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EXPERIENCE SINGAPORE

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COOPERATION PROGRAMME



## Green nation

A city of the future for residents who are engaged, enriched and entertained



## An emerging city

Surmounting the odds to create the Tianjin Eco-city



## Clearing the air

Small Island Developing States look to Singapore for tips on sustainability

# Sustainability, Singapore style

Creating a liveable city that  
harnesses technology to  
drive the economy



# Ed's Note

Dear readers,

According to the World Economic and Social Survey 2013, the rapid rate of urbanisation means that more than 6.25 billion people may be living in cities by 2050. This underscores an urgent need to address the numerous sustainable developmental challenges facing Planet Earth, including climate change.

As an urban city, creating a liveable and sustainable environment is a subject close to Singapore's heart. At the World Cities Summit held here in June, Prime Minister Lee Hsien Loong spoke about Singapore's efforts to develop sustainability and eco-friendliness by integrating nature, harnessing green technology and strengthening ownership of the land by the people.

**Sustainability, Singapore style** shares how these efforts have attracted international attention and reaped significant economic benefits. In **Green nation**, we feature some of the buildings and public spaces behind the vision articulated by Prime Minister Lee.

But spreading the word is not limited to our own shores. In **An emerging city**, read about the Tianjin Eco-city, a ground-breaking mega-project between Singapore and China, which has since become an exemplar of green construction.

In April, Singapore shared our experience in sustainable development with other small nations from the Small Island Developing States (SIDS) who took part in a course under the Singapore Cooperation Programme.

Flip to **Clearing the air** to find out some of the valuable lessons on sustainable development learnt through the words of the participants.

There is a long way to go to keep our planet sustainable, but with undertakings and collective commitment as covered in this issue of *Experience Singapore*, we hope the world can overcome the challenges to be a better place for humanity.

*Teo Lay Cheng*

Director  
Public Affairs Directorate  
Ministry of Foreign Affairs Singapore

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in touch!

Share with us your memories,  
photos and experiences in  
Singapore under the  
Singapore Cooperation  
Programme. Email us at  
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↑ **Green  
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Focus  
CITY IN A GARDEN

# Sustainability, Singapore style

Creating a liveable, sustainable city that harnesses green technology to drive the economy. **WORDS BY ELISABETH LEE**

*By* **2050**, more than two-thirds of the world's population will live in cities that will be more crowded than ever, bringing urgency to the quest to ensure that metropolises are both liveable and sustainable.

In June 2014, some of the world's brightest minds met in Singapore for the 4<sup>th</sup> World Cities Summit to address these very challenges. Under the theme "Liveable and Sustainable Cities: Common Challenges, Shared Solutions", the summit brought government →





*Focus*

CITY IN A GARDEN



## OPENING CEREMONY

Guest Of Honour  
Prime Minister  
Lee Hsien Loong  
1 June 2014



◀ Singapore Prime Minister Lee Hsien Loong addressing the World Cities Summit in June.

➔ leaders and industry experts together to share ideas and forge new partnerships.

At the opening of the summit, Prime Minister Lee Hsien Loong outlined the government's efforts to develop the country into a liveable and sustainable city, focusing on three areas: Integrating green spaces into the living environment; putting green technology to use; and engaging both citizens and residents to be partners in the city's sustainable future.

"There are many examples of how Singaporeans are working together to build a more liveable and sustainable Singapore. For example, [we are] preserving nature in Pulau Ubin, one of our bigger offshore islands, through the Ubin Project. And we are designating or aiming to inscribe the Singapore Botanic Gardens as a UNESCO World Heritage Site."

"We are also reviewing the Sustainable Singapore Blueprint so that we have a comprehensive plan and a roadmap for some years ahead," Mr Lee said.

This builds on Singapore's ongoing efforts to become more eco-friendly. Statutory boards such as the Urban





Redevelopment Authority and the Building and Construction Authority (BCA) have taken the lead through judicious land-use planning, and by implementing exacting, eco-friendly building standards. By 2030, 80 per cent of all new buildings and major retrofits will be required to obtain BCA Green Mark certification. This standard is aimed at reducing water and energy bills and the potential environmental impact as well as improving the indoor environment for a healthy workplace. The government has also initiated funding and incentive schemes to encourage firms to cut energy consumption and waste, as well as to adopt green technology.

