

Riverine Recreation: Integration of Water and Public Space through Responsive Architecture and Solution Derived from Public Intervention; the Case of Padma Riverbank, Rajshahi, Bangladesh

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Abstract—Urban riverfronts are natural assets. Rivers are vital for water resources, protection and conservation of nature and recreational aspects in regard to their immense contributions to urban landscape and physical environment. Rivers have environmental, economic, cultural, social and even historic values. Nowadays, urban riverfronts are under so much pressure. Waterfront developments can be a potential way of rejuvenating cities and physical environments. It can be a powerful way of counteracting urban sprawl. People are instinctively drawn to nature, especially riverbanks, for its calming and rejuvenating effects on human psyche. In recent times, when everything is becoming mechanized and utilitarian, fields and gathering spaces are disappearing from dense urban areas, riverbanks can be a healthy alternative to accommodate the need for public gathering and recreational spaces. Bangladesh is a significant delta. Built by dirt carried by the rivers, rivers criss cross the country like the veins and arteries of a living organism. The lifestyle of the people are historically and culturally tangled with rivers. But unfortunately, rivers have always been neglected in urban planning, sent to the back of the cities to be hidden from public. This unhealthy urbanization has put rivers in serious threats. The need for introducing an adoptive architecture that connects people with water, protects environment and facilitates new developments is now more acute than ever. Rivers should be seen as a sustaining natural feature and a significant factor in development of any kind. How can river be treated not as a threat to be fenced, but a natural phenomenon, to be integrated in daily life and the urban experience? The research aims to find out the role of the river, its effect on the lifestyle of the people and to envision and develop an archetype including river as a significant part of physical built environment.

Keywords: Water, Public Spaces, Urban Fabric, Rejuvenation, Riverside development

1. Introduction

Rivers are a prominent natural asset. More so in Bangladesh. The country is a significant delta and has been built gradually by dirt and silt carried by the waters. Rivers gave birth to this

land is like the life of this country. Countless rivers criss cross the country like veins and arteries. Historically, the daily life of the people, their habits, their livelihood, their culture, and their lifestyle – every aspect is intertwined with these rivers. Yet, Bangladesh, like any other third world developing country, faces the dilemma of unplanned urbanism. Recent population growth and growing need for built forms is gradually pushing the country towards a unhealthy urbanization. As a result social spaces are disappearing from the dense urban jungle and rivers are being ignored and left out of integrated planning. They are being pushed to the back of the cities and not treated according to their rich potential. Riverside areas are being seen as a threat, they are being caged and fenced in a poor way, when they can play the role of significant social recreational spaces. A healthy rejuvenation of riverfronts can give the city a new dimension. It can be a powerful counterbalance to the unhealthy urban sprawl when integrated with the urban fabric. It can also become proper water oriented public space.

This study aims study the effect of river on the recreational activities of public, understand their relationship with the river and find out the role of the riverside areas as a potential social recreational space by addressing the following research question.

How can river be treated not as a threat to be fenced, but a natural phenomenon, to be integrated in daily life and the urban experience?

2. Role of Rivers in Bangladesh

As mentioned before, rivers play a vital part in the daily life of the people of Bangladesh. Over 700 rivers and their tributaries criss cross the country like intricate lattice. The land was made

by dirt and silt carried by these rivers and since then these rivers have been contributing as a life source for this land. Agriculture, food, electricity, transportation in this land owes mainly to the rivers. They also provide tranquil, serene beauty, opportunities for different occupations and also create climatic comfort, by regulating the climate.

2.1. Origins and Movements of Bangladeshi Rivers

Most of the rivers in Bangladesh originated from the Himalayan mountain range. They flow through India, then flow through Bangladesh with a different name before finally discharging into the Bay of Bengal, creating the Ganges, the world's largest delta.

The rivers in Bangladesh adopt different looks in different seasons. In summer, some rivers dry up, revealing "Charhs" or sandy dry lands. In monsoon rivers overflow with water rushing at high velocity, causing floods in nearby areas.



