

**THE CIRCULAR WATERWAY IN DHAKA: ENHANCING RECREATION  
AND PLACE MAKING**

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## **Candidate's Declaration**

It is hereby declared that this thesis or any part of it has not been submitted elsewhere for the award of any degree or Diploma.

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Jesmin- Nahar- Sultana

**Dedicated to**  
***My Beloved Parents***

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## Abstract

Dhaka, seen from the river was a stunning sight and presented a spectacular image to passerby. Thoughtless development of the city destroyed most of the natural assets it possessed, specifically water bodies, wet lands and greenery, which contemporary cities strive to achieve with hard-hearted planning measures and the city also suffers from inadequate provision of outdoor recreation facilities. Dhaka still can set the example of being a green and fluid landscape paradise. There is an immense scope for planning as well as urban design. If the city is developed with the assets it still have, many scenic places can be developed. This research focuses on prospects of enhancing recreational aspects of the Circular Waterways (CW). With the help of water ways around Dhaka potential scope for water based outdoor recreation for the city dwellers can be explored. Three portion of CW have been selected to explore their potentialities for recreation and place making.

From the analysis it is found that ‘Tongi- Ashulia- Mirpur’ route has the true essence of a water based recreation route. People gather here and river is their main attraction for enjoying their activities. Among the three routes only this route provides some facilities to its recreational users. ‘Washpur- Rayerbazar- Katashur’ route has huge potentialities to expose as an ideal recreation area, without any facilities this site has ability to generate huge number of visitors, if necessary facilities and service is provided in this site this place can be developed as an outstanding river side recreation place. Demra-Noapara’ has shown the largest negative gap scores among the three routes because the route is not developed yet and absence of basic required facilities and services.

The recreational development of these routes’ highly depends on the visitors’ satisfaction. To measure visitors’ satisfaction level gaps between their expectations and reality has been identified. From the analysis it is found that the items related to natural beauty and atmosphere satisfied visitors the most and create a relish incitement into their mind rather than the facility related items. These routes are deprived of proper facilities and services. That’s why these routes have not revealed any positive gap scores except the two items under ‘environment’ and ‘recreation facilities’ domain of “Tongi- Ashulia- Mirpur” route. That means the items are not meeting visitors’ expectations. As we have seen that the ‘Recreation Experience’ domain has got the highest satisfaction level of the recreational users and lowest negative gap scores among all the domains it can easily be said that the recreational users come to these three routes for relaxation and aesthetic beauty of the routes though the provided facilities and services are not up to the mark and sometimes absent.

With the help of these explorations some proposals and recommendations have been

suggested in respect of the existing situation for enhancing water based recreation for the city dwellers. Some proposals were shown with sketches to show how specific problems may be solved and make easily understandable to the reader. This research attempts to identify and enhance the attraction points along the selected routes.

Findings from the survey reveal the fact that river plays a very important role in outdoor recreation. Only 9% respondents of the overall respondents' thought that river is just happens to be there and plays no part to their recreation where as to 65% river is "very important" and to 26% it is "Somewhat important". Consequently statistics established that river plays a very important role directly and indirectly to the enjoyment of their recreation. In our country where open spaces are inadequate and lack of outdoor recreation facilities the waterways can be utilized to enhance outdoor recreation activities and contribute the city's recreation and place making enhancement. It is interesting to note that, some routes of the Circular waterway's and their corridors are already being used for recreation.

## Chapter 1: Introduction

### 1.1 Background of the Study

Dhaka once renowned for its waterways and lush greeneries, inspiring travelers to call it the “Venice of the East” - has now turned into one of the most polluted and crowded cities in the world. This once serene and tranquil city, now also suffers from inadequate provision of outdoor recreation facilities (Biswas, M. 2002).<sup>[1]</sup> Recreation is one of those qualities of a city that make lives of city dwellers happier, satisfactory and fruitful (Hossain, M. M. 2004).<sup>[2]</sup> The popularity of water based recreation is very clear and significant in our history. During 1800s and until 1940s the “Buckland Bund” was the famous promenade place for the city dwellers and also acted as leisure center. Due to the phenomenal increase in population over the recent decades and the continuous encroachment into open space for profitable commercial land uses, space available for play and recreational activities has declined dramatically. Open space in the city was approximately 1266 acres in 2004, a significant decrease from the 1916 acres in 1978 (A. Ahmed and M. Sohail).<sup>[3]</sup> The increased density of population in our cities caused the use of open space for development while at the same time it created an ever-growing need for recreational facilities. The essence of community interaction in public recreation sites is disappearing from the civic life of this city and the ever increasing recreational needs of breathing spaces are becoming extremely limited.

The survey of DAP (Detail Area Plan) revealed that there is an acute shortage of open space and recreational areas in Dhaka (DAP Final Report Chapter-III, RAJUK).<sup>[4]</sup> Dhaka City has 148 playgrounds, 27 parks and 3 amusement parks. According to DAP final report, the present Dhaka city (C-group area– 26860 acres) has got a total open space area of 480 acres for a population of 14.8 millions. This gives a ratio of only 0.032 acres of open space per 1000 population, whereas any town planner would wish the minimum standard ratio to be 4 acres per 1000 persons. DAP proposed to provide only 0.16 acre per 1,000 population, far below any international standard for a modern city (4.23 Acres/1000 persons recommended by WHO). Due to the lack of proper

maintenance and management the conditions of the existing parks and open spaces are deplorable. With the continued growth in population and housing, the disparity between the amount of open space required for a healthy living and the amount available continues to increase.

For the purpose of extricating oneself from the humdrum and monotony of the busy city life - it is essential to develop adequate recreational facilities for the citizens. This provides them scope for relaxation when they are tired and fatigued (Mehdi *et al.*, 2002).<sup>[5]</sup> In this mechanized urban life dwellers of city yearn for a place where they can pass their leisure time. If someone wants to get away far from the madding crowd of the city to enjoy some tranquil moments, with light music in the background while having food, and enjoying little sailing boats river views - the waterways in and around Dhaka offers excellent options. The severe lack of recreational facilities in the city alternately offers scope for recreational activities beside the waterways. After an entire day's hard work for living, the journey to and from work by boats can offer much more restful and pleasant experiences than commuting by motorized public vehicles. Settings that can trigger off memories and fantasies will be more likely to provide rich place experience; and place making can help to refine the memorable experience of visitors through activities that give an impact to them. This research intends to explore the potentials of recreation and place making along selected routes of the Circular Waterways.

## 1.2 Problem statement

It has become extremely difficult to provide recreational needs with increasing population in Dhaka. The severe lack of recreational facilities for the city dwellers calls for the regeneration of recreational activities – a natural option at hand is that related to the waterways around Dhaka. Dhaka is located in a delta; water in the form of rivers, canals, waterways, ponds and flood plains form the matrix of Dhaka. It is not just an image of a picturesque landscape; it implies communication, drainage, economic life, festivity, and a certain way of being. The city is blessed with so many rivers and canals, such as the River Buriganga, Turag, Sitalakhya, Balu and the Tongikhali, which

encircles the city and forms a 110 km Circular Waterway (CW)<sup>1</sup> around Dhaka (See Map No. 1.1). The tributaries of these rivers and canals once formed an intricate web over the city. But over time much of this network has been dismantled and severe consequences are being experienced (Hafiz, 1998).<sup>[6]</sup>

Most of the peripheral areas of Dhaka city are deprived of the recreation facilities; the few amounts of recreational opportunities available are situated and serve the inner city. To facilitate recreational facilities for people living in the periphery as well as in the inner, a vibrant and opportune option in hand is the water bodies around Dhaka. When there are talks about Dhaka's outdoor recreation, the images first strikes one's mind are the open spaces, parks, playgrounds, etc. But there is no mere mention about the immense possibilities of the waterways in and around Dhaka. People enjoy water-based recreation knowingly or unknowingly. Someone does not have to travel to far-flung, exotic destination to see amazing sights. The beauty, mystery, and history of Dhaka are all waiting right on the doorstep, ready to be discovered and re-discovered.

Inland waterways (IW) are a living infrastructure which has benefited countries all over the world and which has immense potential to intensify recreational activities (Ken and Guy, 1991).<sup>[9]</sup> IW also enhance communication, environmental improvement, enhancing cultural heritage, promoting healthy lifestyles and improved wellbeing and sports, sustainable transport, encourage active communities, can also act as a visual amenity and contribute to place making (The Inland Waterways Association's proposals, 2010).<sup>[10]</sup> Place making is the process of retaining the essence of a place while improving its physical and psychological aspects so that people are attracted to that place (Gunn, C. 1994).<sup>[11]</sup> These places attract visitors not only on weekends but also on weekdays and can act as a catalyst for attracting people in interesting ways so

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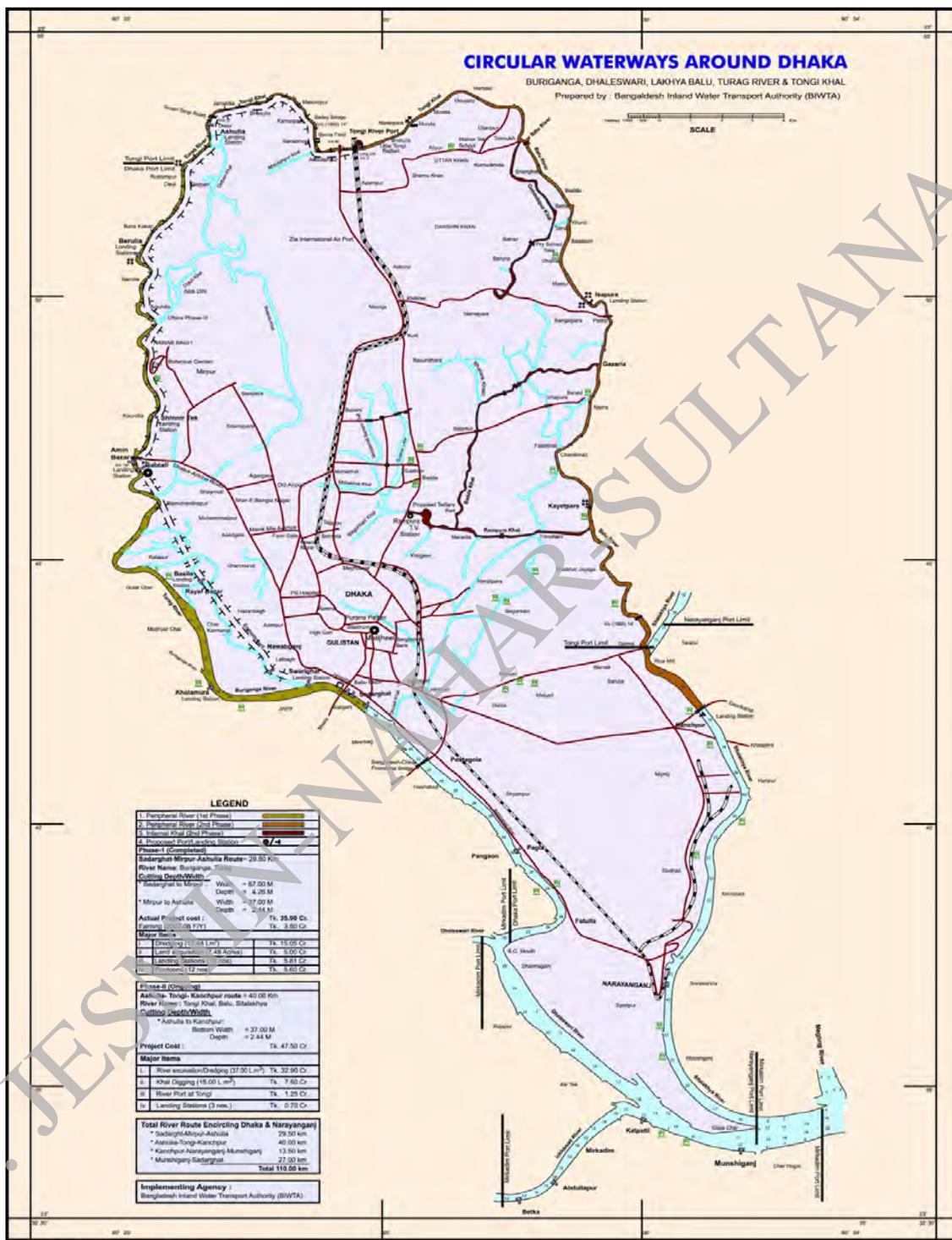
<sup>1</sup> The nomenclature of "Circular Waterways" is not argued here; in fact this is used throughout this thesis. The 110 km waterway around Dhaka has been denoted as the "Circular Waterways" by the BIWTA who initiated a project called "*Introduction of Circular Waterways in and around Dhaka City*". The BIWTA is taking attempts to upgrade the rivers and canals in order to solve the environmental problems like increased water logging, flooding, heat buildup, increased pollution; enhancing communication and transportation and promote tourism and recreation (Final Report, BIWTA, 2001),<sup>[7]</sup> (Revised Development Project Proposal, BIWTA, 2009).<sup>[8]</sup> So this thesis uses the term "Circular Waterways" which signify the 110 km waterways around Dhaka as denoted by BIWTA and seeks scope for enhancing recreational facilities for the city dwellers.

that people's feeling are roused to visit them. When the interaction between places and visitors are really satisfying, visitors feel to visit those places a gain and a gain. Waterways also act as a tourism asset and provide a link between existing and new attractions and support the holiday industry through water-based activities (Waterways Ireland Final Report, 2006).<sup>[12]</sup> Visitors drawn to the waterways contribute to the economy of the waterway corridor through expenditure on local goods and services.

The use of water in urban design to enhance aesthetics is also well known. So Kolbe notes, a city along a water-route, with the presence of water, creates a powerful esthetic image for the city (Kolbe, L. 2009).<sup>[13]</sup> World over attempts have started to rejuvenate eco-friendly and sustainable waterways to cater to transportation, tourism, place making, etc (*ITPI Journal*, March, 2002).<sup>[14]</sup> The appeal of spending leisure time on the water is a common theme in recent urban waterfront development all around the globe. Although dramatically different in their geography and culture, people around the world like to associate relaxation and enjoyment with being on the water (*Breen, A and Rigby. D, 1996*).<sup>[15]</sup> Dhaka has the fortune of riverbanks that are a natural treasure of potential public spaces. Through place making the city can meet the recreational needs of its dwellers, as there seems to be very limited opportunities in Dhaka for residents to spend their leisure time or short holidays within the city. The waterways of Dhaka can provide excellent opportunities to enhance all these. Thus, this thesis intends to show the prospects of enhancing recreational aspects of the Circular Waterways (CW), how trip makers and on site recreational users currently perceive and use the water-routes for recreation, and what improvements they expect along selected routes. The intention is also to show how this can also contribute towards place making of Dhaka through better plan and design of places along the selected routes of the waterways.

### **1.3 Objectives with Specific Aims**

- To identify the present practices and expectations of recreational trip-makers in selected routes of the Circular Waterway in Dhaka.
- To investigate the potentials of recreation and place making along selected routes of Circular Waterway.



Map: 1.1 Waterways in and around Dhaka. (Source: BIWTA)

#### 1.4 Rational of the study

Dhaka is a tender land-mass -- virtually an island -- framed by rivers and a fluid landscape. Even now a ten-minutes ride outside Dhaka shows the aquatic reality of the land-flood plains, wetlands, agricultural fields and canals completely girdle the city (Ashraf, K. K. 2010).<sup>[16]</sup> Dhaka was established on the north bank in a planned way by the Buriganga river side. The other areas were purely rural in characteristics that had a superb beauty of their own which city administrators have failed to protect. This character has been lost due to unplanned developments. In many countries and cities all over the world that has only one river or canal, the water body is coveted and protected like a precious gem and the activities taking around them are beyond the imagination of our designers and planners. But in our country where we have insufficient outdoor recreation and open spaces the waterways can be utilized for outdoor recreation activities. Some routes of the Circular waterway's and their corridors are being used as recreation point presently. Recreation activities can take place surrounding the rivers and place making can occur centralizing on the recreation activities. The adjacent land areas need to be developed for that purpose. But this prospective issue has not been considered or developed in a planned way yet. This issue has immense potentialities; but the main constraint is that the western embankment totally neglected the river during planning and design. On the other hand, the completion of the Eastern Embankment will turn Dhaka into an island surrounded by walls and embankments. When the banks of the river were stabilized for flood protection, little thought was given to either aesthetics or recreation, i.e. public enjoyment. But the eastern part still has the potential to connect the rivers with people and make proper utilization of the resources when the need for enhancing recreation is paramount. With these the congested city will have effectively provided with a significant amount of accessible open spaces. How these routes can be enhanced by place making from the users point of view is the main concern of this thesis. The small rivers, canals, ponds and open spaces within the city have been used up for development; the only option left is to create recreation opportunities based around CWs as well as to create places along its routes which the city and the citizen will cherish. These are the main concern of this thesis.

### **1.5 Importance of the study**

The prospects of river recreation and the impacts it could have on the overall recreation sector of Dhaka city, as well as its pattern of future growth, requires in depth studies and research. But this potential factor has always been neglected in our development plans. Under the circumstances, a detailed study on the present water recreation system is undoubtedly significant for the planned development of Dhaka city as a whole. The thesis has been conducted in order to identify the scope of waterways of Dhaka city in terms of recreation. To assess the existing demand of water based recreation, detailed analysis of the pattern of recreational activities taking place along the waterways, the facilities provided to its inhabitants by the concerned authorities and the user's satisfaction level is necessary. The findings may be used by the concerned authorities to raise the standards of provided facilities up to the level.

The study will also be beneficial for those who will undertake to study the ways in which Dhaka city may make the best use of scarce resources to maximize recreational satisfaction among its dwellers. The study is expected to provide some information and a comparative picture of the pattern of waterway recreation and nature of activities by the users and their anticipated amenities. The thesis also tried to explore the user's perception about the waterway and waterways recreation around Dhaka and how these activities are influenced by user's socio-economic background, age, income, etc. and has also provided some avenues for future research and study in this field. If further study will conduct it should have focused on detailing of the route design development.

### **1.6 Possible outcomes of the study**

The development of recreation and tourism along waterways will bring together the community's needs for leisure and economic growth with an opportunity to experience and understand the historic waterway environment as part of a managed and protected landscape. However, properly targeted, improvements to our waterways can make a contribution to improving the quality of life for those living in the deprived communities along the waterways as well as for other communities. In encouraging a

modern, integrated and sustainable approach to their use, this thesis intends to maximize the opportunities the waterways can offer for leisure and recreation and as a catalyst for urban regeneration. This intends to lead to a drive to re-open and revitalize a bandoned and under-used waterways. The CW has the immense potentialities to act as an alternative to mitigate road traffic congestion and environmental degradation and this can act as a catalyst for better plan, design and development of Dhaka to create positive impacts on the city, such as recreation and place-making.

## **1.7 Research Methodology**

### **1.7.1 Nature of research**

The present study attempts to find out the prospects of enhancing recreational aspects of the CW, how trip makers and on site recreational users currently perceive and use the water- routes for recreation, and what improvements they expect along selected routes. The intention has been also to show how this can also contribute towards place making in Dhaka through better plan and design of places along the selected water-routes. Nature of this study is exploratory rather than testing any hypothesis. By definition, an exploratory research involves investigation of problems on which little formal knowledge is available (Shumi, A. S. 2011).<sup>[17]</sup> Being the nature of this study an exploratory one and using descriptive statistical tools rather than inferential statistical ones, the present study is both a theoretical as well as an empirical one. Both the qualitative and quantitative approach has been used to explore the research.

### **1.7.2 Outline of methodology**

The overall approach to the study has been formulated with conformity to the scopes of the study and to provide a complete guideline to fulfill the objectives. The methodology for the study has been shown on a flowchart in Figure no. 1.1 and is described in detail below.

#### **A. Conceptualization**

The study begins with the conceptualization of the potentials of water based recreation along the waterways around Dhaka. With the perception of the role that water recreation

could play to improve the overall outdoor recreation sector in Dhaka, this thesis has been initiated to justify its prospects, and further steps have been planned accordingly.

### **B. Reconnaissance survey**

After making the first thoughts of the project, a reconnaissance survey has been conducted to have a general understanding about CW to see how people use the water routes for communication as well as recreation. For this, the survey has been made on the both banks of the River Buriganga, Turag and Tongi Khal from Sadarghat to the upstream up to Tongi Jtama field and Sitalakhya River from Demra to Noapara. Reconnaissance survey has been made to recognize existing river side recreation points, and the extent includes the physical infrastructure for the waterway transport, the land uses on the riverbanks, existing landing stations, road linkage to the landing stations, and circulation pattern of the waterway users.

### **C. Formulation of objectives**

Two specific objectives have been developed for the study and the total study intends to fulfill these objectives.

### **D. Formulation of thesis plan**

After the formulation of the objectives, a comprehensive work plan has been prepared to carry out the study. By maintaining sequential flow and interrelationship of activities thesis plan has been developed to achieve the desired result.

### **E. Literature review**

An elaborate literature survey was carried out to have a basic understanding on river side recreation pattern and its practice around the world. River side recreation provision in Dhaka as well as in the whole country is a totally neglected issue in Bangladesh but it has huge potentialities to expand in a great extent and could be able to take significant contribution in the tourism sector of Bangladesh. No research has been conducted on that issue yet. For this reason a research project named “CHICAGO Rivers Demonstration Project” based on ‘Perception and Use of Chicago Waterways for recreation’ has been used as a guide for this research. This report describes an interrelated set of social science investigations conducted for this Project. The purpose of these studies was to understand how user and interest groups currently perceive and

use the Chicago and Calumet River corridors, and how they would like to see the corridors improved for recreation and related values.

