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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.

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:

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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.
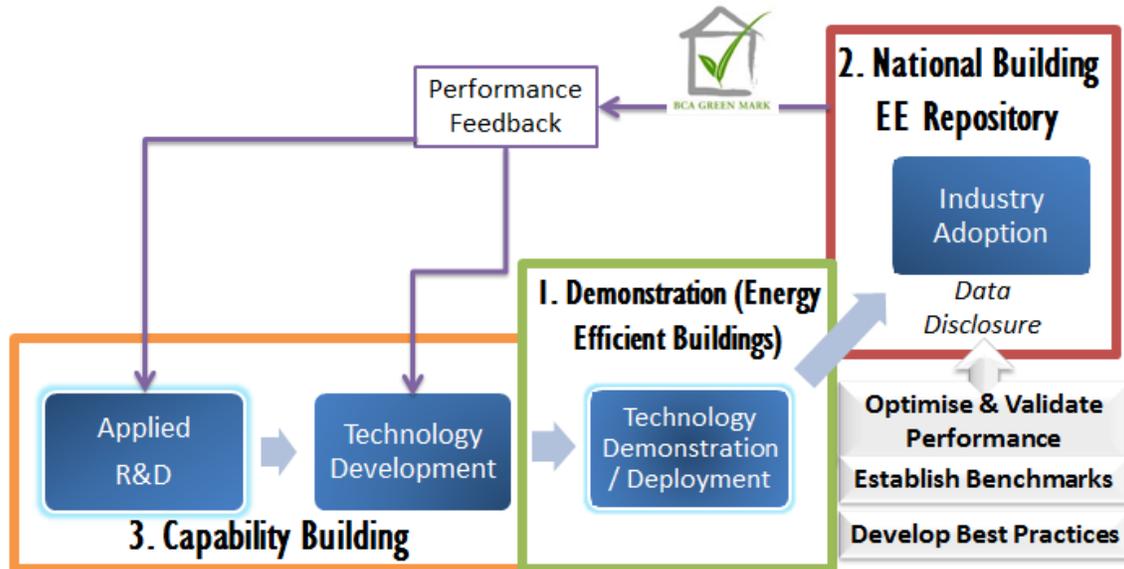
1. Energy Efficient Demonstrations (EED)

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.

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

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- 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
- Integrated Design - Building Envelope and Façade System - Building Management and Information System - Air-Conditioning and Mechanical Ventilation	Policy and Behavioural Studies

Mechanics

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