

BCA-SIA-SGBC International Tropical Architecture Design Competition 2014 for Institutes of Higher Learning

What

The BCA-SIA-SGBC International Tropical Architecture Design Competition 2014 for Institutes of Higher Learning (IHL) is a design competition which focuses on tropical green architecture and sustainable building design solutions. It aims to raise the awareness of the green building movement and initiatives amongst the younger generation and encourage them to become future architects and green experts in tropical green designs.

The competition was first launched in 2011 and jointly organised by the Building and Construction Authority (BCA), Singapore Institute of Architects (SIA) and Singapore Green Building Council (SGBC). This is the fourth time the competition has been organised.

Sponsors

This year's competition is supported by CPG Consultants Pte Ltd.

Number of entries received/shortlisted

A total of 70 entries from 13 countries including Australia, Costa Rica, Germany, India, Indonesia, Malaysia, Philippines, Kenya and USA were received this year. Out of which, six finalists were shortlisted.

Eligibility

Open to institutes of higher learning (IHLs) globally, either teams or individuals.

Criteria for entries

The theme for this year's competition is "**Our Urban Green Home**". The design entries are expected to demonstrate the essentials and key constituents of a green residential building in a metropolitan city. Entries should be applicable for the tropical climate and showcase innovative and sustainable designs. They should also show how the proposed home will be able to integrate with the surrounding environment and landscape.

Other requirements include:

- Incorporating both active and passive design strategies, renewable energy (if applicable) and other ecological features
- Demonstrating how the design encompass energy efficient factors
- Ensuring that the design concept allows end-users to cultivate behaviours or actions that will keep the home green in the tropical climate / incorporate design elements meant to guide users towards self-selecting energy-efficient behaviours
- Presenting a practical, feasible direction for future residential buildings, based on resources available in present day
- Incorporating the engineering feasibility of the design solutions proposed
- Using a green assessment tool of choice to validate their sustainable design concepts (E.g. BCA Green Mark scheme)

Judging criteria and scoring

1	Design Concept & Creativity (20%)
2	Relevance to tropical context (20%)
3	Relevance to theme (20%)
4	Feasibility in current context (15%)
5	Design for behavioural change and social capital (15%)
6	Presentation (5%)
7	Reference to green rating (5%)

Judging panel

Building and Construction Authority	Mr Tan Tian Chong Group Director (Technology Development)
Singapore Institute of Architects	Mr Cheong Yew Kee Council Member
Singapore Green Building Council	Mr Ng Eng Kiong President
CPG Corporation	Mr Khew Sin Khoon President & Chief Executive Officer
Housing and Development Board Building Research Institute	Mr Alan Tan Director (Environmental Sustainability Research)

Winners

Award	Country	School	Project Title	Prize
1st	Australia	University of Melbourne	Water Smart Home	\$5,000
2nd	Indonesia	Parahyangan Catholic University	Green Modular Housing System	\$3,000
3rd	Germany	Bauhaus University Weimar	Green Collectivism	\$2,000
Merit	Singapore	National University of Singapore	The Mosaic	\$800
Merit	Malaysia	National University of Malaysia	Small Farming, Home Farming	\$800
Merit	Indonesia	Parahyangan Catholic University	Kampong Pulo	\$800

1st Prize Award: Montague Precinct
Team: Van Anh Hoang
University of Melbourne, Australia



Montague precinct is planned by the Government as the new high density residential area for the Extended Melbourne CBD. Since Melbourne's population is expected to steadily grow to more than 5 million by 2025 and 6.5 million by 2050, the Government opts for a density of 300 dwellings per hectare for the area. Within the 4ha site, the proposition creates a live-connect-work urban community that addresses the challenge of creating higher and denser living community while providing more desirable housing typologies that accommodate more outdoor settings and open green spaces.

With an integrated public transportation system, the development permits higher use of existing infrastructure. The concept also promotes the idea of a sustainable community through the proposal of environmentally sustainable design strategies, both passive and active in the consideration of energy efficiency, rain water harvesting and utilization of solar energy and wind power. By "planting" buildings that function as trees in terms of management and energy self-sufficiency, the design aims to "Greening" Melbourne into a forest, reverse negative effects of urbanization and industrialization. In addition, it proposes to transform urban gardens into 'micro-farms' for vegetables and animals to produce food for residents' needs.

