

# ArchitectureUpdate

## Project-in-Focus

A River in Need, Morphogenesis

Landscape  
Architecture  
Redefining Cityscapes



# Grooming the Ganges' Ghats

**A River in Need,**  
Allahabad to Varanasi, Morphogenesis

Morphogenesis presents an urban intervention for sustainable restoration of a historic interface between the space of human habitation and the space of water. The Ganges is a living entity in the psyche of most Indians. Traditional folklore and mythology are replete with such stories. A large-scale vision and small-scale execution are the keys to a successful implementation.



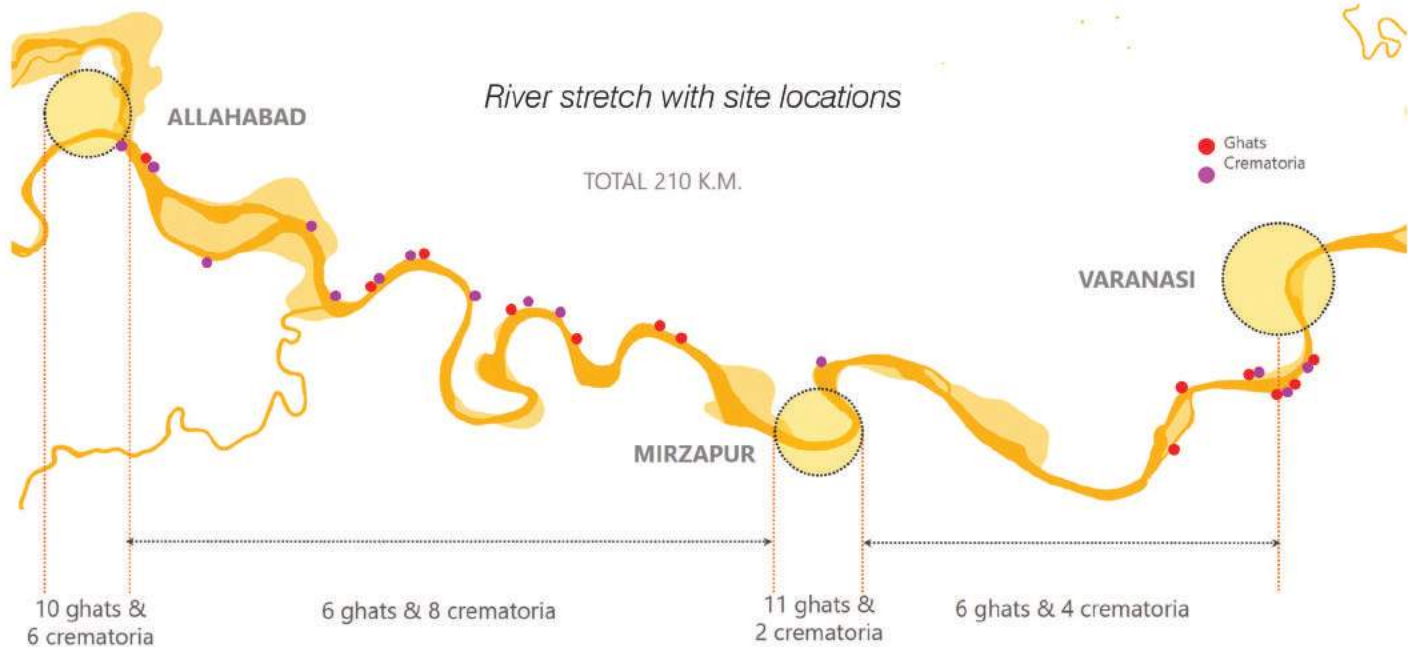
Ar Mani Rastogi & Ar Sonali Rastogi, Founders and Managing Partners, Morphogenesis

Morphogenesis is one of India's Architecture and Urban Design practices with offices in Mumbai, Bengaluru and New Delhi, in India. The firm reinterprets India's architectural roots and consistently employs passive design solutions for a unique contextual language.

