

MEDIA RELEASE

BCA Breakfast Talk for CEOs: Green Buildings Innovation Cluster to Bring Best Practices to Key Stakeholders

- *BCA's new \$52 million initiative aims to quicken the pace of adoption of feasible green buildings solutions arising from research efforts*
- *BCA's flagship R&D building, the Zero-Energy Building (ZEB) maintains net zero energy consumption record since it commenced operations in Oct 2009*

Singapore, 3 September 2014 – The Green Buildings Innovation Cluster (GBIC), an integrated research, development and demonstration (RD&D) hub within the Building and Construction Authority (BCA), was launched today by Senior Minister of State Lee Yi Shyan at the BCA Breakfast Talk for CEOs. GBIC will consolidate existing RD&D efforts and capabilities, and provide platforms to demonstrate promising technologies such that they can be brought closer to market adoption. This initiative will be supported by a \$52 million fund to develop, test, monitor and showcase the potential green building solutions.

2. The GBIC is part of efforts under the Energy National Innovation Challenge (Energy NIC)¹ and arose as a follow-up to the building energy efficiency (EE) technology roadmap. This was unveiled by the National Research Foundation (NRF) in July this year, together with roadmaps in the areas of solar photovoltaic, carbon capture and storage/utilisation, green data centre and industrial energy efficiency.

¹ The National Innovation Challenge (NIC) is Singapore's answer to large and complex problems facing the country. The NIC seeks to harness Singapore's research capabilities to develop practical, impactful solutions to national challenges in such areas as energy resilience, environmental sustainability and urban systems. In addition to improving the lives of Singaporeans, these solutions carry the potential of commercial spinoffs both at home and abroad. Under the National Research Foundation's 2015 Strategic Plan, the Energy NIC has been allocated S\$300 million (2011-2015) to harness Singapore's R&D base to increase energy efficiency, reduce carbon emissions and increase energy options.

Three key activities under the GBIC

3. Three key activities that GBIC will focus on include: Energy Efficient Demonstrations; National Building Energy Efficiency Repository; and Capability Building Programmes (See more info in Annex A).

4. The results of GBIC's RD&D projects will be measured and documented in detail for subsequent R&D purposes. The experience and learning points from these projects will also be shared with industry stakeholders, such as academic and research institutions, building owners and developers, as well as other professionals in the green buildings industry from both public and private sectors.

Establishment of Partnership with BCA Green Mark Champions

5. To kick start the GBIC initiative, an establishment of partnership between BCA and eight key partners including Ascendas Land Singapore Pte Ltd, CapitaLand Limited, City Developments Limited, Housing and Development Board, JTC Corporation, Keppel Land International Limited, National University of Singapore and the Nanyang Technological University, took place during the Breakfast Talk. This partnership marks the strong support from the eight BCA Green Mark Champions to validate performance of potential promising technologies within their buildings, with the aim of raising the adoption of these technologies across the industry.

6. "Some of the world's fastest growing cities are in Asia and they require tangible green building solutions. In order to do so, we need to be relentless in our research for more effective green building solutions and combine our efforts in developing large scale and high impact demonstration projects to educate both the industry and public. The launch of GBIC underlies our commitment to lead the green building movement and quicken the pace of adoption of green building practices locally and regionally. We are glad to have our partners on board to support us in moving a step closer to translating the results of our RD&D efforts into actual realisation," said Dr John Keung, Chief Executive Officer, BCA.

New ZEB publication to share knowledge and experience

7. One of the first few green building R&D projects in Singapore is BCA's Zero Energy Building (ZEB) at BCA Academy, built in 2009. It was the first Zero Energy Building in South-east Asia that was retrofitted from an existing building and currently houses offices, classrooms and a resource centre. The experience in developing and operating BCA's pioneering ZEB has been documented by the BCA Centre for Sustainable Buildings (BCA CSB) in a new publication "Leading the Way to Net Zero, 2009-2014: Inside SE Asia's First Retrofitted Zero Energy Building", to share on the different technologies tested and employed in the building, as well as the challenges and lessons learnt.

8. Over the last four years, ZEB has managed to maintain a net zero energy consumption, even accumulating a net surplus of 55 MWh of electricity, enough to power 144 flats of about 100 square metres for a month. ZEB acts as a living demonstration platform for the test-bedding and study of energy-efficient buildings and technologies, as well as an educational hub for students and practitioners in the field. To date, it has drawn interest from more than 23,000 visitors from more than 50 different countries. The publication will serve as a useful and valuable reference for all stakeholders in Singapore as well as in the region to help raise awareness and to facilitate knowledge transfer on zero energy buildings.