#### **F. Selection of Study Area**

Reconnaissance survey has identified that the route from Sadarghat to upstream up to Katashur has a unique pattern of water transport for passengers and upstream up to Aminbazar for goods transportation. For a significant size of recreational users' route trip making, exclusive potentialities for recreational prerequisite and immense scope for future development for recreation, and potential attraction points for recreation along the river routes, three portions of routes of CW have been selected. The "Tongi-Ashulia- Mirpur" Route, "Washpur- Rayerbazar- Katashur" Route and "Demra-Noapara" Route (Shown in Map No. 1.2) have been selected for conducting the study. Approximately 3%-4% trip makers use the "Washpur- Rayerbazar- Katashur" route for recreational purpose and the daily average recreation trip makers generated in this route is about 223 (Nabi, A. M. 2006),<sup>[18]</sup> in Ashulia is about 300 and in "Demra- Noapara" is about 100 (Physical survey, 2010).<sup>[19]</sup>

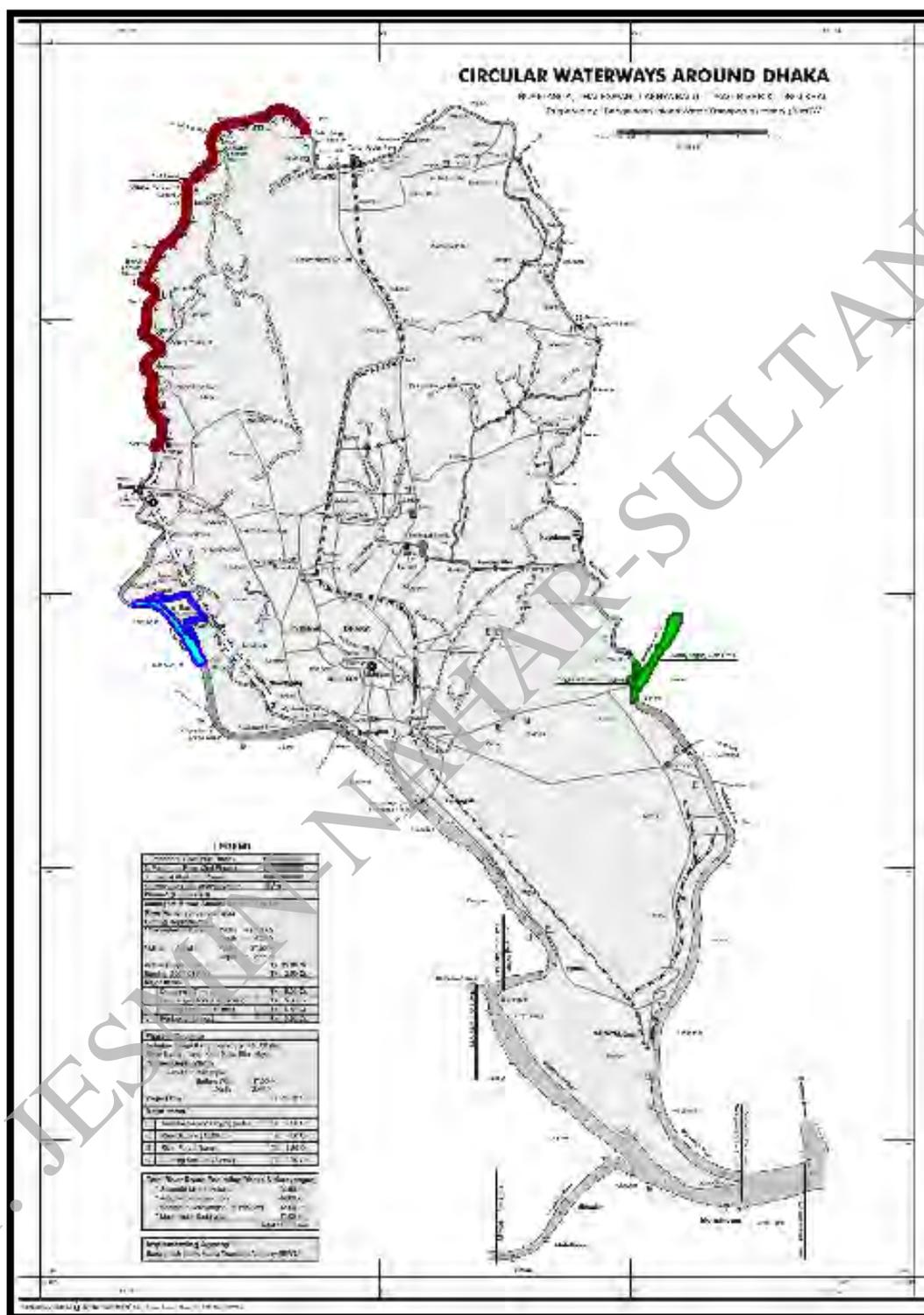
#### **G. Sampling**

The on-site recreational users and route trip makers have been taken as samples. A representative sampling has taken randomly for 95% confidence level with a sampling error of 6% and that came to around 187. But due to several limitations, sample size has been fixed at 180; 100 for "Tongi- Ashulia- Mirpur" Route, 50 for "Washpur-Rayerbazar- Katashur" Route and 30 for "Demra- Noapara" Route. "Tongi- Ashulia- Mirpur" Route has covered more samples because 48% samples are from this route and it gives the true picture of river side recreation characteristics and more recreational users gather here than other two routes. Though this sample size is very little in respect of the total volume of recreational users', but 180 can be a representative sample of the whole volume of trip for an exploratory research and face to face in depth interview.

#### **H. Preparation of questionnaire**

After performing a reconnaissance survey on the study area, a clear and well defined questionnaire was developed. As this study was mainly based on primary data sources, questionnaire preparation was an important part of this study and special attention was

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**Map: 1.2** Map showing selected routes of the study area. (Source: By the Researcher)

given to preparation of the questionnaire. For this study, preparation of questionnaire was completed in three phases:

1. **Preparation of draft questionnaire:** Keeping in mind the objectives of the study the questionnaire was prepared so that it included every aspects related to river user's characteristics, respondents identification, their perception, satisfaction level and expectation about the water based recreation.
2. **Pretesting of questionnaire:** After preparing a draft questionnaire containing questions related with all possible types of aspects needed for the study, a pretesting of questionnaire was conducted. It helped to find out the errors of the questionnaire. It also helped to rearrange questions, and to make question more meaningful and answerable.
3. **Finalizing the questionnaire:** After pretesting of questionnaire, it was finalized after correcting all errors. The final questionnaire was used to conduct survey in the study area.

The questionnaire included open-ended questions to capture the wide range of activities, users' likings- disliking, suggestions, user perceptions and attribute preferences, and closed-ended questions to measure attitudes about specific river-recreation related issues. The survey was field tested on 30 respondents. When open ended questions were asked in the pretest they did not response well but when the respondents were asked to answer the close ended ones they were more comfortable and the answers were carrying great weight. After pretest some points were removed from questionnaire and decided to give focus on in-depth interview survey because of size of questionnaire is comparatively time consuming and the respondent's perception about the issue is not clear. Questions focused on three major areas: river use characteristics (activities, transportation to the site, distance traveled to the site and the time taken for this journey, visit length); perceptions of the river (the importance of the river, potential problems in the corridor, liked and disliked at tributes, perceptions of recent improvements, and suggested changes for rivers in the river area); and demographics (age, occupation, income, sex etc). A five points "Likert Scale" has been used to measure 'levels of

importance' and 'levels of performance' to explore visitors' satisfaction level with various attributes of provided facilities among selected routes.

## I. Method of Data collection

### 1. Primary Data

Primary data has been collected through observation, questionnaire survey and interview method.

- a. **Observation** method has been applied to identify user's trip pattern, pattern of user's activities, characteristics of routes, existing physical infrastructure, neighboring land use, accessibility condition of link road, tourist attraction points along the route, type of vessel, its existing condition and speed, number of landing stations, Ghats and their condition, river bank vegetation type, water quality of river and behavior pattern of onsite recreational users'. Along with observation method photographs and video graphs have been taken to demonstrate the existing condition of study area.
- b. **Questionnaire survey**- All interviews were conducted on-spot and face-to-face, with the interviewer writing respondents' answers to open-ended questions verbatim. Survey respondents were selected carefully, controlling for interviewer bias as much as possible, and ensuring that representative samples of the recreation visitors were interviewed. A minimum number of interviews were selected for each site, and a sampling interval was determined based upon the intensity of use at a given site. For instance, where there were few recreational users, each solo visitor or a member of each group was interviewed. The in depth, face-to-face interviews took place on the river study routes during (dry season) February and March of 2011. Interviewers were at each site on weekdays and weekends, during mornings (8.30 am to 12.00pm) and afternoons (3.00 pm to 6.00 pm)<sup>2</sup>. Sites were

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<sup>2</sup> The Jamdani Hat is held at "Jamdani Palli" which starts from 4.00 am and ends at 8.00 am. every Friday. Visitors come here only in weekend and maximum numbers of people come here to attend Jamdani Hat. That's why Interviewers were at "Demra- Noapara Route" on weekends during mornings (6.30 am to 12.00 pm) and afternoons (3.00 pm to 6.00 pm).

visited two or more times in each time period. Most users who were approached agreed to participate in the survey. The primary reasons for refusal were lack of time, perception and especially couples showed hesitance to disclose their identities.

- c. **Interview:** Interview has been conducted with different experts and key personnel of concerned authorities to be acquainted with their views about Waterways recreation potentialities, their perceptions about river recreation, problems and opportunities, recommendations for increasing and improving recreational use, to provide information regarding the gaps, improvements and ratification of issues raised by the respondents, to obtain information about the current supply of recreation facilities and plans for future development. In this regard a semi-structured questionnaire was used to collect required information to improve the recreational aspects of the waterway. Interviews with key personnel of BIWTA, architects, and planners have been made in different time throughout the thesis preparation which helped to conceptualize and formulate thesis plan and suggest recommendations.

## 2. Secondary Data collection

The sources of secondary data were several books, reports, theses, different journals periodicals, newspaper and through internet, which is one of the best and helpful source of secondary data. Beside these, different official publications of government agencies like RAJUK, BIWTA were also a prime source of secondary data. Maps have been collected from different organizations like DCC, RAJUK, BIWTA, and DWASA. Organizations showed different information for the same issues written the same period which illustrated immense lack of coordination between the agencies in data preparation. As a result, some required map has been made by adjusting and coordinating existing information obtained from different agencies. But Map prepared by RAJUK for DAP (data source of 2006) has been considered as base map.

**J. Data analysis and Findings:** This study is based on exploratory Research

approach. At first, data were analyzed through descriptive analysis and to measure gap between visitors' expectation and reality 'Gap Analysis' method was used. After that depend on the study type Inferential Technique was used. "Chi-Square" as a Non Parametric Test, was used to test the hypothesis.

#### **K. Proposed design concepts for study routes**

Some design proposals have been suggested through sketches for the recreational development of the study routes in respect to the existing situation for enhancing the water based recreation for the city dwellers. Sketches have been provided to show how specific problems may be solved and places can be created. Photographs have been used to portray conditions which very elaborate writings may describe.

#### **L. Recommendation**

To improve the present condition of river side recreation points and to explore the hidden recreational potentialities of selected routes some recommendation has been proposed. Recommendations have been suggested on the basis of restoration and conservation of the water way, physical development on the route side area, landscaping and plantation type, management and maintenance and over all places making through water sensitive urban design.

### **1.8 Limitations of the study**

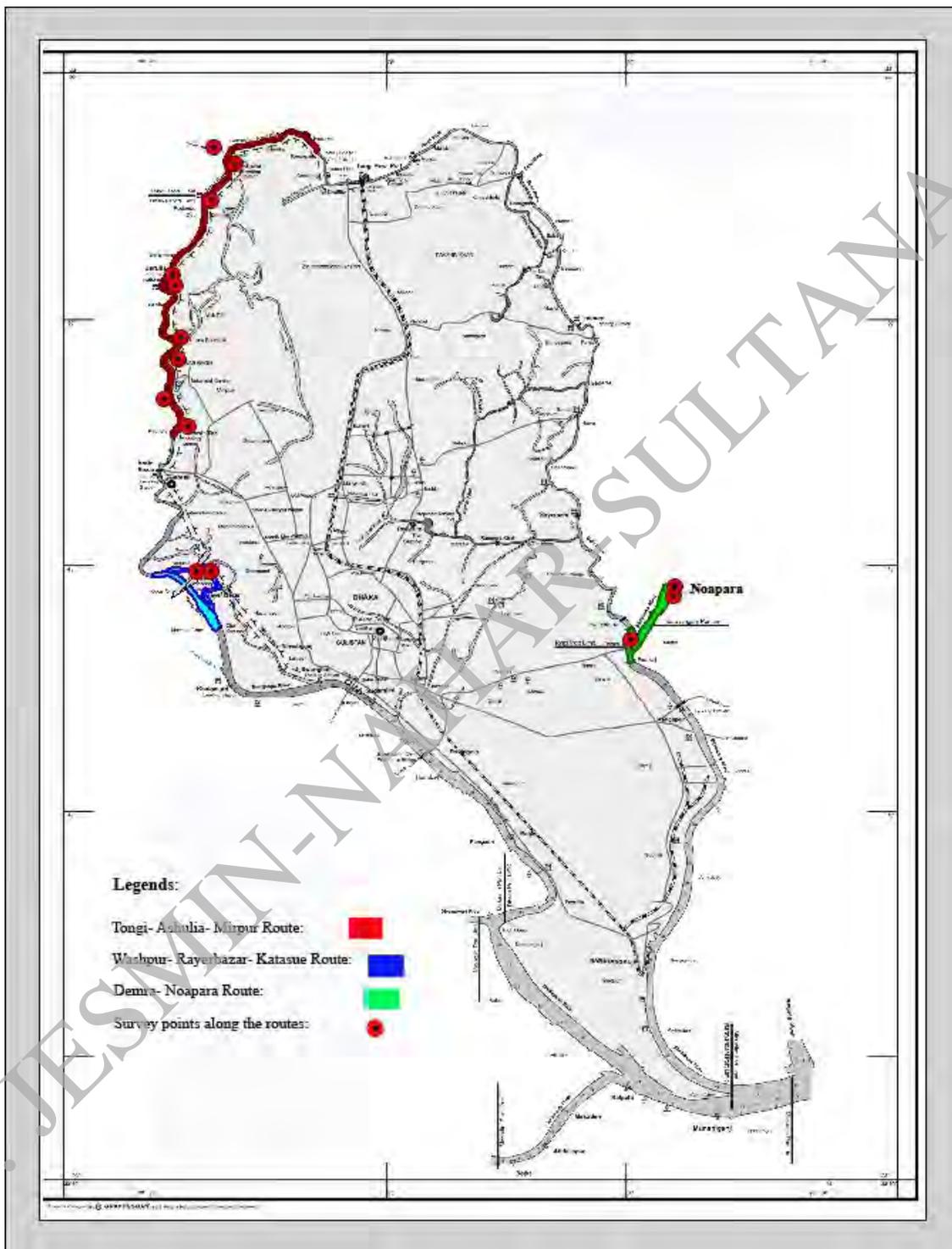
The study encompasses three portions of routes of CW which have immense potentials for recreational uses. The overall methodology and approach of the study, however, are not beyond its limitations. The major limitations of the study are:

1. The major limitation was that there is absence of comprehensive research work which can give a clear perspective regarding water based recreation in Dhaka. Waterways are much neglected issues in Bangladesh. There are a few or very limited studies conducting on the development of waterways. Unavailability of required secondary data has also been a major constraint in this regard. Some of the data have been used from the internet sources (website).
2. Different organizations showed different information for the same issues written in the same time period. Sufficient updated data are not available for all priority issues.

3. Though the sample size selected for the questionnaire survey to analyze user's satisfaction level regarding the waterway recreation is expected to represent the authentic output, a analysis with a larger size could ensure better result, which was not possible for due time, manpower limitations and seasonal constraints. Survey has been conducted during the winter season (February- March, 2011) and in winter there are events like trade fair, book fair, etc and this year we were the proud host to the mega event "Cricket World Cup 2011" and so on; so visitors preferred to take part in those events rather than visit Ashulia as well as peripheral side of the city.
4. Seasonal restraint is a great limitation for this study. Field survey was conducted during dry (winter) season.<sup>3</sup> The collected data in this way reveal the activities and pattern of recreation during the winter ((November-February) mainly. Due to time limitation, it compelled the present study to exclude information of other seasons (wet season) which are very important for waterway recreation activities. Special characteristics of summer use are not captured in this survey. Site attributes that are liked and disliked and characteristics of recreational users' may change with the season. To gather this information, this survey would need to be implemented in the other seasons.
5. A detail inquiry on the users is necessary to reveal their perception ability, expectations and level of satisfaction, recreation pattern and activities. Respondents were required to be interviewed for longer period that were sometimes uninterested and irritated with this survey due to lack of interest in the survey, time limitation and lack of clear perception concerning this issue.
6. A lot of young female respondents were unwilling to give interview because of their privacy as they did not want to disclose their identities. But at the same time rest of them heartily participated in the interview.
7. Above all, time, man power and money were insufficient for such an elaborate but interesting study.

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<sup>3</sup> The survey has conducted during winter (dry season) because in winter the routes have a nother attraction for its cosmic greenery natural exquisiteness through vast paddy field and vegetable production and attractive view of defined water routes. On the other hand October to March is considered as the best tourist season in the country (due to storm, monsoon, flood, etc. during other seasons).



**Map: 1.3** Map showing the survey points along the selected routes.

(Source: By the Researcher)

## 1.9 Thesis Organization

The research is organized into six chapters. Chapter 1( Introduction) discusses the background of the study, problem statement, aims and objectives, rationale and importance of the study, describes the methodology applied to fulfill the objectives and possible outcome along with the limitations encountered. Chapter 2 (conceptualization and review of literature) provides the theoretical background, including discussion on relevant research done in the past. This chapter describes the concept about water recreation, planning and place making etc. Also includes review on the Development Plans and related projects relevant to the study, water and environment conservation acts, rules and regulations of Bangladesh; water resource management scenario and overall water way condition of Dhaka. In Chapter 3, the Historical background of water based recreation of Dhaka and some case studies on the water based recreation in Dhaka and around the world have been discussed and their implications in the context of the study area have been identified. Chapter 4 (study area profile) incorporates a complete description of the study routes. Chapter 5 ( Users' Satisfaction Level Analysis and Expectations ) describes the survey design instruments, findings and however, is a detailed analysis on the present recreation pattern and activities of the selected routes of the CW in the form of literature, numeric data and graphical interpretation, maps and users' satisfaction level through Gap analysis and explore the specific expectations of the users'. Finally, Chapter 6 represents the proposed design concepts for the recreational development of the study routes. It also contains some recommendations and necessary measures that have been proposed based on the findings of the above mentioned chapters.

## Chapter 2: Conceptualization and Review of Literature

This chapter provides the theoretical background, including discussion on the concept about water based recreation, planning and place making etc. It also includes review of Development Plans and related projects relevant to the study, water and environment conservation acts, rules and regulations of Bangladesh; water resource management scenario and overall the condition of the waterways in Dhaka. This chapter has helped a lot to conceptualize and has created the base to understand about the relevant issues.

### 2.1 Introduction

To many professionals, recreation is not a matter of motions but rather a matter of emotions: it is an attitude and a way of life. To still others it is any activity which is performed for its own sake during free time which offers human beings joy and satisfaction and an outlet for his physical, mental and creative powers. Recreation, in its purest sense has the characteristics of both creative and re-creative activity, may be passive or active, occurs mainly during free time and in its finest aspects it can become leisure through which one can learn how to live a creative, happy and full life (Biswas, M. 2002).

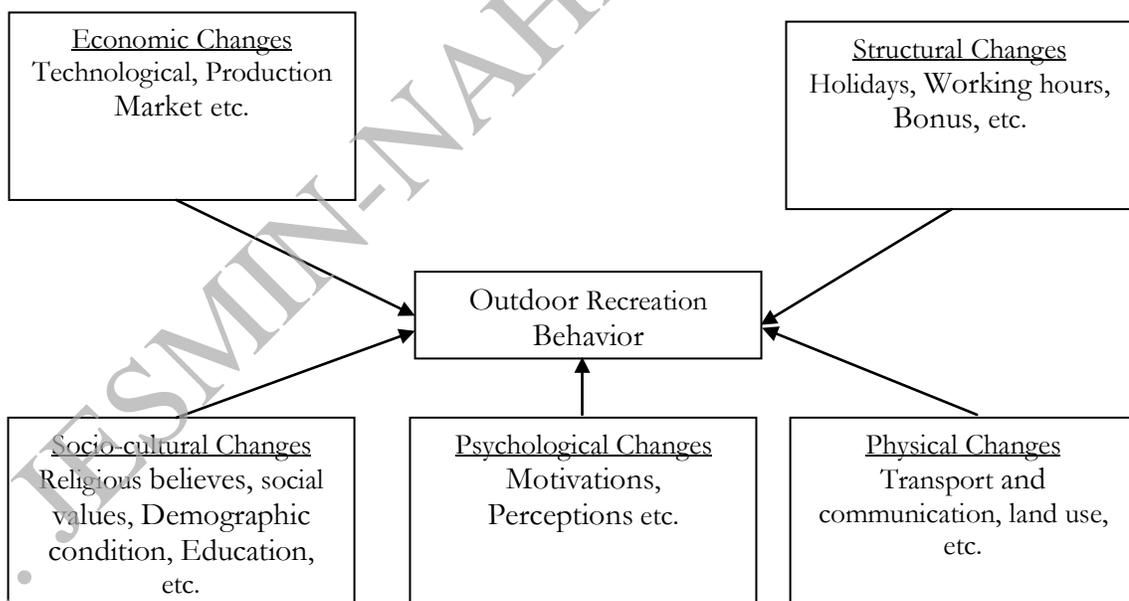
To which type of recreation one would participate depends on his physical income, age, sex, physical and mental conditions, etc. Recreation can be of different types. It can either be individually or collectively, can be physical, mental and social or a combination of all the three. Subject to time we can divide recreation into two parts: Indoor recreation and Outdoor recreation. Outdoor recreation can again be of two kinds: Local- different recreational facilities available locally, such as, library museum, zoo, open space, play ground, etc. Regional- the places which are located in the remote areas of the town, e.g. picnic spot, historical place, scenic places and the riverside, etc.