Its work encompasses a range of typologies across Architecture, Interiors and Landscape Urbanism. Morphogenesis is a firm that believes in gender neutrality with over 50% women working with them across all levels. They shine with their vision and commitment in making a significant contribution in shaping the changing landscape of Asia.







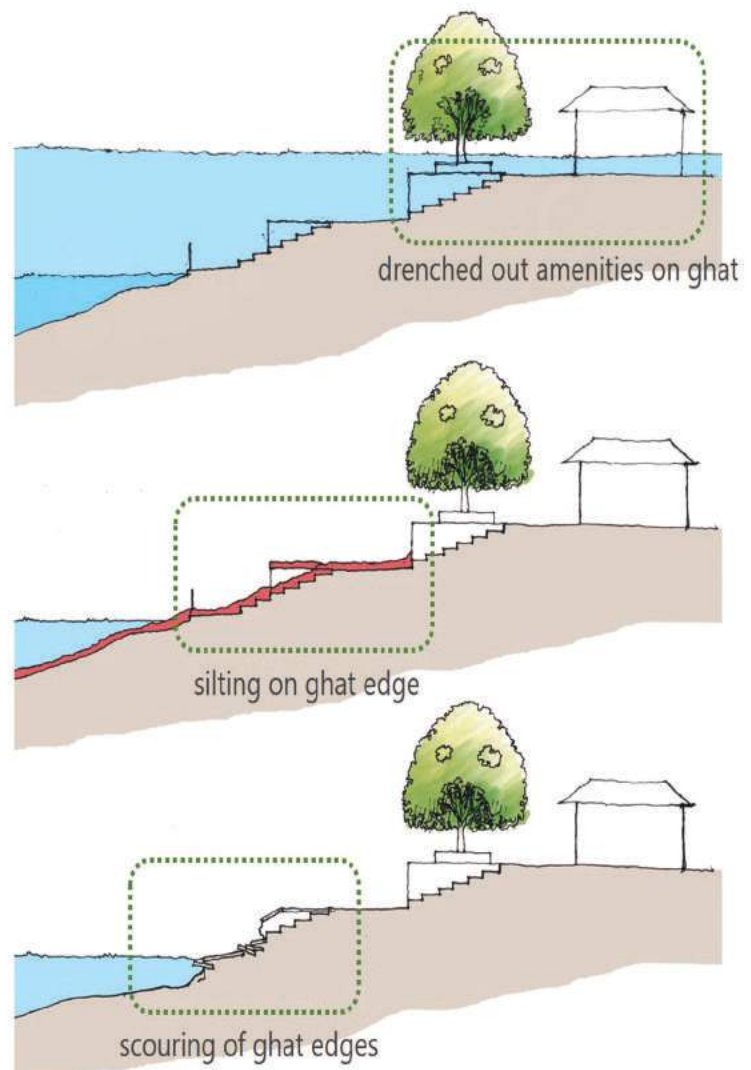
What makes the Ganges an important river to do this for, is its historic relevance- it is almost one with human life, and directly and indirectly supports almost 10% of the world's population. That puts into perspective the enormity of the task at hand. Like many great rivers of this world, the Ganga carries a variety of flora and fauna, provides life and livelihood, and is one with the psyche of the people who live surrounding it. It has religious connotations and human life cycle connotations (one is born, lives and ends life as one with the water). Daily acts and rituals serve as a constant reminder of this. While there is now a court order to treat the Ganga and Yamuna rivers as living entities, and therefore any violation of them is treated in the same manner as violating human life, this is only putting into words what has always been the case.

