

Creating a Civic Realm: Ganga Riverfront Revitalization, Patna

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In the present essay, Nishant Lall discusses the Ganga Riverfront Development Project at Patna which is presently being implemented in phases. The historic city of Patna in eastern India is one of the major cities on the banks of mighty Ganga. To address the issues of severance of tangible links between the city and the river, a joint renewal initiative between the National Mission on Ganga, National Ganga River Basin Authority (NGRBA) and Bihar Urban Infrastructure Development Corporation- BUIDCO with funding from World Bank was started in 2011.

The essay highlights the features of the project while discussing the role of Urban Design in a complex web of urban renewal. The project was shortlisted in the 'Future Projects' category at the 2A Asia Architecture Award at Istanbul in 2015 and was given a 'Regards to Efforts' award in the Young Designers Award organized by Indian Architect and Builder in 2016.

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Figure 1: Panoramic view of the Ganga riverfront in Patna

Sliver Space and *Natura Naturans*

“In a land where it seldom rains, a river is as precious as gold. Water is potent: it trickles through human dreams, permeates lives, dictates agriculture, religion and warfare.”¹

- Alice Albania

The need and necessity of times led our ancient settlements to lace around river systems over the ages. The river systems were the first economic, transport corridor that ushered the bounty of nutrient rich soil after seasonal floods. There was a constant flux of the dynamic system of the river both in *flat space* (meandering, flood plain) and *geo-morphology* (depth, erosion). The dynamic river system also had a pace to its attributes- slow and unmoving during the summers with low water level, and the daunting gaze of a river’s full flood fury in the monsoons. Talking about the formative process, Goethe, in his *The Metamorphosis of Plants*,² reaffirms Spinoza’s terminology as he says that nature can be conceived in two ways, as creative power and as created product, *natura naturans* (literally, ‘nature naturing’- nature doing what nature does)

and *natura naturata* (literally, ‘nature natured’- nature already created).

Modern agriculture and civic services (water and sewerage), packaged fertilizers, piped water systems has caused the relevance and reverence of water to erode in the urban mindset. Physically, the edge of the river and the urban settlements lost its connection to the ebb and flow of the river systems. Travelling across Indian cities, one finds- not only a disregard to this natural edge but also exploitation – garbage dumping, toxic wastes and sewerage discharge. Although a narrow demarcation, a thin edge, the attitude to these urban edges demonstrates our apathy to natural systems (rivers, parks and forests) that constantly nourish the urban systems even now. Their importance has been brought to fore by many environmental movements, activists and governmental schemes. With urban densities rising, coupled with a paucity of public spaces in Indian cities, the forgotten edge of the river offers respite from the tight urban conditions and a renewed connect with the natural systems.