9. As in past years, the BCA Breakfast Talk for CEOs is held in conjunction with the Singapore Green Building Week. This year's event sets the stage for discussions and insights on smart green buildings as well as on the importance of tenant engagement towards the sustainability of a building. The event gathered close to 300 CEOs, senior management and C-suites from major developers, building owners and tenants to catalyse change through sustainable energy consumption behaviour and practices.

10. More information about the Singapore Green Building Week, International Green Building Conference and BEX Asia are available at <http://www.sgbw.com.sg/>, <http://www.sgbw.com.sg/about-igbc> and <http://www.bex-asia.com/>

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About Building and Construction Authority (BCA) Singapore

The Building and Construction Authority (BCA) of Singapore champions the development of an excellent built environment for Singapore. BCA's mission is to shape a safe, high quality, sustainable and friendly built environment, as these are four key elements where BCA has a significant influence. In doing so, it aims to differentiate Singapore's built environment from those of other cities and contribute to a better quality of life for everyone in Singapore. Hence, its vision is to have "a future-ready built environment for Singapore". Together with its education arm, the BCA Academy of the Built Environment, BCA works closely with its industry partners to develop skills and expertise that help shape a future-ready built environment for Singapore. For more information, visit www.bca.gov.sg.

ANNEX A

THREE KEY ACTIVITIES UNDER GBIC

Three key activities that GBIC will focus on include: Energy Efficient Demonstrations; National Building Energy Efficiency Repository; and Capability Building Programmes

- a) **Energy Efficient Demonstrations (EED):** EED are demonstrations of identified promising technologies or systems in large-scale buildings. The end goal is to attain cost-competitiveness and validate replicability of the demonstrated technologies or solutions, and to establish platforms where the industry can test and showcase novel or market-proven technologies.
- b) **National Building Energy Efficiency Repository (NBR):** NBR is a central repository that collects and analyses essential building-system-subsystem data, operation, and occupant-related metrics of the demonstration projects. The data would be collected in or near real-time to validate performance of the identified technologies, set benchmarks for building types, and develop industry best practices and standards.
- c) **Capability Building Programmes:** The programmes will focus on five key areas spanning across the technology and non-technology clusters: Integrated Design, Building Envelope and Façade System; Building Management and Information System; Air-conditioning and Mechanical Ventilation; and, Policy and Behavioural Studies (see table below).

TECHNOLOGY CLUSTERS	NON-TECHNOLOGY CLUSTER
<ul style="list-style-type: none">• Integrated Design• Building Envelope and Façade System• Building Management and Information System• Air-Conditioning and Mechanical Ventilation	<ul style="list-style-type: none">• Policy and Behavioural Studies

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Green Buildings Innovation Cluster (GBIC)

Background

Research, development and demonstration (RD&D) will be playing a more prominent role in BCA's 3rd Green Building Masterplan, so as to push the envelope and accelerate the adoption of promising building energy-efficient (EE) technologies and solutions in the industry.

Guided by the long-term goal of "low energy, high-rise buildings for the tropics", a building EE technology roadmap was developed as part of efforts under the Energy National Innovation Challenge (Energy NIC) to bring about significant changes in Singapore's energy landscape in a whole-of-government effort. Arising from this, the government through the National Research Foundation (NRF) has set aside \$52 million over a five year tranche to set up an integrated RD&D hub, the Green Buildings Innovation Cluster (GBIC, pronounced as *gee-bick*), to more tightly couple applied research with translation. This five-year programme will be administered by BCA's Centre for Sustainable Buildings and Construction at the BCA Academy.

Objectives

The GBIC will serve as the central focal point to reinforce the national drive towards greater energy efficiency as well as to streamline, coordinate and disseminate building EE-related activities. It will be a one-stop hub to experiment, exhibit, and exchange knowledge of promising building EE solutions with industry stakeholders. The overall objectives of GBIC are to:

- Develop and demonstrate novel and market-proven solutions in a mix of building types;
- Validate performance, raise and build awareness and capability;
- Proliferate energy efficiency across the built environment.

Key benefits

GBIC will consolidate existing green building RD&D efforts and capabilities. It will also provide platforms for demonstration of promising novel technologies such that they can be brought closer to market adoption. Results of the demonstration projects will be measured and documented in detail. These results can then guide subsequent R&D directions. The experience and learning points from this endeavour will also be shared with industry stakeholders.

Key stakeholders

Key stakeholders of GBIC are academic/research institutions, building owners/developers, and other professionals in the green buildings industry from both public and private sector.