Figure 1. Origins and Movements of Bangladeshi Rivers

3. Present Condition of the Rivers

In present times, the rivers of Bangladesh are in a lot of peril. The overpopulation and unhealthy urban sprawl is forcing the current development strategy to fill in wetlands and water bodies, altering the course of natural lakes, narrowing down or even killing of rivers in some cases. A lot of once famous rivers have already disappeared and a lot more are under serious threat. This unthoughtful trend of blind urbanization is leaving a devastating impact on nature. The country is being affected by natural disasters like frequent flood, deforestation, surge, cyclones

4. New Vision for Urban Waterfronts

Cities and towns are finally rediscovering their rivers. After nearly 30 years of neglect and pushing river at the back of the city, they are finally giving urban rivers the attention they desire. Urban waterfronts are being transformed into vibrant parks, commercial areas or public spaces. This trend has finally picked up pace and a lot of towns are adopting the idea to rejuvenate their riverfronts. After abusing urban rivers through years of misuse and neglect, we have only recently

come to realize what a valuable economic and community assets they are.

The concern for introducing similar adoptive sustainable architecture to the riverside areas of Bangladesh is at its peak. The need for architecture that interacts with people, rivers and water, protects the environment and creates opportunity for new developments is being noticed by scholars and specialists alike.

5. Study Area Selection

A thorough study was done along the bank of the Padma River, Rajshahi to find out the interaction between people and the river and the type of programs adjacent to the river.

The city Rajshahi has been developed on the north bank of the Padma River. The city grew as a riverside settlement and was gradually developed away from the river. The main roads are somewhat parallel to the river. The river is at the center of creation and growth of the city. It was an important commercial, cultural and communication hub in the old days.

The study area is located on the south of Rajshahi city, adjacent to the river. This area is locally called "Shimla Park" and is a piece of land that has not intervened. This is a narrow strip between the river and the embankment constructed by the Water Development Board, extending along the length of the river tip to 18 kilometers.



Figure 2. Study Area

6. Methods and Approaches to Study

Analysis, observation and surveys were done to find out the physical characteristics of the riverside, its relation to the city and impact of the river on the daily lives of the people. Due to limited finance, time and manpower, the whole study process was narrowed down to a limited area. A limited questionnaire survey was also carried out among the residents of the city. Primary data was collected from visit to the site, observation and local governing authorities. Secondary data was collected from books, journals, research paper and documents online. To understand the dynamic relationship of river, city and the people, stakeholder interviews were carried out. Local governing authorities and user group (people of the city who

use the riverside as recreational spots) were the two main stakeholders.

6.1. Site-specific Physical Survey

- Site condition
- Surrounding areas and land use patterns of nearby areas
- Spatial sequence of the site
- Cross sectional study
- Comparative analysis between study area and other vibrant riverside areas
- Identification of opportunities for improvement of physical environment



Figure 3. Sectional Analysis of Study Area

6.2. Relationship with the people

- Demography and user group analysis
 - Study of the way they use the riverbank
 - Time/Occasion specific vibrancy pattern
 - Cultural landscape alongside the river
- Historical influence of the river on the city

Figure 4. Activity Pattern alongside the Riverbank



7. Analysis of the Relationship between City, People and the River

Rajshahi originated on the bank of the River Padma which still exist as the older part of the city. Almost every city originates from the center of its economic activities, particularly, commercial and industrial activities. Rajshahi is no exception. The all season navigable Padma River once served as the lifeblood of Rajshahi City. There were trading through the port facilities on the Padma, commercial activities cropped up around the port and gradually expanded outward with the pace of growth of population and economic activities. Rampur-Boalia was the main focus of activities. However, mainly or

sluggish growth of the economy, the rate of urbanization was always slow in Rajshahi. Loss of navigability of the Padma is identified as the most important reason for economic down fall of the city.

The bank of the Padma river from Gopalpur to Charghat (about 20 Km) is at elevated place. From the court point to Sahapur, is further elevated and protected by Rajshahi city flood protection embankment; the general ground elevation in this area varies from 17 m to 18m PWD; but the embankment crest height is around 21m PWD. The natural ground slope is from southwest to northeast (from the Padma riverbank) in the western side of the city; but southwest to northeast direction (due to the influence of the Baral river basin) at the eastern side, at Charghat area.

Although previously used as a business port, the Padma riverfront was later developed as a recreational area, which could've been a vital plus point. But in recent years, illegal business settlers and unplanned development has put a threat to the most vital areas of the riverfront.

The survey found some insights into user groups 83% of the people coming to the riverbanks for recreational purposes were young people, most of them (78%) being students, the rest being children and adult over 30 years old. Most of the user groups visited the riverbanks on daily basis to socialize and occasionally visited the study area. They wanted to see some form of development there, as currently the study area has no provision for people to spend time there. One prominent aspect was the popular need for provisions of boat rides, and for people to be able to reach the water edge, to have access to the water. So that they can touch it, feel it. One other aspect was the popularity of street food vendors/tea tongs at sight.

