BioSpectrum
the business of Bio & Health Sciences
ASIA EDITION

China's industrial zones and pharma progress

24 January 2013 | Opinion | By BioSpectrum Bureau

Over the last thirty years, China's growth has been fuelled in part by the rapid and dynamic development of its industrial parks or development zones. Significant investment in both physical and administrative development in these zones has allowed industry to flourish, bringing about success for both domestic and international companies.

One such industry where this change is keenly felt is the pharmaceutical industry. Since 1984 when pharmaceutical giant GlaxoSmithKline established its first China joint venture (Sino-American Tianjin Smith Kline & French Laboratories), industrial zones in China have been able to provide the conditions for success for the world's most powerful and innovative pharmaceutical companies.

Tianjin, where the Tianjin Economic-Technological Development Area (TEDA) has spent the past 28 years leading the way in terms of development and innovation, is one of the biggest cities in Northern China. TEDA has also been named China's top industrial zone every single year by the Ministry of Commerce since 1998.

It is no coincidence that, in 1995, GlaxoSmithKline established SmithKline Beecham again in Tianjin. Towards the end of 2012, Lundbeck, a Denmark-based pharmaceutical firm, has invested US$9.5 million to open a modestly sized facility in the same city.

But how can this industrial zone continue to attract the best and the brightest within the pharmaceutical industry, given the challenges and high standards required by these companies to maintain success over time?
In recent years, perhaps the biggest challenge has been to overcome the problems of the global financial crisis, and how this makes a variety of companies and industries more reluctant to invest. Whereas traditionally an industrial zone might focus on attracting big name companies to invest, with the dip in the market this was not always possible. Instead, there has been a shift to developing the entire industrial chain, making it easier and more attractive for companies to invest in a region.

TEDA's biopharmaceutical industry chain is extremely well developed, with 396 enterprises providing medicine manufacturing, medical equipment production and services. Most of the foreign-invested firms focus on manufacturing,

whereas the domestic firms are engaged in R&D innovation and production. This has helped to create synergies between large companies such as GlaxoSmithKline, Novo Nordisk and Novozymes, as well as device or manufacturing companies such as Hannah. There are also Contract Research Organizations (CROs), such as Wuxi AppTec, and even Traditional Chinese Medicine manufacturers engaged in innovation within TEDA. More importantly, an industry biotech chain has been formed that includes research and development, technology transfer, production, business logistics and tradeshows. As pointed out by Mads Kronborg, Public Relations Manager for Lundbeck: "We chose TEDA because the actual facilities of the site met our technical and strategic requirements...also, the industrial park hosts a number of other multinational pharmaceutical companies thereby forming a 'hub'."

Synergies are particularly important in the pharmaceutical industry to push forward innovation. For example, TEDA has companies such as Tianjin Jin Yao Group and Wuxi AppTec that are the first in the country in terms of innovations in corticosteroids and pharmaceutical R&D respectively. Combined with a wealth of foreign investment and the annual 200 million yuan budget of the TEDA Bio-pharmaceutical Industry Fund, the future looks set to bring about an improved investment environment with greater emphasis on specialization and segmentation for all areas of the biotech industry.

Investment zones are attractive to global pharmaceutical brands also because of advanced infrastructure and opportunities of proximity. For example, in 2012, Tianhe-BGI Bioinformatics and Computing Joint Laboratory was launched in the Binhai New Area. The JV uses the Tianhe-1A, the world's second fastest supercomputer, to research biological sciences, doing human genomics association studies in 3 hours that used to take over 300 days.

After all, it is cutting-edge research that really drives pharmaceutical and biotech growth. Thus far, over 200 million yuan investment has been made on pharmaceutical research alone in TEDA. By 2015, there are expected to be more than 50 R&D institutions in TEDA, with investment in research expected to account for 10 percent of total revenues. These innovations are already taking place in research institutions such as Tianjin Industrial Biotechnology R&D Center, Chinese Academy of Sciences (TIBC, CAS), and Tianjin Institute of Pharmaceutical Research (TIPR). This is further bolstered by the clinical bases that surround the area, with 60 A-level hospitals in the Tianjin and Beijing region with a wide variety of specializations.

Indeed, such clinical advantage in China has been one of the driving forces drawing many global pharmaceutical brands to China. Cost efficiency, strong intellectual capital and adoption of international standards in good clinical practice have all helped usher in a better environment for clinical research in the country.

