

Asia Petrochemical Industry Conference 2015

Country Report

From

Singapore

Prepared by:

Singapore Chemical Industry Council Limited (SCIC)

Asia Petrochemical Industry Conference 2015

Seoul, Korea

Country Report - Singapore

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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: (2012)	5.4 million
Population Density: (2012)	7,615 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: \$160.23 billion (as of 2014)

Official Foreign Reserves: \$340.44 billion (as of 2014)

Overview of Singapore's Economy in 2014

Year	GDP at 2005 Market Prices (S\$ M)	% Growth
2009	248,911.2	-1.0
2010	285,658.5	14.8
2011	299,624.7	4.9
2012	305,201.5	1.9
2013	324,592.4	6.4
2014	390,089.1*	2.8*

Overview of Manufacturing Sector Performance in 2014

Year	Total Output (S\$ M)	% Growth
2009	213,669	- 17.6
2010	270,494.7	26.7
2011	285,453.9	5.5
2012	300,702.8	5.3
2013	290,476.0	- 3.4
2014	303,889.0*	1.4*

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

Overview of Chemical Cluster Performance in 2014

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

The chemical industry's output in 2014 registered a higher output of \$101.88 billion, an increase of 29.1% from S\$97.11 billion in 2013.

The chemical cluster still continued being a key contributor, maintaining its position as the leading cluster within the manufacturing sector, contributing about 34.1 % to the overall manufacturing output in 2014.

Year	Chemical Cluster Output (S\$ Bn)	% Growth
2009	58.5	- 40.4
2010	81.3	39.0
2011	97.2	19.6
2012	102.06	5
2013	97.11	- 4.9
2014	103.48*	34.1*

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Chemical Industry Sectoral Performance in 2014

Petroleum

Petroleum output continued to be the strongest contributor to the overall manufacturing output of the chemical cluster. This sector contributed an output of S\$46.48 billion in 2014, compared to S\$51.32 billion in 2013.

Petrochemicals

The petrochemicals sector output rose from S\$36.51 billion in 2013 to S\$41.76 billion in 2014.

Specialties

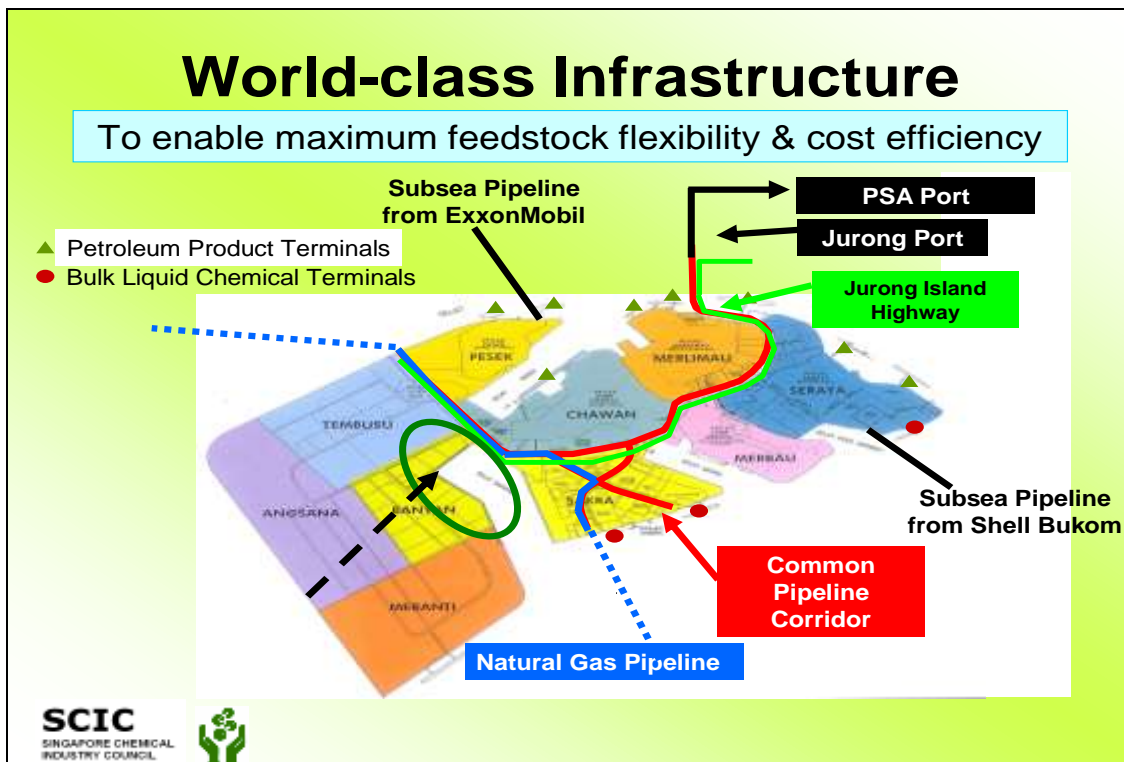
Specialties contribution rose from S\$9.61 billion in 2013 to S\$9.92 billion in 2014.

