Shanghai's Science and Innovation Landscape

A snapshot of Shanghai's S&I reforms and potential opportunities for NZ

New Zealand Consulate-General, Shanghai

Shanghai's place in China's bigger picture of economic reforms

- Using innovation to drive sustainable economic growth is a key priority for China. In the context of slowing GDP growth, an aging population and declining returns on fixed investments, China has identified innovation as one of the ways to raise productivity, generate higher value-added growth and create higher paying jobs. China's 13th Five year plan reflects this priority, with "innovation" being made one of the five guiding principles, and a large number of cities across China are now undertaking reforms with the aim of becoming science and innovation hubs.

- Shanghai plays an important role in China's overall economic reform strategy. Latest annual figures show that Shanghai's GDP reached RMB 2.50 trillion in 2015 (NZD $51 billion on current exchange rates). Shanghai's GDP per capital reached RMB 103,100 last year (NZD $21,304). As a first tier city, the city's sophisticated middle and upper middle classes will be important in achieving China's goals of making the shift from investment driven to consumption led growth. The city has ambitions to transform itself into a global finance, commerce and shipping hub.

- Despite this, Shanghai's economy has been slowing in recent years with GDP growth dropping to 6.9% in 2015. The city's economic engine continues to be the services sector (reaching 70% of total GDP in the first quarter of this year). While this in itself is viewed positively, municipal government officials have also commented that growth in the services sector alone is not sustainable unless it is complimented by high-quality growth in the manufacturing sector. Using innovation to drive reform of Shanghai's manufacturing sector and boost its competitiveness and value-add is a key priority. At the same time, the city's demographic advantage is also decreasing due to its ageing population, making it even more important to find new ways to increase productivity and generate value-added growth.

Becoming a science and innovation hub

- Against this backdrop, and following direct approach by President Xi Jinping in 2014, the Shanghai Municipal Government has stepped up its efforts to transform the city into a global science and innovation hub by 2030. In May 2015, the Shanghai Municipal Government introduced 22 measures to encourage science and innovation, and the focus on innovation was again reinforced in the city's 13th five year plan, approved earlier this year.

- Shanghai appears to be taking a holistic approach in pushing forward several key areas of reform. For example, it is reforming its system of talents appraisal to place

less emphasis on written papers/theses and more on commercialisation of R&D results. In terms of industry regulation, Shanghai is reforming the administration and management of new (e.g. internet based) types of industries to encourage, while at the same time regulate, these businesses. In the area of tax and revenue reform, preferential tax treatment is being offered to, inter alia, encourage investment into research and development. The aim is to increase Shanghai's R&D expenditure to 3.8% of GDP by 2020 (current levels are 3.7% - already well above the national average of 2.1% as well as the levels of most developed countries).

- Shanghai is also committing significant funding to science and innovation-related projects, including funding earmarked specifically for international S&I cooperation. In 2015, combined municipal and district funding earmarked for science and innovation projects totalled RMB 18 billion (NZD $3.7 billion) with similar levels expected this year. Investment is going into establishing, or expanding, innovation parks; as well as funding innovation incubators and accelerators in a bid to grow the city's entrepreneurial base. We report on these initiatives and opportunities for foreign companies, in more detail below.

<u>International S&I Cooperation funding</u>

- The Shanghai 13th Five year plan places emphasis on "opening up and collaboration" as a means of spurring innovation, and there are a range of initiatives and funding opportunities that are open to both domestic and foreign universities, research institutes and companies. One such initiative is the Shanghai Science and Technology Commission's (SSTC) funding specifically earmarked for "government to government international cooperation" – universities, research institutions and enterprises of countries and regions that have signed an MoU with the SSTC are able to partner with Chinese institutions and receive funding of up to RMB 500,000 (NZ$100,000) for joint S&T projects[1].

<u>Commercialisation of research - establishing and expanding the city's high-tech parks:</u>

- One of the key objectives of Shanghai's ambitious reforms is to enable the city, and indeed China, to more effectively commercialise its own scientific research. The push to promote commercialisation of R&D is one factor that has led to the construction of some 40 industrial parks at the national and municipality levels in the Shanghai area. The rationale is that a clustering of businesses, innovation services, talents and finance will lead to a critical mass and drive innovation. The "jewel in the crown" of these innovation parks is Zhangjiang High Tech Park, which has particular strengths in integrated circuits, bio-tech and pharmaceuticals, low carbon technologies and software development. In addition, in March 2016, the National Development and Reform Commission and the Chinese Ministry of Science and Technology approved plans to establish a Comprehensive National Science Centre at Zhangjiang. The goal

[1] The 5 research areas identified in this year's guidelines include: nanoscience and micro-nano manufacturing; big data and cloud computing; smart cars and the Internet of Things; original new drugs and precision medical; and synthetic science and biotechnology formulation.

is to create a cross-discipline national science hub by 2020; however the detail on what this would look like is still to be advised.