Instinctively, since the beginning of the creation there is a deep relationship in human mind with the environment of nature. At one stage man gets tired with the city environment built artificially and he feels an innate urge within to go near to the nature. Among the younger generation the necessity of recreation is more palpable than in the elders because this age is for work, a period for creating something. Outdoor recreation

is almost a therapeutic kind. In the opinion of some researchers recreation plays a remarkable role in holding up the youths from going astray and restraining them from other criminal activities (Mehdi *et al.*, 2002).

## 2.2 Factors affecting outdoor recreation behavior of people

Early proponents for the development of outdoor recreation facilities and programs have stressed that recreation activities play important role in improving the physical and mental health as well as the moral standard of the individual and society (McFarland, 1970). Human beings are involved in outdoor recreation activities during leisure time. As such, leisure and outdoor recreation is closely interconnected. Outdoor recreation behavior of a person or a group of people is influenced by economic, socio-cultural; psychological, motivational, physical and structural changes. These factors affect the outdoor recreation behavior of the people. It is noteworthy that these factors, although are presented separately, may act jointly to change the recreation behavior of recreationist (Biswas, M. 2002).



**Fig: 2.1** Factors affecting outdoor recreation behavior of people. Source: (Biswas, M. 2002)

Demand and supply of recreation are the two main areas of outdoor recreation study. It can be pointed out that recreational demand is closely associated with supply of

recreational facilities or opportunities in a specific area. These facilities are consumed by the recreationist who possesses varied demographic and socioeconomic characteristics.



**Fig: 2.2** Relationship between recreation areas, opportunities and recreationists (adapted from Mercer, 1980).

### 2.3 Present state of outdoor recreation open spaces in Dhaka

In a crowded city like Dhaka, outdoor recreation is a very important activity for its residents. Unfortunately, the provision of outdoor recreation facilities of Dhaka city has never gained required attention- the open space deficiency in most parts of the city attests to this. There are a number of pressing problems, such as, rising land prices due to land scarcity, rapid population growth, poorly planned residential and shopping areas growth of slums and poor control of landlessness. All these hinder the recreational and overall land use development of the city.

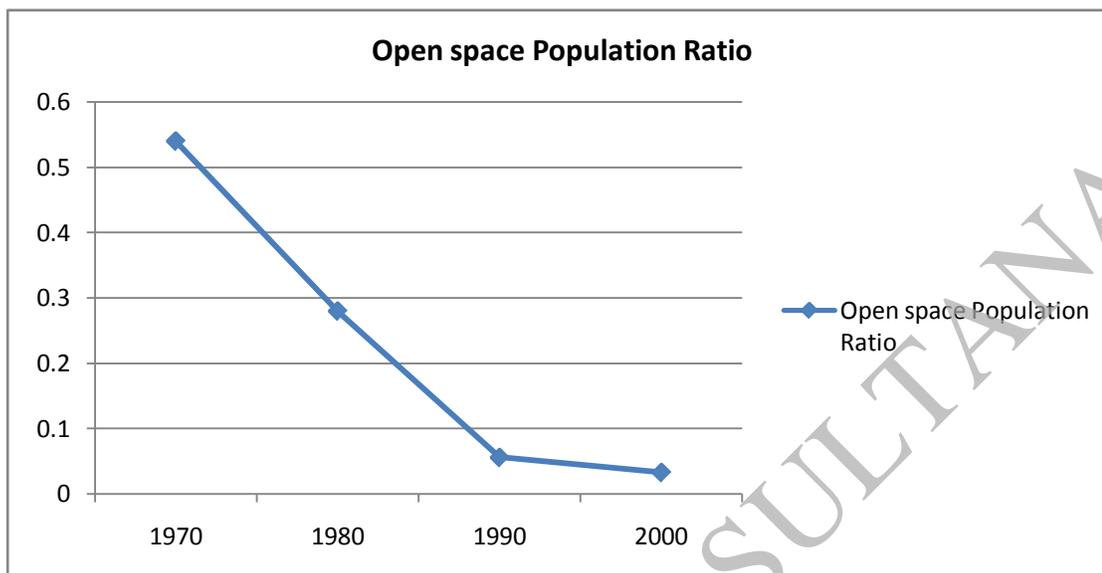
The growth in housing has not been coupled with proportional growth in recreational facilities and consequently, the city lacks miserably in providing recreational space and facilities to its people. There is also no uniformity in open space standard throughout the whole city in general. The existing open space and park provisions vary widely between the old and new parts of Dhaka city and remain far below the standards of provision. In the older city areas there is too little space allotted for recreation. This is true also for many of the more newly developed areas. The areas are poorly provided with parks, recreation ground and other sports facilities. Even the small amount of recreational spaces is not being properly maintained (Biswas, M. 2002).

At present, the open spaces are maintained by different government agencies. Large scale open spaces under PWD (i.e. Suhrawardi Uddyan and Majar area, Ramna Park, Shahid Minar, National Assembly Building, Chandrima Uddyan, Anowara Uddyan and National Eidgah) covers 302.5 acres of open land. DCC maintains local levels parks and playgrounds which constitute 85.25 acres of open space. Housing and Settlement Directorate has 5.71 acres. Besides, Mirpur Zoo, Botanical Garden, and National Stadium cover 86.33 acres. Thus, the existing stock of open space is about 480 acres. Besides, a number of open spaces are maintained under different institutions and authorities in Dhaka where use is reserved (DAP Final Report Chapter-III, RAJUK).

Open spaces are one of the most important ingredients of a city. Buildings alone never make a city, but buildings and spaces in a well-knit fabric. From the planning history of Dhaka it is understood that open spaces had never been developed following the basic principles of planning. As a result, open spaces of Dhaka, particularly since liberation, have been developed without spatial and population consideration. During the decades, population of DCC area is increasing but the quantity of open space has not kept pace with increasing growth of population (Islam and Akther, 2010).<sup>[20]</sup> Table 2.1 and Fig 2.3 are showing the open space and population ratio and Trend in different decades.

**Table No: 2.1 Open space to population ratio in different decades** (Source: Islam and Akther, 2010)

No.	Decades	Open space population ratio (Acre/1000)	Pattern of distribution of open space	Serving population	Open area
1.	Decades of 1970s (1972-1980)	0.54 Acre/1000	Random	1.6 million (Dhaka municipal area population)	470 acres
2.	Decades of 1980s (1980-1990)	0.28 Acre/1000	Random	2.4 million (DCC area population)	617.01 acres
3.	Decades of 1990s (1990-2000)	0.056 Acre/1000	Random towards clustering	-----	269.121 acres
4.	Decades of 2000s (2000-2009)	0.033 Acre/1000	Clustering	6.7 million (DCC area population)	221.92 acres



**Fig no: 2.3** Trend of Open space -Population ratio in different decades

(Source: Islam and Akther, 2010).

#### 2.4 Definitions:<sup>4</sup>

“The removal of wrecks and obstructions in Inland Navigable Waterways Rules, 1973,” of BIWTA according to the rule.

**“Inland navigable waterways” means and includes-**

1. All rivers and canals where vessels can ply during any part of a year ;
2. Any lake, haor, beel or any other expanse of water which are used by vessels in any part of the year;
3. Shores of the above mentioned waterways;
4. Inland river ports, landing ghats and terminals maintained and operated by the authority on any of the above mentioned waterways.

**“High-Water-Mark”** means is a line drawn through the highest points reached by ordinary spring tides at any season of the year; and **“Low-Water-Mark”** means a line drawn through the lowest points reached by ordinary spring tides any season of the year. **Foreshore** is the soil lying between the low-water mark during dry season and the

<sup>4</sup><http://www.biwta.gov.bd/rules.html> [21]

high-water mark during monsoon.

“**Navigable River and Channels**” means waterways which allow the passage of vessel of any description. According to the laws on rivers and canals, “**River bank**” means up to 50 meters from where river water reaches during high tide is considered the river bank. BIWTA and BWDB are legally responsible for taking care of this matter.

### **Flood and flood flow zone**

The rising of a body of water and its overflowing onto normally dry land is called flood. Annual place of inundations are thus flood flow zones. A river in its flow regime maintains a width within which the flows occur during flooding time.

#### **Main flood flow zone**

Main flood flow zone is the cross sectional area of a river that carries the dominant flood flow.

#### **Sub flood flow zone**

Sub flood flow zone is that area which conveys the flood water only during high tide and storms.

Flood Flow Zones are designed for control the area where the flood flows are running over the flood time or at a specified time of a year. Land development within the designated flood plain areas requires control to avoid obstruction to flood flow, which might otherwise result in adverse hydraulic effects like rise of flood water levels and change in flow direction as well as adverse environmental effects like hampering ecological biodiversity (Asaduzzaman et al.).<sup>[22]</sup>

## **2.5 Dhaka City and its Waterways**

Dhaka city is on the higher ground – the southern edge of an alluvial old terrace – in a low-lying region and at a strategic position regarding the water- routes of the country. The city is bounded by the Buriganga River on the south, Tongi Khal on the north, Balu River on the east and Turag River on the west. The edges of the high lands are flanked by marshes and old river beds. A substantial portion of the adjoining low-lying areas have recently been brought under the structured zones of the city due to the accelerated

rate of the urban growth in Dhaka (Hossain *et al.*, 2009).<sup>[23]</sup>

According to *Soil Resource Development Institute*, Division and Zila wise distribution of agricultural and other land types, 2008, Dhaka's low land is 16773 ha, very low land- 2685 ha, ponds and water bodies- 858 ha and River-4034 ha. According to BWDB (Bangladesh Water Development Board) the general information about the rivers encircling Dhaka are given in the following table (BBS, 2005).<sup>[24]</sup>

Name	Length(km)	Width(m)	Depth(m)	Off take/ outfall
Tongi khal	17	60	9.15	Turag river, Tongi / Balu river Dhaka.
Turag	71	218	13.5	Uthpathi Bangsi alaca, Calia / Buriganga river, Dhaka.
Buriganga	45	265	14	Turag river, Dhaka
Sitalakhya	73	277	14	Old Brahmaputra, Sibpur Dhaleshwari River
Balu	45	100	9.63	Tangi khal, Tongi / Sitalakhya river, Demra.

**Table No: 2.2** General information about the rivers encircling Dhaka

## 2.6 Studies on Recently Undertaken Waterway Development and Waterway Recreation Projects

### 2.6.1 Introduction of Circular Waterways (CW) in and around Dhaka city

Although Dhaka is encircled by rivers, these rivers do not contribute to the urban transport system of Dhaka due to draft limitation, lack of landing stations/ ghats on eastern side, and absence of proper linkages with road transport. BIWTA has completed the western section (Sadarghat to Ashulia) of the Circular Waterways System through dredging and construction of landing stations but the eastern section of the CW System (Ashulia to Demra) is yet to be completed. The DMDP structure plan also recommends

development of a circular waterway around Dhaka, utilizing the available natural waterways and rivers. The proposal included dredging of the rivers, channels and canals around Dhaka and establishment of landing ghats with road links to major road network. The navigability of the encircling waterways was expected to enhance and facilitate movement of goods and passengers to different parts of the city by water transport. It was anticipated that these waterways could also encourage development of riverine recreational facilities, and reduce congestion and pressure on existing roads of Dhaka (DAP Final Report, RAJUK).<sup>[25]</sup>

#### **2.6.1.a Circular Waterway around Dhaka at a glance**

- 110 km ring route around Dhaka.
- The first phase stretched 30 km route from Sadarghat to Ashulia.
- The second phase is 40 km waterway from Ashulia to Kanchpur via River Balu and River Sitalakhya.
- The rest 40 kilometers route connecting Kanchpur to Sadarghat.
- The first phase with a provision for 10 landing stations was inaugurated by the then prime minister in March 2005.
- The landing stations completed in the first phase are: Sowarighat, Basila, Kholamora, Rayer Bazar, Gabtoli, Aminbazar, Nawaberbagh, Shinnirtek, Birulia and Ashulia.
- Objectives:
  - To enhance navigability,
  - Reduce Dhaka's traffic congestion,
  - Facilitate transportation of cargo goods in a relatively shorter time,
  - Resolve Dhaka's water logging problem and
  - Help improve environment.
  - Promote recreation and tourism
- Cargoes of more than 2,500 trucks are being transferred through this waterway every day, generating Tk 3.5 corer revenue annually.
- Terminals were built at 7 landing stations. Two-storey terminal buildings were

built at Sowarighat, Aminbazar, Gabtoli and Ashulia and one-storey buildings were built at Kholamora, Basila and Shinnirtek. RCC stairs were built at Nawaberbagh and Rayer Bazar.

- The BIWTA started the second phase in July 2007 and it will take up to June, 2012 to be completed.
- The Japan Debt Cancellation Fund (JD CF) will finance the second phase.
- The second phase has also included three canals between Rampura and Trimohini, between Rampura and Gozaria via Badda and between Trimukh and Namapara.
- A new river port will be built at Tongi and three more landing stations at Kanchpur, Isapur and Kayetpara with pontoons, steel gangways, passenger guestrooms, terminals, and spud.
- Sponsoring Ministry: Ministry of Shipping
- Executive Agency : BIWTA

Dhaka Circular Waterway is a victim of pathetic planning which fades the prospects of this project. The Ministry of Shipping had the idea and funds, but they had no planning whatsoever about how to revive this age-old waterway. The project is also a victim of absolute inconsistent management and negligence.

#### **2.6.1.b The main reasons behind the failure of this project are**

- Lack of comprehensive planning
- The authorities' lack of sincerity
- Lack of proper dredging and proper width
- Ensuring supplementary services like approach roads
- No policy on types of vehicles eligible to ply the waterway
- Absence of well defined routes
- Lack of properly planned landing stations ( physical standard, proposed locations)
- Lack of coordination among agencies concerned like BIWTA, Roads and Highways Department and Railway
- The waterway route has some physical obstacles like vertical clearance of the

bridges

- Ignorance of Taskforce Recommendations
- The first-phase failed to serve the passengers due to
  - Selection of wrong type of watercrafts
  - Lack of coordination between existing road network and the circular waterways
  - Infrequent trips of passenger launches
  - Less population in Ashulia
  - BIWTA focused on revenue income from goods transport through the waterways.

#### **2.6.1.c River Cruise Programme**

A regular river cruise programme from Ashulia Landing Station through "Shalook" vessel was inaugurated by Bangladesh Parjatan Corporation (BPC) on May 1, 2005. It was a unique effort to take away the city dwellers from the chaotic mechanized ambience of the city to the riverine nature of Bangladesh. But the initiative was not successfully continued because of lack of sincere efforts. Started from Ashulia Landing Station, the inaugural river cruise ended at the same place after two-hour cruising up to Basila. A colorful cultural show was also organized during the cruise. During the river cruise the guests contented their hearts with the beautiful scenery along with the lives of river side people, their activities and opined that the step taken by BPC was really a perfect and timely effort. It was thought that the initiative launched by BPC would definitely encourage the private entrepreneurs to operate such river cruise from Ashulia. BPC prepared itinerary in order to operate a regular river cruise from Ashulia. It comprised a 7 hr. cruise from Dhaka-Ashulia-Pagla-Ashulia-Dhaka. Its price was fixed at Taka 875 per person which included morning snacks, lunch and transfer by non AC transport. Besides, a two-hour and one-hour cruise at a cost of Taka 200 per person (minimum 25 persons) and Taka 100 per person (minimum 25 persons) respectively and special discount for the students at a cost of Taka 110 per person for a two-hour cruise from Ashulia was offered by the BPC. The students' river cruise comprised a minimum 40 students which includes snacks service also. That initiative would be successful if it

was continued with sincerity. Due to lack of initiatives from the private entrepreneurs and planning the cruise programme could not run properly. [26]

**Cruise ship Sarina launched** at Ashulia BIWTA landing station



Sarina, a luxurious cruise ship, was launched to entertain local and foreign tourists at Ashulia BIWTA landing station. The ship is fully air-conditioned and equipped with modern facilities. It is capable of carrying 310 passengers. Initially the ship sailed on every Fridays and Saturdays on a seven

-hour cruise from Ashulia landing station to River Padma and back. The fare for adults and children (under 12) has been fixed at Tk 2000 and Tk 1500 respectively. It is inclusive of morning and evening tea, coffee, cookies, buffet lunch and live cultural programme. The ship stays at BIWTA landing station every night to be used as floating restaurant for dinner during wet season. [27]

#### 2.6.1.d. Water bus in Dhaka



The water bus services with a capacity of 35 passengers every trip from Gabtoli to Sadarghat after a pause of one and half hours. The fare for 16 km journey from Sadarghat to Gabtoli was fixed at Tk 30. In reality however, the trips take 1hr 15 mins. Moreover, the landing station of

Gabtoli was far away from the bus station. The service has very low frequency. Though a vessel is supposed to be leaving either station every 90 minutes, but the actual waiting time often crosses the 120- minute mark. There are no information centers at the two landing stations, and passengers are often seen leaving the stations due to the absence of any official. The design of vessel does not allow simultaneous boarding and alighting (as the waterbuses in other countries). Significantly, BIWTC, which introduced the waterbus service, is yet to recruit necessary hands. Till now the two launches 'M V

Turag' and 'MV Buriganga' are operating with masters (drivers) hired from BIWTA. Senior B WITC officials are also helping out. With inadequate hands on board, both vessels have had brushes with mishaps. Last but not the least, the waterbus service does not have a good intermodal connection and passengers who have destinations in the city center have to experience severe traffic problem and face congestion to get from the waterbus terminal to the city center. It is apprehended that passengers would abandon the service if the state of affairs drag on for long.

### **2.6.2 Recently Undertaken Waterway Recreation Projects**

According to the DAP Final report the following Waterway Recreation Projects have been taken for Dhaka city (DAP Final Report, RAJUK).<sup>[28]</sup>

#### **2.6.2.a “River Bank development cum park scheme”: Old Dhaka: East and West, DPZ-1**

a) Sector: Tourism

b) Project Title: “River Bank development cum park scheme”.

c) Location: Old Dhaka: East and West, DPZ-1, 2.

d) Implementation Period: July 2011 - June 2014

e) Project Objectives:

- ◆ To remove intensely commercial, blighted and congested land use along the river Buriganga bank (riverfront) on the south.
- ◆ To develop parks and open spaces for recreational purpose in the riverfront up to Badamtoli.
- ◆ To provide much needed open space along the river side.
- ◆ To render planned revitalization of old Dhaka.
- ◆ To protect river bank from unauthorized encroachment.

f) Expected Benefits:

- ◆ Create a planned, scenic river front for the old Dhaka
- ◆ To give recreational facilities to the old Dhaka inhabitants
- ◆ To beautify Old Dhaka East & West for regeneration

g) Implementing agencies: RAJUK/DCC.

h) Source of fund: GOB/RAJUK

**2.6.2.b “River Bank development (Pedestrian Promenade) scheme”: Old Dhaka (DPZ-1 and 2)**

a) Sector: Recreation cum Park/ Open space Scheme

b) Project Title: “River Bank development (Pedestrian Promenade) scheme”

c) Location: Old Dhaka (DPZ-1 and 2)

d) Implementation Period: July 2011 - June 2016

e) Project Objectives:

- ◆ To develop river front, keeping aesthetics and cultural values of the old Dhaka
- ◆ To provide parks, walking routes, gardens etc along the river front
- ◆ To create beautifully land out promenade, suitable for recreation

f) Expected Benefits:

- ◆ River front development into planned prime recreation zone
- ◆ Better opportunity for people to relax and have recreation
- ◆ Planned Land use development

g) Implementing agencies: DCC / RAJUK

h) Source of fund: GOB/ DCC /RAJUK

**2.6.2.c “Continuation of Green Belt cum Water body (wetlands/lowlands) scheme: DPZ 9**

a) Sector: Tourism

b) Location: Western Fringe of Dhaka (DPZ- 9)

c) Implementation Period: July 2009 - June 2011

d) Project Objectives:

- ◆ To create a ring of land in which development will be restricted.
- ◆ To protect the wetland and develop recreation and plantations, social foresting, horticulture, nursery.
- ◆ To create an encircled green buffer incorporating both west and east fringes.
- ◆ To provide much needed open space, park and recreation facilities.

e) Expected Benefits:

- ◆ A continuous greenbelt encircling the city
- ◆ Better Wetland preservation cum flood water water bodies (wetlands/ lowlands) preservation
- ◆ Enormous recreation opportunity

f) Implementing agencies: RAJUK /DCC/ DE/ Parjatan Corporation.

g) Source of fund: GOB/RAJUK/DCC.

**2.6.2.d “Recreational Park around water bodies (wetlands/ lowlands) in west Embankment”: DPZ- 8 Rayerbazar, Zafrabad Area, Zoo area.**

a) Sector: Tourism

b) Project Title: “Recreational Park around water bodies (wetlands/ lowlands) in west Embankment”

c) Location: DPZ-8 Rayerbazar, Zafrabad Area, Zoo area.

d) Implementation Period: July 2009 - June 2011

e) Project Objectives:

- ◆ Continuation of “Green Belt scheme”
- ◆ Preservation of water bodies (wetlands/ lowlands) in the Dhaka City.
- ◆ Creation of recreation and park

f) Expected Benefits:

- ◆ Recreation, open space, parks etc provision for people from Zigatola, Rayerbazar, Hazaribagh, Zafrabad etc.
- ◆ Continued “Greenbelt” development

g) Implementing agencies: RAJUK/DCC/ DE/ Parjatan Corporation.

h) Source of fund: RAJUK/DCC

**2.6.2.e “Continuation of Green Belt cum Water body (wetlands/lowlands) scheme in Mirpur West” Mirpur West (DPZ-13),**

a) Sector: Tourism

b) Project Title: “Continuation of Green Belt cum Water body (wetlands/lowlands) scheme in Mirpur West”

c) Location: Mirpur West (DPZ-13)

d) Implementation Period: July 2010 - June 2014

e) Project Objectives:

- ◆ To assist in the development of a green buffer around the Dhaka City
- ◆ To assist in the safekeeping of drainage functions of water bodies
- ◆ To contain the growth of the city

f) Expected Benefits:

- Development of Greenbelt, Suburban atmosphere and checking of urban growth beyond Embankment
- Storm water, flood water discharge; wetland preservation through green buffer zone creation to the east, south and west of the city

g) Implementing agencies: RAJUK/DCC/ DE/ Parijatan Corporation.

h) Source of fund: GOB/ Donor agency

## **2.7 Water body Conservation Acts, Rules and Regulations**

For the proper development of Dhaka Metropolitan area regarding land development and environmental consequences, several regulations and laws, such as the Private Land Development Projects Rules, 2004, Wet Land Conservation Act, 2000, Environment Conservation Act and Policy, 1995 etc. are initiated.

