Driving Singapore's External Economy

Singapore

MEDIA RELEASE

IE Singapore Advances Infrastructure Hub Initiatives to Address Demand in Asia

MR No.: 034/15

Singapore, Wednesday, 21 October 2015

1. Singapore will play a key role in facilitating regional infrastructure projects amidst the global economic slowdown. With global capital project and infrastructure spending expected to grow steadily from US$4 trillion in 2012 to a project US$9 trillion in 2025[1], this sector continues to be a key driver of the global economy. Asia will account for nearly 60% of this spending over the next decade.

2. With its strategic location and vibrant infrastructure ecosystem, Singapore possesses strong attributes as a regional hub to fill the infrastructure gaps[2] in Asia. Between 2010 and 2020, US$4.3 trillion of infrastructure investments are required in China, US$2.1 trillion in India and US$1 trillion in Southeast Asia[3].

3. International Enterprise (IE) Singapore has been working closely with the industry to lead a series of initiatives on infrastructure development in Asia. These initiatives enable structuring, financing and execution of Asian infrastructure projects in and through Singapore. They include the Asia-Singapore Infrastructure Roundtable series that bring market and project intelligence to companies, the Project Finance International (PFI) Asia Best Practice citations which recognise excellence in project

[1] https://www.pwc.com/sg/en/capital-projects-infrastructure/assets/cpi-sea-infrastructure-spend-summary-201405.pdf

[2] Source: *Asian Development Bank, 2009, Infrastructure for a Seamless Asia, Manila*. Over the next decade in Asia, US$4.1 trillion of new investment is required in the power sector, US$2.5 trillion in transport, US$1.1 trillion in telecoms, and US$0.4 trillion in water and sanitation.

[3] http://www.adbi.org/files/2013.09.04.cpp.wignaraja.asian.infrastructure.dev.way.forward.pdf

delivery, talent development programmes, and participation in project development facilities like the Global Infrastructure Facility (GIF)[4].

4. Mr Teo Eng Cheong, Chief Executive Officer, IE Singapore, said, "With increased interest from multilateral development banks, infrastructure funds and institutional investors, there is more liquidity for infrastructure in the region today. As countries continue to develop a strong pipeline of projects, this will create more opportunities for developers, financiers, advisors and contractors to participate. Singapore plays a key role in serving this trend."

GIF holds second global meeting in Singapore

5. As part of the World Bank-Singapore Infrastructure Finance Summit 2015, the Advisory and Governing Councils of the Global Infrastructure Facility (GIF) are being held in Singapore this week. The meeting discussions are focused on expanding infrastructure projects with potential to mobilise private investment. In the coming weeks, the GIF will also announce the projects to be supported through its US$100 million project preparation window and work on establishing a downstream window to provide credit enhancement to mobilise private financing.

6. Mr Bertrand Badré, World Bank Group Managing Director and Chief Financial Officer, said, "It is very fitting that the GIF's meetings are being held in Singapore. Singapore demonstrates the huge impact that fully-financed and well-run infrastructure can have in transforming an economy; and the events of the World Bank-Singapore Infrastructure Summit week reinforce the role that the GIF can play on the world's infrastructure stage." Mr Badre added "The main thing we are discussing today is that infrastructure does not stand by itself – it is part of an ecosystem – an ecosystem with many component parts: a regulatory framework, legal and institutional set up, a strong civil society, partnerships. Now is the time to build on these components to help create a pipeline of projects; to strengthen governments' ability to bring to market bankable projects that address basic needs and help alleviate poverty."

Largest turnout at 5th Asia-Singapore Infrastructure Roundtable

7. The 5th Asia-Singapore Infrastructure Roundtable today saw the largest number of participants since its induction in 2013. More than 200 delegates and speakers from the

[4] In April 2015 - http://www.iesingapore.gov.sg/~/media/IE%20Singapore/Files/Media%20Centre/Press%20Releases/GIF20press20release2028Apr1520FINAL.pdf

region[5], participated in the event's panel discussions and workshops. Infrastructure players and regional government representatives held dynamic discussions on the need to collaborate closely in seizing business opportunities in the region. This is especially critical for some of the world's largest economies in Asia, such as China, India and Southeast Asia.

8. Added Mr Teo, "Singapore is shaping up effectively as the infrastructure hub for Asia. We have received positive feedback at our Roundtables that Singapore's regulatory framework and financial ecosystem are robust in facilitating infrastructure projects for the region. We are keen to continue partnering more countries and assist companies to bring more projects to fruition."