When one looks at cities along her banks which are thousands of years old, like Rishikesh and Varanasi, the pyres to attain nirvana have been burning for 3000 years, as eternal flames. Human habitation along the Ganges has been around for even longer. A number of things India is famous for, like Yoga, have found new life along the Ganges from where it has dispersed to the rest of the world. It also hosts the largest transient human habitation at the Kumbh Mela which takes place at the meeting point for the Ganges and its two tributaries, and a case for many an Urban Design studio around the world.

Yet, the Ganga is dying. The issues that the river faces today are environmental, social, hydrological and infrastructural. Whilst all are important, the most critical one to tackle is the Ganges' environmental degradation. The Ganges probably carries more sewage than any other water body in the world today. 260 million litres of industrial waste pours into it every day, more than the output of several nations. It carries pesticides and is highly contaminated by ritual waste and human remains. While the Ganges provides life to a significant population, the number of waterborne deaths it causes due to pollution, at a conservative estimate, is 600,000 per year.

As architects and advocates for this 'River in Need', to design in an environmentally contextual and culturally sustainable way, one has to recognise that the ultimate goal to close the circle of life around the Ganges is to become one with the

river. However, that is usually carried out on wood pyres, leading to deforestation and therefore scouring of the edges of the land, with land and water becoming one silted quagmire. High cremation costs often mean that wood required is inadequate, resulting in part burnt bodies polluting the river. Morphogenesis aims to design the crematoria and actual pyre, to reduce the amount of wood required to 30%, thereby also reducing the cost of the cremation, which is often higher than the annual income of the household.





## INTERVENTIONS & DESIGN STRATEGIES

EACH GHAT RESPONDS TO ITS OWN TOPOGRAPHY, HYDROLOGY & LOCAL CONTEXT



There has to be a sensitive handling of all the various rituals that the Ganges is part of. It is as important to anoint a newborn as it is to place the ashes of the dead in there. The cycle has been studied—where people will gather, where they will wait, where they will be mourning and where there will be celebration. All these need to coexist in a culturally sensitive manner.

Whilst looking at rejuvenating the usage of the river, a prime design concern has been dealing with the erosion of the river bank, which is addressed by researching and redesigning traditional vernacular learning of the way the water edge was treated, such as ghats (a flight of steps leading down to the river), which lent themselves to stabilising the river edge along with providing the interface for human and water engagement. The provision of ritual tanks and various other urban design elements—platforms for discourse, platforms for cremation—are such that all the acts can be performed using the water in a controlled way, hence introducing the potential for cleaning of the polluting elements. Morphogenesis has looked at reforestation with plants that are resilient, and work with varying flood levels on the ghats. With

increasing densification of Indian towns and cities, there is greater need for space required for urban interaction, community building and for public engagement. Morphogenesis aims to turn the city inside out by sustainable development of this riverside urban frontage. These ghats when redeveloped will not only serve their traditional ritualistic purposes but also function as urban spaces for discourse and dissemination of knowledge. In that vein these spaces are designed to be Wi-Fi enabled, and in keeping with sustainability metrics, they will almost entirely run off solar power. Simple technological yet historic innovations like hume pipes are introduced to stabilise the edges.

In terms of design strategies, locally available porous materials which allow water to percolate through are used. Almost all structures are proposed to be made of brick because of the good quality soil available in the region, and that it is low maintenance and self-cleaning with the weather. Chaupals (seating under the shade of trees), which has been the age old gurukul method of teaching, are reintroduced as shade canopies for social activity. Smart ghat columns provide additional framework for increasing shaded area besides fulfilling essential functions of providing drinking water, internet connectivity and as solar power stations. Ventilation has been taken care of, with all structures lifted, which is ideal for hot climate construction. Solar panels form most of the lifted roofs enabling greater energy efficiency. Piers capable of sustaining water transport up and down the river have been designed.