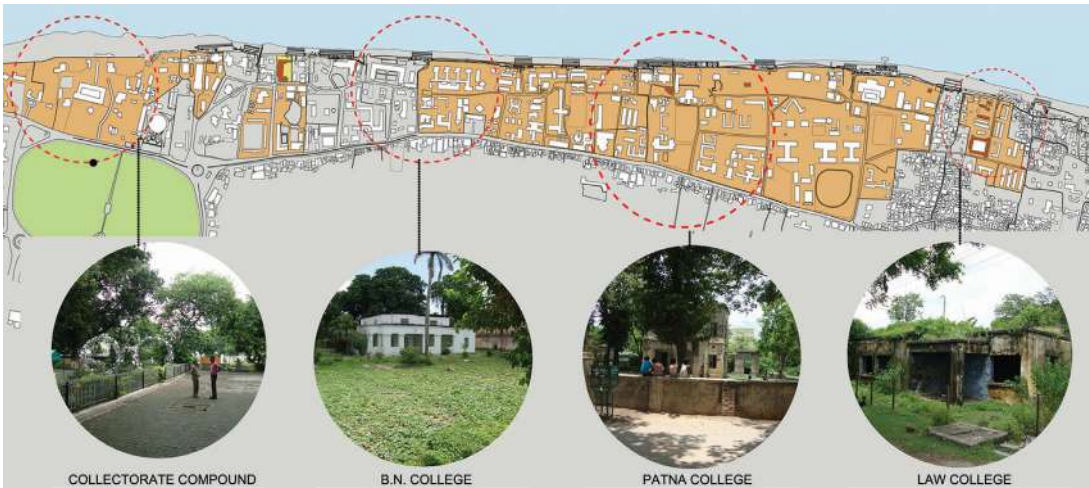


Figure 2: Site study showing low-density government precinct

Linear City

The city of Patna (historical Pataliputra), in Eastern India, the capital of Bihar, is a linear city planned along the river Ganga and has a long history of association to the river- ancient transportation corridor, route for opium trade during the British era, being a sanctuary for Gangetic dolphins and lakhs of pilgrims thronging the ghats during the annual festival of *Chhath Puja* (major sun worship festival in the region) falling in early November. King Mahendra, son of Ashoka the Great is said to have sailed to Sri Lanka to spread Buddhism from one of the ghats on the city now called Mahendru Ghat.

Presently, uncontrolled processes of development, urban growth and garbage disposal have made the river edge redundant and the entire city now morphologically and typologically faces its back to the city. Physically there exists meagre spatial relationship between the built form of the city and the river. Some of the conditions that

cause this, include dense urban morphology of old residential neighborhoods which limit access to the river edge and building typologies that face their back to the river edge thereby leading to the edge being as a dumping and

The Ganga Riverfront Urban Initiative for Patna city proposes a comprehensive urban design addressing vital civic concerns like safety during festivals, public space, lack of facilities along with environmental awareness and ecological restoration.

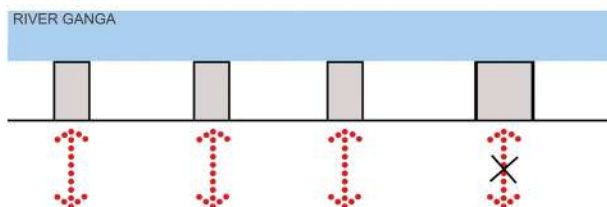
garbage disposal zone. Over the 7 km stretch of a total of 28 ghats, just a few are (Mahendru, Collectorate, Kali, Gandhi, Patna College, Anta and Adalat Ghats) are well used. However, during the *Chhath* festival every year, over 10 lakh people throng the whole riverfront.

Reviving the Riverfront

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EXISTING CONDITION

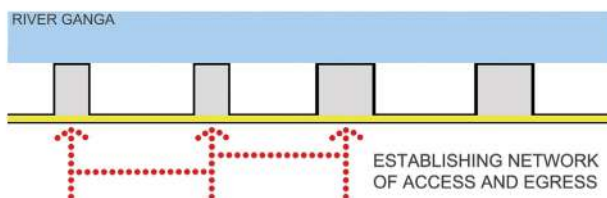
ISOLATED GHATS
UNSAFE ZONE/
BACK OF THE CITY
GARBAGE DUMPING



PROPOSED URBAN EDGE

7KM LONG NEW URBAN EDGE
AND STRENGTHENED NETWORK

CONTINUOUS EDGE



PROPOSED FACILITIES

PUBLIC FACILITIES,
LANDSCAPE ZONES,
PUBLIC SPACES,
COMMUNITY BUILDINGS

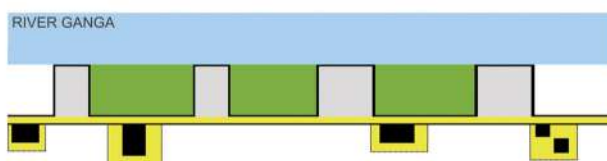


Figure 3: Vision plan concept diagrams

safety during festivals, public space, lack of facilities along with environmental awareness and ecological restoration. One important consideration is 'Walking'- for recreation, health or simply a detour. It is central to the scheme and as such, a 6 meter wide promenade is proposed that enables walking along the riverfront. The promenade offers the residents face-time to the river and nurtures a collective civic mind towards it that is based on appropriate consumptive behavior and waste disposal.