Two projects in Singapore awarded PFI Asia Best Practice citations

9. Later today, two projects in Singapore - Tuaspring and Pacific Light - will be awarded the prestigious PFI Asia Best Practice citations. These citations recognise successful delivery of major infrastructure projects in Asia. IE Singapore is a strategic partner of this programme for the second-year running.
    a. Pacific Light power plant is the first power plant in Singapore to be fired entirely by liquefied natural gas, and accounts for 6.2% of installed power capacity here[6].
    b. A project by Hyflux, Tuaspring is Singapore's second and largest seawater reverse osmosis desalination plant, and triples the amount of water Singapore gets from desalination[7].

10. The awards will also be presented to five other projects (Refer to Annex 2 for full list of citations) in Asia, by Mr Liew Mun Leong, Chairman of Changi Airport Group and Chairman of Surbana Jurong Group Private Limited (Refer to Annex 3 for Mr Liew's opening address at the PFI Best Asia Infrastructure Projects Dinner).

YTP-Infrastructure Development Scholarship awarded to three students

11. As part of IE Singapore's continuous efforts to nurture talent for infrastructure sector, the Young Talent Programme-Infrastructure Development Scholarship were awarded to three outstanding students on 13 October 2015. The scholarship is a result of a strong collaboration between IE Singapore and National University of Singapore, following the

[5] Including China, India, Indonesia, Philippines and Thailand
[6] http://energyasia.com/blog/singapore-pacificlight-power-starts-s1-2-billion-power-plant-jurong-island/
[7] http://www.hyflux.com/newspage.html-title

signing of an MOU last October. Recipients are currently enrolled in the Master of Science in Project Management programme at NUS. Students in the programme learn capabilities and knowledge on structuring and financing complex infrastructure projects. The scholarship recipients will pursue global careers at participating YTP companies - DBS Bank and Hyflux.

Annex 1: Opening address by Mr Teo Eng Cheong at 5th Asia-Singapore Infrastructure Roundtable
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Note to Editor

Please use 'IE Singapore' if an acronym for 'International Enterprise Singapore' is required. In addition, unless otherwise stated, the use of statistics cited in our media releases, website or Statlink, should be attributed to IE Singapore.

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International Enterprise Singapore

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ANNEX 1

Opening Address by Mr Teo Eng Cheong
Chief Executive Officer, International Enterprise (IE) Singapore
5th Asia-Singapore Infrastructure Roundtable
21 October 2015, 1330hrs
Shangri-La Hotel, Singapore

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1. Good afternoon. Welcome to the 5th Asia-Singapore Infrastructure Roundtable organised by International Enterprise (IE) Singapore.

2. A few months ago, I had a chance to visit the Panama Canal. For those of you who may not know about the Panama Canal, last year it celebrated its 100th anniversary. The canal is 77kilometres long, and connects two oceans, the Atlantic Ocean to the Pacific Ocean. The interesting thing about the Panama Canal is that it has a series of locks to lift the ships 26metres when they enter and exit the canal. It is truly a mega-structure that is the largest infrastructure project of its time.

3. At the time when I saw it, what struck me the most was - "How could this be possible"? One hundred years ago, Panama was a country that was just formed and capital markets were not very well-developed. There was not much financing, and technology was obviously not as advanced as today.

4. Fast forward 100 years. In the world today, Asia has a huge demand for infrastructure. We know of Hyflux, which has one of the largest desalination plants in Singapore. Sembcorp Utilities has a power plant project in Bangladesh recently and PSA has a port in Guangxi China. These are just some examples of Singapore companies who have gone into infrastructure. But yet, not enough projects have been implemented, especially in Asia.

5. There is a lack of bankable projects. In Asia alone, more than 600 million people still do not have access to electricity. Almost 300 million people still lack access to clean drinking water. Obviously, infrastructure development is still not as good as what we hope for it to be. So what are the issues facing infrastructure development?

6. The Panama Canal was possible one hundred years ago because of innovation. When I say innovation, I mean a series of different types of innovations. Specifically, innovation in three related areas. Firstly, innovations in government policies. Secondly, innovation in financing and third, innovation in technologies. Let me elaborate on each of these points in this context.

7. Policy innovations - Today, government policies in too many countries are simply not conducive enough. Not conducive enough for infrastructure, land development and operations. Policies are often too focused on the short-term. They focus on too much rigidity in policies where they are not coordinated. We cannot solve all problems relating to government policies but I have two suggestions that hopefully some of you would take back to your governments.

8. Firstly, infrastructure policies should be done with sufficient flexibility so as to cater to future needs and future technological advancements. We all know that infrastructure projects have very long lifecycles and demand will change over time.

