

Floating University

BRAC University campus, Dhaka, Bangladesh



Main author

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Project data

Project group: Architecture, building and civil engineering
 Client: BRAC University
 Project background: Private commission
 Planned start: July 2016

Summary and appraisal of the project by the jury

This project achieves the impossible: it adds both built and open space to the city. The site is polluted swamp-land within Dhaka. Working with the client, an NGO-run university by BRAC (Building Resources Across Communities), the project team proposes a building that floats above the pond. First, the water itself is remediated into a bio-retention pond. The whole ground level of the project is opened to the public. Above, sustainable thinking permeates the design of the university building. Brise-soleil and planted façades optimize the interior climate, reducing cooling demand by 40%. Water recycling and rainwater collection reduces water use by nearly 50%. Photovoltaic panels and beekeeping transform the roof into a productive environment. In total, green areas cover more surface than the area of the entire site.

When this project is built, the jury believes that it will set a new benchmark for sustainability in Asia. Rapid urbanization has deteriorated Dhaka's water bodies and natural habitats. The design remediates a natural area and opens it back up to the city. It situates the building in a way that allows both the university and the public to inhabit the site. Sustainability is deeply integrated into the building design, from thermal zoning to serious reductions in the use of energy and water. Particularly commendable is the way a single building is conceived as a larger rejuvenation project for the city.

Statements on the sustainability of the project by the author

Promoting human well-being and comfort in the built environment

BRAC University's mission statement is to foster the national development process through the creation of excellence in higher education that is responsive to society's needs. The design responds with an environment that is conducive to learning and human interaction. Strategies include:

- Access to natural light and ventilation – direct end-user control of the environment of the classroom.
- Universal accessibility for all.
- Transitions from indoor to outdoor – the building is not hermetically sealed and air-conditioned but offers a variety of spaces.
- Landscape as an inspiring, stimulating, biophilic environment with a strong connection to its natural surroundings.
- 250% of the site footprint is space for social interaction and is accessible by and integrated with the surrounding neighborhood.

Enhancing urban biodiversity

Dhaka's rapid urbanization has resulted in the displacement of the city's water bodies, vegetation, wildlife and open, civic spaces, resulting in a dusty, harsh environment. The new campus aims to bring back some of the lost biodiversity to the city through:

- Vertical gardens (large podium columns from ground

to L3, covered in planting media and epiphyte plants) and edge-stacked planters on the east and west (forming an intrinsic façade shading device) that attract insects and other animals and improve the air quality.

- A roof lawn and fruit trees that attract pollinating bees, form a bird habitat and produce fruit for consumption.
- Water features that recreate an ecosystem with local plants, forming a habitat that supports biodiversity.
- Green areas provide a total 127% of the site footprint.

Reducing waste, saving energy and water

All organic waste created on campus is composted for maintenance of the landscape. The building uses Adaptive Thermal Comfort using 7 modes of cooling/ventilation, fine tuning the building to the local climate. These include enhanced breezes, elevated air speed, dry misting, hybrid tempered, full AC, and mechanical ventilation, optimizing fresh air. The fine-tuned thermal zoning and passive optimization - brise soleil, planted façades, roof canopy – of the building envelope results in 40% reduction in demand. The 6,900 m² 1600 KW PV roof shade contributes 18.5% of energy required, resulting in 58.5% reduction compared to the reference building. Water recycling of both grey for landscape and black water for toilets, with rainwater collection, gives a 46.5% reduction in use.



Image 1: The campus park is the public interface and heart of the university. Given the urban lake site, the vision is to present an innovative and sustainable inner city campus that exemplifies tropical design strategies in response to the hot, humid, monsoon climate while demonstrating the sensitive integration of nature and architecture. The main design strategy is to create two distinct programmatic strata by floating the academia above the lake and revealing a campus park below.



Image 2: Social interaction spaces are incorporated throughout the university to allow for both planned and spontaneous student activities. Differing scales and types of social spaces cater to varying group sizes, all designed for maximum comfort and interaction, with dynamic visual links across levels allowing students to observe activities happening across voids. The building section is designed to catch the breezes and direct them to these gathering spaces, while providing shelter from sun and rain.



Image 3: Main strategy is to create two distinct programmatic strata by floating the academia above the lake.



Image 4: The design strategy reflects the synergistic coexistence between mankind and mangrove.



Image 5: Rooftop sky park holds a liberal open playing field, running track, swimming pool and cricket pitch.



Image 6: Site plan.

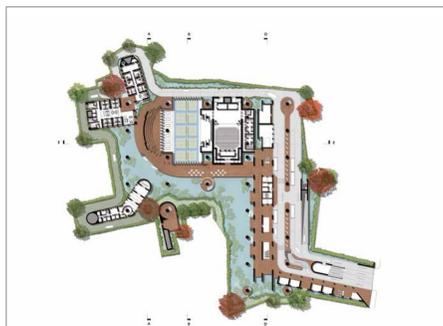


Image 7: First floor plan.



Image 8: Section A.



Image 9: Section D.



Image 10: Section E.