Singapore has played a key role in creating organisations that are concerned with the push for sustainability. In 2008, the Centre for Liveable Cities (CLC) — which organises the World Cities Summit — was inaugurated. This was followed in 2011 by the formation of the Singapore Sustainability Alliance, a broad-based platform that hopes to bring the government, academia and businesses together to formulate holistic solutions.

## THE NEW, GREEN ECONOMY

Singapore is now set to take this one step further by leveraging its green credentials to drive the economy and attract global businesses.

Its focus on conservation has been a boon for the economy. Many clean technology companies have made major investments here — China-based Hanergy, Denmark-based DHI and Germany-based Saferay have all announced projects — and this sector has experienced robust growth in recent years. According to government figures, the cleantech sector in Singapore is expected to contribute S\$3.4 billion to

the gross domestic product (GDP) and employ 18,000 people, while clean energy is expected to contribute S\$1.7 billion to GDP and employ 7,000.

Singapore's standards for sustainable land use and green construction have not gone unnoticed by the world. As CLC Chairman Dr Liu Thai Ker tells *Experience Singapore*, countries like China look to Singapore for guidance in urbanisation. "China is in the midst of urbanisation, and Singapore's experiences are relevant. Visitors from there are impressed that the city works very well. We created a good environment, and not just physically."



**"China is in the midst of urbanisation, and Singapore's experiences are relevant. Visitors from there are impressed that the city works very well. We created a good environment, and not just physically."**

CLC CHAIRMAN AND ARCHITECT DR LIU THAI KER





*In Singapore*  
A LIVEABLE LAND

# GREEN NATION

A CITY OF THE FUTURE FOR RESIDENTS WHO ARE ENGAGED, ENRICHED AND ENTERTAINED.

**A**T THE WORLD CITIES SUMMIT in June 2014, Singapore Prime Minister Lee Hsien Loong shared with delegates how Singaporeans are working together to build a more liveable and sustainable country: through increasing green efforts, as well as by strengthening ownership by the people, among other things.

One example of this is by preserving nature in Pulau Ubin, one of Singapore's bigger offshore islands, through the Ubin Project; by aiming for UNESCO World Heritage Site status for the

Singapore Botanic Gardens; and by reviewing the Sustainable Singapore Blueprint so that there is a comprehensive plan and roadmap for years ahead.

Sustainability is one of the factors in the country's Building and Construction Authority (BCA)'s Green Mark certification programme. These eco-standards have been conferred on 227 developments so far in 2014, pointing to a rising awareness of the programme as well as growing competency in constructing buildings using green technology.

The sustainability of a city of the future also means fostering more ownership among the residents. New civic spaces like the Gillman Barracks art enclave and upcoming National Gallery Singapore give the people spaces to interact in the art and cultural arenas. When completed in 2015, the National Gallery Singapore — situated within the storied buildings of the former City Hall and Supreme Court — will be the country's biggest visual arts venue, and will focus on displaying Southeast Asian art.







#### ← SINGAPORE BOTANIC GARDENS

The beloved park, founded in 1859, has been submitted for addition to the list of UNESCO World Heritage sites. If admitted, Singapore would have her first UNESCO World Heritage site. Prime Minister Lee Hsien Loong mentioned that Singaporeans take great ownership in, and are very proud of the Botanic Gardens.



#### ↑ ITE COLLEGE WEST

The sprawling Institute of Technical Education College West has won BCA Green Mark awards before for its variety of green features. These include having 40 per cent of its roof area covered in grass or gardens; and the use of low-E glass and shading, with none of the seven blocks facing the afternoon sun. In 2014, it again received Platinum certification for its widespread use of energy-saving features like LED lights, photovoltaic panels and extensive skyrise greenery.

#### ↓ SINGAPORE MANAGEMENT UNIVERSITY CITY CAMPUS

The University's City Campus was also awarded the BCA Green Mark certification. Its green roof, collection system for its air handling unit condensates, and its efficient chiller plant helped earn it a Platinum award. In addition, its façade is double-glazed using low-emissivity (low-E) glass which repels sunlight better than regular glazing.