Talking about the urban flaneur, Frederic Groz in *The Philosophy of walking*³ says he appeared at a time when the city had acquired enough scale

to become a landscape. It could be crossed as if it were a mountain, with its passes, its reversal of viewpoint, its danger and surprises too. It had become a forest, a jungle.

Historically, ghats did receive attention from the local municipality and elected offices. It included repairs, upgrades, and few new ghats by the tourism department and temporary setups for the large-scale usage of ghats during the Chatth festival. In the recent times, as stated earlier, the decline and apathy was palpable, rendering the deterioration of the riverfront. In 2011, a joint initiative between National Ganga River Basin Authority (NGRBA), National Mission on Clean Ganga (NMCG) and



Figure 4: Area Level Master Plan

BUIDCO (Bihar Government) with funding from World Bank was started. This provided a bureaucratic synergy from municipal, state and central levels, all seeking a larger vision for the riverfront on a pilot basis. This was further reaffirmed by the systematic stage wise review of the World Bank experts who have had valuable contributions to the implementation plan approved in 2014.

The involvement of our studio started as urban design consultants for a local firm working on the project since the onset. Over the two years of the preparation of the implementation scheme, we collaborated further with experts from landscape ecology and riparian edge restoration, landscape design, social experts (see detailed credits). The State government also brought in Indian National Trust for Art and Cultural Heritage, INTACH- Delhi for heritage assessment and Indian Institute of Technology, Delhi (IIT-D) for crowd-modeling simulations and safety review of the implementation plans. The River Front Proposal aimed to serve dual benefits- create environmental awareness towards achieving a cleaner Ganga, and

reconnect Patna with its long ignored link with the river.

Edge, Paths and Connections

“The oldest path systems in the Earth’s history are found in the non-living nature. Water is transported to the sea in rills, streams, rivers and currents. Branching takes place, involving confluences, islands, meanders, deltas and in the sea, currents and tidal inlets.”

- Frei Otto ⁴

The existing urban river edge in Patna is a 7 kilometers stretch consisting of 28 Ghats- isolated and unconnected at the river edge. Although some of the Ghats are very well connected with city and are actively used, most of them are only used at a local level due to their poor accessibility and connectivity to city. The riverfront comprises of a thin strip of land varying from 30m- 50m as per local condition and much of is in gradient. The Vision Plan covers an area of study that is a complex mosaic of urban fabric varying from 100m to 400m from the river and bounded by the main transportation spine- Ashok Rajpath. The initial

