

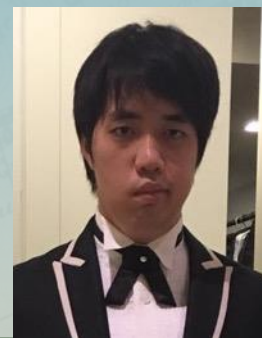
2018 AFEO SINGAPORE COUNTRY REPORT

Presented by Mr. Ong Eng Teck,
IES Council Member

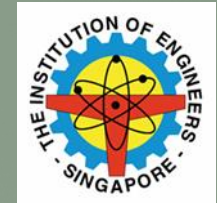


12 - 14 November 2018
Resorts World Sentosa, Singapore

YOUNG ENGINEERS COMMITTEE (YEC)



TOP ENGINEERING COMPANIES



SINGAPORE'S 27 LARGEST ENGINEERING FIRMS

2016	ENGINEERING FIRM	2015	TOTAL NUMBER OF REGISTERED ENGINEERS		2016 BREAKDOWN			TOTAL NUMBER OF STAFF	KEY EXECUTIVE OFFICER
			2016	2015	MECHANICAL	CIVIL	ELECTRICAL		
1	SURBANA JURONG	1	70	81	14	42	14	2,789	WONG HEANG FINE
2	AECOM SINGAPORE	2	36	37	3	28	5	738	BILLY WONG
3	PARSONS BRINCKERHOFF	3	33	31	9	17	7	-	RAYMOND LO
4	ARUP SINGAPORE	4	25	27	3	21	1	300	CHIA WAH KAM
4	WORLEYPARSONS	10	25	18	5	11	9	290	EDMUND POH
6	T.Y.LIN INTERNATIONAL	6	23	21	5	15	3	212	TEH HEE SEANG
7	BECA CARTER HOLLINGS AND FERNER (S.E.ASIA)	5	21	25	7	9	5	197	TAN KIAT LEONG
8	MEINHARDT SINGAPORE (INCLUDING MEINHARDT INFRASTRUCTURE)	6	20	21	4	13	3	323	SHAHZAD NASIM OMAR SHAHZAD LEE BEE WAH THOMAS SIT
8	CPG CONSULTANTS	8	20	20	5	13	2	1997	KHEW SIN KOON
10	MOTT MACDONALD SINGAPORE	9	19	19	4	13	2	400	YOU FOOK HIN

2017 TOP COMPANIES



- **Surbana Jurong Private Limited** is a Singapore government-owned consultancy company focusing on infrastructure and urban development.
- Wholly owned by [Temasek Holdings](#) and had 13,000 employees.

One of the **largest**
Asia-based urban, industrial and
infrastructure consulting firms

Over **50 years**
track record of successful
project delivery

Completed master planning for
over **30 countries**

Planned over **100**
industrial parks
worldwide

Increased Singapore's land mass
by **16%** through reclamation

Designed
over **1 million**
homes in Singapore

2017 TOP COMPANIES



- **AECOM** is an American multinational engineering firm that provides design, consulting, construction, and management services to a wide range of clients.
- 87,000 employees, and is 161th on the 2017 Fortune 500 list.

Number 1 Global Design Firm.

World's **Most Admired** Companies in last 3 years

More than **150 countries.**

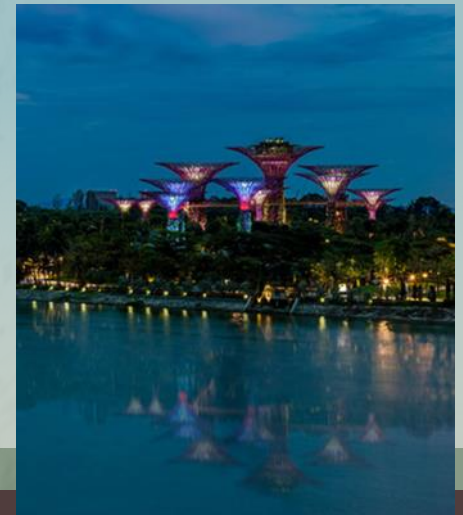
Leader in all key markets (transportation, environmental, energy, oil and gas, water).