The people were very clear about what they wanted. Their preferences are listed below.

User group preferences:

- To be able to walk along the riverside.
- Food and refreshment facilities.
- To have enough seating provisions.
- Space for cultural activities.
- To create a public recreational area with multipurpose usability.
- To be able to reach and touch the water. Option to go on boat rides.
- Beautification garden.
- Amusement options for children.
- Make people aware of the importance of River and related activities.

8. Development and Design Guidelines

After interviewing the stakeholders, it was clear how they wanted to see their riverside. This along with riverside

development strategies and principles helped to come up with some guidelines for development at the study area. Issues were identified and some goal was set. The goal of the study was to analyze the role of the river on the people of the city, develop the study area as an integral part of the urban fabric and to not consider the river as threat, rather use its dynamic state as assets. These guidelines will help to bring forth a healthy development in the study area and rejuvenate the space as a social recreational space for the people, thus creating a vibrant public space that counter acts the dense unhealthy urban sprawl of the city. These guidelines also helps to make people aware about the rivers and their ecological aspects.

8.1. General Development Guidelines

1. Walkability is one of the prominent feature of the Padma riverbanks and it should be taken in account in any development plans. The whole riverside should primarily developed as walkable areas with no obstruction in the way. Built forms may have green roofs accessible to public to maximize walkable areas. Every part of the development should be walkable.
2. The obvious main feature of any riverside is the river itself, more specifically, water. It must not be forgotten that water is and always will be the main attraction. So exposure to water is vital. Views and Vistas should be created to offer the public a sense of closeness to the water. Docks or sloping ramps can be used at water edges to take the people closer to the water. People should be allowed to reach, feel, and touch the water. Built forms can be floating, with no walls on the bottom floors to enhance the view. Provisions for boat rides must be present.
3. The River Padma does not cause severe flood. But it does have varying levels of water levels according to different seasons. Since this is not severe, it can be seen as a landscape asset and not a threat. Multi-level circulation, walkways with various level variation can be built to enhance this effect. Floating platforms or docks can be also used. The varying degree of water levels will give the area different looks at different seasons.
4. One thing the public and the specialists are conscious about is the preservation of the natural state. It should always be remembered that this is a riverfront and not a shopping mall. Minimum physical intervention should be made. Built areas should be lessened and more green areas should be left to reduce heat gain. Local materials can be used to reduce footprints. The natural state of the riverfront should be preserved as much as possible. Local trees can play a vital role for this.
5. Vibrancy should be ensured for public interest. Different programs can run to ensure the vibrancy. Spaces like amphitheatres, open air stages, exhibition spaces, restaurants should be integrated into planning to ensure round the clock and round the year use of the riverfront.
6. It should be kept in mind that riverfront will be developed as public recreational area. So the people must have the freedom to go any part of the riverfront and stay there as long as they want without having to pay any charge. Rented restaurants, coffee shops can be a part of the development but they should not be at the water edge or nearby areas. These areas should be treated as walkable public spaces with minimal seating provisions and greeneries. Illegal business owners that exploit public spaces should be kept away. To entertain and facilitate the public, there should be provisions for street food vendors/ tea vendors/ even small tea tongs, seeing they are the most popular with the people. Not many people come to riverfronts to eat in a confined indoor restaurants. They prefer these vendors so they can purchase the snack and enjoy it while walking along the riverside or sitting beside it. But these vendors should be placed carefully and must not work as an obstruction. Their numbers must be monitored as well, again it should be remembered that this is a riverfront and not a fair/carnival.
7. Economic benefits should also be considered. Minimum rentable features should be introduced like open air stages, exhibition areas, and multipurpose halls to generate economic benefits. Again they should be placed carefully, without obstructing the view. Even boat rides, street food and tea vendors can generate economic benefits.
8. Open air stages are vitally important in the study area as Rajshahi is a culturally rich old city and the riverside is one of the preferred spaces to hold cultural programs. Open air stages and amphitheatres must be a part of the development scheme.
9. One last important thing that should be considered is to make the public aware of the cultural, historical and ecological importance of our river. Only by making the mass people aware of the issue can we achieve protection of our precious rivers. River life museums/ boat museums/ libraries and even souvenir shops can help to spark public interest and awareness. River life exhibitions can be held regularly, crafts associated with river can be old. Altogether, public awareness and education should be taken into consideration in any development schemes.