	2010	2011	2012	2013	2014
	Value (S\$Bn)	Value (S\$Bn)	Value (S\$Bn)	Value (S\$Bn)	Value (S\$Bn)
Petroleum Sector	42.3	54.8	57.40	51.32	46.48*
Petrochemical Sector	30.0	32.3	32.96	34.58	41.76*
Specialties Sector	6.9	8.0	9.78	9.37	9.92*

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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 (Jlv2.0) initiative. As Singapore gears itself for the increasing global competition, Jlv2.0 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 2014/2015

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

- **Chevron Oronite**

On 15th July 2014, Chevron Oronite has completed their expansion works in Jurong Island plant. The plant will be the largest additives manufacturing facility for Chevron Oronite in the Asia-Pacific region. The expansion will help meet the increase in lubricant demand in the growing markets such as China and India.

- **Infineum**

On 14th May 2014, Infineum open its new manufacturing facility in Jurong Island. This is a first salicylate plant of its kind in Asia Pacific that will manufacture calcium salicylate.

- **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 first two caverns are completed in 2013, and have yielded a capacity of 0.48 million m³. The entire facility is completed in 2014, with 1.47 million m³ 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

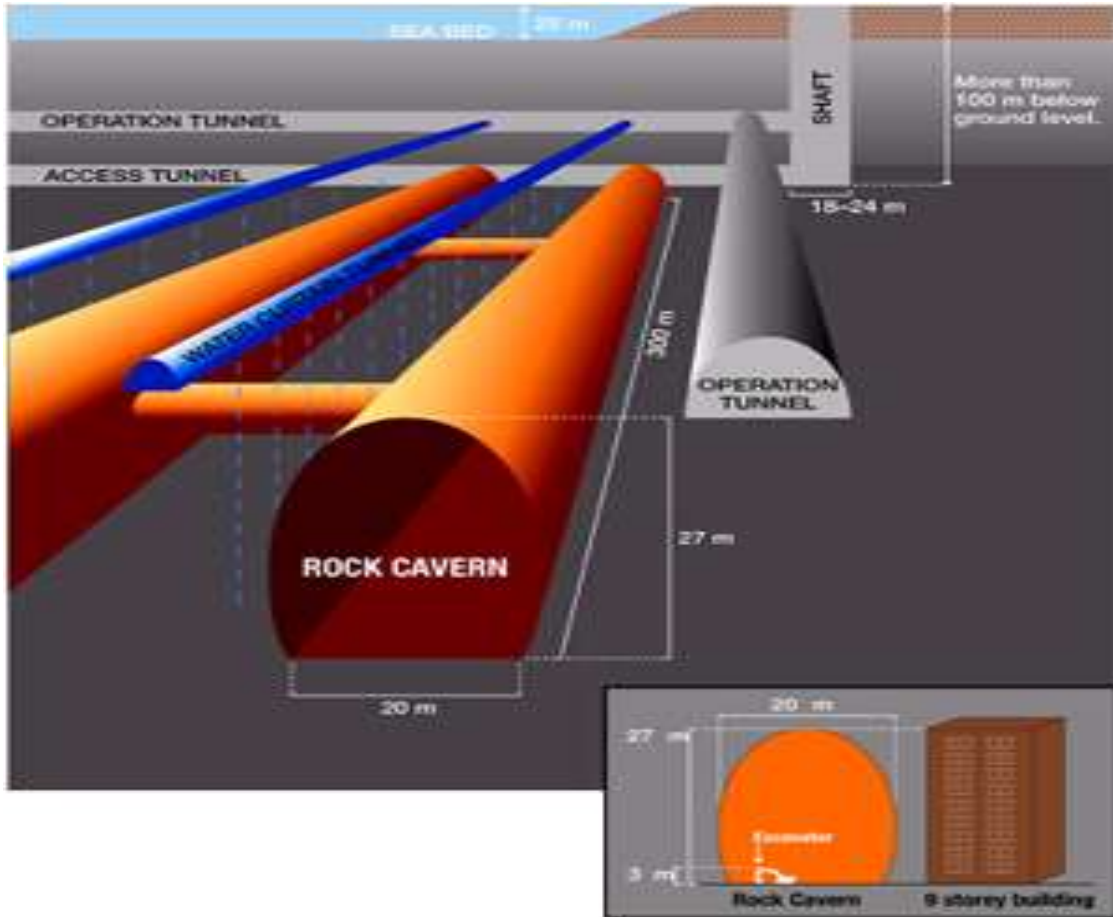
Jurong Rock Cavern

Competitive Storage Solution

Proposed location for underground storage

- Ready built storage
- Greater security
- Increase opportunity for trade

SCIC
SINGAPORE CHEMICAL
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**Image courtesy of JTC Corporation*

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	2014
	Value(\$K)
ETHYLENE	76,542
PROPYLENE	139,980
BUTADIENE	121
BENZENE	778,931
TOLUENE	13,175
XYLENES	7,921

Total Export of Main Products by Value

PRODUCT	2014
	Value(\$K)
ETHYLENE	487,245
PROPYLENE	110,752
BUTADIENE	129,219
BENZENE	460,476
TOLUENE	571,645
XYLENES	1,434,539

Total Import of Main Products by Quantity

PRODUCT	2014
	Qty (Tons)
ETHYLENE	46,478
PROPYLENE	90,245
BUTADIENE	13
BENZENE	484,689
TOLUENE	8,765
XYLENES	3,967