Quintiles is a contract research company providing a wide range of clinical research services for biotech and pharmaceutical clients all over the world. When asked about the "coopetition" with the domestic firms in China, Jay Johnson, Quintiles' Senior Director of Corporate Communication, Asia Pacific, said: "We work with many companies that are doing drug development in China, either for the purpose of registering products for sale in China, or as part of multi-national clinical trials aimed at approval in multiple countries."

The benefits of regional collaboration are echoed by Dr Daniel R Marshak, SVP & chief scientific officer at PerkinElmer. He says: "A newer trend we're seeing take hold is more around resource collaboration. For example, a European company that has several promising candidate molecules that it would like to explore, but cannot develop all of them simultaneously. Now the company can partner with local pharmaceutical companies to outsource part of the R&D and testing through collaborations or partnerships."

"This is enabled in part by the informatics tools that allow information to be discovered, shared and protected," Marshak explained. "For example, electronic laboratory notebooks (ELNs) that can be shared safely across companies and geographies, have been critical to allaying concerns about IP protection and global management of drug discovery and development."

Building an industrial chain to attract companies is one thing, but without the ability to attract and retain the best minds, development zones cannot be a hub for innovation and research success. Overcoming this challenge is a constant battle, but China's development zones have seen a number of successes in this area.

Industrial zones in China realize that they need to offer more than just a place where profits are possible - they need to offer a truly pleasant and livable environment where valued staff can enjoy their free time as well as their working days. This is why TEDA now has its own professional football team, a botanical garden, an International Cardiovascular Hospital and, since 1995, an international school accredited by both WASC and CIS.

But it is not just about keeping talent happy - the need for talent to be readily available in the area is also important. This is an area where TEDA excels, given that there are 200 tertiary institutions within the 150-km city circle of Beijing-Tianjin. Every

year, more than 5,000 graduates major in chemistry, biology, medicine and other related majors, and there are nearly 200,000 personnel engaged in related scientific research. As Mads Kronborg of Lundbeck said, "[One of the reasons] for us to choose Tianjin is that there is a sound pool of talent in Tianjin with experience in pharmaceutical operations."

Building a livable environment is not just about activities for staff members, but also creating a modern, energy and resource efficient environment where companies can comply with present and future environmental legislation and save money and raw materials in the process.

One way to achieve this has been the industrial symbiosis (IS) scheme. Funded by the EU's Switch Asia project, the Chinese government and the UK government's environment department, the four-year project in TEDA is the first IS project in Asia and aims to get companies together to find out if they can use the waste products of other companies in their industrial processes. In one example of IS, food processing company Cargill was able to provide its nutrient-rich industrial effluent to New Water Source Treatment Plant, a sludge treatment company, which needed nutrients in its water feed to give the biological organisms what they needed to break down the sludge. So far, the IS project has achieved 38 synergies that have reduced costs by RMB 12 million (US$1.9 million), led to additional sales of RMB 90 million (US$ 14.2 million), avoided the emission of 32,000 tonnes of CO2.

And when Danish biotech company Novozymes Group expanded its Tianjin facilities in 2011, Friis Arne Petersen, Ambassador for Denmark in China, gave speeches thanking TEDA for their support in working towards a low carbon economy.

Despite the successes, there are challenges, mainly surrounding the quickly changing demands of the industry and the need to maintain levels of growth and investment in innovation, whilst also battling the constraints of regulation.

"A challenge often associated with high-growth industries is the friction created between organizations that want to innovate quickly, and regulators that want to ensure public safety is utmost at all times. We are seeing this with the recent emergence of the Chinese biotech and biopharmaceutical industries, who are innovating amidst newly defined regulatory processes. Chinese authorities are looking to develop these nascent domestic industries, and are looking to European and American models to help shape their own," says Dr Martina Bielefeld Sevigny, VP & GM of PerkinElmer Life Sciences Technology, China.

And this is where China's development zones have a strategic advantage. These zones are authorized to streamline the entire approval procedure pipeline. For example, TEDA is sanctioned to expedite its investment partners' sample testing, customs inspections and quarantine, as well as arranging tariff exemptions for equipment imports. While this does not mean drug approval is easier, as standards are still extremely strict, it does mean that unnecessary delays and bureaucratic barriers do not interfere with innovation.