- As at 2016, around 260 companies have set up R&D centres and 44 multinational companies have set up their regional headquarters in Zhangjiang, including HP, IBM, Dow and Honeywell. Zhangjiang is using the presence of these large MNCs to attract innovative SMEs looking for investment and collaboration opportunities to set up base in the Park. Backed by generous funding from government, Zhangjiang offers free or low cost office space and a range of innovation services.

- Zhangjiang is also being used as a pilot area to test out S&I related reforms that would create a more "innovation friendly" business environment. According to most recent statistics from the World Intellectual Property Organisation (WIPO), China topped the list of countries for patent applications, outstripping the combined total of its next closest followers, the US and Japan. However, China only ranked 84th in the most recent World Bank Group ease of doing business report.

- The Shanghai government is aware of the disconnect between these two indicators, and is seeking to use Zhangjiang's incorporation into the Shanghai Free Trade Zone (FTZ) to trial a series of institutional reforms to drive innovation. Companies based in Zhangjiang will be able to leverage FTZ policies to decrease administrative red tape and drive efficiencies. For example, large S&I companies based in Zhangjiang can enjoy customs clearance within their own warehouses in the park, and small and medium-sized enterprises can take advantage of the FTZ's bonded warehouses for customs clearance procedures. CIQ reforms in the FTZ are also being introduced that would enable pharmaceutical companies to enjoy streamlined inspection and quarantine procedures in respect of imported raw materials for pharmaceuticals. R&D centres and labs can also take advantage of a fast track in Pudong airport for perishable research samples coming from overseas.

- All of these new practices are aimed at speeding up border clearance, hence reducing the business compliance costs of companies or R&D agencies based in the Park. In addition, companies based in Zhangjiang can enjoy the broader economic and financial benefits of the FTZ, such as easier ability to transfer money between the FTZ and offshore.

- Zhangjiang openly welcomes cooperation with foreign governments, and countries such as Finland, Israel and the US have already established innovation centres within the park.

"Mass entrepreneurship and Innovation": support for start-ups

Incubator and accelerator facilities and funding

- Shanghai is growing its entrepreneurial base in the hope that this will lead to new, cutting edge products, services and technologies. Traditionally, Shanghai has not been viewed as a centre for "grass roots" entrepreneurship as is nearby Zhejiang province or Shenzhen to the south. However, particularly in the past two years, the government has pumped significant investment into new infrastructure and support to business accelerators and incubators in a bid to encourage high-tech and other innovative companies to set up shop in the city – using its proximity to affluent consumer markets and readily available capital sources as competitive advantages.

- The Shanghai Science and Technology Innovation Centre (STIC) has responsibility for policies and financial support targeted towards SMEs. While being an incubator itself, it also administers funding to over 230 business incubators in the Shanghai municipality that provide tailored services to business starts-ups across a range of sectors from biotech, to ICT, to new materials – and this number is set to rise to over 300 in the near future.

- In an effort to attract foreign S&I talents and resources, and increase international cooperation, STIC will this year launch the Start-up Gateway Programme (SGP). The SGP seeks to attract more foreign start-ups to choose Shanghai as the base for their operations in China. Under the programme, STIC has selected 18 "foreign friendly" business incubators that provide different tailored incubator services across a variety of sectors as the first batch of cooperation partners. It is anticipated that starting end-Sept, foreign start-ups will be able to access English language information on the STIC website about each of the 18 incubator's core services and areas of expertise, so that they can chose an incubator that best matches with their particular needs. Each of the 18 incubators will be evaluated by the STIC against key performance targets – such as percentage of businesses successfully matched with local partners – in order to continue receiving support and funding from the STIC under the programme.

- One such start-up incubator under the SGP is XNode. XNode provides entrepreneurs with a co-working space that combines eastern and western elements (it aims for an occupancy ratio of 50:50 Chinese:Western start-ups). Support services include guidance on identifying and targeting customers; introductions to local government agencies offering support programmes for new businesses and start-ups; and advice on how to negotiate the local business culture. It also provides advice on how to access angel investors, venture capital and other potential sources of investment in the China market.