#### ← GILLMAN BARRACKS

This former British colonial-era development has been transformed into an artistic enclave, with art galleries and restaurants providing visitors with a sense of tranquillity and art culture unreplicated elsewhere in Singapore. The site was jointly developed by the Singapore Economic Development Board, the JTC Corporation and the National Arts Council.

#### → PULAU UBIN

The offshore island of Pulau Ubin is no longer home to as many villagers as it once was, but its rustic charm is something Singaporeans wish to preserve. The Ubin Project aims to engage the public and collect their thoughts on how they view the site as part of Singapore's natural heritage in the future.







*Joining Hands*  
ECO-LABORATION

# An emerging city

**Tianjin Eco-city — a Sino-Singapore joint venture — overcomes challenging conditions to become a model for sustainable urbanisation.**

WORDS BY ELISABETH LEE

**I**T WAS ONCE A BARREN LAND, but in the span of just five years, the Sino-Singapore Tianjin Eco-city — which covers 30 square kilometres, or about half the size of Manhattan in New York City — has materialised to become a symbol of the trust and cooperation between Singapore and China.

As Mr Ho Tong Yen, Chief Executive Officer of the Sino-Singapore Tianjin Eco-city Investment and Development Company (SSTEC) tells *Experience Singapore*, “Today, it is an emerging city that is home to 10,000 residents and more than 1,000 companies.”

The focus here is on sustainability, which “plays a key role in almost every aspect of our work”, says Mr Ho, a Singaporean. From the city’s inception in 2007, experts from Singapore and China have spent years putting goals such as green construction and energy utilisation at the centre of the overall framework.

Mr Ho explains, “The international community has been discussing ‘eco-cities’ for many decades, but there is to date no agreed definition of what an ‘eco-city’ is. The

Tianjin Eco-city’s Key Performance Indicator (KPI) framework is therefore one of the areas where China and Singapore have done some important ground-breaking work.” This comprehensive KPI framework was developed by experts from both countries, and defines the project’s goals.

There are 22 quantitative and four qualitative KPIs covering various aspects of sustainability — for example, having 100 per cent green buildings and 20 per cent of the energy used being from renewable sources. Mr Ho says that these days when the international community discusses eco-cities, they would often consider the Tianjin Eco-city’s goals as a frame of reference.

The city’s development is guided

↑ An eco-friendly office building (above) and the Eco-Business Park (right), at Tianjin Eco-city.



by two broad sets of sustainability principles: The “three harmonies” between people and the environment, the economy and other people; and the “three abilities” in that the city must be practical, replicable and scaleable. Key green features include a desalination plant; an emphasis on walkability; green landscaping; integrated waste management; and a light-rail transit system. The city will also have barrier-free subsidised public housing to promote social harmony, and will retain various heritage features situated along the historic 1,000-year-old Ji Canal that runs through the city.





↑ Housing in the Eco-city was developed with reference to Singapore's experience in public housing.

← The Eco-city (main picture) compared to the site in 2008 (left).

So far, Singapore companies have invested more than US\$1 billion in the Tianjin Eco-city. More than 60 Singapore companies have joined their Chinese counterparts in developing the city, and more than 30 Singapore companies have established a presence there.

Leaders of both countries regularly visit to review progress. Then-Chinese President Hu Jintao visited the Eco-city in 2011; Singapore Prime Minister Lee Hsien Loong visited in 2012; and Chinese President Xi Jinping visited in 2013.

Every year, the Deputy Prime Ministers of the two countries hold a Joint Steering Council to guide development. The Council — co-chaired by Singapore Deputy Prime Minister Teo Chee Hean and China Executive Vice-Premier Zhang Gaoli — is attended by ministers and officials from both sides.

These high-level visits underscore the importance the two governments accord to the project. The two sides also enjoy active and frequent cooperation on many levels outside the project.

By the end of 2015, the city will have a hospital, and this will be followed by a theme park, a five-star hotel, more schools and community centres, and a commercial mall. When completed around 2020, Tianjin Eco-city is expected to be home to more than 350,000 residents.

"Today, five years after breaking ground, a basic community has already taken shape," says Mr Ho. "I am confident that in about 10 to 15 years, we can expect to see a thriving community."