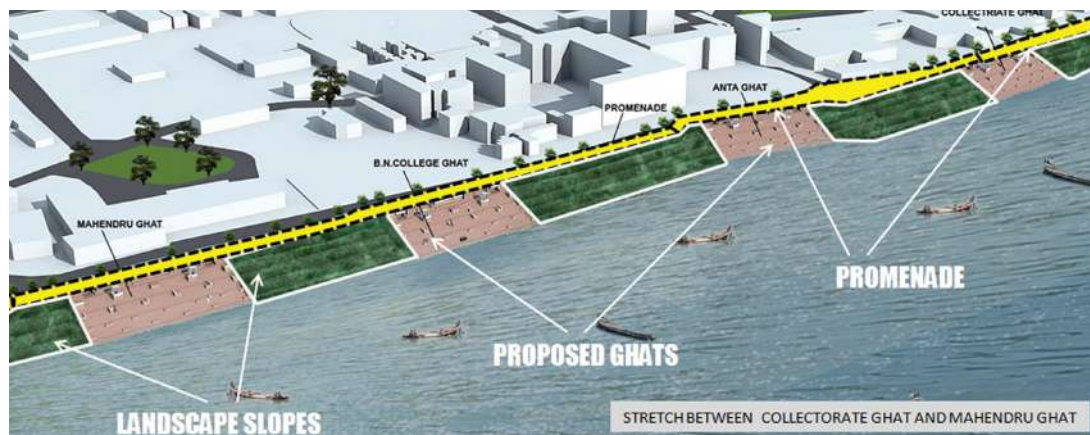


Figure 5: Proposed promenade

site assessments began with elaborate study of connections from the main spine, evaluating pedestrian, motorized and non-motorized vehicle access. We found, some ghats were also used as boat jetties that transported passengers and vegetables from the larger riverine villages and plains. Throughout the project, it has been vital to preserve and augment these connections to the river- both from city side and from the river to the city via boats.

To ease the pedestrian movement during festivals, a network of loop roads and emergency access roads have been carved out of government properties. The essence of connections also lies in the interlinking of ghats and existing fragmented open spaces to provide a continuous public space along the river, aiding in religious festivities and recreation. The open spaces on the river precinct between the river and Ashok Rajpath are of two kinds- residential neighborhoods that are densely built up and have an extreme shortage of open spaces, while others like university campuses that have availability of huge amount of open spaces. Land

pooling, consolidation, developing access roads are key to the overall urban strategy to strengthen the desired connections. Revitalization of underutilized institutional land with government for public use is encouraged along with regeneration of function of unused structures to create public spaces and visual anchors.

Distinct Local Urban Precincts

As most of the study area is a complex patchwork of urban settlement and communities, the complete stretch of 7 km was identified in five major precincts based on their adjacent land-use and physical characteristics. Physical limitations like presence of embankment, retaining walls, heritage structures and existing sewerage discharge were mapped and the proposal incorporated these features in aspects of design and landscape. The methodology to map the precincts was based on a three dimensional overall site model where attributes were highlighted. The potentials were probed on following basis: connectivity network, land availability for public parks to strengthen