Technology and circumstances will change over time. Without flexibility, we will not be able to cope with increased demands or unforeseen constraints.

9. I want to highlight a few examples in Singapore. The Electronic Road Pricing (ERP) system in Singapore allows for different pricing at different times of the day, essentially to regulate traffic. And that is flexibility built into the system. The other thing about transport in Singapore is the MRT. Some of you would know that since the late 90s, starting from the North-East line, the trains in Singapore are fully automated and driverless. And the reason for that is because manpower is a big constraint in Singapore. If you always have to depend on skilled manpower to drive your trains, the ability for you to expand your trains as and when you like is limited. And therefore, the decision was taken in the 90s to have fully automated, driverless trains. And that of course, entails putting in more capital cost in exchange for injecting flexibility in the whole aspect of its infrastructure. And that is a very good reason why I am sure the Land Transport Authority (LTA) will still think that it was an excellent decision they made in the 90s.

10. My second suggestion on government policies is that, these policies should be carefully coordinated across various sectors, to exploit synergy and make infrastructure much more efficient than it is today. The need for road systems, water piping systems and sewage systems, to be coordinated at the design, construction and maintenance stage, is well-known. Because they are all-day on and underneath the roads. With the increase of population, the need for better coordination of housing development, road constructions and other amenities is also well understood. And now we have a coordinating team of Ministers for infrastructure. In future, hopefully we can exploit other synergies. I went to the LNG terminal in Singapore and you can see that very low temperatures are generated when they intensify the engine. And such low temperatures can perhaps be used for some cooling purposes.

11. Similarly, a lot of industrial activities, still plants and cement plants, generate a lot of heat. And this heat can also be used for other purposes. Today, these synergies may not be fully exploited. If we have a better coordination of infrastructure, we can exploit some of these synergies and reduce cost. So that's the first way of innovation.

12. Government policies need to be better coordinated, they need to be much more flexible in order for us to reduce cost of infrastructure, maintenance and operation. The second area is financial innovation. Today, 60% of cross-border project finance in ASEAN is managed out of Singapore. And I think that is because we have a strong financial sector and deep liquidity pool in Singapore. But infrastructure remains underfunded and this will not become easier in today's climate of austerity.

13. PPP is one big area of innovation that can unlock private sector funding. When dealing with private sector, market discipline, we will take into account the full cycle cost of the project. But we all know that PPP is fraught with difficulties. We have made some attempts to harmonise PPP laws or regulations across countries, as well as bring about infrastructure debt financing and long-term capital. I am very glad that in April this year, the World Bank launched the Global Infrastructure Facility, or GIF in Singapore. And this GIF facility will help prepare complex infrastructure plan so that it can become compatible and investible.

14. Financing innovation is the second area I think many of you are familiar and I think we can do more, to bring about long-term nation capital to much needed investment in infrastructure.

15. The third area of innovation is technological innovation. The world has seen a surge that has transformed many industries in the last decade. Industries from telecom to music industries and so on. Infrastructure can benefit some of these technological advancements. I would like to refer to three groups of technologies.

16. The first group of technology consists of those that can impact infrastructure development at the design and planning stage, such as modelling software which allows better visualisation, better planning and better forecast. The Building Information Modelling (BIM) is one method that companies have used so that options can be studied. They can also better assess costs involved, better forecast and make a better decision in a shorter time. It could better predict the project costs and time for completion. All these lead to better designs and hopefully, faster approvals.

17. The second part of technologies will be relating to the actual construction of the infrastructure assets. This would be new building materials, new and more efficient methods of construction, pre-fabrication and so on. Or it could be more unconventional type of innovations. I was just talking to a Singapore company just now over lunch. And I understand that the blades of the wind turbine can be adjusted based on the wind direction. Today, solar panels can be adjusted based on the direction of the sun and that increases the sunlight absorption by 20% compared to the past. That is a worthwhile innovation, important to improve efficiency of the infrastructure.

18. The third area of technology relates to data analytics which would make operation and maintenance of infrastructure much more efficient. Through a network of sensors, drones and RFID, a lot more data can be collected. This would allow for better monitoring, better forecast of demand and therefore, better solutions to match supply and demand, such as dynamic pricing. This data could also allow for early detection of defects to prevent wastage, to prevent downtime, so that operations of all these infrastructure can be much more efficient. And I'm glad, Singapore companies such has Singapore Power and Sembcorp are already putting efforts into R&D and innovation in infrastructure.