- After nearly one year of market research, XNode was chosen by Austrade as the local service provider for its "Innovation Landing Pad" initiative. Starting in Sept 2016, market-ready Australian start-ups selected by Austrade will be provided with a workspace within XNode for up to 90 days. During that time, start-ups will have

access to XNode's full range of services including coaching; introductions to mentors, investors and customers; and tailored networking events.

Investment into venture capital and private equity markets

- Also in an effort to promote entrepreneurship and increase seed funding for start-ups, the Shanghai government has invested vast amounts of funding into growing the city's private equity and, more relevantly, venture capital markets. The Shanghai Venture Capital Investment Fund was founded in 2012, and every year for the past 5 years the Municipal Government has invested RMB 1 billion (NZ$205.5 million) into this fund. This year, the district government and one of Shanghai's SOEs called Shanghai Technology Venture Capital Group both invested a further RMB 1 billion. The goal is to leverage this RMB 3 billion in state-owned capital to attract another RMB 7 billion (NZ$ 1.4 billion) in capital from securities firms and insurance companies to create a RMB 10 billion (NZ$2 billion) VC parent fund. This funding is earmarked specifically for investment into subsidiary funds in S&I related sectors including internet, biotech, IT and smart manufacturing. According to funding criteria, at least 70% of the funding needs to be invested in companies that are registered in Shanghai. Foreign companies are eligible to access capital in these subsidiary funds; however they would typically first need to find a local partner and set up a Joint Venture.

- But there are plenty of other options for foreign companies seeking sources of venture capital in Shanghai. There are over ten thousand VC companies and funds in the Shanghai municipality; and only a small portion of the Shanghai Venture Capital Association's 230 members receive funding from the abovementioned VC parent fund. Outside of these state-subsidized subsidiary funds, requirements for foreign companies to find a local partner are allegedly more relaxed. If NZ companies had specific projects looking for funding, the VC Association would be happy to make introductions to its members whose fund scales and investment criteria match.

In Summary:

- What we are witnessing in Shanghai is a distinctly Chinese innovation model. Large amounts of funding are being invested by the municipal and district governments to assist with achieving the goals of more effectively commercialising research; attracting talents; and growing the city's entrepreneurial base in the hopes that this will spur development of innovative products, services and value-added industries. In contrast to other areas of Shanghai's economic and financial reform agenda which place more emphasis on allowing the markets to play a greater role, the city's innovation agenda appears to allow for a greater degree of involvement by the government in shaping the nature and direction of reform.

- Only time will tell whether these initiatives and reforms will have the desired effect of driving sustainable economic growth, and help China to avoid the "middle income trap." Many commentators have pointed out that true innovation doesn't happen

from the top down – it needs to happen from the bottom up, and the government's role in the process should be around creating the right environment, including adapting the education system to encourage students to think more broadly; and ensuring effective IP laws.

- As far as foreign companies are concerned, feedback suggests that uncertainty around the ability to protect IP is a concern for some innovative businesses considering establishing themselves in the China market. The Shanghai government is aware of these issues, and is rolling out a comprehensive suite of reforms and initiatives to improve the city's IP frameworks and service systems. At the same time, some comments suggest that in certain fast-moving innovative sectors (e.g. tech/internet/IT) businesses are also adapting to place more emphasis on speed to market and "first mover advantage" as a means of protecting their IP. It is also worth flagging that under Chinese law, foreign companies and institutions that receive Chinese government funding may also face restrictions on the ownership of IP produced from those research and commercialisation projects. We intend to report further on these reforms and initiatives; as well as seek feedback from advisors and businesses on their experiences with protecting IP in the Shanghai market in our next S&I report.

- What is clear is that there are plenty of opportunities for foreign institutions and companies to take advantage of the city's preferential innovation policies, and many foreign companies and institutions – including some NZ ones – are seeking to do just that. Shanghai's particular advantages include its high concentration of S&T research institutions and universities; abundant financial capital; and a long history of internationalisation. The city's sophisticated and affluent consumers are key targets in commercialising new customer-focused products and services. At a more basic level, Shanghai's relative liveability also makes it a good "gateway" for foreign entrepreneurs seeking to enter the China market. On the other hand, the high cost of living and doing business in Shanghai can act as a barrier to entry for some. It is also a highly competitive and mature market and some innovators have opted to base themselves in other centres with lower costs of doing business and offering even more generous incentives packages.

- The New Zealand Consulate General in Shanghai is receiving increasing levels of interest from NZ companies and institutions seeking to understand potential opportunities within Shanghai's S&I ecosystem. We will continue to provide information on developments here, to assist businesses and institutions in making informed decisions about whether Shanghai is the right fit for them.

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