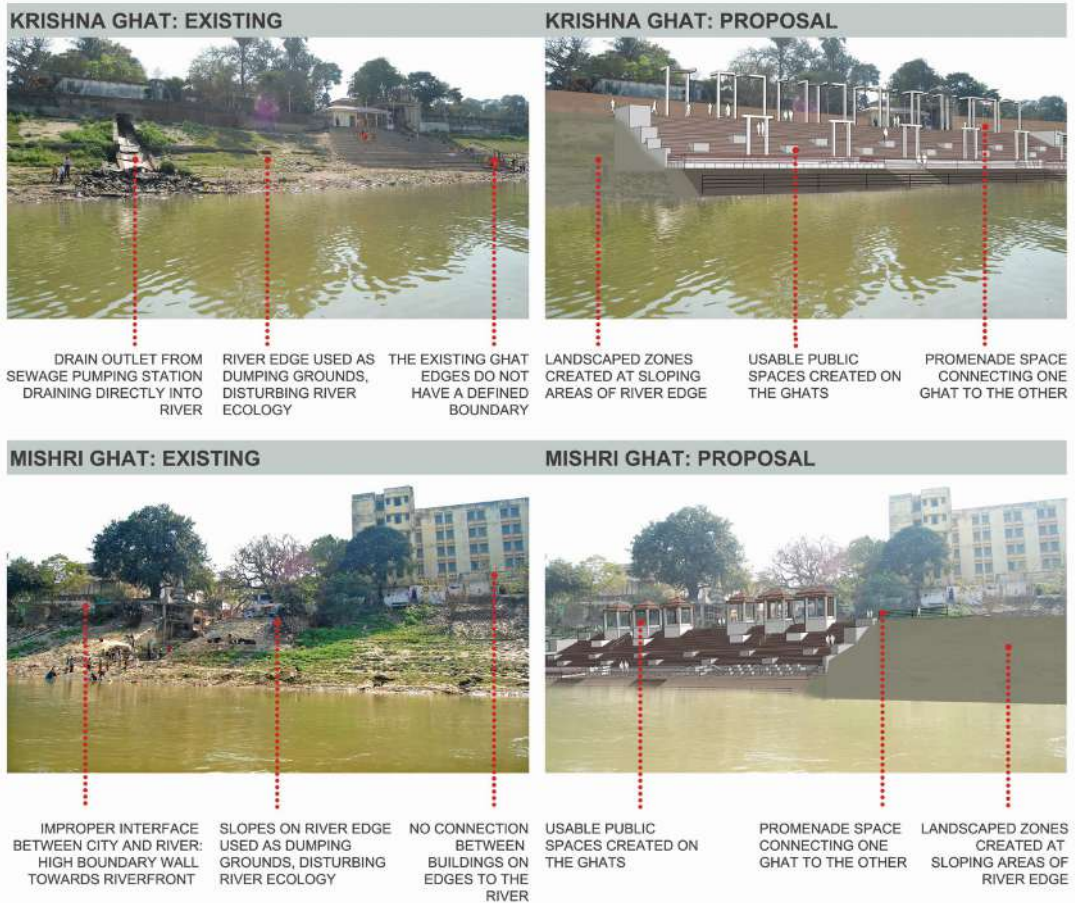


Figure 6: Before and After Renderings for two ghat locations

open space connections to river, availability of government land for user facilities, building retrofit locations and phasing.

Focus was also given to the usage pattern of the 28 ghats and based on that the proposals for infrastructure, parking and augmenting access both vehicular and pedestrian were created. Precinct level parking and emergency evacuation routes were also eliminated. Distribution of facilities along the linear edge like a linear joggers park, continuous pedestrian access of the edge, heritage precincts were elaborated during the

process of creating the Urban Vision. The idea of an urban precinct takes up in detail the idea of the implementation zone and phasing of the construction. To enhance mobility, smaller shuttle loop bus system is proposed to integrate with the citywide public transit network of the precinct.

A New Civic Identity: Creating an Active Urban Edge

A dense cluster of cities straddle the Gangetic plain that makes a complex network of trade and economy. Economics and planning have found a convenient nomenclature of



Figure 7: Ghat design proposals

metropolitan areas (Delhi, Noida, Lucknow), 2nd tier and 3rd tier cities. Patna has found a place in this middle landscape and though historically very rich, it is currently undergoing a major urban transformation and seeking a new identity. Myriad cultural forces are shaping this new thinking- Popular youth culture, families migrating to Patna from hinterlands, vibrant educational and coaching hubs to one of the busiest medical hubs in eastern India. A new 10 acre art park (Rajdhani Park), the housing of the famed Patna Museum in a new building designed by Fumihiko Maki are also reinforcing the cultural landscape. Due to its extent (6.6 km of urban edge), the Riverfront Project aims to stir up a renewed civic identity

and ultimately hopes to nurture a *Civic-mind* towards the Ganga River. Revitalization of the

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river edge by creating continuous walking promenade, network of streets and paths would make the 6.6 km stretch accessible and walkable leading to a year round multi-functional public space. The spatial mix of traditional ghats, new ghats, terraces, viewing decks and stepped green terraces offers a new terrain. New program and facilities are

proposed in precincts, such as awareness and ecology centers, restaurants, cafe's, community centres and amenities like seating, adequate lighting, hawking zones, kiosks that would

The built character of Patna's River edge is an expression of surrounding land use, which varies between institutional, residential, and in other cases mixed use. Each of them has come into existence over time and is quite distinct in its morphology.

help to make the edge functional and user friendly. The project team is currently working with curators to create a public art terraces program, which are placed every 400m on the promenade as a visual anchor. As per the phasing plan, a 50 seat Audio-Visual Theatre and a small library will be completed in 2016.