Involved in LTA's **Travel Smart** Pilot Programme

2017 TOP COMPANIES



- **AECOM CPG Corporation** is the corporatised entity of the former Public Works Department of Singapore.
- Providing building and infrastructure development and management service in Asia-Pacific Region
- 2,000 talented and passionate individuals developing smart cities of the future.



MAJOR CONFERENCES



18 - 21 JULY 2017, SUNTEC SINGAPORE
WORLD ENGINEERS SUMMIT
APPLIED ENERGY SYMPOSIUM & FORUM



**WORLD CITIES
SUMMIT 2018**

8 - 12 JULY 2018
Marina Bay Sands, Singapore

Liveable & Sustainable Cities:
Embracing the Future through
Innovation and Collaboration



TECHINNOVATION
SINGAPORE 18 - 19 SEPT 2018
MARINA BAY SANDS

ENGINEERING ECOSYSTEM :BUSINESS ENVIRONMENT



- Safety and Security

Singapore has one of the lowest crime rates not only in the Southeast Asian region, but worldwide. **A noteworthy achievement for a global metropolis!**

<https://www.straitstimes.com/business/economy/singapore-is-worlds-best-expat-destination-for-third-straight-year-survey>

ENGINEERING ECOSYSTEM :BUSINESS ENVIRONMENT



- Ease of Doing Business

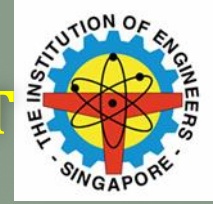
Singapore ranks **2nd** among 190 economies in the Ease of Doing Business, according to the findings of World Bank's annual “Doing Business” 2018 report.

Singapore has been ranked among the top 3 economies in the Ease of Doing Business rankings for **the past 12 consecutive years.**

<http://www.doingbusiness.org/en/rankings>
<https://www.acra.gov.sg/Statistics/Rankings/Rankings/>

Top 10 Economies	2018 Ranking	2017 Ranking
New Zealand	1	1
Singapore	2	2
Denmark	3	3
Korea, Rep	4	5
Hong Kong SAR, China	5	4
United States	6	8
United Kingdom	7	7
Norway	8	6
Georgia	9	16
Sweden	10	9

ENGINEERING ECOSYSTEM :BUSINESS ENVIRONMENT



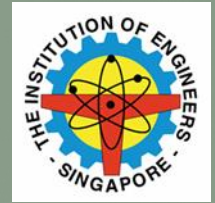
- Ease of Starting a Business

Singapore ranks **6th** among 190 economies in the Starting a Business indicator.

It takes only **2.5 days to start a business** in Singapore, compared to the average of 20 days worldwide.

Top 10 Economies	2017 Ranking	2016 Ranking*
New Zealand	1	1
Canada	2	2
Hong Kong SAR, China	3	3
Georgia	4	8
Jamaica	5	12
Singapore	6	6
Australia	7	7
Ireland	8	10
Korea, Rep	9	11
Kosovo	10	13

ENGINEERING ECOSYSTEM :BUSINESS ENVIRONMENT



- Global competitiveness

The WEF report assesses 12 factors that drive long-term growth and prosperity, including infrastructure, macroeconomic environment, labour market efficiency, health and primary education, to rank 137 countries.

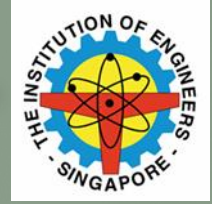
Singapore has slipped from its place as the world's **second-most competitive economy** - a spot it has occupied since 2010.