The first law regarding water bodies was enacted during the British colonial age in 1864 to control and collect tolls from river routes. The Bengal Canal Act 1864 is the mother of all laws about rivers, canals and other water bodies. Beginning from that act up to the recent Open Space and Water Body Conservation Act 2000, all laws restrict changing of the characteristics of water bodies including rivers and riverbanks. Other relevant laws, rules, and regulations in Bangladesh are -- the Bengal Irrigation Act 1876, The Bengal Port Act 1908, East Bengal Embankment and Drainage Act 1952, Inland Water Transport Authorities Ordinance 1958, East Pakistan Irrigation (Imposition of Water Rate) Ordinance 1963, Bangladesh Water and Power Development Boards Order 1972 (President order No 59 of 1972), Bangladesh Water Rate Ordinance 1983, Land Reforms Ordinance 1984, Ground Water Management Ordinance 1985, Water

Resources Planning Act 1992, Water Supply and Sewerage Authority Act 1996, National Water policy 1999, and the Act No 27 of 2000 (The Daily Star, 2009).<sup>[29]</sup>

**The Bengal Canal Act 1864:** The Bengal canal act says, "It shall be lawful for the government from time to time to authorize any person to make and open any navigable channel, or to clear and deepen any navigable channel, and to stop any watercourse, make any tracking path, or do any other act necessary for the making or improvement of any such channel." Under that law the government is authorized to 'take possession for a public purpose of any land that may be necessary for the execution of any of the above mentioned works, under the provisions of the act'. It goes on, "Any person who shall willfully cause ..... any obstruction to any line of navigation or any damage to the banks or works of such line of navigation, or who shall willfully omit to remove such obstruction after being lawfully required to do so, shall be punished on conviction before a magistrate with simple imprisonment which may be extended to one month or with fine which may extend to Tk 50, or with both."

**The Bengal Port Act 1908:** Generally Bangladesh Inland Water Transport Authority (BIWTA) is in charge of the rivers and riverbanks where there are river routes, under the Bengal Port Act 1908. Under this Act, BIWTA was made the regulatory body of the rivers (1-12 km) flowing around the capital in a gazette notification in 1960 and is responsible for protection and use of river banks. But the authorities were not given magistracy power to stop encroachment and river filling activities. The definition of a river is also sketchy in the laws.

**Open Space and Water Body Conservation Act 2000:** The most important legislation for conservation of wet land is "Water body Conservation Act, 2000. This Act states that natural water bodies mean the places which are demarcated in the Master Plan as river, canal (khal), depression areas (beel), lake, stream or wetland or places which are declared as 'flood flow zones' by the local government notification and such places should also include the land which retains storm water. This law prohibits any kind of development on these areas. It is a legal instrument that will enable RAJUK as well as

the concerned organizations to protect the water bodies which includes Flood Flow Zones. According to this law, no water body (Declared in Master Plan) can be transformed or converted to other use except permission of the concerned authority. For conservation of all playgrounds, open spaces, parks and natural reservoir, change of the nature of any land is prohibited in all the municipalities including the municipalities in the capital, divisional towns and district town. These areas must be published by gazette notification.

This landmark legal tool can protect environmentally sensitive areas of Dhaka but its implication become difficult because the water bodies, the low-lying and retention area, *khals* within the DMDP area are not demarked on the *mouza* map (Roy, S. 2007).<sup>[30]</sup> 'Wetland and Open Space Conservation Act, 2000', which extended the fine up to Tk 50,000 and the imprisonment up to five years, or both. But successive governments have not been very sincere to implement the law. On the other hand, the laws specify what punishments the judiciary may mete out to the violators, but it does not direct the government to recover the original characteristics of water bodies if someone fills them up. So, once someone changes the characteristics of a river, canal, or any other water body -- it does not get back its old shape. Real Estate Developers, the Army, etc. have encroached many open spaces and wetlands, but no actions were taken to stop them. Some even apply force to appropriate them.

**The Private Land Development Projects Rules, 2004:** To guide the land development activities in Dhaka Private Residential Land Development Rules (PRLDR), 2004 is framed with guidelines and instructions of private housing project. The implementing agency of this rule is RAJUK. This rule clearly states that how the projects will prepare, will get approval and how the projects will be monitored. In this rule it is strictly prohibited to convert the natural water bodies, flood flow zone and sub flood flow zones for housing projects. The Government will identify such a area and notify those in the Government Gazette. There are many housing projects located in the flood flow zones- to date the Govt. agencies remained stand to these.

### **The Bangladesh Environment Conservation Act, 1995**

The Bangladesh Environment Conservation Act, 1995 state that the Government may, by notification in the official Gazette, declare any area as an ecologically critical area if the Government is satisfied that an area is in an environmentally critical situation or is threatened to be in such situation. The Government shall specify the activities or processes that cannot be initiated or continued in an ecologically critical area. This act was revised in 2010 and known as “The Bangladesh Environment Conservation (revised) Act, 2010.”

#### **2.7.1 Associated Policies and legal instruments**

There are many associated Policies and legal instruments through which concerned Authorities will be able to accomplish environmental conservation and wetland protection.

##### ***National Environment Policy (1992)*** <sup>[31]</sup>

The Environmental Policy, 1992 gave a lot of importance to protect water bodies and environment. It states in the part of Policies for Housing and Urbanization that

- In every planning, Environmental Consideration will be given due priority,
- Controlling such kind of Housing and Urbanization that has negative impact over environment
- Water body will be given priority in enhancing the beautification of cities.

*National Environmental Policy, 1992* states in the part of Policies for Water Development, Flood Control and Irrigation are given below-

- Ensure environmentally sound utilization of all water resources.
- Ensure that all steps taken for flood control, including construction of embankments, dredging of rivers, digging of canals etc. be environmentally sound at the local, zonal and national levels.
- Keep the rivers, canals, ponds, lakes, haors, baors and all other water bodies and water resources free from pollution.

*National Environmental Policy 1992* recommended some action plans under this sector:

- Treatment of domestic and industrial waste before discharging in rivers wetlands or other water bodies will be strictly enforced.

- Rivers, canals and other water bodies will be dredged to increase their water holding capacity and navigability.
- Regular surveys, research and monitoring will be conducted on changing courses and conditions of rivers, wetlands and other water bodies.

### **Tourism policy 1992**

Encouraging river tourism and to expand this sector initiatives will be taken to plan for joint venture package tour with neighbor countries to attract foreign visitors.

### **National Water Policy, 1999** <sup>[32]</sup>

National Water policy, 1999 in its every part emphasized usage of water and the water basin management very seriously as most of the part of our country is situated in the area.

#### Water for Recreation:

Use of water for recreational purposes is useful for developing tourism facilities. Introducing these facilities at the sites of reservoirs, lakes, dighis (big ponds), sea resorts, etc. would help the tourism industry of the country. The policy of the Government is therefore that: Recreational activities around water bodies will be allowed provided if it is not damaging to the environment.

#### Policy regarding Water for Preservation of Haors, Baors, and Beels

- Natural water bodies such as beels, haors, and baors will be preserved for maintaining the aquatic environment and facilitating drainage.
- Only those water related projects will be taken up for execution that will not interfere with the aquatic characteristics of those water bodies.
- Haors that naturally dry up during the winter will be developed for dry season agriculture.
- Take up integrated projects in those water bodies for increasing fish production.
- Natural water bodies will be developed, where possible, for recreational use in support of tourism.

## **2.8 Development Plans and proposals**

**2.8.1 Master Plan, 1959:** In the Master Plan of 1959 the river bank was earmarked as a recreational zone. It emphatically pointed out that Buriganga river front's natural beauty

should be safe-guarded. Following this, it can be proposed to create recreational areas like, parks, walkways, trail system, mariners, and neighborhood play areas, open theatre stage, fare ground, Hawkers Mall, Boat club, Parking Zone etc. In addition to this, a continuing walks way and plantation development up to Ashulia can take place.

### **2.8.2 Sir Patrick Geddes Town planning proposal for Dhaka in 1917 (Hyder. Z 1994) <sup>[33]</sup>**

In Dhaka Sir Patrick Geddes identified the river as the most important element in the origin of the city and also its subsequent growth. Geddes found this river system to be one of the most fascinating one in terms of its mobility and reorganization after each flood. He added in the future growth of the city, it is more appropriate to consider the positive use of the river or waterways, instead of neglecting it.

According to Geddes, instead of a dam it should have been excavated as a canal, like Dholai Khal to facilitate the drainage of flood water before it could inundate the city areas. In Dhaka this kind of a canal is the most suitable form of flood protection. Because in flood season, all three of the major rivers which surround Dhaka and drains down excessive amount of water from the north to the south, sometimes cannot be drained out by the usual channel of the river course. As a result the whole region gets inundated and the city though in a high plain becomes a victim of the flood because of the flood water that submerges everything all around it. This canal could become a source of attraction for park improvement, agricultural development on the two adjoining regions, and also this waterway can work as a peripheral circulation route for the city, especially for goods handling, and these waters can also be used as pisciculture development.

As for the development route on this kind of canal, Geddes pointed out the adverse effect of the inner politics that can take place in it. Like he mentioned about the very instance of the development of the larger communications between Dhaka and Narayanganj and how this communication was effected by the politics between the long concentration of governing minds and of the commercial leaderships. However, Geddes correctly pointed out that, in consideration of the growth of commerce, and domestic

marketing etc., the canal ports can be improved and more may be built to serve key points of the city. This will happen in conjunction with the improvement of the town's markets, and of vegetables, grains, etc. Geddes compared this canal system to the one which was planned in the Netherlands. He remarked that it is always a common tendency in England and India to destroy the canal banks with the building of a railway on them. Geddes strongly suggested that these canal routes should instead be developed as water parks. In the latter part of the twentieth century waterways in cities were more utilized for wonderful park development. Geddes envisioned this in his proposal in Dhaka,

*“Yet this outlook and landscape is not a purely utilitarian one. On the contrary, here is a park system of the rarest extent and beauty, a water park unparalleled elsewhere, and on which, after the reasonable improvement for which we are pleading, a new creative life would arise; and this for University and City alike.”*

The waterways and khals have strong influence on the origin of towns and cities. In Bengal most of the canals were natural. Sometimes local rulers would dig up a connecting khal from the river to make natural khals all year round. The canal that was dug around Dhaka, seems according to Geddes to be one of the blessing for the city. He observed, this incoming water will replenish the canal all year round. Geddes found this element of the city to be one of the most important and interesting elements of the city, which should be exploited to its end. There are many tanks and pools spread all over Dhaka. These were dug by communities or sometimes by wealthy families for the purpose of domestic use. These tanks held water for domestic washing and other purposes. But since these tanks are not maintained very well and sometimes the banks of these tanks are occupied by homeless people migrating to the city, shambles is strewn all around them. Geddes proposed that these tanks can be excavated and its banks cleared of the shambles and instead lined with pavement and trees, thus creating a sort of park in the city fabric. Even if the tanks are sometimes beyond repair and have to be filled up, then the area that is reclaimed by this process could be used for similar park like purpose.

According to Geddes, the river front could be exclusively developed as a park and

recreational space, but then the commercial use of the river bank has to be relocated suitably. Along with that the river itself can provide for some recreational facilities, like boat racing, and boat riding in the afternoon, both of which are very much traditional in Bengal. Geddes stressed the point that though these things are only being observed and performed occasionally, the city can make them regular and permanent events. Another feature that Geddes thought could be used for such purposes is the island on the river the Kamrangir Char. This island can be developed as a park and garden for the citizen to enjoy afternoon promenades and holiday picnicking.

Geddes also considered the riverfront as one of the open spaces. It can be developed as an esplanade. It could be extended and designed in details with a addition of parks, gardens and trees. The existing embankment in Dhaka was planned and executed by the contribution of the local communities. He called for further extension of that embankment in the same manner, and felt, if necessary the government can make the first contribution, and gets the project going. This promenade may enhance the use of the river as boating events can take place on them while the spectator will be able to watch from the embankment.

Geddes worked on the proposal for Dhaka in a time of the history of the city, when it was just embarking on a new beginning. The promise of this city's future was so strong that even without any formal recognition of the proposal by Geddes, the city started growing into a huge complex whole.

### **2.8.3 Dhaka Metropolitan Development Plan (19995-2015)**

Dhaka Metropolitan Development Plan (DMDP) has demarcated main and sub flood flow zones of Dhaka City and prohibited any kind of land filling activity on those areas. DMDP has also identified possible location for retention pond areas. Policies on flood flow zone and retention pond are given below.

#### **Policy Regarding Flood Flow Zones in DMDP**

There are a variety of rules and regulations in DMDP regarding the flood flow zones. Structure Plan, Urban Area Plan and Detailed Area Plan separately gave policies and regulations regarding the flood flow zones.

**Structure Plan** came up with the following policies:

Policy RS/3- Flood Flow Zones: Land development, within the designated flood plain areas of the DMDP Structure Plan, will be controlled in order to avoid obstructions to flood flow, which might otherwise result in adverse hydraulic effects, such as, for example, the rise of flood water levels and changes in flow direction.

JICA in its Report on FAP-8A proposals identified main and sub flood flow zones. The DMDP Structure Plan adopts the same division, whereby development restrictions are more severe in the main flood flow zone. Proposed controls are as follows:

#### Main Flood Flow Zone

Land development for residential, commercial and industrial development, including raising the level of land, via land filling, will be strictly prohibited.

Permitted uses, provided that they cause no adverse hydraulic effect will be:

- Agriculture;
- Dry season recreation facilities;
- Ferry terminals; and
- Excavation of mineral deposits, including dry season brick works.

Causeways for roads or railways will be permitted, subject to detailed geological surveys being undertaken and on condition that they are built with culverts sufficient to allow for unimpeded flood flow.

#### Sub Flood Flow Zone

Development compatible with the rural nature of these mainly rice growing areas, will be permitted on condition that the:

- Structures are built on stilts, or on land raised above design flood water level;
- Alignment of structures and raised land to be designed so as not to disturb flood flow;

**Urban Area Plan** came up with the following policies and regulations regarding the Flood Flow Zones:

SPZ: 173 Flood Zone West (Development Management Report: Part I)

Actions Committed/Required

- The areas should enable to function properly as a flood plain and a basic rural/pisciculture zone.

- All the development permits issued for the development of housing should be withdrawn and no new one is needed to maintain the nature of the zone.
- Conversion of land from rural to urban should be regulated strictly in this zone.

#### Development Management Report (Part II)

The flood flow zones were determined by FAP 8A studies, and lie largely outside the present urban area. The Lands Study recommended that development in low-lying flood plain areas be restricted, since it could obstruct natural flood flow. Such restriction would cause a rise in water level and changes in flood direction; affecting the entire metropolitan area.

In the Main Flood Flow Zone, now mostly agricultural land, urban development should be prohibited. Only development having no adverse hydraulic effects should be permitted. Such development includes:

- Agriculture
- Open space for recreation
- Ferry terminals
- Brickyards

The Sub-Flood Flow Zone is less affected by flood flow. It includes village and homestead areas.

Development in this zone should only be allowed provided that:

- The developed land is raised more than the design flood water level;
- The slope of such land is sufficiently gentle to prevent slope failure and is protected from erosion;
- Structure orientation is designed to minimize flood flow obstruction;
- Floor elevation of structure themselves are sufficiently strong to withstand flood damage.

For both types of flood zone, it is important that laws preventing land fill soon come into force, otherwise controlling development in these zones will be very difficult, and the effectiveness of flood protection measures will be seriously compromised.

#### Purpose and intent:

The purpose of the Sub Flood Flow zone is to generally define areas either temporarily

or seasonally flooded. The intent is to protect the health, safety and welfare of the general public, to reduce negative environmental impacts within natural waterways, and to protect and preserve natural drainage systems to ensure their proper and continued functioning. Areas designated on the urban area plan map as sub flood flow zone are also designated.

Permitted and conditional uses:

Permitted uses

- Agriculture forestry & grazing
- Aquaculture & fisheries
- Brick fields
- Roads\Railways\ Utility ROW
- Farm dwellings
- Ferry Ghats and jetties
- Flood management structures
- Institutions
- Public uses and structures
- Recreation facilities, outdoor
- Religious uses & structures
- Repair shops, minor
- Ship & boat servicing
- Utility installations Type A

Conditional Uses

- Dwellings, farm
- Dwellings, minimal housing
- Dwellings, single\multi family
- Explosives manufacture & storage
- Industrial class 2
- Patrol\service stations
- Office\ services

Plan Review Required

- Golf courses
- Prisons
- Terminals-trains, bus, freight
- Utility installation type B

The **Detailed Area Plan** came up with more specific regulations and delineation of the Flood Flow Zones and specified the categories for use permits. The area over which the flow of flood water during monsoon passes through is termed there as flood flow zone.

Purpose : The intent of the Flood Flow Zone is to protect adverse hydrological impact, human life and health, minimize property damage, encourage appropriate construction practices, and minimize public and private losses due to overflow of water.

Additionally, this zone is intended to maintain the sound use and development of flood-prone areas and to restrict potential home buyers by notifying that property is in a flood area. The provisions of this zone is intended to minimize damage to public facilities and

utilities such as water and gas mains, electric, telephone, and sewer lines, street and bridges located in the floodplain, and prolonged business interruptions; and to minimize expenditures of public money for costly flood control projects and rescue and relief efforts associated with flooding.

#### Land use Permitted for Flood Flow Zone

In the zone, uses permitted by the Authority are:

Aquatic Recreation Facility (Without Structure)

Dry Season Play Field

Marina / Boating Facility

Plantation (Except Narcotic Plant)

Static Transformer Stations

Transmission Lines / Utility Lines

#### Land use conditionally permitted for Flood Flow Zone

The following uses may be permitted or disallowed in this zone after review and approval by the authority / committee.

Communication Tower within Permitted Height

Poultry

#### Restricted Uses

All kinds of uses except permitted and conditionally permitted are restricted.

### **2.8.4 Dhaka city Development Plan and Transportation Plan**

The DITS (1994) final report (volume 2) identified some potential projects for the integration of waterways with land transport and also to use the existing waterways along Greater Dhaka in an optimum fashion.

- Outer Dhaka ring road following alignment of flood protection embankment.
- Upgrade waterways ring and selected khals.
- Other waterbus and water taxi services.

Project Management Cell of DMDP (1995) has taken a scheme of integrated Transport Network Plan for Metro Dhaka (1995-2015), of which water transport is an important component. The Water Transport Development Program of this scheme has been prepared to utilize the natural opportunities efficiently with a view to:-

- Develop navigability of the encircling water way
- Install new berthing points
- Disperse traffic loads of water transport
- Reduce congestion in the old Dhaka
- Develop intra city water transport system

Navigability of the encircling waterways will enlighten the old heritage of Dhaka and enhance the riverian recreational facilities in a great way.

The DMDP Structure Plan also made a recommendation with regard to water transportation, to efficiently utilize the available natural resources with a view to:

- Develop navigability of the encircling waterways;
- Install new berthing points;
- Disperse traffic loads to be carried by water transport;
- Reduce congestion in old Dhaka roads;
- Develop water transport to serve different points around the city.

The whole component includes dredging of channels and canals and installation of berthing points. Navigability of the encircling waterways would enhance the riverine recreational facilities as well as movement of goods to different parts of the city by water transport. Introduction of water transport could reduce the cost of transportation for both goods and passengers.

#### Strategic Transport Plan for Dhaka

The STP also claims that a waterway would be an environmentally friendly way to transport goods around Dhaka; the STP upholds the interest of the pedestrians and recommends waterways and fuel-free transport as great modes of transportation. The STP supported the recommendation made by the DMDP to develop circular waterways around Dhaka. The Bangladesh Inland Water Transport Authority (BIWTA) is already proceeding with the development of a Circular Waterways System around Dhaka, for the transport of people and goods. A number of road links are proposed by the STP to link the network of landing stations to other elements of the multi-modal transport system.

The **Detailed Area Plan** came up with more specific regulations and delineation:

### **Flood Flow Zones**

- . Strictly preserve the zone area as per the higher level plans and DAP.
- Promote agricultural and passive recreational use of the area during dry season.

### **Water Body and Open Spaces**

- Strictly protect canal networks as per the DAP.
- Make Provision for open spaces and water body at the neighbourhood level
- Strictly protect the river fronts and open city dwellers for serene passive recreation.
- Make city scale open space with easy accessibility especially for people of densely populated areas with meagre scope for open space

## **2.9 Water Resource Management Scenario in Bangladesh**

### Regulatory Agencies working in Water resource sector and their responsibilities:

BIWTA: BIWTA is the proprietor of the 112 km Circular waterways around Dhaka. BIWTA is responsible for the custody, maintenance of river channels for navigation and management of the government announced waterways.

National Water Council: was established to take possessing decision about the river related issues with the guidance of the Government chief.