Heritage and Urban Typology

The built character of Patna's River edge is an expression of surrounding land use, which varies between institutional, residential, and in other cases mixed use. Each of them has come into existence over time and is quite distinct in its morphology. The institutional area for instance had been developed on principles of low-density distribution while the residential areas are relatively high density localities. The needs of the precincts thus vary from place to place. It is integral to consider the edge as an extension to existing precinct characters and as a key urban element that integrates the local needs of space and quality. The Riverfront initiative acts as a platform to preserve and mend fragmented local spatial connections, enhance local potentials and create adequate open space standards for the city. Creating

connections between institutional precincts and the river edge through establishing views or creating access, preservation of heritage structures and their integration with the edge would evoke a lost civic cultural essence and create a unique environment in Patna. Heritage sensitive zones have been assessed along with the INTACH and designs surrounding them have been attuned to the overall built character.

Urban Architecture: Ghats

The architecture of the project is operative at *three scales*: ghat architecture at 20 locations (70m long stepped platforms placed at original ghat locations), small facility buildings at 7 locations and facility kiosks at each ghat, and the promenade itself. At the conception of the urban idea, a keen sensibility of architecture and landscape were woven in at the onset. Apart from having dedicated teams for simultaneously handling every aspect for architecture and urban design, the project became a testing ground for our own studio where we strive to work at the intersection of urban design and architecture and provide expertise on implementation of urban ideas and vision plans. We are able to imbue this through strategic analysis of project phasing, land areas available during low water level, and impact of the urban project. That the Urban Vision plan had been submitted at each stage with DPR (detailed project report) meant that we detail all aspects of architecture and landscape at the same time that an urban precinct is being planned. Assessment of the existing visual language and built character were seeding grounds for further thinking on ghat typology, traditional chattri, and pavilions for the proposed 20 ghats. Since each new ghat



Figure 8: Umbrella spaces at Pathri Ghat

varied from 50m to 70m in width, we began to explore a possibility of a combination of a traditional ghat (steps leading to water) with mini-plazas, shade canopies etc. to vary the experiential quality for the user along the overall stretch.

Eight ghat design prototypes were prepared that could create an appropriate typology for the river edge in relation to the context. Integrating ghats with elements like art terraces, shading systems, colonnades and mini amphitheaters transform them as collective spaces, spaces of pause and interaction, spaces for leisure. These typologies have been inspired from water-based architecture across India and historic typologies like stepped wells in Gujarat, bathing tanks in Kerala, Buddhist influences of Vaults, Torri gate structures and local adjacency to significant built structures.

Urban Acupuncture: Buildings as Extension of Ghat Typology

The Vision Plan for Patna's riverfront development has proposed six community facilities and one electrical crematorium (Gulvi ghat) in the intervention stretch. These facilities are small buildings that cater to providing local



Figure 9: Bharawa Ghat during chhath puja festival in 2015, active usage of torri gate structures

needs of a community hall, reading library, river awareness center for local schools etc. Their design is strongly influenced by the urban fabric and a dynamic urban typology of buildings is proposed that embraces the ghat typology in their conception. Such a positioning eludes tradition notions of site boundary and seeks to integrate the urban fabric with the new infill project, elucidating a case of 'Small Scale Urbanism' and widely successful concept in South America, termed 'Urban Acupuncture' (Medellin, Bogota, Caracas). A Café-Reading room is proposed on the Patna College Ghat which is frequented by college students and the roof is conceived as an amphitheater. The Ecological Center at the Collect orate Ghat, an important location for ferry transportation, the design is based on pilotis to provide a public space underneath the facility. The Community Center at Raja Ghat thrives on a viewing terrace and a performance courtyard, which can be used for local weddings and functions.