2nd Prize Award: Green Modular Housing System
Team: Antonius Richard Rusli
Parahyangan Catholic University, Indonesia



The idea is to create a new urban housing concept in a metropolitan city. In this project, Jakarta, an unmanaged developing metropolitan city, was chosen to be the target. The dwelling problem in Jakarta appears to be a result of an inappropriate housing system. In order to achieve better urban green homes, an effective, affordable, and eco-friendly method in designing was needed. A new method was hence developed from a modular design system but with more specific characteristics. Based on a modular system, everyone can become the architect of his own home. It is also economically sustainable and allows users to customise their own house, by adjusting their needs and budget.

The idea is to make a C-Module (a module of a certain size that is surrounded by massive walls on three sides) that can provide space that can accommodate the house activities in everyday life. With the dimension of $2.4 \times 2.4 \times 2.4 \text{ m}^3$, a single block of C-module could provide spaces for a bed room, living room, kitchen, dining room, or even vertical circulation. C-Modules can be mass produced and even reused, just like containers.

3rd Prize Award: Green Collectivism
Team: Tran Hoai Phuong, Bui Xuan Duong
Bauhaus University Weimar, Germany



To build a green home in growing Hanoi, Vietnam needs to go beyond the conventional idea of a mere dwelling. Once a highly water-based city, Hanoi is losing its connection and appropriation with water in the way to become a metropolitan. The proposed house endeavours to reconcile this bond, a development model for the whole city in order to become resilient to flood and climate change.

The proposal creates new urban tissue in form of a sophisticated dyke, operating as both infrastructural and landscape elements. It is the mediator between the river and the city, providing more space for water, occasionally floodable mass and concentrating the urban development to strategic location. Urban and landscape elements work together to establish a self-sufficient water management system.



Merit Award: The Mosaic
Team: Ang Jie Min, Ang Yu Qian, Koe Choon Wei,
Lee Zhe Min
National University of Singapore, Singapore

The Mosaic is a new generation, green residential home for metropolitan cities. It is the epitome of sustainable metamorphic design. It aims to spearhead future residential development by providing sustainable design with high buildability and configurability, while simultaneously promotes social interaction and consciousness. The design rests on efforts to maintain an equilibrium between sustainable design, construction practices and the needs of residents.

Inspired by Lego, The Mosaic utilises a modular concept suitable for volumetric construction and/or off-site pre-fabrication. Each apartment unit represents a 'detachable Lego brick' connected to the floor slab at every level. The bricks can be assembled or rearranged and stacked at each platform, supported by a strong core that runs in the middle of the building. This allows for different stacking configurations to suit the site context.

Merit Award: Small Farming, Home Farming (SFHF)
Team: Lee Hao Yan
National University of Malaysia (UKM), Malaysia



The main purpose of the SFHF Project is to provide a better living place for the poor communities in Jakarta and eventually lower the unemployment and poverty rate, as well as to encourage urban farming that is beneficial for a developing city like Jakarta.

The project is a combined housing and farming project, where the residents will live, farm and work in the same building. Working and living within a building helps in saving money and energy which is more economical. The SFHF Project also features a rainwater harvesting system is in place which contributes to the energy efficiency of the building. The rainwater collected at the roof will be channelled to a rainwater harvesting tank and distributed for the farming irrigation and toilet flushing after treatment.

Merit Award: Kampong Pulo

**Team: Jonathan Nathania, Raymond San, Laurensia Levina, Shinta Fangoria
Parahyangan Catholic University, Indonesia**



Apartments, 'superblocks' and other integrated housing are developing rapidly across Jakarta, Indonesia—alongside slums that continue to grow sporadically across the city. About 65 percent of the people living in Jakarta are in slums. The project aims to create a new urban ecosystem to boost the quality of social, physical and environmental spaces through creating a vibrant community housing; building a green housing environment; and introducing a compact vertical living space. It proposes two main types of housing in this new ecosystem: a Vertical Kampong and an Urban Wetland. These housing types will feature sustainable strategies such as climate responsive design and community-oriented design.