Water resource planning organization (WARPO): The government has created the WARPO to coordinate the rivers and canals even thus the water related issues. Before starting any development project in these sectors, the opinion of this organization should be counted but both the Government and private organizations are related in this sector do not follow this matter.

LGED: LGED and R&H are engaged in the building and construction of bridges and culverts over the waterways.

WASA: WASA is engaged for the supervision of canals and solid waste and storm water drainage and Supply of drinking water to cities.

BAWDB's responsibility: Flood control, drainage and irrigation

Dhaka District Administration: Dhaka District Administration is engaged for the responsibility of land management of the canals on behalf of the Land Ministry.

Government has leased 2 hundred acres of lands of the both banks of the rivers for different governmental organizations like hospitals, electrical substations, etc. But there is a severe lack of coordination among these agencies.

Zila Parisad: Optional function of construction and repair of embankments, supply, storage and control of water for agricultural purposes.

Municipalities: Supply of drinking water to small towns.

## **2.10 Reasons behind the adversity or overall situation of the waterways and waterway Projects in and around Dhaka city**

- Avoidance of taskforce rules and regulations
- Encroachment by the land grabber developers
- Absence of distinct physical demarcation and physically limited (width do not permit)
- Filling up the rivers with soil and wastage dumping
- Concerned authorities and organizations negligence
- Donor agencies' and related regulating organization's negligence and having no interest attitude about the environmental concern issues like building narrow box culverts, roads and establishments on the canals and rivers. Ex: DCC established roads on 19 canals by encroaching them fully or partially. There were 47 canals in Dhaka city before liberation war; of them maximum has 150' width. Now only 22 have their existence after liberation (The Daily Ittefaq, 2009).<sup>[34]</sup>
- Influential political leaders and developer's possession and control over the development.
- Government agencies aggression
- Absence of connecting roads to the waterways
- Physical obstacles' like low height bridges
- Lack of co-ordination between the agencies
- The game of change in government
- Absence of proper information about the vehicles
- Absence of public participation and awareness in this matter

- Funding problem
- Mismanagement and labor oppression
- Absence of facilities like waiting space, protection from hostile and adversary climate, toilet facilities, inquiry and complaint centre's mismanagement.
- Addicted and floating peoples presence in the terminal area at night.
- Mismanagement of the landing stations, navigability problem, launch proprietor's obstinacy
- Presence of illegal establishment
- Insufficiency of government's regulating agencies' manpower in this sector and equipments like insufficient dredgers, modern vehicles.
- Absence of preparedness of accidents
- Presence of terrorist groups
- Gaps in the law's and act's and
- Overall dishonesty or corruption of the government organizations like BIWTA and in every sector in Bangladesh

### **2.11 Government's Recent Initiatives taken for the development of the waterways Environment**

- Task Force formed by the Government.
- Rivers declared as 'Ecologically Critical Areas'.
- Decision on shifting tannery industry outside the capital.
- Cleaning of Buriganga and Turag has already started and helped launching water bus services.
- Court has directed deployment of law enforcing agencies to prevent dumping of wastes into the rivers and Shut down of some business on the rivers.
- Ministry of Environment has directed all the polluters to install Effluent Treatment Plants (ETP).
- The district river demarcation as per Cadastral survey (CS 1910- 1913)
- Evict illegal structures from the rivers
- Construct walkways and plant trees along the river banks

## 2.12 River Water Quality around Dhaka city (Bari, F.M and Badruzzaman, M.B. A, 2007) <sup>[35]</sup>

Rivers around Dhaka city are affected by industrial activities, municipal sewage disposal, faecal contamination, agro-chemicals and sediment loading and population pressure. Maintaining a sufficient supply of clean water for the growing population is one of the major challenges, especially in the densely populated Dhaka city. Based on species abundance and richness numerical scores were assigned to potential water quality classes, viz.

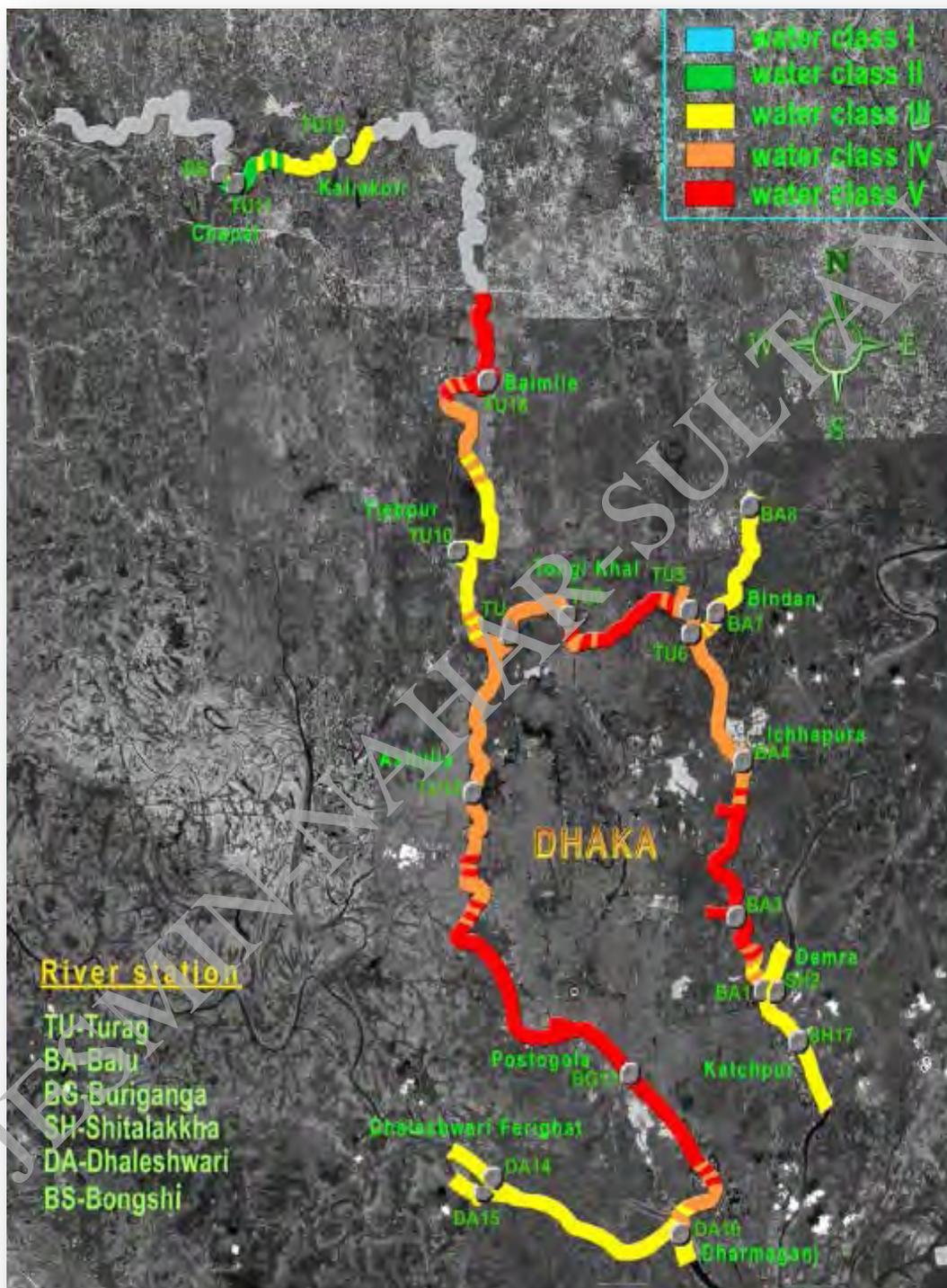
- Class I (none to very slight organic pollution),
- Class II (moderate pollution),
- Class III (critical pollution),
- Class IV (heavy pollution), and
- Class V (very heavy to extreme pollution).

River	Site	Water Quality Classes
Balu 1	Demra	IV
Shitalakkhya 2	Demra	III
Balu 3	Lanchata	V
Balu 4	Ichhapura	IV
Turag 5	Bindan	V
Turag 6	Thermog	IV
Balu 7	Dhopapara	III
Balu 8	Pipulia	III
Turag 9	Ijtema Field	IV
Turag 10	Tiebpur	III

**Table No: 2.3** Water quality classes per site

### **Pollution source**

1. Point sources; e.g. industrial effluent (textile, tannery, dyeing etc), municipal waste etc. and
2. Non-point sources; e.g. agricultural runoff.



**Map No: 2.1** River Water Quality Map around Dhaka city

(Source: Bari, F.M and Badruzzaman, M.B. A, 2007)

### **2.13: Place, Place making and Criteria for Making Better Settings through Place making (Shumi, A. S. 2011)<sup>[17]</sup>**

#### **2.13.a: Place:**

Place is a concentration around a focal point and gathering (Iekavaliu, 2006). A place usually has a fixed location and features in forms that can be identified. Essentially, place forms the basic elements that shape our experiences of the world. The concept of place has appeared in writings that both deal with the psychological and physical environment.

#### **2.13.b: Place making:**

Place making is about making places through ‘reinforcing place characters and place elements’. Place making is aimed to create better settings and functioning spaces for the intended users, while at the same time sustaining certain identities that belong to that particular place. Gunn (1994) explains that place making is ‘the retention of the essence of place while giving it new physical and psychological meaning’, while Motloch (1991) emphasizes that place making should include the effective management of order and spontaneity for understanding and exploration.

#### **2.13.c: Criteria for Making Better Settings through Place making**

From the conceptual studies conducted previously, designing a place alone does not ensure that a place is created (PPS, 2003). Place making is an approach that aspires to create a place that has a strong sense of “place-ness” and a comfortable image to its dwellers as well as outsiders. Additionally, the place shall also perform as a setting for activities and uses that collectively add up to the character of the place. Place making in total is undeniably hard to accomplish as this approach must take into account the needs of the local community as its priority. These characters then shall be the elements that attract the tourists to come and experience a place that is new or different to them, which in return, the lack of amenities may produce a more memorable and social experience.

Settings can be enhanced by identifying the lacking in place characters. Place characters that are present and can be sensed by the users who experience it produce a better and a more enjoyable place. Steele (1981) has also emphasized on characters of place that

create better settings. These characters are very significantly related with place experience.

- **Choices and options** – Activities are the basic essential of a place. Without activities a place will be empty and that generally implies something is wrong. Offering things to do give people a reason to come to that place and possibly return again. The variety of activities also gives various alternatives of activities for tourists with different levels of needs. Choices provide options about how the place can be used; choice and variety in one's experience serve a fundamental human need; richness of a place and give changing experience.
- **Reinforcing patterns and sequence** - Settings with sequences of experience that build on one another are more likely to produce high quality experience. It is another type of place character that shall be carefully planned and thought. The setting itself is able to give the experience of patterns and sequence when designed with this aim in mind.
- **Rich material for fantasies and memories** – Settings that can trigger off memories and fantasies will be more likely to provide rich place experience; but still depending on the users themselves. However place making can help to refine the memorable experience of tourists through activities that give a n impact to them. This again relates to 'choices and options' which is by providing them with diverse alternatives of activities, depending on the level of experience that they seek.
- **A sense of identity** – Identity of a place must be maintained as it is what makes a place unique when compared with other major places. Consistent themes to its form, materials, items, arrangements and symbolism will be more likely to produce positive place experience.

Kevin Lynch (1960) defines the identity of a place is 'that which provides its individuality or distinction from other places, and serve as the basis for its recognition as a separable entity'. Identity of places varies with the individual group or consensus image of that place. Boulding (1961) has defined an image as a mental picture that is

the product of experiences, attitudes, memories and immediate sensations. With an individual the combination of experience, emotion, memory, imagination, present situation and intention can be so variable that he can see a particular place in a several distinct ways. For example, a street is a very different place to a pedestrian and to a car driver- their experiences and purposes are different and they attend to different objects and signs. Therefore the identity of a place varies with the intentions, personalities and circumstances of those are experiencing it,

- **Highlighting personal awareness** – Personal awareness depends on the consciousness of the tourists themselves. Differences in cultures, or similarities in religion, to name a few examples, may stimulate various perceptions or give new knowledge to individuals. Awareness can be stipulated up not only through formal presentation of information such as in museums or galleries, but also through publications and descriptions of the daily lives of the local people.
- **Highlighting opportunity** – Places with special features that can be easily identified are more likely to attract more use by tourists than the ones that are only known by the insiders of the place. This again relates to providing choices and options, and making known of the different alternatives to the tourists. Stimulate use of special features than the ones that are hidden; visitors can easily know or identify special places that are not only visible and accessible to insiders living in the place.
- **Active vitality** – Generated by the patterns of users' activity; generate visible vitality; create experience for people and one another.

### **Chapter 3: The historical background of water recreation in Dhaka and some case studies on the water recreation in Dhaka and around the world.**

Dhaka was known for its greeneries and tranquility but over the time period these precious green and tranquil characteristics has been destroyed. Dhaka still can set the example of being a green and fluid landscape paradise. There is an immense scope for planning as well as urban design. If the city is developed with the assets it still contains, trees and water is used as the elements of urban design, and many scenic places can be produced. With the help of water ways around Dhaka scope for water based recreation for the city dwellers can be explored. To find out the potential scopes of water based recreation to make the city again a paradise for the city dwellers it is utmost important to find out what was the role of waterways in recreation in the golden days of Dhaka city. For this reason this chapter has tried to discover the history and the present condition of water recreation in Dhaka. Also some case studies on the water recreation around the world have been discussed and their implications in the context of the study area have been identified.

#### **3.1 Introduction**

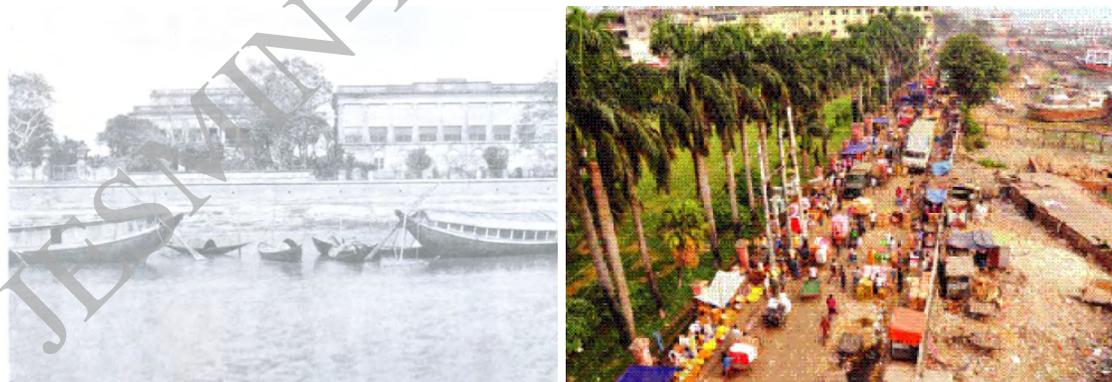
A wise coexistence of man and nature is visible at the initial days of development of Dhaka. Until 1850, development of the city took place on the higher terrain and the encompassing rivers, networks of canals and the wetlands were harmoniously used for transportation, defense, fishing or agricultural purpose. Permanent wetland category of Dhaka includes rivers, lakes, ponds and other water bodies where water remains all around the year. Landscapes those retain water for certain period of the year are termed as temporary wetlands, such as floodplain, marshes, channels etc. Even until the 1950s, with its spacious green spaces, majestic trees, crisscrossing canals, civilized riverbanks, and boats plying in the city, Dhaka promised to be both a garden city and a place by the water with buildings in a setting of lakes, gardens, orchards, and parks (Ashraf, K. K. 2010).

Dhaka city had developed on the bank of River Buriganga. Since historical period, the

river had played an important role as main life blood of the urbanization of Dhaka. The city had been a trading town and the River Buriganga used to serve the city for all sorts of transportation needs. From Mughal period the main commercial center had developed near the river and important buildings and residences were built on the river bank. With the growth of the city towards north the river remained neglected as back of city. In spite of tremendous development in inter city transportation by road, the river remained unparalleled as prime water way.

### 3.2 Water Recreation History of Dhaka

The popularity of water based recreation is very clear and significant in our history. During 1800s and until 1940s the “Buckland Bundh” was the famous promenade place for the city dwellers and also acted as leisure center. Travel loving people came to the “Bundh” area after work to get fresh and relieved from the monotony. The aristocratic people lived adjacent to the Bundh area and they were fascinated about the morning and evening promenade on the Bundh. On Saturdays and Thursdays the English soldiers’ band troop played their instruments in front of the city dwellers on the Bundh and entertained them. All civic came from outside the city area got a hearty reception from the dwellers on the Bundh and then entered into the city.



**Photograph 3.1:** “Buckland Bundh” In 1960s and present state of “Buckland Bundh”.

Source: (Gosh, K. 2009), (The Daily Ittefaq, 5.11.11)

During 1864, initiatives were taken by Mr. Buckland to construct a one mile metal road Bundh from Forashgonj to Babubazar which was known as the ‘Bucklands Bundh’. Wrought iron benches were placed at intervals on the Bundh, parks and gardens were

created to enhance its beauty. River ghat points ‘Shiber Ghat’, ‘Shyam Bazar Ghat’, ‘Lal Kuthir Ghat’, ‘Nawab Barir Ghat’ and ‘Gohona Ghat’ were different in their characteristics like their names. Rabindranath Tagore spent his time adjacent to the Bundh area in barge (bazra) to relish the beauty of the River Buriganga.

Municipality took care of the Bundh. Bazaars sit on the Bundh early in the morning and ends before 8 am. After that Municipality cleaned the Bundh area and they did the job twice a day. In the evening aristocratic people visited this place. Clean roads, Wrought iron benches, parks and gardens and the opportunity created to relish gently blowing pleasant breeze faced a tragic death with the help of government initiatives. In 1963 the Government claimed the possession of the Bundh and gave the ownership to the Inland Water Transport Authority (IWTA) who now has possession of the whole strip. The IWTA got involved in commercial trade trap and had destroyed the Bundh by degrees (Gosh, K 2009).<sup>[36]</sup> RAJUK from time to time wanted to develop the area through landscape development schemes. The UAP (1995-2000) pointed that immediate action for the implementation of Buckland embankment development as a recreation center is required.

A visit to Dhanmondi Lake makes clear how popular a recreational area it is, and what an important function it serves in city life. In the morning, it is a vital gathering place for exercise, shopping, and socializing; during the day, people continue to walk around the lake, to sit and enjoy the surroundings, and to talk to friends. Many vendors earn their living there, and various shops and restaurants do good business. Lakes can thus be a vital part of the city’s economy as well as social life.

### **3.3 Water recreation in Dhaka and around the world**

Some case studies on the water recreation in Dhaka and around the world have been discussed and their implications in the context of the study area have been identified.

#### **3.3.1 The Sydney Harbor, Australia<sup>5</sup>**

##### **Historical Perspective**

The Sydney Harbor is said to be a “Jewel in Sydney’s crown”. Over the years the

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<sup>5</sup> <http://www.harbortaxis.com.au/>; <http://watertaxis.com.au/>; <http://www.sydneyports.com.au/>

harbor has been a major attraction for the tourists, and also a link to workplaces for thousands of local residents (See Photograph 3.2).

### **The Present State**

One of the most visually stunning bays in the world, Sydney Harbor is also an amazing place to stroll, take a boat ride or just sit a spell. Locations like Circular Quay, the Rocks, and the Botanical Garden fit well with the harbor itself to create a unique waterfront atmosphere. As in Stockholm, Sydney's waterfront destinations are best accessed by ferry.



**Photograph 3.2:** The Sydney Harbor- A Bird's eye view  
 When people can get around via the water, they are apt to hang around much longer and recreate on the waterfront. The upshot is a constant hum of people having fun at a huge variety of activities, which could easily occupy someone for days on end.

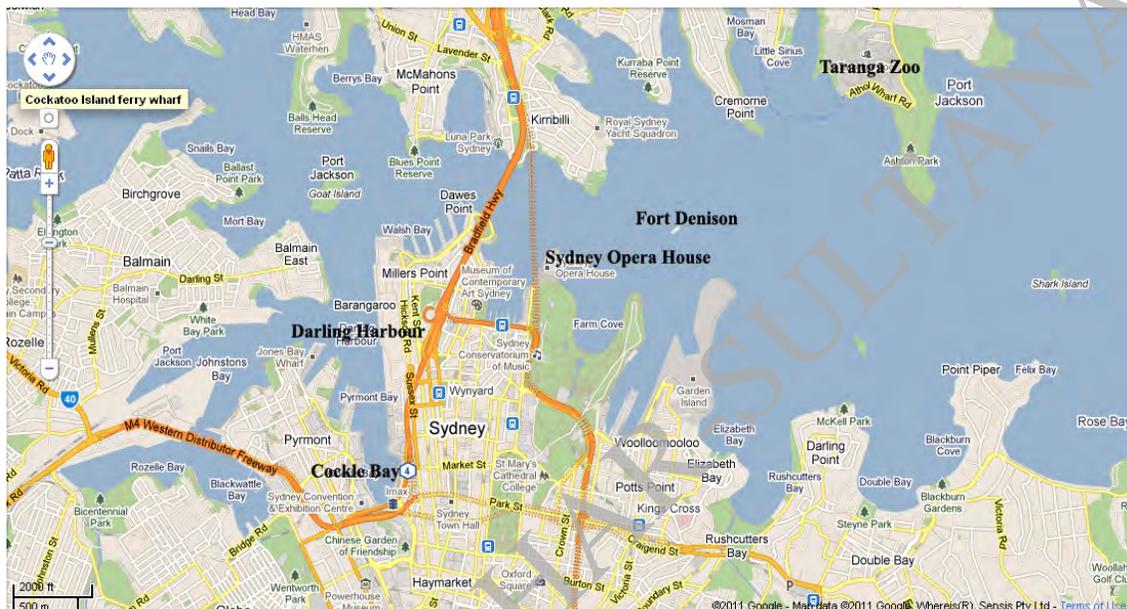
### **Important points along the water way**

Sydney is famous for its water taxi cruises along the harbor which offers one to come close to the scenic beauty of Sydney. The Harbor has numerous points of importance such as Harbor restaurants, islands of National Parks, Opera House, Taronga Zoo, Fort Denison, Cockatoo Island, important sea beaches and even conference halls along its way. Uses of water vessels like wedding water taxi services help to create a unique and magical occasion. No regular transport service is available through harbor. One has to hire boats to reach Sydney Harbor's many small islands, private harbor tours, waterfront restaurants etc. Boats operate from any wharf or jetty situated in the north, all of Middle Harbor and the Lane Cove and Parramatta Rivers. The landing points are all well connected to road transport system.