Micro Architecture: Architecture of the 2.4m Strip- Multi use zone

The concept of 'Sliver Space' is further intensified when we started detailing facilities for the promenade users. The promenade is 6



Figure 10: Built public space at Choudhary Tola Ghat

meters wide in half the stretch and 4.5 meters wide where land was limited. A zone of 2.4 meters width is programmed as a multi-use zone where kiosks related to food shops, information and security booths, life guard stations and bio toilets are proposed. These micro architectures (Atelier Bow-Wow, Pet Architecture) are visualized as small buildings along a linear wall element. The wall element plays off the old embankment wall that will be repaired along the promenade and are designed as simple volumes that are conditions of offset from the embankment walls. The work on these will begin after pilot stretches on promenade are completed.

On the Ground

The Riverfront Project is a collaborative process spanning five years of planning involving multiple stakeholders and agencies. The construction started in early 2014 and the first set three new ghats were used for the Chhath puja in November 2015. The pilot stretches of the promenade and facilities are expected to be completed by the end of 2016, the final completion by the end of 2017.

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During the process of formulation, planning of the project, reviews and implementation, the “drawing” has emerged as a common canvas for all to collaborate- engineers suggest their on site notings and suggestions, landscape ecologists have created an elaborate palette of plantings following the natural slopes and level area on promenades.

for all to collaborate- engineers suggest their on site notings and suggestions, landscape ecologists have created an elaborate palette of plantings following the natural slopes and level area on promenades. The ‘drawing’ in turn meets its forte in the ‘Site’ which is under constant change.

During the monsoon this year, the water level reached above danger level at many ghats on the promenade stretch. Over the 7 km stretch, the existing levels of the ghats vary by 3 to

4m and as such, certain portions of the stretch came under water for a few days. The ghats and promenade are designed to match the natural ground level, each ghat has a different section so that the slope is aligned to the natural slope. A key feature towards the proposed levels was that the promenade and ghat entry should match with the street or path/ gali level from the city-side. This would allow for effective connectivity at most precincts.

As a studio, we have to maintain close contact with site engineers and are exposed to a whole range of urban design implementation issues across a challenging site. As urban designers, we see our role in aligning various design issues emerging during the inception report- from infrastructure to graphics and sign-age and public art terraces. As architects, we engage with the project to develop the architectural spaces that flow with the overall experience of the promenade, in terms of offering terrace spaces for public amphitheater, and pilotis spaces for additional common ground in the sliver space of the riverfront. Overall, the Patna Riverfront Project has helped shape key design methods for our studio practice and has begun to define our scalar approach to architectural and urban design works. ■

All image courtesy the Author.

Project Credits:

Client: BUIDCO- Bihar Urban Infrastructure Development Corporation & World Bank (key funding agency)

DPR Consultant: SLCPL, Sen & Lall Consultants- Patna & New Delhi

Architecture & Urban Design : Nishant Lall / Nilaa Architecture & Urban Design, New Delhi

Landscape: Akshay Kaul Landscape (DPR + Implementation), Oasis Designs (DPR stage only)
Environment Impact Assesment: Voyants, Gurgaon

Cultural Assessment: INTACH- Delhi & Prof. Divay Gupta, New Delhi (Independent Review by State Government)

Safety and Crowd Modelling: TRIPP, IIT Delhi & Prof. Geetam Tiwari (Independent Review by State Government)

Public Art Proposal: Clark House Initiative & CAMP, Mumbai (under progress)

Heritage Trail Development: Anabel Lopez, New Delhi (under progress)

Notes:

¹ Alice Albania, *Empires of the Indus- The Story of a River*, W. W. Norton & Company, 2009.

² Johann Wolfgang Von Goethe, *The Metamorphosis of Plants*, Cambridge: MIT Press, 2009, p. 106. (First published in 1790).

³ Frederic Groz, *The Philosophy of Walking*, Verso Books, London, 2014.

⁴ Frei Otto, *Occupying and Connecting: Thoughts on Territories and Spheres of Influence*, Stuttgart: Edition Axel Menges, 2009, p. 52