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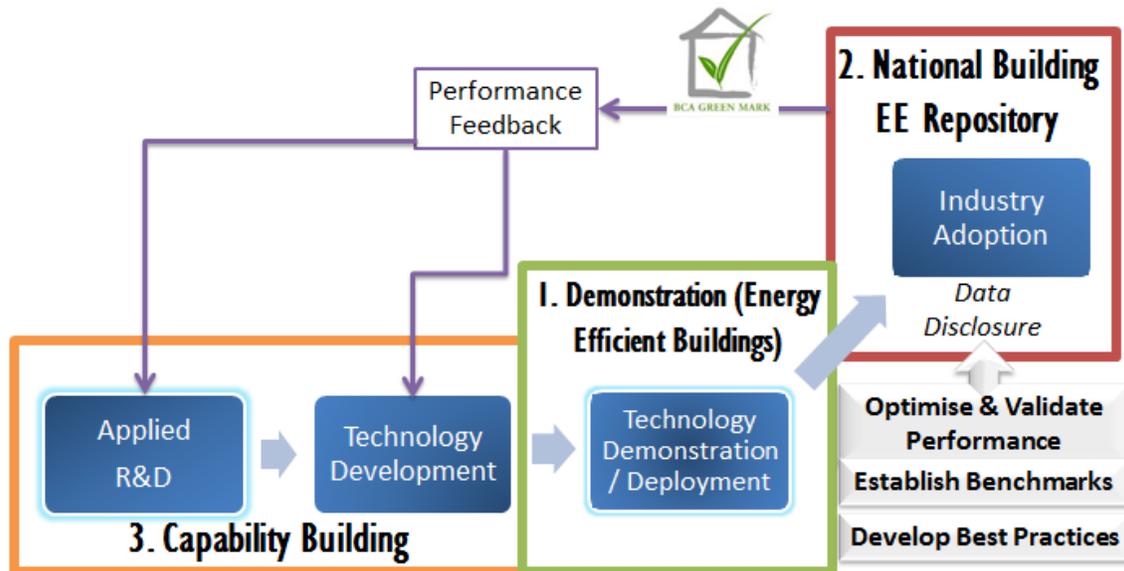
Eight partners have been identified to participate in the initial phase. These are all Green Mark Champions, with a sizable portfolio of Green Mark developments and a strong interest to innovate and demonstrate leadership in green buildings. BCA will be signing an MoU with each of these partners to firm up the collaboration. The partners are:

1. Ascendas Land Singapore Pte Ltd
2. CapitaLand Limited
3. City Developments Limited
4. Housing and Development Board
5. JTC Corporation
6. Keppel Land International Limited
7. Nanyang Technological University
8. National University of Singapore

This is not an exclusive arrangement. GBIC will also work with other stakeholders to push the envelope.

Key activities

GBIC has three key activities namely, **Energy Efficient Demonstrations**; a **National Building Energy Efficiency Repository**; and **Capability Building Programmes** to tightly couple green building RD&D with translation.



1. Energy Efficient Demonstrations (EED)

EED are demonstrations of identified promising technologies or systems in large-scale buildings. The end goal is to attain cost-competitiveness and validate replicability of the demonstrated technologies or solutions. Also, to establish platforms where industry can test and showcase technologies that promise significant energy savings but have yet to see adoption or generate substantial local performance data for verification.

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2. National Building Energy Efficiency Repository (NBR)

The NBR is a central repository that would collect and analyse essential building-system-subsystem data, operation, and occupant-related metrics of the demonstration projects. The data would be collected in real-time or near real-time. The NBR can help to:-

- Optimise and validate performance of the identified technologies;
- Establish basis of setting benchmarks for various building types; and
- Develop best practices and standards that can be shared with and adopted by the academia and industry.

3. Capability Building

The key areas that will be focused under Capability Building include four technology clusters and one non-technology cluster, as detailed in the following table. Taking reference from the building EE R&D roadmap, these five clusters were identified as where gaps currently exist. BCA will directly tap on appropriate expertise in the landscape to drive key research agenda to deepen capability build-up. This is expected to involve, for example, close collaboration with Institutes of Higher Learning (IHLs) and/or the industry.

TECHNOLOGY CLUSTERS	NON-TECHNOLOGY CLUSTER
<ul style="list-style-type: none">• Integrated Design• Building Envelope and Façade System• Building Management and Information System• Air-Conditioning and Mechanical Ventilation	<ul style="list-style-type: none">• Policy and Behavioural Studies

Mechanics

Specific mechanics to carry out GBIC activities is currently in the midst of development.