### **Harbor Events**

Sydney Harbor is home to many special events, such as Harbor week, New Years Eve

and the Australia Day celebrations. Following consultation with relevant port users, the community and business groups, the Harbor Master establishes port procedures that will apply during major aquatic events. Planning for individual events on and around the Harbor rests with a range of committees and organizations.



**Map 3.1:** Map of the Sydney Harbor, Australia



**Photograph 3.3:** Views from Circular Quay towards Sydney Harbour Bridge.



**Photograph 3.4:** Views from Circular Quay towards Sydney Opera House.

### 3.3.2 Circular Quay, Sydney Harbor, Australia.<sup>6</sup>

In many ways, Circular Quay is the "heart of Sydney," and its success is due to the essential role it plays in the city's daily life.

#### Historical perspective

Sydney, a city graced with copious sunshine and sheltered from the wind by protecting ridges, has grown up around its waterfront; indeed the waterfront is a national focal point. Circular Quay gradually built up at the side of Sydney Cove, the 1788 landing-place of the British convict ships which brought Sydney's original citizens. Circular Quay is the "hard edge" along the water - essentially, it is a public space connecting transit, pedestrian and civic elements. Framing the Quay are Sydney Harbor Bridge and the Opera House, among the most popular and internationally known images of the city and the country. The Quay is a perennial site for civic celebrations; in 1994, for example, crowds gathered there to celebrate the awarding of the 2000 Olympics to Sydney.

#### The Present State

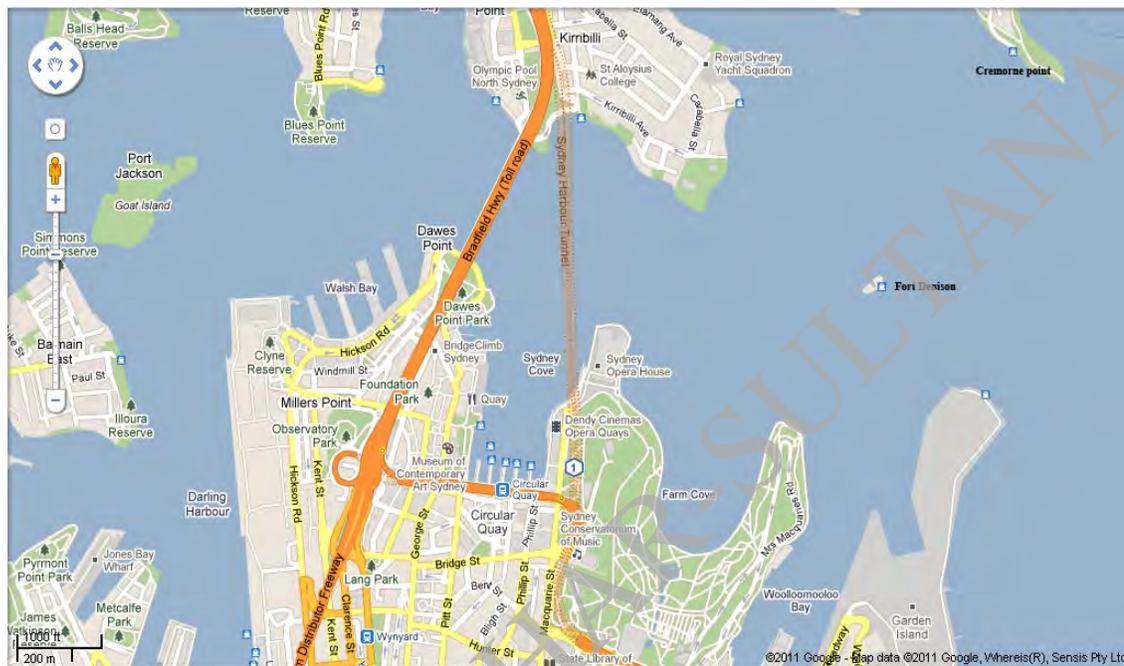
"Circular Quay" is a stepping-off point for most attractions based around the Harbor and an exciting place to be on a warm summer's day. It is a vibrant, bustling place with ferries leaving every few minutes to different parts of the Harbor, including Manly, Watsons Bay, Mosman and Taronga Park Zoo. There are great views of the Harbor Bridge, a short distance away. On the southern side of Circular Quay is a walkway that leads to the Sydney Opera House and Royal Botanical Gardens; while on the northern side, a short walk along lovely landscaped walkways takes one to the Harbor Bridge and the rocks, one of the oldest, most attractive and most interesting parts of Sydney. Buses depart here for Bondi and the eastern suburbs. There is a major railway station at the quay, which is part of the underground City Circle, which skirts around the CBD. Alongside the ferry terminals are a number of small outdoor cafes and the area is a

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<sup>6</sup> <http://www.sydney.com.au/quay.htm>;

[http://www.pps.org/great\\_public\\_spaces//one?public\\_place\\_id=117](http://www.pps.org/great_public_spaces//one?public_place_id=117)

magnet for bu skers of e very d escription. One who is looking for accommodation can find in and within walking distance of Circular Quay.



**Map3.2:** Map of the Circular Quay, Sydney Harbor, Australia



**Photograph 3.5:** Circular Quay and City centre Sydney, Australia



**Photograph 3.6:** Waterfront near Sydney Opera House and Sydney Harbour Bridge, Sydney, Australia

### 3.3.3 Sumidagawa River Walkway: Tokyo, Japan<sup>7</sup>

#### Historical Perspective

With water quality improved through stricter regulations on industrial effluent and construction of the sewerage system and with the waterside development, Sumidagawa River successfully recovered from the deterioration of the river environment. It serves as an advanced model for natural regeneration in Asia. Planned to run seventeen miles along both sides of the Sumidagawa River when completed in the year 2000, the Sumidagawa walkway represents a change in Tokyo's civic planning philosophy. When the banks of the river were stabilized for flood protection years ago, little thought was given to either aesthetics or public enjoyment. As recently as 1990, the downtown section of the Sumidagawa was lined with unappealing concrete that was only occasionally punctuated by an office building's landscaped garden.

#### The Present State

There are now large segments of a beautifully detailed walkway in place which is 28.4 kilometers in size. Where once there were blank walls there are now elaborate plantings, gazebos, tiles with historic wood-block prints of the river and a graceful railing featuring fish, birds and other aesthetic details. With these improvements the planners have effectively provided the congested city with a significant amount of accessible open spaces.

The walkway course from the A sakusa subway station towards the harbor features eleven bridges, each of which are of a different design. The new walkway runs beside both apartments and offices in central Tokyo and even passes through the famous Ginza district. Landscaping alongside the concrete walls also enhances the walk, while pergolas and other features provide shaded rest areas. There is seating throughout, as well as steps beside the flood walls where the walkway spaces is wide and green banks slope gently down toward the river's edge. At the northern end of the walkway, near the

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<sup>7</sup> Breen, A. and Rigby, D. 1996. "The new waterfront: a worldwide urban success story". Thames and Hudson, Pp-140

Asakusa subway is a new enormous underground bicycle storage facility. Bicycles are racked and locked in a brightly lit space that is used by commuters and strollers alike.



**Photograph 3.7:** A formally landscaped river terrace enhances the walkways along the left bank of the Sumidagawa River in downtown Tokyo.

The walkway is below grade level in some places and is screened from the adjoining road by flood walls in others. It is easily accessed by stairs descending from the bridges, which means pedestrians are below the noise and traffic. Although both sides of the river are heavily built up and a new expressway crosses it from west to east and runs upriver, the atmosphere on the walkway is relatively quiet and serene.

Now a major tourist attraction, this section of the Sumidagawa is cruised by tour boats that can hold as many as 550 passengers.

#### **Important Scenic points along the water way<sup>8</sup>**

The Tokyo Metropolitan Government (TMG) created guide map provides interesting sightseeing spots, suggested walking routes around Senju, waterfront area including local events, traditional crafts and local delicacies and other valuable information. The map covers the areas Akabane, Oji, Ogu, Minowa, Kitasenju and Minamisenju. There are various scenic spots along the course including the monument of the loyal retainers, Basho Museum, and Mannen Bridge. There is a promenade in “Sumidagawa Terrace”, a walking route for many people during the weekdays and holidays by the river bank. The glimpse of the boats going up and down the river while walking during daytime is

<sup>8</sup> <http://www.tokyotomo.com/article/en/oedo-chushingura-walking-first-half-of-the-course-sumidagawa-river-side-with-many-historical-spots/>  
<http://www.asakusa-samurai.com> [http://sumidagawa-hanabi.com/index\\_eg.html](http://sumidagawa-hanabi.com/index_eg.html)  
<http://gojapan.about.com/cs/tokyosightseeing/a/tokyocruise.htm>



**Photograph 3.8:** Bridges over Sumida gawa River

also enjoyable but the atmosphere in night time is great with the illuminated bridges. The walk way is very popular with people trying to get away from everyone else during their lunch break. This area is also suitable for jogging. Both old and new-style boats are available, along with a nice river cruise and a meal. A slow walk is full of unexpected surprises; one can find attractive soba shops and restaurants in the downtown.

**Sumida River Cruise and Events:** Tokyo Cruise Ship Co. operates a variety of cruise

boats along the Sumida River and on the Tokyo Bay. The boats are called *suijo-bus* and are popular among tourists. One can arrange his/her own cruise if one would like. Boats pass under 12 unique bridges on the Sumida River. Azuma Bridge, Komagata Bridge, Umayu Bridge, Kuramae Bridge, Ryogoku Bridge, Shinohashi Bridge, Kiyosu Bridge, Sumidagawa-ohashi Bridge, Eitai Bridge, Chuo-ohashi Bridge, Tsukuda-ohashi Bridge, Kachidoki Bridge. Azuma, Kiyosu, Eitai, and Kachidoki Bridge are illuminated at night, and the reflection of lights on the river brings a romantic mood to the cruise. It's interesting to see old and new buildings along the river. Boats that depart from Asakusa stop at the Hamarikyū Onshi Garden.

Ohanami Party: Ohanami party is a kind of festival for viewing cherry blossoms (*hanami*) with friends, so that one can experience the Japanese native cultures. Sumida Park in Asakusa is one of the most popular places for enjoying the festival. The term the cherry blossoms are very short. From the end of March to mid-April, cherry blossom viewing boats are operated along the Sumida River. Lots of people come to see the festival around the Sakura (cherry blossoms) Bridge.

Sumida River Fireworks Festival (Sumidagawa Hanabi Taikai): Viewing fireworks from a cruise boat is very popular during the Sumida River Firework Festival held at the end of July and Tokyo Bay Firework Festival held in August. Fireworks viewing boats require reservations months in advance. The Ryogoku Fireworks Festival is the oldest fireworks festivals for which historical records exist. In 1733, the restaurants near the Ryogoku Bridge received official permission to set off fireworks, which was the start of a long tradition.

### **3.3.4 Kuching Waterfront: a waterfront park as a catalyst for urban redevelopment<sup>9</sup>**

The redevelopment of the old Kuching waterfront near the heart of the city is as bold as dramatic. There are a number of unique characteristics that have made the Kuching

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<sup>9</sup> <http://lawatilahmalaysia.blogspot.com/2009/04/sarawak-land-of-hornbills.html>  
<http://www.molon.de/galleries/Malaysia/Sarawak/Kuching/>  
[http://sedctourism.com/kuching\\_waterfront.asp](http://sedctourism.com/kuching_waterfront.asp)  
[http://www.asiaexplorers.com/malaysia/kuching\\_travel\\_guide.htm](http://www.asiaexplorers.com/malaysia/kuching_travel_guide.htm)  
[http://www.cuti.com.my/Sub/Sarawak/guide\\_kucwater.htm](http://www.cuti.com.my/Sub/Sarawak/guide_kucwater.htm)

Waterfront as popular as it is today. Opened in 1993, it is regarded as one of the best examples of urban regeneration and rehabilitation projects in Asia. The waterfront has successfully created a lucrative atmosphere for business and leisure and is also known as *The People Place*. On Saturdays or Sundays morning a lot of local volunteers cleaning up the area as part of the community programme to instill the sense of belonging of this river beautification project.

### **Historical Perspective**

Kuching lies on the Sungai Sarawak 20 kilometers in from the sea. The city's riverfront used to be the regional shipping and distribution point of the Malaysian state of Sarawak. It acted as a seam between the commercial area on main bazaar and the river. The development of a road network and air transportation during the 1960s and 1970s, and the change in shipping technology led to the abandonment of the godowns (warehouses) and the general deterioration of the waterfront. The river wall had deteriorated, mud flats filled former shipping channels, and squatters had built shacks along the waterfront. At the same time it was a lively colorful area of fishing boats and commerce. In order to upgrade the image of Kuching, the re-invention of the waterfront became a necessity. In 1989, S EDC ( Sarawak State Economic Development Corporation) was signed to develop the waterfront by the state's government. By redeveloping, an area formerly characterized by deterioration, abandonment and squalid living conditions had been transformed into a beautiful new promenade, audio visual center and public space.

### **The Present State**

Kuching Waterfront epitomizes how it has modernized itself without losing any of its charm. Drab warehouse have been replaced with an approximately 1 kilometer long esplanade stretching from the main hotel and commercial heartland of the city to downtown Kuching. This waterfront has brought about a revitalization of the nearby commercial area. By re-establishing vistas and visible connections to the city center, it has also physically and symbolically reunited Kuching with its historic riverfront and has become the most popular meeting place in the city. The place has something for everyone and is 'self-contained' with facilities for entertainment, refreshment,

relaxation, cultural enjoyment and arts appreciation. It is also a great place for family gatherings, corporate outings and school and community projects.

### **Main Feature and Details**

The main features include a new river wall, a wide shaded promenade, a handsomely landscaped waterfront park, cantilevered belvederes over the river and restored historic buildings. This esplanade is beautifully landscaped and dotted with wooden benches, food stalls, restaurants and entertainment facilities. The centerpiece of the bustling waterfront is the new town square waterfront park containing a nineteenth century square Tower flanked by pools and fountains. This square has become a favorite gathering spot for visitors and the local population alike.

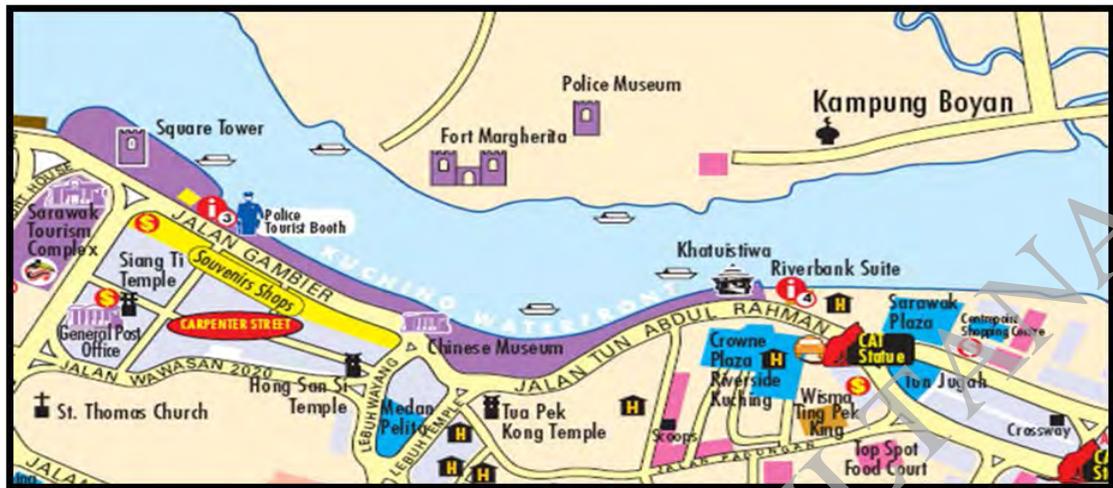


**Photograph 3.9:** Wooden benches, food stalls, and restaurants along the waterfront.

The paving, artworks, decoration and promenade wall all draw on the rich cultural heritage of the island of Borneo – its mix of ethnic populations and its colonial history. Thirteen different mosaic patterns are used in the paving, and designs on the river wall balustrade are based on a traditional Chinese motif. Pavilion roofs likewise are influenced by colorful, traditional designs. Planting is lush, and attractive street furniture and light fixtures and an imaginative nighttime illumination scheme have been used.

### **Important points along the waterway**

The water taxis (*locally called sampans or tambangs*) take people across the river at their leisurely pace or board the river cruise for a short trip up the river. A number of older buildings have been preserved and incorporated into the design, including the Chinese History Museum, the Sarawak Steamship Building, an open air theatre and the Square Tower. Modern additions to the Waterfront include a restored Chinese pavilion,



**Map 3.3:** Kuching Waterfront Map



**Photograph 3.10:** Convenient food and drink stalls along the waterfront. Souvenir and handicraft stalls usually available at night.



**Photograph 3.11:** Modern Kuching waterfront esplanade

an observation tower, a tea terrace, an open-air theater, colorful musical fountains, and a number of modern sculptures, Main bazaar, the Sunday Market at Satok, the Kuching Civic Center, the Astana, Fort Margherita and the Malay kampong which line the north bank of the river or even the newly constructed DUN complex and the New Sarawak State Legislative Assembly Building.

### 3.3.4.5 Events

Aptly called The People Place, Kuching Waterfront was built for the people of Sarawak to enjoy, entertaining and be entertained, a heritage to be proud of and a legacy to pass on to generations to come.

Decorated Boat Parade: One of the most interesting events is the '*decorated boat parade*' around Sarawak River at Waterfront Kuching. Some of the boats are static, but some of them are moving all the time. Some of them were fast, some of them were slow. Sometimes, the boats may turn its direction so that the visitor at both sides of the river can see both sides of the boat.



**Photograph 3.12:** 'Decorated Boat Parade' and 'Monthly Dance and Music Performance' around Sarawak River at Kuching Waterfront.

Monthly Dance and Music Performance: The Monthly Dance and Music performance focuses on ethnic and traditional dances using their individual costumes accompanied by music and audience are encouraged to participate by joining in the dance. Rounding up the 4th Sunday of each month, the dancer groups strut their multi-ethnic diversity of Sarawak at the Godown Amphitheater Kuching Waterfront between 8:00pm - 9:00pm. The busy weekly schedules to expose the artistic talents of Sarawak are part of the efforts to bring up a generation of artists and enhance the appreciation of local cultures and ethnic traditions.

River cruises: One can ride the Sarawak River Cruise boats or take the famous Sarawak Sampan Taxis across the river which usually costs RM0.50 cents (US\$0.15). The Sarawak River Cruises depart daily at about 5.30pm and costs RM60 (US\$20) for adults while children pay half price. Some tour agents from the Main Bazaar sell these tickets as well or one can inquire directly from the jetty where the cruise departs.



**Photograph 3.13:** The landscaped Waterfront of Kuching (Source: Breen, A. and Rigby, D. 1996. "The new waterfront: a worldwide urban success story". Thames and Hudson, Pp-148)



**Photograph 3.14:** The cruise ship, Equatorial Kuching Waterfront Sarawak River Cruise Boat



**Photograph 3.15** Kuching Waterfront at night

Kuching Waterfront is the best place to see nightlife of lovers, youngsters and love-makers. It really comes alive and seems like half of Kuching is out meeting friends, watching a show or just taking the air. Various vendors are seen along the main walkways selling all sorts of 'interesting' items. Food

kiosks are abundant at various points while couples and tourist flock to enjoy the walk along here. A number of make-shift stalls sell souvenirs and crafts too but at a slightly higher price than the usual shops. The place usually simmers down around 9pm.

### **3.3.5 The Assiniboine River Marina and the Market and Tower at the Forks, the City of Winnipeg, Manitoba, Canada.<sup>10</sup>**

As a strategic location situated at the confluence of the Red and Assiniboine Rivers, as well as an important meeting place for people over the centuries, the Forks was designated a National Historic Site to commemorate its importance in the development of Manitoba and Canada's west over the centuries. Evidence found during archaeological digs has proven that aboriginal people were using the site of the Forks as a stopping and meeting place as early as 4000 BC. It was also a rest stop for aboriginal

<sup>10</sup><http://www.hicker-stock-photography.com/stockphoto/assiniboine-river-marina-and-market-tower-the-forks-national-historic-site-city-of-winnipeg-manitoba-177.htm>

bison hunters during the seasonal migrations to the plains of Manitoba and Saskatchewan. Today however, the Forks National Historic Site is at the centre of Manitoba's bustling capital city of Winnipeg. It is still used as a meeting place



however; today people meet for a meal, a coffee, or for shopping at the markets as well as for celebrations and festivals.

### 3.3.6 Jinji Lake, Suzhou: *Farmland turns into Lakefront city*<sup>11</sup>

#### Historical Perspective

The Jinji Lake Landscape Master Plan transforms a rural farming community into a modern urban development with multi-cultural appeal and a variety of uses. The waterfront district covers 520 hectares of land surrounding Jinji Lake, the most arresting natural feature of the Suzhou District. Because of the lake's natural beauty, undeveloped resources and opportunities for an open space system, the Chinese government saw the area as prime property to create a world-class, environmentally responsible community. The craftsmanship at Jinji Lake has set new standards in China by which other public spaces are now being judged.

