Asia Petrochemical Industry Conference 2014

Country Report

From

Singapore

Prepared by:

Singapore Chemical Industry Council Limited (SCIC)

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Pattaya, Thailand

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: (2012)	5.4 million
Population Density: (2012)	7,422 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:	$154.60 billion (as of 2013)
Official Foreign: Reserves	$344.73 billion (as of 2013)

Overview of Singapore's Economy in 2013

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***

Overview of Manufacturing Sector Performance in 2013

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***

** 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 2013

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

The chemical industry's output in 2013 registered a lower output of $97 billion, a 4.9% drop from S$102.06 billion in 2012.

The chemical cluster still continued being a key contributor, maintaining its position as the leading cluster within the manufacturing sector, contributing about 34 % to the overall manufacturing output in 2012.

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***

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Chemical Industry Sectoral Performance in 2013

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$51.32 billion in 2013, compared to S$57.40 billion in 2012.

Petrochemicals

The petrochemicals sector output rose from S$32.96 billion in 2012 to S$34.58 billion in 2013.

Specialties

Specialties contribution dropped from S$9.78 billion in 2012 to S$9.37 billion in 2013.

	2009	2010	2011	2012	**2013**
	Value (S$Bn)	Value (S$Bn)	Value (S$Bn)	Value (S$Bn)	Value (S$Bn)
Petroleum Sector	31.8	42.3	54.8	57.40	**51.32***
Petrochemical Sector	19.3	30.0	32.3	32.96	**34.58***
Specialties Sector	7.3	6.9	8.0	9.78	**9.37***

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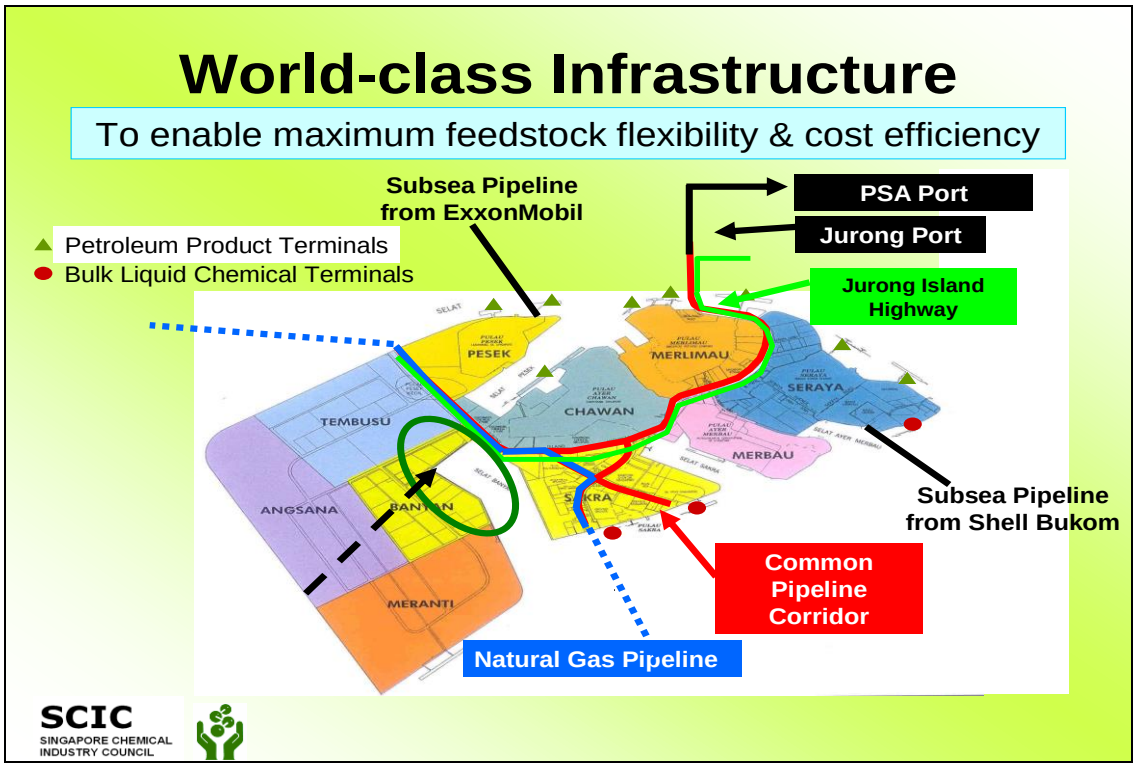
Location of Petrochemical Plants in Singapore – Jurong Island

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 2013/2014

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

- **Sumitomo Chemicals**

On 7th Mar 2014, Sumitomo Chemical opened its first solution-styrene butadiene rubber (S-SBR) plant in Asia outside Japan. The plant will make Singapore's Jurong Island one of the largest manufacturing sites for synthetic rubber globally.The plant, which will serve customers in Asia, Europe and North America, has an annual capacity of 40,000 metric tons.