Morphogenesis' social agenda is to respond to a river in need, a river that feeds one of the highest densities of population in the world, and in its resurrection, not only bring back the glory of the past but also create potential for the future that sustains the Ganges' intrinsic importance in the lives of future generations. ▲



*Typical Ghat on High water level*



*Typical ghat on Monsoon water level*

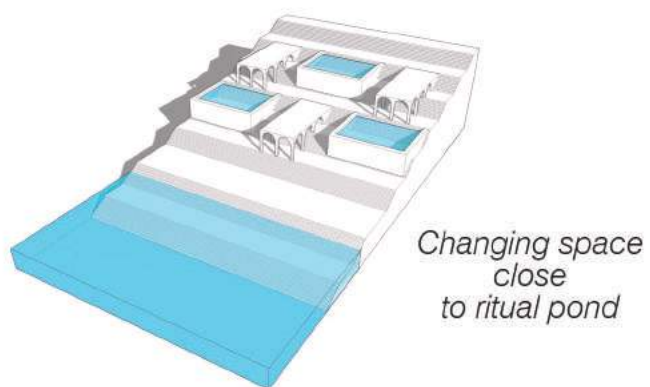


*Typical Ghat on normal water level monsoon*

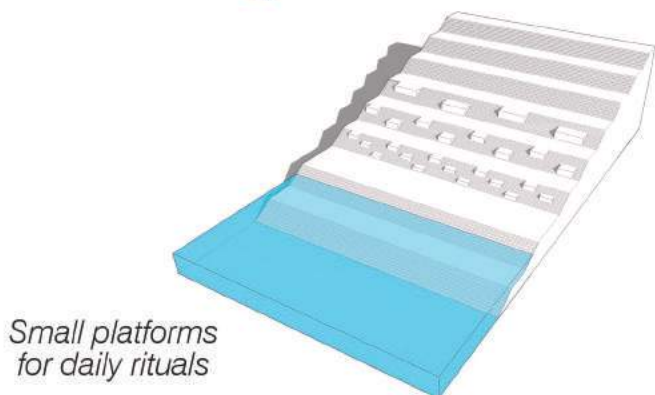


*Typical Ghat on low water level*

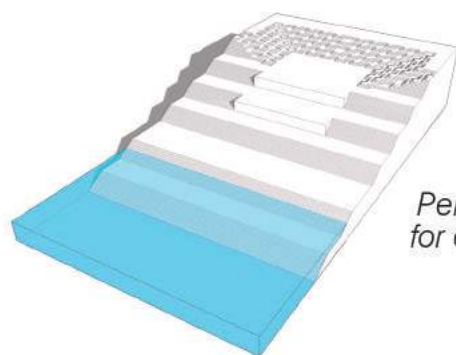




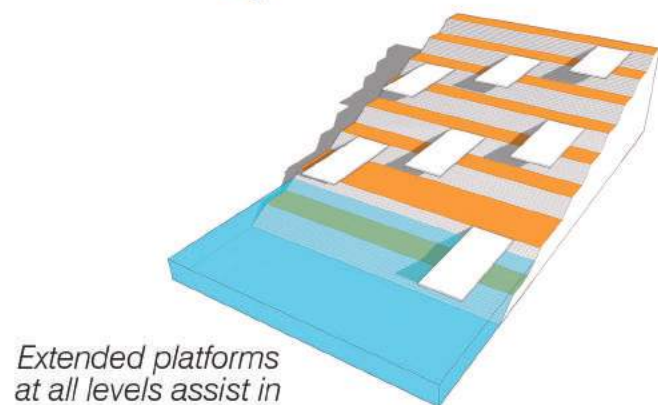
Changing space  
close  
to ritual pond



