

By Ong Beng Lee

TIANJIN ECO-CITY

SETTING NEW BENCHMARKS

The Challenge

Rapid urbanisation has placed immense pressure on the environment, amenities, and resources of cities around the world. It also generates pollution, including greenhouse gas emissions that contribute to climate change. The United Nations Framework Convention for Climate Change (UNFCCC) has declared the collective global effort to keep greenhouse gases at a safe level "grossly insufficient" so far.

China, the world's most populated country, second largest economy, and largest carbon emitter, is at the forefront of rapid urbanisation. Fortunately, the Chinese government understands that, if not properly managed, the rapid expansion of China's megacities will strain its energy, water and land resources and pollute its air, soil and water. It will also increase competition for housing and jobs and lower the quality of life of the people.

China is seeking to develop its urban space sustainably. However, there is no international standard

or industry benchmark for sustainable development that China should rely on. To demonstrate their commitment to do their part to strengthen environmental protection and energy conservation, the governments of Singapore and China decided to jointly embark on a project to create a model for sustainable development.

The Solution

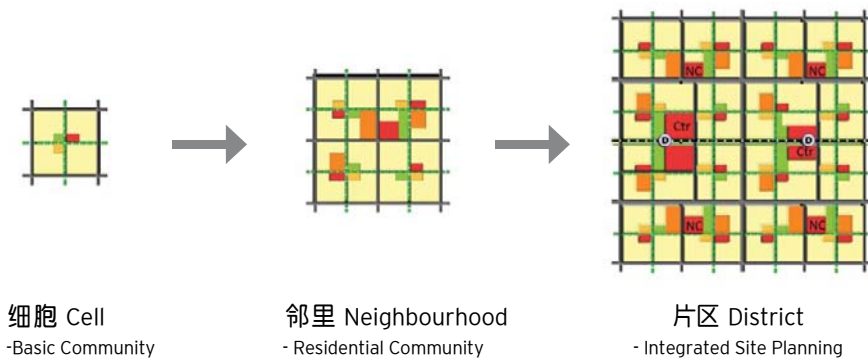
The idea for the Sino-Singapore Tianjin Eco-city was conceived by the leaders of China and Singapore in 2007. Tianjin Eco-city aims to provide a model for sustainable development for other cities in China and elsewhere, amidst global concerns about the effects of urbanisation on climate change.

It is the second joint project between the Chinese and Singaporean governments. The first was the acclaimed Suzhou Industrial Park. Built in 1992, it is characterised by state-of-the-art business facilities, modern housing, new universities, schools, and other public amenities.

In Tianjin Eco-city, the two governments have moved beyond industrial park planning to develop 30 square kilometres of wasteland into an economically and socially vibrant, environmentally friendly, and resource-efficient city. Through the project, the Singapore government undertakes to share with the Chinese government its expertise and experience in areas like urban planning, environmental protection, resource conservation, water and waste management and sustainable development, as well as policies and programmes that engender social harmony. Through these engagements with the Chinese government, the Singapore government hopes to learn from them in areas where China is more advanced than Singapore as well. Construction of the Eco-city commenced in September 2008 and, when finished in 2020, it will house an estimated 350,000 residents.

In choosing the city's location, the Chinese government set two criteria. Firstly, the Eco-city should





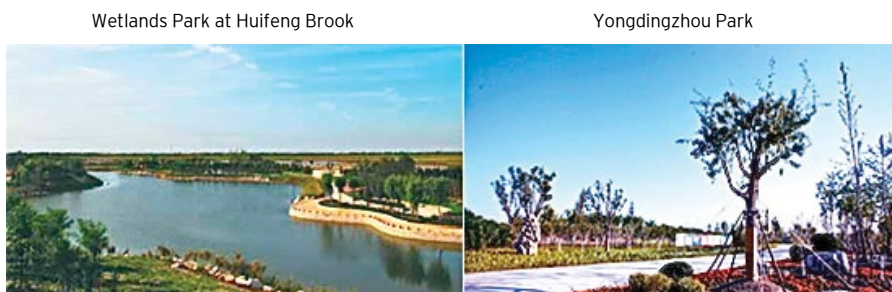
be developed on non-arable land. Secondly, it should be located in an area with limited water supply. The site was selected after a thorough study by both Chinese and Singaporean experts, and is located 40 kilometres from the Tianjin city centre.

