

### Sacred and Profane

### Water treatment infrastructure, Varanasi, India



**Main author**

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**Project data**

Project group: Architecture, building and civil engineering  
Project background: Research project

**Summary and appraisal of the project by the jury**

Water has always played an important role in the culture of India, both as a resource for everyday activities as well as a source of spiritual value. It is in this respect that the project, located on the edge of the Ganga River in Varanasi imagines a new typology of water purification infrastructure that transcends mere utility. Merging the disciplines of engineering, architecture, and urban design, not to mention sociology and anthropology, technical requirements are combined with places for social gathering and cultural rituals, in a set of carefully designed architectural interventions at the threshold between river and land. Key to the proposal is not only the treatment of the highly polluted water, but most importantly the making of a genius loci, uniting the sacred with the profane.

The jury praised the skillful presentation of the project's ideas and greatly appreciated the clarity and beauty of the submitted drawings that intelligently refer to Indian tradition, while acknowledging the present. This said, the jury wondered whether the technology deployed, particularly with respect to the water purification processor, could not have been partially substituted by more subtle and less intrusive methods as used in other parts of the project, for example, by means of rock and gabion water filtration as well as sedimentation pools. Criticism notwithstanding, the jury greatly valued the author's objective to regard infrastructure as more than a mere servant to utility - to be reclaimed as a truly public resource and thus as a matter of design.

**Statements on the sustainability of the project by the author**

**Cleaning the polluted Ganga River through a national network of localized infrastructures**

The building addresses a network of water pollution by creating a prototype which forms a catalyst for cleaning the whole river. By implementing a network of rehabilitation infrastructures along the river at all polluting tributaries, a 5,000 km-long infrastructural system, which adapts to various city conditions, is created. The sanctuary is located at the junction of the Assi tributary, which carries the waste of 500,000 people into the Ganga River in Varanasi. This water is treated in an omni-processor which turns waste water into potable water. River water is filtered through a series of charcoal and plant gabion walls and enters a "safe-water" stream along the river's edge. Scientific research facilities experiment with, monitor and test cleaning technologies.

**Responding to the heritage, vernacular, sacred and ecological conditions of Varanasi**

The built form fits into the heritage fabric of the majestic millennia-old stepped promenade of the city by mimicking its sacred form. This respects Varanasi's aesthetic quality and creates a gentle unimposing infrastructure into an old sacred city. The use of local sandstone and clay-brick masonry construction respects the materiality of the city and gives opportunity

to engage local builders. The annual monsoon causes the water level on the banks to rise and fall. The building responds to the changing conditions both spatially and systematically. Floating wetlands are accessible year-round when the building becomes submerged.

**Facilitating the daily water rituals and needs of the city**

A central focus is the daily water needs of the city and its people. The site includes a number of treated water bodies that facilitate safe and convenient consumption and the practical, recreational and ritual uses of water. Floating charcoal wetland lavoirs allow people to wash clothes without polluting the river. Wetland pools can be used for swimming as well as ritual bathing. The bathhouses use water treated by the research facility, heated through the omni-processor plant. Safe, respectful spaces for women are created, addressing existing vulnerabilities. Scientific research facilities house various cleaning technologies, such as reverse osmosis and UV treatment facilities. Additionally, it houses a simulator room to develop other prototype infrastructures on the river's edge.



Image 1: Top: Perspective south under high flood conditions. Charcoal gabion walls are submerged. Layered breeze blocks create a ventilated boundary for the female bathhouses on the right of the image. Bottom: East-west section. Scientific research and treatment facilities are located underground. A pilgrim path acts as a direct link to the main floating charcoal wetland pool. The central water gallery cascades along the ground plane. Tall stone turrets ventilate underground facilities.