"One of the conditions established by the Chinese government during the site selection was that the Eco-city had to be built on non-farmland and in a place lacking in fresh water. These are challenging conditions, but if we are able to build an Eco-city even in such harsh conditions, then this is a model that can be replicated elsewhere, where conditions are more favourable," says Mr Ho.

Furthermore, some of the key concepts in the Tianjin Eco-city have already been replicated elsewhere in China. Says Mr Ho, "Last year, the Eco-city Administrative Committee — the Eco-city's local government — signed an agreement with the Wuqing District in Tianjin to replicate some of the Eco-city's concepts in Wuqing. The Tianjin government has also asked the Committee to help oversee a few neighbouring developments and to replicate some of our green concepts in those areas."



## A BRIDGE BETWEEN TWO COUNTRIES

Tianjin Eco-city is a flagship cooperation project between Singapore and China, both at government level and at private sector level. SSTECH is a 50-50 joint venture between a Singapore consortium led by Keppel Corporation — which contributed the capital — and a Chinese consortium led by TEDA Investment Holdings which contributed the equivalent amount in land. "The development of the city on a commercial basis is important for ensuring that this is a commercially-viable project that is practical and replicable," says Mr Ho.

↑ Singapore Prime Minister Lee Hsien Loong (right) visited Tianjin Eco-city in 2012.







↓ Ms Sindy Singh (third from left) feels that some of Singapore's transport solutions could be explored in Trinidad and Tobago.

→ Mr Xavier E Matsutaro (third from left) found the visit to Marina Barrage useful and beneficial to his work.



solutions to transportation may well be explored locally."

Ms Singh found the negotiation exercises particularly useful. "Overcoming negotiation deadlocks is an effective skill to employ in reaching a consensus with parties who have differing interests," she says. "There are a lot of personalities at play in negotiations and negotiators have to be skilled in manoeuvring through them in order to focus on and settle the issue."

#### FIRST-HAND EXPERIENCE

Another participant, Xavier E Matsutaro from Palau, echoed Ms Singh's comments on the course's usefulness. "As a delegate representing my government in negotiations, my priorities lie in serving my country's interests," the Associate Climate Change

Coordinator says.

"The discussions we had in the course on working through various forms of impasses were relatable to what I do. Participants worked together to arrive at a point where national, regional and international interests converged to reach a mutual agreement."

The participants also visited Gardens by the Bay and Marina Barrage to get a better sense of Singapore's environmental sustainability and water management strategies. Gardens by the Bay is an award-winning 101-hectare park in the heart of the city whose design integrates many eco-friendly features. Its conservatories use a suite of technologies that help to achieve at least 30 per cent savings in energy consumption compared to conventional cooling technologies. The park's lake system also acts as a natural water filtration system while being an aquatic habitat for fishes and dragonflies.

Marina Barrage, Singapore's first reservoir in the heart of the city, is part of a comprehensive flood control scheme to alleviate flooding in low-lying areas in the city. It also utilises green principles such as double-glazed glass panels which reduce heat penetration and minimise electricity usage by

the air-conditioning system.

The sustainability features of these two attractions were a highlight for Mr Matsutaro. "Marina Barrage is an example of an effective measure to advance sustainable initiatives by making the most of locally-generated water resources and systems," he says.

"This lesson is useful to Palau as climate change will impact our water security in the future. It was beneficial to learn innovative ways to increase long-term water security through information sharing and seeing first-hand examples."

↑ Participants from SIDS such as Barbados, Nauru, the Comoros and Cook Islands learnt about negotiation skills at the UNFCCC negotiations.

## SUSTAINABLE DEVELOPMENT AND CLIMATE CHANGE (SDCC) PROGRAMME

Singapore has been providing training on climate change-related issues under SCP for many years.

In 2012, we took our efforts a step further by establishing a dedicated programme on Sustainable Development and Climate Change (SDCC) under the SCP.

Through the SDCC programme, we hope to share Singapore's experiences in adopting sustainable development solutions and building resilience to tackle climate change and its impact.

The SDCC programme also involves collaborations with developed country partners and international organisations. This allows us to deliver more impactful and relevant programmes geared towards capacity building for other developing countries.