- **ExxonMobil**

ExxonMobil opened a multibillion-dollar plant expansion on Jurong Island on 8 Jan 2014 which doubled the company's production capacity in Singapore. The facility in Jurong Island now accounts for about one quarter of ExxonMobil's global chemical capacity and it is the largest-ever chemical expansion.

- **Shell**

On 16th April 2013, Shell broke ground on Jurong Island for new production units which will add to Shell's existing high-purity ethylene oxide (HPEO) and alcohol ethoxylates capacity. This will cater to the growing demand from the region. Shell's investment paves the way for additional downstream specialty chemicals projects such as Solvay Novecare, which also announced the construction of an alko facility which will be integrated with Shell's HPEO plant.

- **Singapore Liquified Natural Gas (SLNG) Terminal**

Singapore Liquified Natural Gas (SLNG) Terminal receiving terminal was completed and commenced operations on 7 May 2013. It has an initial capacity of 3.5 million tonnes per annum (Mtpa) and increased to 6 Mtpa at the end of 2013 when a third tank, a second jetty and regasification facilities were completed. The terminal's throughput capacity will further rise to 9 million tonnes per annum when the fourth tank and its related regasification facilities are constructed.

- **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.

When the first two caverns are completed in 2013, they will yield a capacity of 0.48 million m^3. By the time the entire facility is completed in 2014, 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

Jurong Rock Cavern

Competitive Storage Solution

Proposed location for underground storage

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

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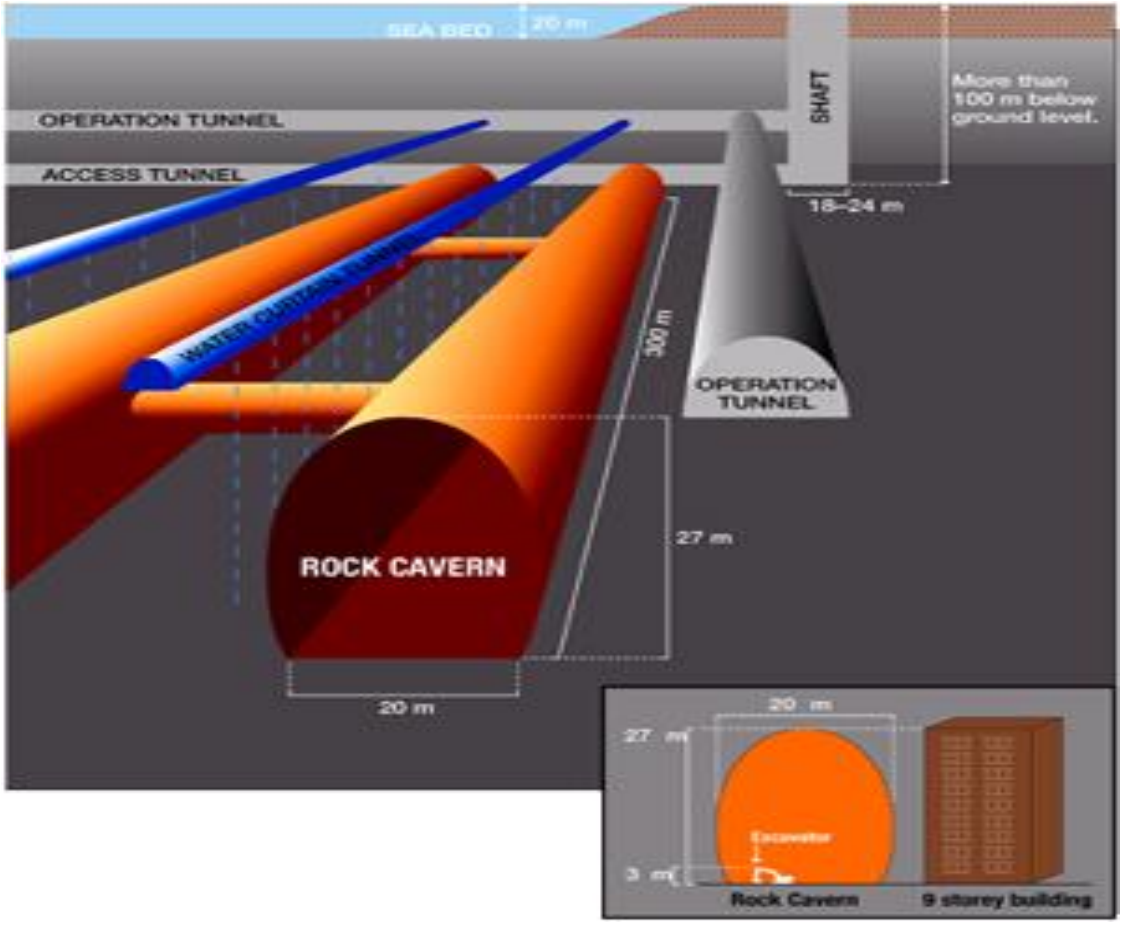