Total Export of Main Products by Quantity

PRODUCT	2014
	Qty (Tons)
ETHYLENE	274,769
PROPYLENE	61,219
BUTADIENE	113,928
BENZENE	334,349
TOLUENE	408,392
XYLENES	942,730

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	2014
	Value(\$K)
POLYETHYLENE	1,795,579
POLYPROPYLENE	648,448

Total Export of Main Products by Value

PRODUCT	2014
	Value(\$K)
POLYETHYLENE	2,882,747
POLYPROPYLENE	1,843,333

Total Import of Main Products by Quantity

PRODUCT	2014
	Qty (Tons)
POLYETHYLENE	986,937
POLYPROPYLENE	342,486

Total Export of Main Products by Quantity

PRODUCT	2014
	Qty (Tons)
POLYETHYLENE	1,419,612
POLYPROPYLENE	908,465

Styrenics Committee

Production Capacities of Products

Product	Total Production Capacity (tpa)
STYRENE	940,000

Total Import of Main Products by Value

PRODUCT	2014
	Value(\$K)
STYRENE	667
POLYSTYRENE	16,888

Total Export of Main Products by Value

PRODUCT	2014
	Value(\$K)
STYRENE	1,090,802
POLYSTYRENE	104,979

Total Import of Main Products by Quantity

PRODUCT	2014
	Qty (Tons)
STYRENE	317
POLYSTYRENE	5,520

Total Export of Main Products by Quantity

PRODUCT	2014
	Qty (Tons)
STYRENE	548,140
POLYSTYRENE	46,000

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	2014
	Value(\$K)
ETHYLENE GLYCOL	339,971
ETHYLENE OXIDE	1,478

Total Export of Main Products by Value

PRODUCT	2014
	Value(\$K)
ETHYLENE GLYCOL	1,526,471
ETHYLENE OXIDE	23

Total Import of Main Products by Quantity

PRODUCT	2014
	Qty (Tons)
ETHYLENE GLYCOL	277,259
ETHYLENE OXIDE	314

Total Export of Main Products by Quantity

PRODUCT	2014
	Qty (Tons)
ETHYLENE GLYCOL	1,226,120
ETHYLENE OXIDE	0.164

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	2014
	Value(\$K)
ACETONE	9,814
ACETYLENE	163
PHENOL	10,298
BISPHENOL – A	4,373

Total Export of Main Products by Value

PRODUCT	2014
	Value(\$K)
ACETONE	221,337
ACETYLENE	895
PHENOL	224,437
BISPHENOL – A	123,924

Total Import of Main Products by Quantity

PRODUCT	2014
	Qty (Tons)
ACETONE	6,476
ACETYLENE	11
PHENOL	4,777
BISPHENOL – A	1,565

Total Export of Main Products by Quantity

PRODUCT	2014
	Qty (Tons)
ACETONE	161,735
ACETYLENE	271
PHENOL	120,186
BISPHENOL – A	57,044

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.