International Green Building Conference 2015 **Build Green, Live Smart**

Images by Building and Construction Authority

Held from 1 to 3 September, International Green Building Conference 2015 provided an opportunity to reflect on the global green building outlook and present some initiatives and developments by organiser Building and Construction Authority (BCA) in Singapore. Attended by over 1,000 participants, the conference is touted as the premier event for green building in Asia and was the anchor event of the seventh run of the Singapore Green Building Week that ran from 31 August to 6 September 2015.

Targeted at architects, designers, developers, urban planners, and other building professionals, the conference comprised a series of keynote plenary sessions, technology-focused talks, workshops, and networking sessions. It also included Green Mark Tours, where participants could sign up to visit selected exemplary Green Mark–certified buildings, such as Learning Hub at Nanyang Technological University.

During the opening ceremony, guest-of-honour Mr. Choi Shing Kwok, Permanent Secretary of the Ministry of the Environment and Water Resources, was present to announce the newly revamped Green Mark 2015 scheme; unveil details of the upcoming BCA SkyLab, the world's first high-rise rotatable laboratory for the tropics; and share key findings from the second BCA Building Energy Benchmarking Report.

Build Green, Live Smart

This year, to complement Singapore's Smart Nation vision, the conference's theme was "Build Green, Live Smart". A key message was for building developers or designers to deliver greener building infrastructure and for end-users to live more sustainably with the help of smart data tools and technology. Invited experts expanded on these themes during the intensive conference programme, which included three plenary sessions and three different tracks of seminars running in parallel.

Among the speakers for the Opening Plenary session on "Leadership in Green Building", Terri Wills, CEO of World Green Building Council, spoke about the council's new strategy and how it will accelerate the green building movement, while Wang Youwei, chairman of China Green Building Council, shared about the green building movement in China and the policies and directions adopted there.

During the Spotlight Plenary delivered on the second day themed "Empowered Green Living", Chan Soo Khian, principal and design director of SCDA Architects Pte Ltd, introduced a framework of sustainability for beautiful and climatically responsive architecture. It encompassed cultural sustainability, or the narrative of culture that drives architectural space and form; building sustainability, or the use of appropriate local craftsmen and materials; and environmental sustainability, or a climatically sensitive design response to climate.

Drawing an unexpected connection between building and food waste, hunger, and climate change, John Mandyck, chief sustainability officer of UTC Building and Industrial Systems, further suggested how simply wasting less food could lead to economic, environmental, and social opportunities.

Speaking during the Closing Plenary themed "Build Green, Live Smart" was William P. Bahnfleth, professor and director with the Indoor Environment Center Department of Architectural Engineering of Pennsylvania State University; he was also a presidential member of ASHRAE, a global society advancing human well-being through sustainable technology for the built environment, from 2013 to 2014. Bahnfleth summarised current views on the consequences of mediocre indoor environmental quality and proposed ways to achieve a better balance among the potentially conflicting objectives of green building.

BCA Green Mark 2015

BCA's Green Mark has been the leading benchmark for green building in Singapore since it was launched 10 years ago. A decade on, BCA has announced a new version called "Green Mark 2015" with an expanded scope to address sustainability in a more balanced and holistic manner and with more streamlined assessment and certification procedures. The scheme has been launched for piloting and will be fine-tuned before full implementation.

Green Mark 2015 was developed through a collaborative framework involving more than 100 industry specialists and experts and 12 task forces led by BCA and with extensive consultation

1. Guest-of-honour Mr. Choi Shing Kwok, Permanent Secretary of the Ministry of the Environment and Water Resources, delivered his address during the opening ceremony.

2. Aerial rooftop view of BCA's SkyLab test-bedding facility to be completed in 2016.

with industry bodies and academics. Green Mark 2015 is structured into four main sections: Climatic Response; Building Energy Performance; Resource Stewardship; and Smart and Healthy Building. A bonus section on advanced green building efforts is included to spur efforts beyond requirements.

The revamped scheme will place a stronger emphasis on indoor environmental quality and the use of smart controls and analytics to assist in the management and optimisation of building resources. It will evaluate projects on their energy effectiveness in terms of both energy efficiency as well as energy consumption. It hopes to accelerate solar PV adoption by encouraging and recognising the use of renewable energy through solar feasibility studies and solar-ready roof design.

BCA SkyLab for State-of-the-Art Test-bedding

Slated to open for test-bedding in the first half of 2016, the BCA SkyLab will be the world's first high-rise rotatable laboratory in the tropics with state-of-the-art facilities for testing and developing innovative energy-efficient building technologies. Developed in collaboration with Lawrence Berkeley National Laboratory in California, BCA SkyLab is part of BCA's plans to accelerate the pace of research, development, and application of energy-efficient building technologies.

The key features of the BCA SkyLab are its rotatable and comprehensive plug-and-play testing capabilities. Built on the rooftop of a new building at the BCA Academy, it will allow for the testing of technologies in a high-rise urban setting under tropical weather conditions. The 360-degrees rotatable platform will enable tests to be carried out at any orientation to the sun and wind. Beyond technical purposes, the BCA SkyLab will also serve as an education and engagement platform for the sharing of research findings and expertise.

Configured to be plug and play for easy installation and flexible use, the facility will comprise two identical indoor compartments, one test cell and one reference cell, of 40 square metres each. An advanced instrumentation system and a comprehensive sensor network will be capable of measuring energy performance and environmental parameters. It can be used to evaluate the energy efficiency of the building components of façade, cooling, lighting, and smart controls.

BCA Building Energy Benchmarking Report 2015

Last year, BCA took an important first step towards benchmarking and publicising building energy performance information with the inaugural BCA Building Energy Benchmarking Report 2014. The report provided evidence and an objective assessment of the energy performance of commercial buildings. It sought to provide buildings owners with insights to the performance of their buildings, compared to other buildings in similar categories, equipping them with more information towards achieving their sustainability goals.

For the second year, BCA has released the Building Energy Benchmarking Report 2015. It provides a comparative study and consists of two years of data. The three key findings are:

- Commercial buildings achieved better energy performance in 2014 compared to 2013, with retail buildings showing the most improvement at 4.6 percent.
- BCA Green Mark–certified commercial buildings continued to perform better than non-certified buildings, as much as 15 percent for offices and 10 percent for retail buildings in terms of electricity consumption.
- Tenants' electricity consumption continued to be comparable to that of their building owners, reaffirming the potential for tenants to play more active roles in improving the energy performance of their premises so as to achieve greater overall improvement for the entire building.

The next benchmarking report will be expanded to include tertiary institutions and health care facilities for a more comprehensive overview of the energy performance of buildings in Singapore.