Jinji Lake area is in the middle of the Suzhou industrial area. The area of the water is 7.38 square kilometers. The overall plan tries to use less artificial elements in order to

<sup>11</sup> Hou, D. 2009. "Urban Waterfront Landscape Planning", A published Master's Thesis for European Spatial Planning and Regional Development, Blekinge Institute of Technology, Karlskrona, Sweden. [www.bth.se/fou/cuppsats.nsf/all/.../\\$file/thesisDiyunHou.doc](http://www.bth.se/fou/cuppsats.nsf/all/.../$file/thesisDiyunHou.doc), <http://www.landscapeonline.com/research/article/3838>, <http://www.johnchow.com/suzhou-water-show-at-jinji-lake/>, <http://www.aecom.com/What+We+Do/Design+and+Planning/Landscape+Architecture+and+Urban+Design/projectsList/Jinji+Lake>, <http://www.suzhou.gov.cn/news/2006/1/28/eng/eng-8-52-40-3057.shtml>, <http://www.djc.com/news/ac/11151118.html>, <http://www.liveinsuzhou.com/default.asp?tag=Jinji-Lake>

make people pay more attention on natural elements. Master Landscape Design encompassing public open space, parks and detailed landscape design around the lake and at the water's edge. The master landscape design divides the lake into eight distinct neighborhoods, connected by a continuous park system. Open space and waterfront parks around Jinji Lake have improved local citizens' quality of life. Jinji Lake has become a landscape success story and destination site in China demonstrating how landscape can create places for people to live, businesses to invest and cultures to celebrate. The Jinji Lake landscape design won a national design merit award from the American Society of Landscape Architects in 2003. The 2005 Suzhou "Tourist Oscar" was won by Jinji Lake scenic spot for its unique feature of urban ecological preservation and leisure tourism.

### **The division of space**

AECOM provided a plan that closely integrated the urban environment with the public realm through recreational areas and a land use pattern responsive to the lake. Plan components include a large ceremonial plaza and mixed-use development adjacent to the central business district and a linear waterfront promenade on the west shore. The south shore features a historic fishing pier, a neighborhood shopping district around a manmade cove, and a Sustainability Education Center with wetland gardens. A series of active neighborhood parks and an arts and entertainment district, with an aquarium, outdoor concert pavilion, and display gardens make up the east shore. The north shore is composed of a waterfront park, wetlands, a signature bridge, and a man-made island for resort and water recreation uses. The Jinji Lake area space division: A. Harbor Plaza B. The Grand Promenade C. Marina Cove D. Reflection Point E. Reflection Gardens F. Arts and Entertainment village G. Mirror's Crossing H. Discovered Island

Among these, most natural areas are the Discovered Island, the Reflection Point and the Grand Promenade. In Discovered Island, there are many bulrushes in the land along water; it is in order to clean the water in Jinji Lake. In Reflection Point, there is a natural island in south of the street to airport. It is used to protect plants and birds. The Grand Promenade is a place special for the feeling that a good footpath can make people feel closer with water. The platform extends to water, and the depth of water

often change, so there are two steps of platform, when the water rise, people can play water on the second step.



**Figure 3.1** Master Plan of Jinji Lake, Suzhou



**Photograph 3.17** The broad, curving Grand Promenade

### Traffic system

The traffic system in Jinji Lake is divided into two kinds, one is on water, and another is on land. The surface of the water is a big corridor used to connect with the eight parts; roads on land are well organized with a complex traffic system. Most of the streets here are only for pedestrians. Big roads are necessary as the Jinji Lake area is big enough to

meet the need of traffic and only sidewalks hardly to meet the need. The street for cars connect all squares, parks, green lands and residential areas and designed with other establishments, such as lights, stools and steps which can make the environment closer to people. Between the big and small roads, there are usually grasses to reduce the dust.

All the cars and pedestrians are well separated. The walking roads connect the entrances, squares and inner public lands. There are different kinds of paths: footpath, sidewalks with steps, rock paths and plank boardwalks built along water.

#### **The details of Jinji Lake**

Jinji Lake's landscape design explores and celebrates inherent dualities: The city of Suzhou's status as a revered historical city and its goal to be a modern global player. The landscape design respects the historic traditions of Suzhou and weaves together the worlds of old and new, business and recreation, living and education, linking the past to the future, art to architecture, land to water, city to village and Suzhou to the world. The arts and entertainment village, a marina, and promenades and walkways lead the public to the lake's edge to encourage boating, swimming and other water-related activities.



**Photograph 3.18** Waterfront of Jinji Lake

The Jinji Lake is full of entertainment, because a part of Jinji Lake is special for business and investment. There are restaurants, hotels, bars, shopping mall and an assembly hall. Ligongdi is to the south of Jinji Lake, and along this street, both sides have modern restaurants and clubs but the appearance of the buildings is traditional. Ligongdi can be divided into two parts: one is dynamic and the other part is static. It attracts people in different age groups and business.

The government emphasizes that this area must be clean and ecological, because Jinji

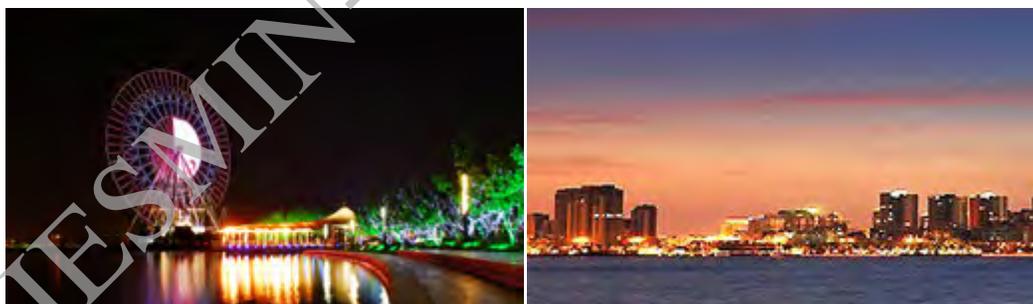
Lake is one of China's cleanest and largest lakes. EDAW took special measures in the design to clean surface water by using natural and created wetlands along receiving streams to filter pollutants in agricultural and urban storm water runoff.



The most interesting street in Jinji Lake is Ligongdi and is called the colored belt of Jinji Lake at night as lighting is used to make a fancy impression.

### Events and River cruises

During the holidays Suzhou Industrial Park (SIP) offers a series of benefits and special promotion activities covering extensive fields of shopping, dining and wining, shows and tourist funs. The Jinji Lake scenic spot offer the night tour at the Ferris Wheel Park and the night cruise is available at the Wanghug Dock on the west bank of Jinji Lake. The large-scale water show by the Jinji Lake starts at eight in the evening and lasts half an hour. The show at the Bellagio used only water and music, the show at Jinji Lake adds lights, lasers, fire and a water screen that shows videos. The 27 minutes show also last a lot longer than the four minutes Bellagio water display.



**Photograph 3.19** Night view at the Ferris Wheel Park

### 3.3.7 Flood precautions turn into truly successful public spaces in Vienna.

Vienna has taken cues from both historic and modern precedents to remake the river as a culturally vibrant public place, employing anything from the popular phenomena of beach bars to a renovated pool barge. While facing a number of political, environmental and industrial challenges in the process of reestablishing its riverfront, the city has

successfully made it an integral part of everyday Viennese life.

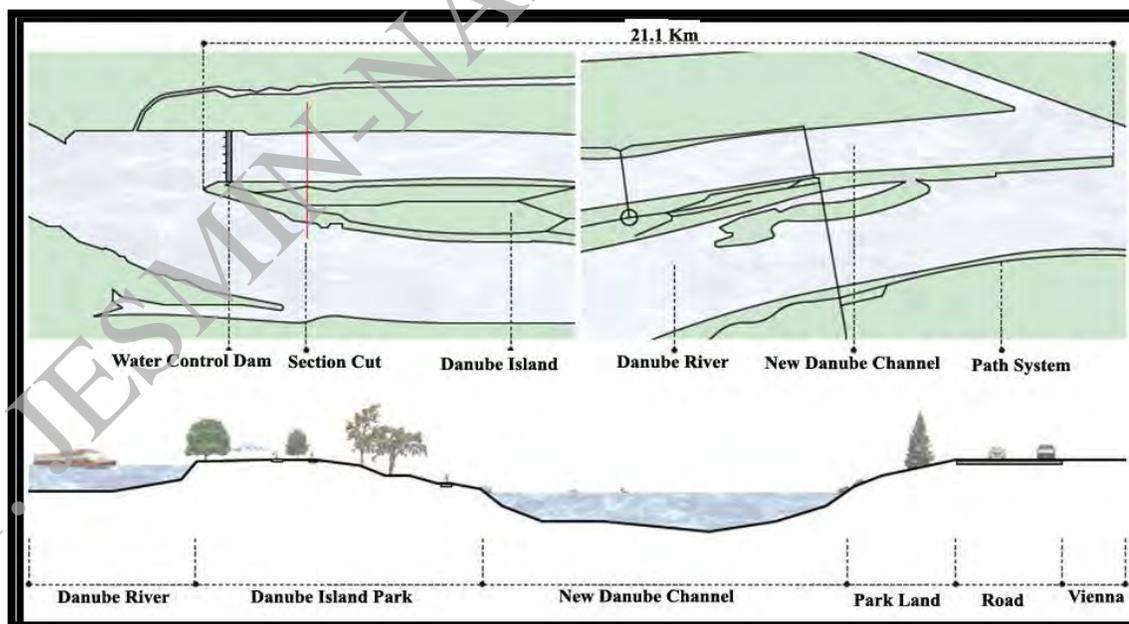


**Photograph 3.20** Danube Island and its new recreational water channel

and Danube Island. Built with dams and other infrastructure to control and take excess flood water, the new utilitarian river has been claimed exclusively for recreational use.

In this scenario, the island becomes a park while the new water channel permits only small boat traffic, keeping swimmers safe from barges. Instead of allowing the recreational river and its banks to be developed privately, the city carefully regulates

Vienna is susceptible to frequent flooding due to its geographical location, located on the Danube River, downstream the snowy Alps. To avoid historically disastrous floods, the city built an auxiliary channel of the river to flow the length of the city. This channel, and the long island that separates it from the Danube, have become known as the New Danube



**Figure 3.2** Map of the length of the island from tip to tip, section cut showing the Danube and its lower auxiliary channel.

how the buildings, roads, sidewalks and plazas are designed and placed in the new district, guaranteeing the waterfront as a public amenity. The risk of flash floods required Vienna to make a precautionary change to the natural structure of its waterfront.

### 3.3.8 House boats on the backwaters of Kerala<sup>12</sup>

The most exciting thing on the backwaters of Kerala, however, is the Kettuvallam (traditional Kerala houseboat) which has become the most popular tourism product in India today. A holiday in the houseboats of Kerala is even more enchanting. The Kettuvallams were traditionally used as grain barges, to transport the rice harvested in the fertile fields alongside the backwaters. Thatched roof covers over wooden hulls, 100 feet (30 m) in length, provided protection from the elements. At some point in time the boats were used as living quarters by the royalty. The houseboats have converted into floating cottages to accommodate tourists. Most tourists spend the night on a house boat. Food is cooked on board by the accompanying staff – mostly having a flavor of Kerala. The houseboats are of various patterns and can be hired as per the size of the family or visiting group. The living-cum-dining room is usually open on at least three sides providing a grand view of the surroundings, including other boats, throughout the day when it is on the move. It is brought to a standstill at times of taking food and at night. Kettuvallams are motorized but generally proceed at a slow speed for smooth travel. At times, as per demand of customers, electricity is switched off and lanterns are provided to create a rural setting.



**Photograph 3.21** House boats on the backwaters of Kerala.

<sup>12</sup> [http://en.wikipedia.org/wiki/Kerala\\_backwaters](http://en.wikipedia.org/wiki/Kerala_backwaters)

Kettuvalloms take tourists from a particular point and bring them back to around the same point next morning. There are some specific cruises mostly in the Alappuzha area such as the one night cruise from Alappuzha to Thotapally via Punnamada Lake, two nights cruise from Alappuzha to Alankavadi, one night cruise from Alappuzha to Kidangara, and one night cruise from Alappuzha to Mankotta. More than 400 kettuvallams ply the backwaters, 120 of them in Alappuzha.

### 3.3.9 Floating walkway on Brisbane River<sup>13</sup>

The Brisbane City Council has been developing a network of river walk pavements along the banks of the Brisbane River. Jim Soorley, a former mayor of Brisbane, encouraged serious investment into the quality and capacity of the Brisbane river walk. An interesting section is the floating walkway between the Story Bridge and Merthyr

Street New Farm. Brisbane City planners require many developers of formerly private riverfront blocks to create new sections of the Brisbane River walk that are accessible to the public. The river depth was progressively increased and narrow points widened to allow larger vessels into the river and further upstream.



**Photograph 3.22** The Brisbane River walk

### 3.3.10 Implications in respect of the study area

Every monsoon Dhaka City dwellers experience flood due to rain. Drainage system of Dhaka serves less than 25% of the urban area. The remaining areas drain through overland flow into adjacent water courses or depression areas and back swamps (Islam, I. 2006).<sup>[38]</sup> The building of embankment all around the city was not the right solution. The completion of the Eastern Embankment will turn Dhaka into an island surrounded by wall all around. Instead of a dam it should have been excavated as a canal like in

<sup>13</sup> [http://en.wikipedia.org/wiki/Brisbane\\_River](http://en.wikipedia.org/wiki/Brisbane_River)

Vienna where flood precautions turn into truly successful public spaces. In Dhaka this kind of a canal is the most suitable form of flood protection and could become a source of attraction for park improvement and recreational use. Also this waterway can work as a peripheral circulation route for the city, especially for goods handling, and can also be used as pisciculture development.

Due to flood embankment, the surrounding area of the “Mirpur- Ashulia- Tongi” route is fixed and there is insufficient area remain for recreational purpose. In that case, floating river walk like on Brisbane River can be a solution and recommended to utilize the minimum resources. In those places where space is limited on the embankment side and route width is maximum there the floating walkway on the Brisbane river concept can be applied. Locations like Ashulia landing station area, the Zoo, Bot Tola and the Botanical Garden fit well with the route itself to create a unique waterfront atmosphere. Like Sydney Harbor the route has the potentiality to act as an amazing place to stroll, take a boat ride or just sit a spell. A beautifully landscaped walkway dotted with wooden benches, food stalls, restaurants and entertainment facilities can lead to the attraction points. Bicycles storage facility can be provided and are racked and locked in a brightly lit space that can be used by commuters and strollers alike. Like Kuching and Fork this route might offer astounding arrays of edibles to its visitors. Some kinds of festivals and events like ‘flower festival’, ‘boat competition’, ‘decorated boat parade’, and Fireworks festival could be arranged to make the routes livelier.

Dhaka’s waterfront destinations are best accessed by ferry. Like the Circular Quay the Ashulia landing station area has the potential for connecting transit, pedestrian and civic elements and act as a public space. It can be a stepping-off point for most attractions based around the route and an exciting vibrant, bustling place to be on. Scheduled ferries can leave from here to different parts of the route. Great views of the ‘Ashulia – Tongi Bridge’ can be seen from a short distance away.

As there are bridges over all the three routes which are low bridges and stand as major obstacle to the Circular Waterway, the taskforce has recommended the bridges to be knocked down and reconstruct them according to the vertical and horizontal clearance. As a result the bridges could have unique identity and it could be the exhibit like the 12

unique bridges on the Sumida River each of which is of a different design and are illuminated at night, and the reflection of lights on the river brings a romantic mood to the cruise.

Traffic problem could be solved in multiple levels like Sumida River walkway. The walkway should be below grade level in some places and accessed by stairs descending from the bridges. Pedestrians should be established below the noise and traffic and have the atmosphere of relatively quiet and serene. Landscaped walkways featured with pergolas would provide shaded rest areas and sittings alongside to enhance the walk. Like The Assiniboine River Walk, when not flooded, 'Demra- Noapara' route can provide walkers with a paved path along the River, where visitors can take their time to enjoy the sights; bike trails and tours could also be available there.

House boat concept like Kerala can be used in 'Demra- Noapara' route. As the "Jamdani Hat" starts early in the morning at 4.00 am and finishes at 8.00 am only on Friday in a week and it is quite impossible for many of the wishers to reach there in the early morning. Considering that, House boat concept can be applied in "Demra- Noapara" route and there can be arrangement of some house boats converted into floating cottages to accommodate visitors which may solve the problem to attend the hat.

### **3.3.11 Dhanmondi Lake development: A success story of Dhaka**

Dhanmondi Lake is one of the popular leisure spots and most important successful breathing public space in the city. The lake offers attractive panoramic views and the lake side development is providing the city dwellers with place for cultural gathering, hang outs, foods etc. The lake has become a well visited tourist spot, with cultural hubs such as the 'Rabindra Srobar' located along its side. As a reference case at local context, the development of Dhanmondi Lake bears remarkable importance for the present study. The scenario of Dhanmondi area before the lake development differs strongly from that of present. The change in land use pattern after the lake development reflects the influence of this development (Sultana *et al.* 2006).<sup>[38]</sup>

In 1956, Dhanmondi was developed as a planned residential area. In the development plan, about 16% of the total area of Dhanmondi was designated for the lake. The lake

was originally a dead channel of the Karwan Bazar River, and was connected to the Turag River. The lake is partially connected with the Begunbari Canal [Wikipedia, Dhanmondi Lake].<sup>[39]</sup>

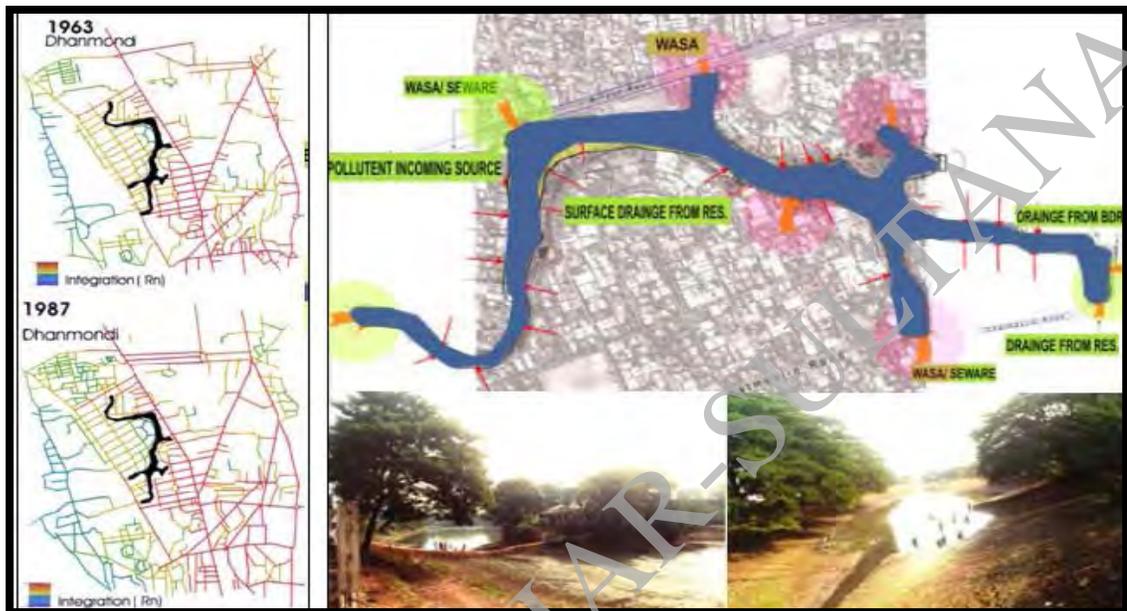
Within a process of rapid urbanization, Dhaka city is faced with the constant threat of encroachment of land and water bodies for building housing and commercial facilities to accommodate the growing population. This phenomenon is changing the residential landscape of the city into a mixed land-use pattern. Dhanmondi, lying in the heart of the city was such an extreme example. In course of time, this residential neighborhood and the lake have witnessed drastic transformations. Here, the uncontrolled and unauthorized growth of different urban amenities such as retail centers, hospitals, clinics, schools and other commercial activities were rapidly diminishing the open spaces which also served as the social and cultural spaces by the lake side green plateau passing throughout the entire neighborhood. The infrastructure and other facilities were stretched beyond limits, which in turn resulted in environmental degradation. The lake became a dump yard of pollution – receiving unauthorized sewerage outlets, drainage discharges, surface run-off and even solid waste from various sources (Figure 3.3).

In 1998, to cope with this extreme urban situation, Dhaka City Corporation commissioned ‘Vitti Sthapati Brindo’<sup>14</sup>, a local architectural organization, to revitalize the lake side waterfront and the adjacent area to enhance the social, economic, cultural and environmental sustainability of this residential neighborhood. The idea was also to invite people from other parts of the city so that the lake can be protected from encroachment by creating a buffer zone in between the allotted residential plots and the lake. Dhanmondi, being located along the integrated routes of the city in different stages of its growth, the area remain easily accessible to the people from all parts of the city. This perception, undertook a vision of providing a place of recreation for the urban community of Dhaka city.

Communities’ participation was included for addressing the problems of encroachment and environmental degradation. In order to recover encroached land areas, the project had to evict some illegally encroached local land owners. The main concept behind

<sup>14</sup> A Dhaka based private architectural organization,

making this project a successful one was to create a cooperative relation between the public and the authority. Finally, the project stretches with an area of 85.6 acres out of which almost 31 acres are land and rest 54.6 acres are water body. (Hossain *et al.*, 2009)



**Figure 3.3:** Dhanmondi area and the lake before development (disintegration, physical and environmental deterioration) Source: Khan, N. 2008 & Vitti Sthapati Brindo Ltd, Dhaka 1998.