Global Competitiveness Index 2017–2018 rankings

Rank	Economy	Previous
1	Switzerland	1
2	United States	3
3	Singapore	2
4	Netherlands	4
5	Germany	5
6	Hong Kong	9
7	Sweden	6
8	Britain	7
9	Japan	8
10	Finland	10

Source: WORLD ECONOMIC FORUM
STRAITS TIMES GRAPHICS

ENGINEERING ECOSYSTEM :BUSINESS ENVIRONMENT



- Supporting Infrastructure



Singapore tops city infrastructure rankings

The latest list from consulting firm Mercer ranked **Singapore as the city with the best infrastructure** in the world, followed by two cities in Germany – Frankfurt and Munich.

ENGINEERING ECOSYSTEM :BUSINESS ENVIRONMENT

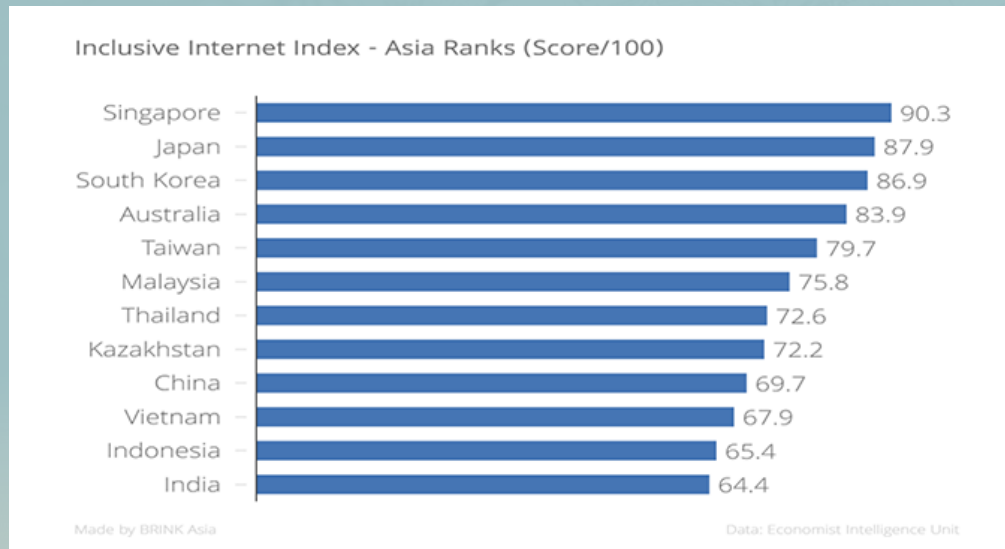


- Global Inclusive Internet Index 2017

Singapore and Sweden lead the world in terms of Internet inclusivity

The Inclusive Internet Index measures how effectively individual countries have adopted Internet usage and the benefits derived from it.

It also takes into account the ease of access that people have to a high quality and affordable Internet connection.



<https://www.edb.gov.sg/en/news-and-resources/insights/innovation/singapore--sweden-top-the-global-inclusive-internet-index.html>

ENGINEERING CHALLENGES AND ACHIEVEMENTS: 3 MAJOR DEVELOPMENTAL CHALLENGES



- **Geopolitical Shifts**

Asia will play a larger role on global trade and investment flows driven by developments such as China's Belt and Road programme, India's economic reforms and ASEAN's growing middle class.

- **Technology**

Whirlwind changes brought about by technology will continue to reshape the Singapore economy and jobs in its wake

- **Economic Restructuring**

Innovation must be pervasive in the economy, companies and workers must develop deep capabilities where businesses must forge partnerships whether here or abroad

ENGINEERING CHALLENGES AND ACHIEVEMENTS: 3 MAJOR NATIONAL PRIORITIES: WAYS TO DEAL WITH



- Investments and sustainability
 - ❖ Energy Grid 2.0
 - ❖ Energy Efficiency Fund
 - ❖ A Productivity Grant (Energy Efficiency)
- Innovation
 - ❖ Productivity Solutions Grant
 - ❖ An Open Innovation Platform
 - ❖ A \$10 million investment venture by National Research Foundation and Temasek Holdings
- Partnerships
 - ❖ A new Infrastructure Office
 - ❖ Single PACT scheme-give companies up to 70% co-funding for projects undertaken in partnership with others
 - ❖ An Asean Innovation Network

