore can make a valuable contribution to the sustainable development and improvement of lives and the environment.