19. So, 100 years ago, a mega-project like Panama could be financed, built and operated efficiently until now. Today in Asia and globally, there is so much demand for infrastructure. There is so much liquidity around. I think we can do so much better.

20. I am optimistic that going forward, we will see a lot more activities in the infrastructure space if governments are able to have a coordinated approach and build flexibility into their projects. And in the financial sector, if they will continue to explore new innovations to channel long-term capital to the infrastructure sector, and if companies can put more effort into R&D and innovations, I believe the big gap for infrastructure development can be addressed. All of us, not only in this sector, but also our personal lives, our children's lives, will definitely benefit from this.

21. And that's the reason for us to be here today. We want to explore the various possibilities and ways forward for infrastructure development in Asia and each of you have the capacity and expertise to contribute meaningfully. We can fulfil this gap and make infrastructure development not only possible, but also a meaningful venture for all of us. Thank you.

ANNEX 2

List of PFI Asia Best Infrastructure Projects citations

1. Tuaspring (Desalination & Power Plant) – **Singapore**
2. Pacific Light (Gas-Fired Power Plant) – **Singapore**
3. Mundra Uulta Mega Power Project – **India**
4. Paiton 3 (Coal-Fired Power Plant) – **Indonesia**
5. Manjung Island Energy (SPV for Coal-Fired Power Plant) – **Malaysia**
6. Uch II (Gas-Fired Integrated Power Plant) – **Pakistan**
7. Burgos Wind (Wind Farm) – **Philippines**

ANNEX 3

Opening Address by Mr Liew Mun Leong, Chairman of Changi Airport Group and Chairman of Surbana Jurong Group Private Limited
PFI Best Asia Infrastructure Projects Dinner
21 October 2015, 1930Hrs
Shangri-La Hotel, Singapore

Good evening Distinguished Guests,

Ladies and Gentlemen

It is said that China Premier Li Keqiang loves to quote Nobel Prize economist winner Joseph Stiglitz's postulation that the 21st century will be affected most significantly by two phenomena - Technology and Urbanisation. Indeed, China has now strategised urbanisation and infrastructure development as key economic growth drivers in her 12th five-year economic plan.

China is not alone to pump prime her developing economy this way. Japan had accelerated its economy with infrastructure investment immediately after World War II and successfully continued such momentum for a few decades. I remember visiting Japan in 1978 as an engineer to study her world class infrastructure projects. They were then constructing the Seikan tunnel, a 52km long tunnel, 100m beneath the seabed across the Japan Sea. This project to connect the economy of Honshu and Hokkaido beneath the sea and encumbered with nine geological faults was recognized as the most ambitious civil engineering undertaking of the 20th century. I was also greatly inspired to have witnessed the construction of the longest suspension bridge to connect Honshu and Shikoku, as well as the tallest and most massive concrete dam in central Japan. They were all phenomenal world class infrastructure projects. Within a few decades after the war, Japan accelerated to be the world's second largest economy till recently.

Likewise China boldly ventured to complete the Three Gorges dam projects to power their growing economy. They have completed 112,000km of railways including 16,000km of high speed rail. That world's longest high-speed rail network delivered 2.357billion passenger trips and 3.18billion tons of freight in 2014, effectively and efficiently connecting their people and economy in vast continental China. In recent decades, China has built the world's longest sea bridge, the longest gas pipeline and the longest high speed railway to boost their economic growth. There is an old Chinese saying "If you want to be rich, you must first build roads". China recently replaced Japan as the world's second largest economy within even a shorter time of economic expansion.

There is nothing really new here. The Romans paved roads and constructed aqueducts in Europe, the British built ports, roads and railways across the common wealth empire. The Russians and Americans controlled their territories with the Trans-Siberian and the Trans-Continental railways. Here in Singapore, we have accelerated our economy by building world class infrastructures like reliable power supply, telecommunication, waterworks, airport, seaport, and other transport infrastructure. These capital intensive infrastructure investments were specially planned and designed to not only improve the quality of our lives but also to attract investments from multi-national corporations. As a result, we transformed ourselves from being a Third World country to First World within a mere 35 years. The strategic importance of infrastructure development in emerging economies needs no further elaboration.

But why aren't many emerging countries successfully emulating the proven strategy of infrastructure investment to drive their economies? I spent several decades of my career as a civil engineer and at leadership level, in the urbanisation and infrastructure industry building airports, roads, township, industrial parks and commercial real estates both in Singapore and overseas. In my view, there are three hindrances.