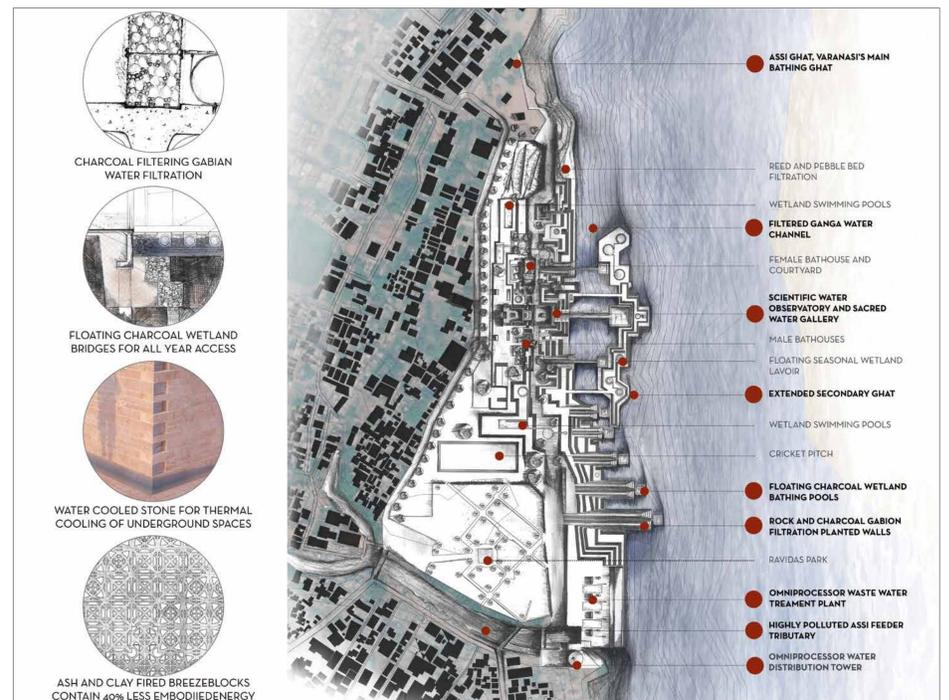


Image 2: Right: Precinct site plan. This indicates the various types and stages of water purification within the sanctuary. The precinct joins the Assi bathing ghat to Ravidas Park creating a large public area and contributes various public recreation, ritual and cleaning facilities to it. Polluted water that enters the Ganga from the Assi River is treated and redistributed into the city from the omni-processor plant. Left: Diagrams containing sustainable details, materials and techniques used.

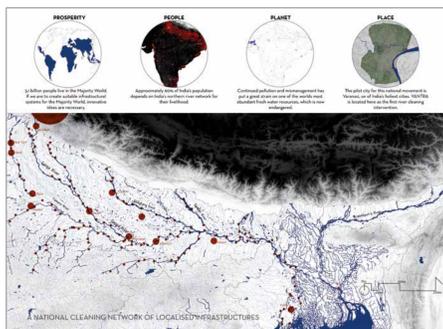


Image 3: Creating global solutions for ecological challenges through a network of localized infrastructures.

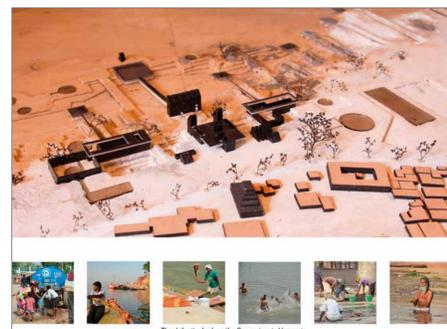


Image 4: Model of the built fabric that responds to the unique daily water needs of Varanasi.

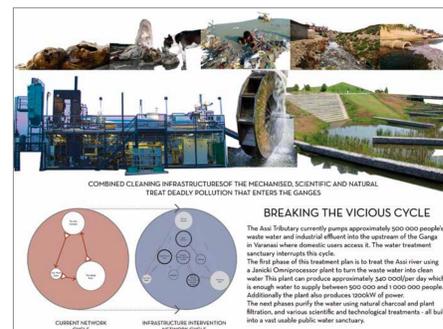


Image 5: Using a hybrid of different cleaning technologies to rehabilitate the hazardous Ganga River.

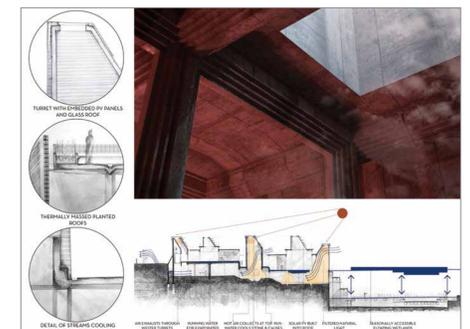


Image 6: Top right: Underground structure. Left: Building details. Bottom right: Diagrammatic systems.

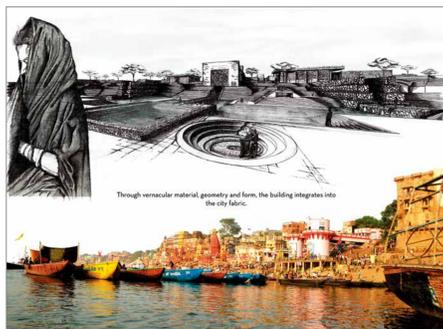


Image 7: Top: Western perspective under low flood conditions. Bottom: Perspective of Varanasi along the river.

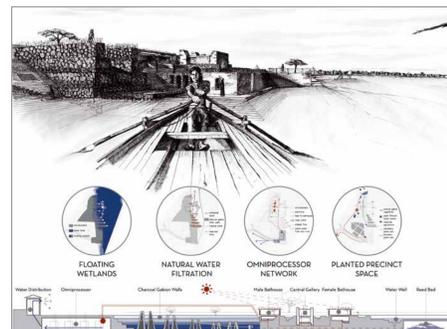


Image 8: Top: Perspective north under low flood conditions. Bottom: Diagrams of sustainable systems and networks.

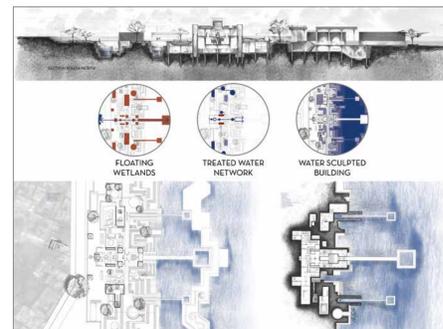


Image 9: Top: North-south section. Middle: Water reticulation diagrams. Bottom: Plans ground-underground.



Image 10: Perspective of monolithic stepped site and seasonal wetland pool.