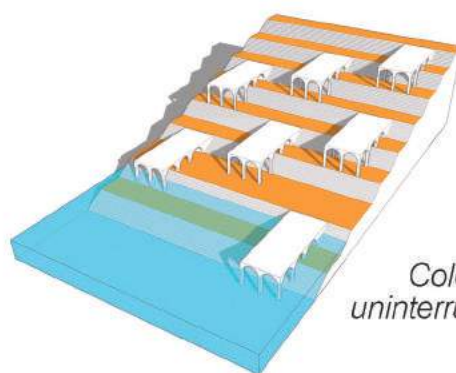
Small platforms  
for daily rituals



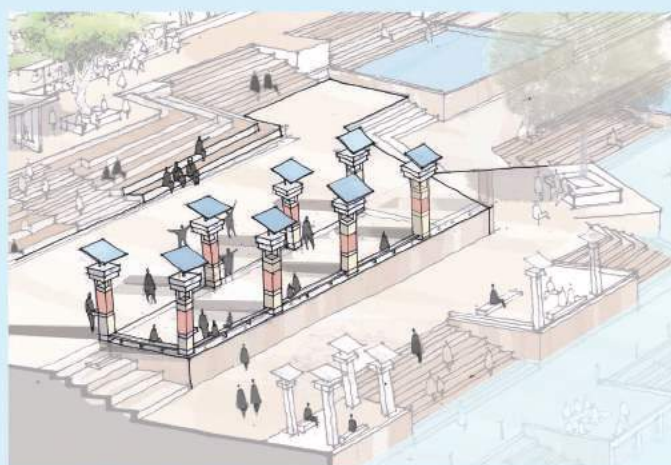
Performing space  
for event and other  
activity



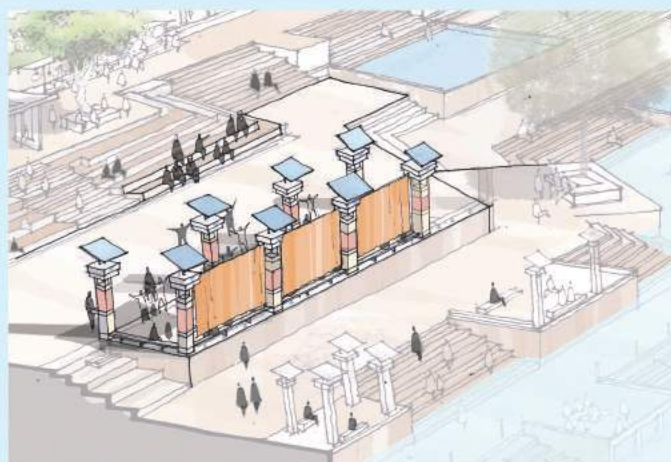
Extended platforms  
at all levels assist in  
accessing boats



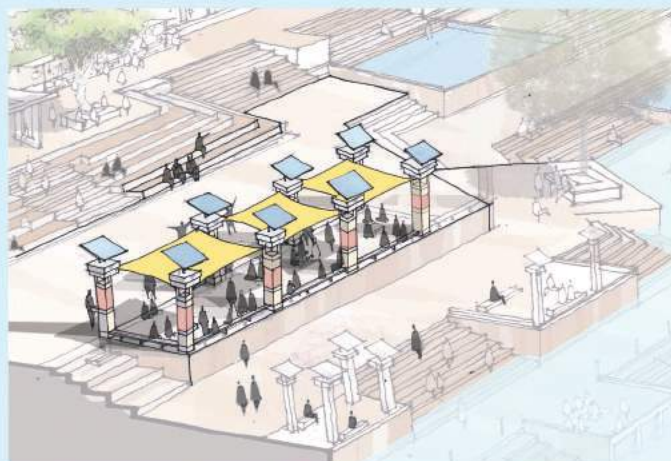
Colonnade for  
uninterrupted river flow



Sustainable smart columns on Ghat



Typical approach- Smart columns to create  
performance background



Typical approach- Smart columns to create  
shaded space

#### fact file:

Architectural Firm	:	Morphogenesis
Project Name	:	A River in Need
Location	:	Allahabad to Varanasi
Client	:	Government Of India (Engineers India Limited)
Area	:	210 kms
Image Courtesy	:	Morphogenesis