The first hindrance is that infrastructure financing is enormously difficult to secure. Infrastructure projects are much more complex to understand compared to normal real estate. Every banker will comfortably know what is in a residential home, an office or a shopping centre. They presume that they are experts in these products. But to understand the needs and economics of power plants, telecommunication, waterworks, airports, high speed rail etc., will need specialised knowledge and training. These infrastructures are viewed as technically complex, uncertain, high risk, and capital-intensive with long tail returns. To be fair, many are plagued with records of notorious mismanagement or riddled with corruption and financial leakages. Political uncertainties in some emerging countries are also not encouraging. They are, in short, not so easily bankable and many have become non-starters. They remain useless on the drawing boards.

There is some good news now. China has initiated the Asian Infrastructure Investment Bank which will support infrastructures construction in the Asia Pacific region. AIIB will raise US$100 billion to fund infra projects in the region estimated at US$8 trillion investment in the next five years. Japan has also pledged another US$100 billion in international financing along the same lines. These initial US$200 billion war chest will ease and lend greater confidence to open financial markets for infrastructure investment.

The second hindrance is the political will of governments to invest into capital intensive infrastructure facilities. My sense is that so far, many Asian emerging countries may not have the political determination and long-term thinking to push ahead the huge capital outlay required, even though these investments are much needed. Again, things have changed. Several Asian emerging economies noticeably India, Indonesia and other South East Asian countries have renewed their firm government pledge to push for national development. They have seen the growing demand to improve the living conditions of their people such as in Japan, China, Korea and Singapore, and have realised the dire need to integrate infrastructure investment as the corner stone of their strategic economic growth plan.

The third hindrance is the lack of comprehensive technical competencies and capabilities to implement massive infrastructure development projects at the national level. I agree with the Editor of the last PFI special report that "construction is the riskiest part of any project financing deal." I have seen too many promising projects going wastefully down the drain due to lack of technical expertise in planning, design and project management.

I think that there are now adequate technical expertise in Japan, China, Korea, Singapore and other countries who could collaborate and/or assist emerging countries in infrastructure development. Japan and China have played such strategic roles successfully in several Asian countries. We in Singapore, in our modest way, have completed several world class infrastructure projects and could share the experience we have gained. We likewise, have technically collaborated with several countries in urbanisation, industrial parks, airports and infrastructure development. For example, Changi Airport, acclaimed as the most awarded airport in the world, has undertaken several collaboration projects with airports in Asia, South America, Middle East and Russia. Similarly, Surbana Jurong Group, formed by the recent merger of two government technical organisations previously involved in urbanisation, public housing, industrial parks and other major infrastructures projects in Singapore has also collaborated on similar development programs in China, Southeast Asia, India, Middle East, South America, Africa and Central Asia. As Chairman of Changi

Airport Group and Surbana Jurong Group, I would be happy to have a chat if you need a technical partner for your project financing initiatives.

It is clear that the pre-requisite of economic growth, particularly in emerging countries, is in adequate infrastructure facilities. Indeed, even for developed countries there cannot be a let up in making sure that their infrastructure does not lag behind others, so as to ensure continued economic growth momentum. The current three hindrances, namely project financing, political will and availability of technical expertise, can be overcome. I am of the view that for those of us who are involved in infrastructure financing, investment and development business, the stars are now aligned for a global expansion. The prospects in this area, I therefore conclude are exceptionally good.

Finally, I would like to congratulate the winners of this evening PFI Asia Best Practice Citations for their outstanding infrastructure projects.

Thank you.

ANNEX 4

About the Global Infrastructure Facility (GIF) second Advisory Council and Governing Council meetings in Singapore

IE Singapore is participating in the biannual Global Infrastructure Facility (GIF) Governing Council and Advisory Council meetings in Singapore. This is the first meeting of both councils since the World Bank CFO Bertrand Badré announced that the GIF was open for business in Addis Ababa, Ethiopia in July 2015. IE is a founding funding partner of the GIF and represents Singapore on both councils.

The GIF is focused on expanding the universe of infrastructure projects that have the potential to mobilize private investment. It is a collaboration between the major multilateral development banks and the governments of Australia, Canada, China, Japan and Singapore.

The Governing Council will meet to discuss its current activities and progress to date. The GIF has reached out to emerging market country governments to come forward with projects and investment programs that may need support through the project preparation and transaction process. The GIF will design, prepare and structure viable infrastructure projects globally. They will be designed to maximise the likelihood of financing from long-term private sources such as institutional investors.

The Advisory Council meeting will see about 30 private sector partners convene in Singapore. They represent some US$12 trillion in assets and include pension funds, insurance companies, fund managers, reinsurers and sovereign wealth funds, as well as commercial banks.