ENGINEERING CHALLENGES AND ACHIEVEMENTS: 3 MAJOR INFRASTRUCTURE ENGINEERING PROJECTS



- Gardens by the Bay (2012)

***First conceived by Dr Kiat W. Tan**, botanist and now chief executive of Gardens by the Bay, the idea of constructing a world-class garden in the tropics, on reclaimed land, south of Singapore's financial centre, seemed completely outrageous at the time.*



<http://www.bbc.com/storyworks/earth/garden-of-wonders/gardens-by-the-bay>

ENGINEERING CHALLENGES AND ACHIEVEMENTS: 3 MAJOR INFRASTRUCTURE ENGINEERING PROJECTS



- Gardens by the Bay (2012)

The first sight that greets every visitor at **Gardens by the Bay** is the funnel-shaped canopies of wintry, steel branches set atop towering steel and concrete trunks measuring between 25 to 50 metres in height. *A fusion of nature, art and technology, it's no surprise that the Supertrees have become landmarks of Singapore instantaneously recognisable to all, in a short span of five years.*



<http://www.bbc.com/storyworks/earth/garden-of-wonders/gardens-by-the-bay>

ENGINEERING CHALLENGES AND ACHIEVEMENTS: 3 MAJOR INFRASTRUCTURE ENGINEERING PROJECTS



- Gardens by the Bay (2012)



Under the domes

The modern glass-clad greenhouse, or conservatory, does not rely on such heat sources. Instead, it traps solar energy to create a warm, temperature-controlled environment; perfect for plants that wouldn't otherwise thrive in the cold outdoors.

1 million plants, trees and flowers from every continent, except for Antarctica, can be found in the Gardens.



ENGINEERING CHALLENGES AND ACHIEVEMENTS: 3 MAJOR INFRASTRUCTURE ENGINEERING PROJECTS



- NEWater



NEWater is the high grade water produced after treated used water has been further purified using a 3-step process involving advanced membrane technologies like Microfiltration, Reverse Osmosis, and the final disinfection of the product water using ultraviolet light (PUB, 2014)

ENGINEERING CHALLENGES AND ACHIEVEMENTS: 3 MAJOR INFRASTRUCTURE ENGINEERING PROJECTS



- Jurong Rock Cavern

Please click [HERE](#) for video.

- 1) It is the first underground oil storage facility in South-east Asia. **It frees up 60ha of usable land**, or about 84 football fields.
- 2) The subterranean development goes up to 130m beneath the Banyan Basin on Jurong Island. **The caverns are at 27 m high, 20 m wide and 340 m long, as tall as a 9-storey building.**



ENGINEERING CHALLENGES AND ACHIEVEMENTS: 3 MAJOR INFRASTRUCTURE ENGINEERING PROJECTS



- Jurong Rock Cavern

3) The caverns will store liquid hydrocarbons such as crude oil, condensate, naphtha and gas oil. Its location complements Jurong Island's role as a petrochemicals hub. The infrastructure will support companies such as Chevron Philips, ExxonMobil and Shell.

4) The five rock caverns and 8km of tunnels, which cost a total of \$950 million, are just the first phase of the project. The nine storage galleries inside will provide 1.47 million cu m of storage, or 580 Olympic-sized pools worth of space. The capacity will double once the second phase is complete.

5) This is not Singapore's first foray into large-scale underground storage. In 2008, the Singapore Armed Forces officially opened [the Underground Ammunition Facility](#) to store the military's munitions and explosives, freeing up about 400 football fields of space.

<https://www.straitstimes.com/singapore/five-things-to-know-about-the-jurong-rock-caverns>



THANK YOU