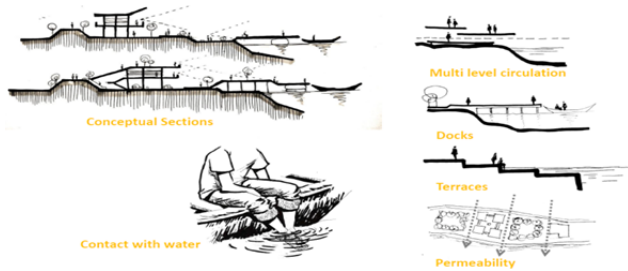


Figure 5. Development Variables

8.2. Proposed Development Scheme

The general development schemes taken into account and an overall development visualization was proposed.

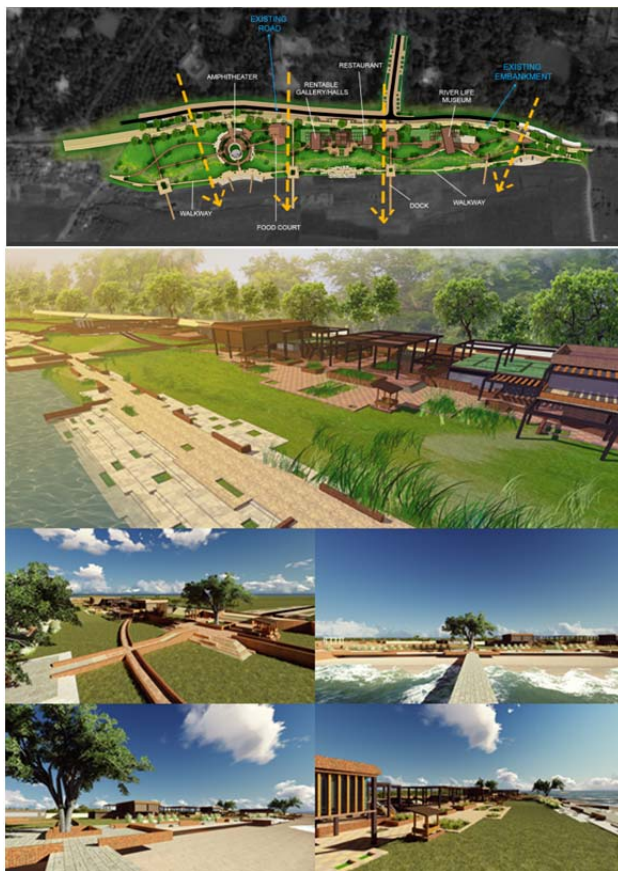


Figure 5. Proposed Development Scheme at Study Area

Table 1. Derivation of Variables

Objectives	Indicators	Variables
To understand the various states of the river and its impact on the city	1. Exposure to the water, the riverside as a contact place	i) Views and Vistas ii) Floating built forms iii) Docks iv) Ramps sloping into water

Using the dynamic states of river as a way of providing changing, dynamic landscapes	2. Walkability	i) Pedestrian trails ii) Walkable green roofs
	3. Solutions responsive to the various states of the river (water level)	i) Multi level circulation and walkable areas ii) Floating platforms
	4. Preservation of existing natural elements	i) Semi paved and green surfaces ii) Local materials iii) Preserve existing trees and landscape
To find out the key aspects of interaction between river and city.	5. Vibrancy	i) Vibrant, multipurpose, public use of the spaces
	6. Interest generation	i) Tea stalls ii) Portable Street food vendors iii) Souvenir shops
	7. Economic benefits	i) Rentable gathering spaces

9. Conclusion

In this day and age, we live in a mechanized, utilitarian urban jungle. Our spaces for social interactions, spaces for kids to play, spaces to spend lazy afternoons are gradually disappearing. Also disappearing are our attachment for our natural assets. It is high time we treated our rivers with some caution. Riverside areas can be a very potential alternative to fill in the void of our gradually disappearing social recreational areas. Rejuvenating the riverside as vibrant public recreational areas has the potential to change a city altogether. Conscious efforts in planning and development can bring out the highest potential of these areas. A healthy river assures healthy environments and healthy people and in terms a healthy city.

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