Water has been the Achilles' heel of Chinese urban development as, without adequate water supply, land becomes unliveable and unworkable. Of note, North China is particularly vulnerable to water resource constraints. This prompted the several decade-long South-North Water Transfer Project, which transfers excess water from China's southern heartlands to the urbanised Northeast, including Tianjin. However, even supplies from

this source will be put under intense strain if urbanisation in Northeast China continues unabated.

Tianjin Eco-city sits on non-arable, salt-alkaline land in an area characterised by heavily polluted water bodies. This was due to surrounding factories discharging wastewater and other toxins into the water table. Following an extensive cleaning operation, a pond that was once heavily polluted will soon become suitable for recreation. The Eco-city is also using water more efficiently by means of novel initiatives, which include rainwater harvesting, wastewater recycling and, when residents have moved in, encouraging water conservation.

The Eco-city is transforming the area from wasteland into a thriving and



liveable city, where ecological rehabilitation will be delicately balanced with urban development. The project pays close attention to social and economic development, and environmental protection. Once complete, one-fifth of the city's housing units will be in the form of subsidised public housing, in order to meet the needs of lower income households. Public green spaces, as well as free recreational and sports facilities, will be within 500 metres of all public housing. This will help to forge a more inclusive community.

Buildings will be built high-rise and of high density to optimise land use. The city's plans have a unique cellular layout, where several cells constitute a neighbourhood, and a few neighbourhoods constitute a district. Amenities are planned at the cell and neighbourhood levels so that residents' needs can be met, while minimising the need to commute. Furthermore, jobs in business parks will be within easy reach of residential areas. A light rail transit system, complemented by a modern tram system, will be built in order to meet the transportation needs of residents.

The city's economic hub will generate jobs for its residents, draw talent, and inject vibrancy into the city. To date, it has attracted over RMB50 billion (US\$8 billion) in investment. Despite the city enjoying the full support of the Chinese and Singaporean governments, it is intended to be a replicable, scalable and practical model for other cities to emulate, characterised by financial self-sufficiency and commercial viability from the standpoint of investors. As such, the technologies used in the development and operations of the city will be both affordable and suitable for replication elsewhere.

The Outcome

The Eco-city has made progress since construction began four years ago. The project is being tackled in stages, with the first of these near completion. Social amenities, such as schools, healthcare facilities



- 1 pg 21: Master plan of Tianjin Eco-city. Image courtesy of URA, Singapore.
- 2 pg 22, above: Tianjin Eco-city has a cellular layout, where several cells constitute a neighbourhood, and a few neighbourhoods constitute a district. Image courtesy of URA, Singapore.
- 3 pg 22, below: Completion of the first parks in the Eco-city. Photo courtesy of the Eco-city Project Office/ MND, Singapore.
- 4 pg 23, above: The recently completed National Animation Centre in the Eco-city. Photo courtesy of the Eco-city Project Office/ MND, Singapore.
- 5 pg 23, below: The Tianjin Eco-city utilises renewable energy through solar photovoltaics, solar water heating, ground source heat pumps and wind turbines, thus allowing the city to reduce reliance on fossil fuels. The target is to achieve 20% renewable energy utilisation in the Eco-city by 2020. Photos courtesy of SSTEC.

However, it is the project's ambitious environmental, social and economic goals that really set this city apart. The city's urban planners have introduced a set of 22 quantitative key performance indicators (KPIs). These include developing 100% green buildings that will better conserve energy; 20% renewable energy utilisation to reduce reliance on fossil fuels and tap clean energy like solar, wind and geothermal energy; 90% of all internal travel to be via public transport or non-motorised transport; and at least 50% of employable residents are to be employed within the Eco-city to minimise the need to commute.

Other KPIs include maintaining low carbon emissions per capita GDP, ensuring high recycling rates, and potable water from the tap - a rarity in China.

The Tianjin Eco-city is approximately eight years from completion yet people have started citing it as a role model for sustainable development that other cities in China - and the rest of the world - could emulate. The Eco-city was not planned as an

experimental showpiece. Instead, it is a carefully planned and well-executed project, which hopes to change the way urban planners, from around the globe, design and realise the cities of tomorrow.



Ong Beng Lee is the Senior Director of the Eco-city Project Office (ECPO) in the Ministry of National Development, which is the lead agency for the Tianjin Eco-city project on the Singapore side. ECPO works closely with the Chinese authorities, other Singapore agencies involved in the project and the joint venture company to conceptualise strategies and plans for the Eco-city and to oversee its implementation. Mr Ong has been with ECPO since September 2007. A member of the Singapore Administrative Service, he has previously served in other ministries such as the Ministries of Trade & Industry, Home Affairs and Defence.