*Image courtesy of JTC Corporation

General Matters and Raw Materials Committee

Production Capacities of Products

Product	Total Production Capacity (tpa)*
ETHYLENE	3,800,000
PROPYLENE	1,770,000
BUTADIENE	455,000
BENZENE	1,373,000
TOULENE	242,000
XYLENES	1,500,000

Total Import of Main Products by Value

PRODUCT	2013
	Value($K)
ETHYLENE	32,470
PROPYLENE	93,569
BUTADIENE	8
BENZENE	800,980
TOLUENE	31,689
XYLENES	93,730

Total Export of Main Products by Value

PRODUCT	2013
	Value($K)
ETHYLENE	239,848
PROPYLENE	78,902
BUTADIENE	117,603
BENZENE	118,949
TOLUENE	504,446
XYLENES	1,473,923

Total Import of Main Products by Quantity

PRODUCT	2013
	Qty (Tons)
ETHYLENE	17,100
PROPYLENE	55,591
BUTADIENE	0.004
BENZENE	473
TOLUENE	21
XYLENES	48

Total Export of Main Products by Quantity

PRODUCT	2013
	Qty (Tons)
ETHYLENE	144,747
PROPYLENE	49,838
BUTADIENE	114
BENZENE	73
TOLUENE	335
XYLENES	783

Polyolefins Committee

Production Capacities of Products

Product	Total Production Capacity (tpa)
POLYETHYLENE	860,000
POLYPROPYLENE	1,085,000

Total Import of Main Products by Value

PRODUCT	2013
	Value($K)
POLYETHYLENE	1,583,766
POLYPROPYLENE	617,757

Total Export of Main Products by Value

PRODUCT	2013
	Value($K)
POLYETHYLENE	2,731,489
POLYPROPYLENE	1,592,150

Total Import of Main Products by Quantity

PRODUCT	2013
	Qty (Tons)
POLYETHYLENE	436
POLYPROPYLENE	353

Total Export of Main Products by Quantity

PRODUCT	2013
	Qty (Tons)
POLYETHYLENE	1,442
POLYPROPYLENE	820

Styrenics Committee

Production Capacities of Products

Product	Total Production Capacity (tpa)
STYRENE	1,260,000

Total Import of Main Products by Value

PRODUCT	2013
	Value($K)
STYRENE	304
POLYSTYRENE	16,503

Total Export of Main Products by Value

PRODUCT	2013
	Value($K)
STYRENE	1,593,602
POLYSTYRENE	134,206

Total Import of Main Products by Quantity

PRODUCT	2013
	Qty (Tons)
STYRENE	0.1
POLYSTYRENE	5.8

Total Export of Main Products by Quantity

PRODUCT	2013
	Qty (Tons)
STYRENE	753
POLYSTYRENE	55.1

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	2013
	Value($K)
ETHYLENE GLYCOL	380,264
ETHYLENE OXIDE	1,446

Total Export of Main Products by Value

PRODUCT	2013
	Value($K)
ETHYLENE GLYCOL	1,783,465
ETHYLENE OXIDE	25

Total Import of Main Products by Quantity

PRODUCT	2013
	Qty (Tons)
ETHYLENE GLYCOL	277,041
ETHYLENE OXIDE	314

Total Export of Main Products by Quantity

PRODUCT	2013
	Qty (Tons)
ETHYLENE GLYCOL	1,302,186
ETHYLENE OXIDE	0.2

Chemicals Committee

Production Capacities of Products

Product	Total Production Capacity (tpa)
ACETONE	180,000
ACETYLENE	693,500
PHENOL	300,000
BISPHENOL – A	230,000

Total Import of Main Products by Value

PRODUCT	2013
	Value($K)
ACETONE	13,083
ACETYLENE	231
PHENOL	7,140
BISPHENOL – A	3,687

Total Export of Main Products by Value

PRODUCT	2013
	Value($K)
ACETONE	162,606
ACETYLENE	734
PHENOL	104,212
BISPHENOL – A	140,751

Total Import of Main Products by Quantity

PRODUCT	2013
	Qty (Tons)
ACETONE	9,421
ACETYLENE	118
PHENOL	3,524
BISPHENOL – A	1,523

Total Export of Main Products by Quantity

PRODUCT	2013
	Qty (Tons)
ACETONE	121,502
ACETYLENE	443
PHENOL	58,631
BISPHENOL – A	61,336

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.