### **Design considerations to revitalize the lake and the lake side area**

Dhanmondi Lake development project was undertaken to provide a place of recreation for the urban community of Dhaka City. This was a part of a long demand of the urban dwellers for their physical as well as mental nourishment. The first thing came in to consideration to revitalize the lake and the lake side area was to decontaminate the lake water, shape up the water shade area, open it up and make it easy accessible to public. A public private partnership made this possible.

The lake was made accessible to the public realm, by increasing both - physical and visual connectivity between the lake side water front and the neighborhood. With an open idea of connectivity, the visibility was ensuring by replacing high fences with low green hedges so that the lake becomes visible from the periphery roads. Physical connectivity was achieved by insulating walk ways through the periphery of the lake side and also approaching from the side roads from accessible locations. Some passive activities became a pre requisite along the walk ways to make this links sustainable. The

circular path around the lake side acted as the-necklace and the facilities that generate moderate traffic resembled as the precious stone concerning the openness of the sustainable issues. A few large green spaces were selected in strategic locations with better visibility towards the lake and accessible from within the neighborhood.

The scheme looked for some moderate function that will generate less traffic in the residential area. Functions like, food kiosk, drink corner, small restaurants, community boat club, community health club, open air theatre and children's play area, were distributed in different visually and spatially strategic locations throughout the development. The concept was to act these functions as attractor, to bring in more people in the lake side areas. To implement this idea the functions were appropriately placed: To avoid direct traffic flow from the busy and congested peripheral roads of the neighborhood, contributing to the major road network of the city, the functions were embedded in more localized areas.

Considering the management aspects of the project and to make it financially self sustainable, these facilities would generate income and hence could be maintained modestly by a public private partnership. In reality, the idea contributed to the restoration of the overall environmental quality of the serene lake side area.

### **Important features**

Many important features of Dhanmondi area have been built up along the lake. Abahani club grounds, Dhanmondi club ground, Kalabagan Cricket club, Women Sports Complex are situated near the lake. The Dhaka City Corporation (DCC) has permitted eight private organizations to run various businesses in the area. The open stage for cultural programs, boat club, angling club and a number of restaurants attract a large number of visitors every day. The lake and its adjacent areas become the central point of amusement of the crowd during the weekends. The administration of the project activities concern is based on a two tier management body. The two separate committee responsible for the operation and maintenance of the whole project facilities namely; The Advisory Committee and The Management Committee.

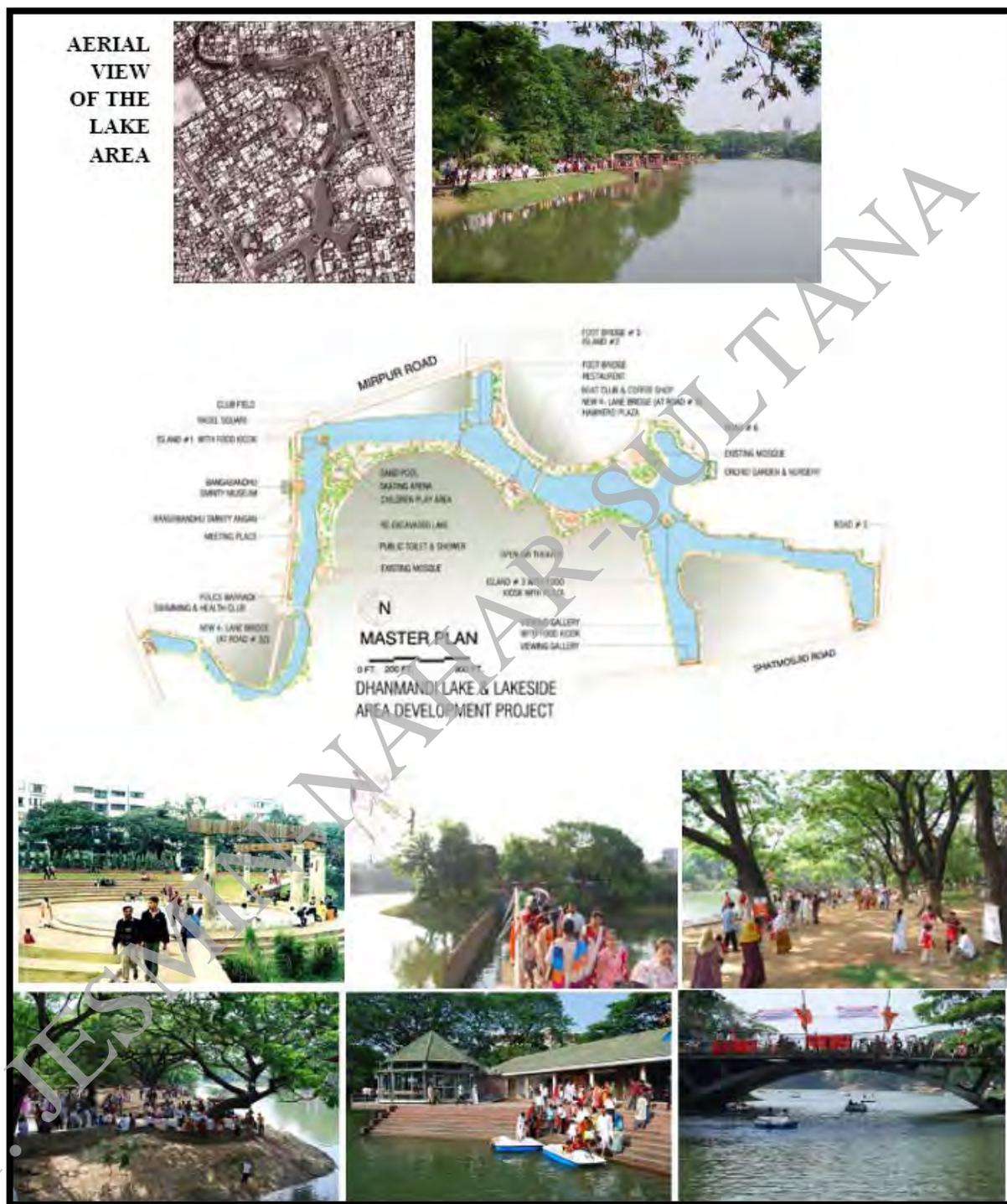
Dhanmondi Lake is a well visited spot where many interesting activities and events take place on a regular mode. The lake comes with different looks and beauty in different

seasons. There are many trees around this lake blossoming with various strokes of colors such as red, orange, pink, yellow, white and purple. On a hot summer a walk beside the lake can be very relaxing and enchanting to pass the leisure times. People tend to visit the lake during the evening sunlight as it gets comforting and air becomes cooler with soft breezes. There are many food courts and small restaurants near the sidewalks of the lake. Dingi, Panshi, Shampaan are one of the popular restaurants beside the lake. Tea, soft drinks, pickles, pithas (Bengali Sweet Cake) and ice-creams are available in the walkways too.

### **Outcome of the lake restoration project**

In reality, the project appears to be a successful model by restoring the lake and environment of the neighborhood. It is considered as a paradigmatic strategic urban project in a developing city like Dhaka. The scheme significantly restores and manages an urban water front development and incorporates visionary design strategies to avoid encroachment by the city. An increased connectivity throughout the spaces in the lake side development scheme, has successfully integrated the segregated water body and the residential neighborhood into a continuous whole. The spatial intelligence of the design process lies, in the creation of a high level of social and spatial interface among people from different parts of the city.

The success of Dhanmondi Lake Redevelopment Project opens the possibilities for urban design in Dhaka. Though the neighborhood has been made accessible to the public realm through inclusion of a City scale recreational area, this causes new problems like, traffic congestion, poor maintenance of the area; hence the chance of further environmental deterioration etc. However, these minor issues are causing problem only to the local people facing the main peripheral access routes of Dhanmondi. In broader aspect, it is a noverwhelmingly successful project by accommodating all class of people from the global context of the city – within a minimum financial and physical intervention through the residential neighborhood.



**Figure 3.4:** Identification of successful activity nodes along Dhanmandi lake area to increase the quality of prevailing urban spaces and later public response in reality.

(Source: Vitti Sthapati Brindo Ltd, Dhaka 2008.)

### 3.3.12 Hatirjheel Project: Yet another success story of Dhaka

In this crowded, congested capital city, the Hatirjheel project is being hailed as the breathing space of the city and offers fresh hope for the residents of Dhaka. While the city is becoming more and more suffocating, open spaces are shrinking rapidly, Hatirjheel comes as a breath of fresh air. It is the last hope of the city dwellers for some respite and recreation. Hatirjheel is all set to be the epitome of a beautiful cityscape in this urban jungle of the capital city. A large amphitheatre is suspended on the banks of a limpid lake and the wide road runs by, shaded by large lush green trees. If the Hatirjheel project can be implemented according to the plan and design, then not only will the appearance of this area change; the entire city will have a facelift. It will increase the beauty of the city.

The plan is for a water retention body -- in other words, a lake -- to stretch from behind Sonargaon Hotel for four kilometers up till Rampura bridge. An amphitheatre will be constructed on the banks of the lake at the back of Tejgaon Industrial Area. The people can watch performances at the theatre sitting in the open air by the waters of the lake. Then there will be a water deck at Magh Bazar, an open platform for entertainment upon the lake. In the middle of the lake near Badda and West Rampura will be a forested island called Eco-Centre. It will be a haven for all sorts of flora and fauna. People can travel by boat around the island but will not be permitted on it. There will be water taxis to transport people down the lake. It will take people up till the lake at Gulshan-1. Later this service will be extended up till the lake in Gulshan 2 and Banani. There will be two water taxi terminals, one at Badda and one at Magh Bazar and wide roads around the lake and bridges. The designers placed emphasis on aesthetics, designing it in an environment-friendly manner. Even though this is basically an infrastructural development project, they took it as an environmental development project (Rahman, S).<sup>[40]</sup>

Hatirjheel area is 244.74746 acres while Begun Bari Khal area is 30 acres. ECNEC approved of this Hatirjheel project on October 8, 2007. (Rahman, S) The project is named as 'Integrated Development of Hatirjheel Area Including Begunbari Khal Project'

and this is now being implemented. RAJUK, 16 Engineering Construction Battalion of Army, Dhaka WASA and LGED are jointly implementing the project. The Bangladesh University of Engineering and Technology is the consultant of the project. Vitti Sthapati Brindo Ltd, DPM, AIA and JB got the responsibility for the project plan and design. Bangladesh Army has been given the responsibility of implementing the project as the Special Works Organization. Hatirjheel and Begun Bari canal at one time were connected to Dhanmondi Lake. But during Ershad's rule when Panthapath was constructed, a box culvert and box drainage line was placed at the Dhanmondi Lake and Begun Bari intersection. In context of Bangladesh, box culverts and drainage systems do not work. More stress should be placed on natural drainage systems here. Now if there was a connection between the Dhanmondi Lake, Begun Bari canal, Hatirjheel, Mohakhali canal, Gulshan Lake and Banani Lake, this would be a resource and these were all connected at one point of time. It is still possible to link these up, except for perhaps Dhanmondi Lake. That is why it is so important to develop Hatirjheel. Demands for Hatirjheel development have been made since 1995. The people have long been demanding a revival of the Begunbari canal and this Hatirjheel project will fulfill the demand of the city dwellers.

The project was taken to ease traffic congestion of the much crowded Dhaka city and people expected a nice spot to get some fresh air with lakes & over bridges as planned for the entire project. The city people will have to wait till 2012 for the Hatirjheel project to be complete.



**Photograph 3.23:** Hatirjheel project during March 14, 2011 and July 31, 2012.

## **Chapter 4: Study Area Profile**

Three portion of CW have been selected to explore their potentialities for recreation and place making. These routes were selected because of their exclusive potentialities for recreational prerequisite and immense scope for future development for recreation through place making. So the target of this chapter is to give a complete picture of these three routes and has tried to explore their potentialities and to indicate the problems and limitations.

### **4.1 “Mirpur- Ashulia- Tongi” Route**

#### **4.1.1 General information**

Ashulia is being used as a recreation point by the recreational users of Dhaka city. People are strolling, roaming, boating, gossiping and enjoying the scenic beauty of the river there. The attractive view of Turag River and vast paddy fields of Ashulia make it a popular tourist spot and is one of the nicest and most romantic places nearby Dhaka. People love to go there with their friends and families. Now-a-days Ashulia meet the demand of recreational site with boating and other facilities for the city dwellers. It is a nice place where one can get fresh air and also recreate. For its absolute natural beauty during monsoon it is called the Cox’s Bazar of Dhaka. Again in winter it has another attraction for its cosmic greenery natural exquisiteness provided by paddy and vegetable fields.

During dry season, usually the Ashulia landing station area of this route generates about 150 persons per day in weekend. In weekdays on average 50 persons per day come to Ashulia landing station area. Other than during wet period, the number increases to 250/300 at weekdays and 450/500 at weekend. But special events and occasions like ‘Eid-Ul-Fitr’, Pujas and ‘Eid Ul Azha’ the number reaches to 700/800 and festivals like Valentine’s Day, Pohela Falgun, and ‘Pohela Baishakh’ it reaches 1500 to 2000 (Jashimuddin, Tarka Company; 2011).<sup>[41]</sup> The beauty of the river and the charming nature changing with the climate and seasons creates its own appeal to the visitors to relish only the different scenic beauty of the river and its surrounding areas. Hence this statistics shows the fact that this route has great opportunities and potentialities for developing it as a standard recreational spot for the city dwellers.

In dry season Ashulia has high agricultural value. On the other hand during the months May to September there is immense opportunity for fishing and boating. Wetlands of Ashulia play a vital role as catchments area in facilitating the drainage of Dhaka city in the wet season (Khadiza Begum, K. 2011).<sup>[42]</sup> There is no formal recreational arrangement in Ashulia landing station area from any organization, authority or any private sector except a small food corner in landing station. The food corner sells overpriced goods which has created a monopoly.

### **Important Recreation Attraction Points along the route**

There are some attractive recreation points along “Tongi-Ashulia-Mirpur” Route such as Ashulia landing station area, Mudapara green area, Bat-tola, Birulia landing station area, Tamanna Complex, sluice gate area, many floating restaurants like Monpura, Tamanna etc. Different types of recreational opportunities are there along the waterway side. A botanical park and a zoological park have developed spontaneously alongside the route which makes the possibility of the bank of the waterways to be used as recreational zones. The beautiful natural environments of the zoo offer almost all recreational facilities to the visitors. About 3 million visitors visit the Dhaka Zoo every year and attract around 10,000 visitors every day (Wikipedia, Dhaka Zoo).<sup>[43]</sup> The number increases during the weekends. Locations like Ashulia landing station area, the Zoo, and the Botanical Garden fit well with the route itself to create a unique waterfront atmosphere. Like Sydney Harbor the route has the potentiality to act as a fantastic place to stroll, take a boat ride or just sit and while away the time. But this crucial potential point has no connection with the two recreation point- Botanical Garden and National Zoo. Connections should be created between these points with the help of waterways.

### **Recreation routes identified in the “Tongi Ashulia Mirpur” Route**

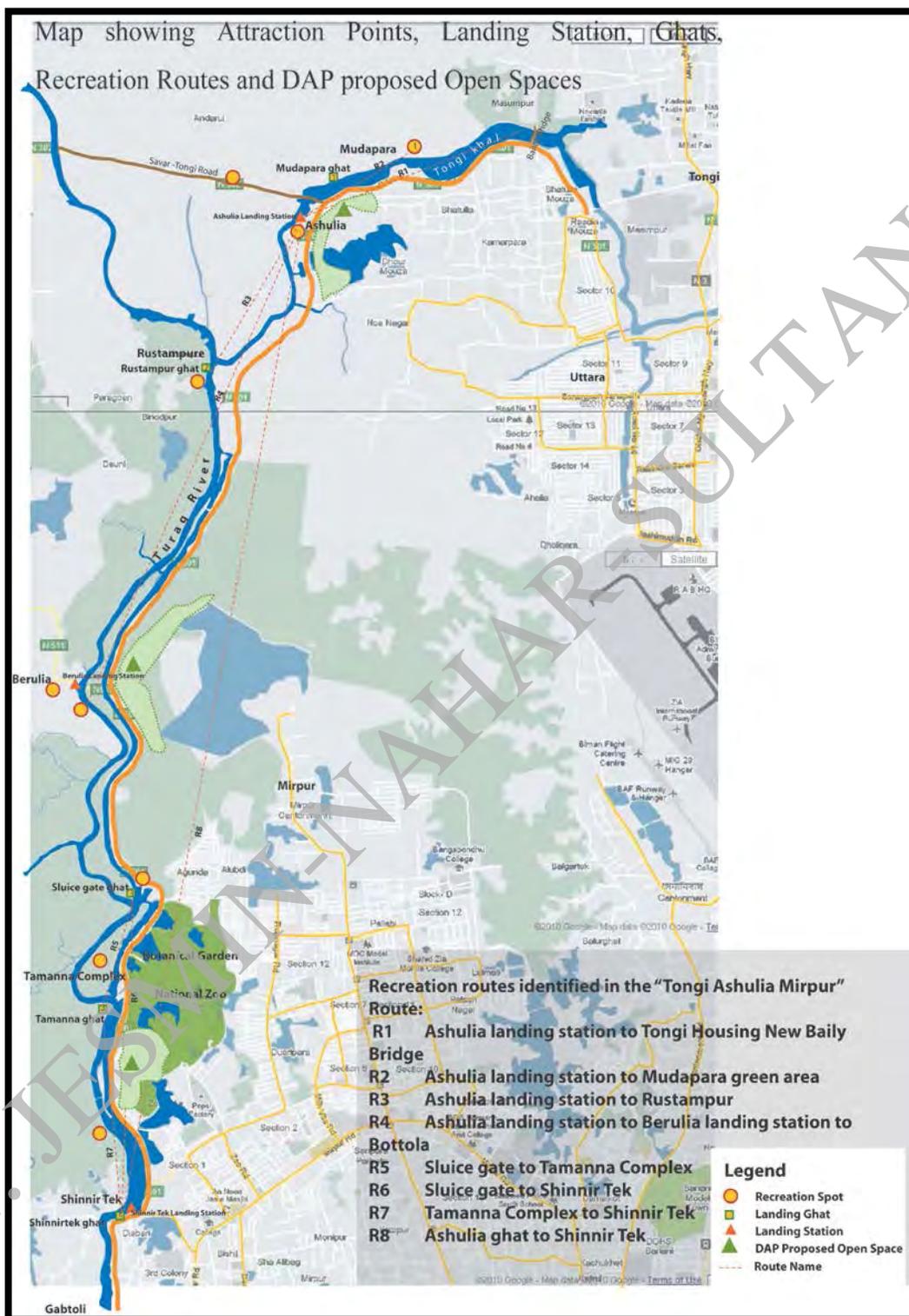
Ashulia landing station ↔ Mudapara ↔ Tongi New Baily Bridge

Ashulia landing station → Rustampur

Ashulia landing station → Shinnir Tek

Sluice gate ↔ Shinnir Tek

Sluice gate ↔ Tamanna Complex ↔ Shinnir Tek



Map 4.1: Map showing attraction points, landing stations, ghats, and recreation routes and DAP proposed open spaces.

### **4.1.2 Existing Physical Infrastructure**

#### **Landing stations and ghats in the “Tongi Ashulia Mirpur” route**

There are three BIWTA recognized Landing Stations and five landing ghats identified in the “Tongi Ashulia Mirpur” route area. The Landing Stations are: Ashulia Landing Station, Birulia Landing Station and Shinnir Tek Landing Station and the Landing Ghats are in due order: Mudapara ghat, Ashulia Ghat, Rustampur ghat, Sluice gate ghat, Tamanna ghat and Shinnir Tek ghat. Brief descriptions of the Landing Stations are given below.

**Ashulia Landing Station:** Ashulia Landing station is situated at the meeting point of the flood control embankment on the bank with the Tongi- Ashulia Highway. The station has two R.C.C ramp, one steel gangway for passenger, two spuds and one 100 ft pontoon for the passengers. There is also one steel gangway and one 100 ft pontoon for cargo. The station has a two storied passenger cum terminal building with one office, one passenger waiting shed, public toilet facilities and parking space for car and trucks (BIWTA, 2001).<sup>[44]</sup>



Ashulia Landing station



Birulia Landing station



Shinnir Tek Landing station



**Photograph 4.1:** Landing Stations of “Tongi Ashulia Mirpur” route area.

Birulia Landing Station: Birulia Landing station is situated on the right bank of the Turag River. It is an important landing station and market place as it is connected with Savar by road. This station has one passenger waiting shed cum Toll office of 100 sq ft, one steel gangway and one R.C.C step both for cargo and passengers.



Ashulia Ghat



Rustampur Ghat



Tamanna Ghat



Shinnir Tek Ghat

**Photograph 4.2:** Landing Ghats of “Tongi Ashulia Mirpur” route area.

Shinnir Tek Landing Station: Shinnir Tek Landing Station is situated on the left bank of the Turag River mid- way between Gabtoli and Ashulia Bridge. It is a very busy landing area both for the passenger and cargo. This station has one steel gangway of 100 ft long, one 100 ft pontoon both for the passenger and cargo. The station has a one storied

passenger cum terminal building and one passenger waiting shed cum toll office of 100 sft. Passengers rarely use the landing station. They prefer to use the ghat rather than using the landing station.

### **Accessibility condition of link road to the route**

Ashulia is a beautiful wetland area- only 31 km southwest of Dhaka. There's a good road link from the city. The flood embankment cum road is the main approach road for most of the landing stations and ghats. But the link road accessibility condition to the route is not good enough. Proper Link between road network and water routes is one of the main failure causes of circular waterway's 1<sup>st</sup> phase success. The access links are mostly dirt roads and few of them are brick paved. From Ashulia Landing Station, it takes about 30 minutes to arrive at Rustampur ghat, approximate one hour to arrive at the Bot-tola, Birulia Landing Station and around one and half hour to reach at Tamanna complex area through motorized country boat (MCB).



**Photograph 4.3:** Accessibility condition of link road to the route. (Shinnir Tek Landing Station and Ghat link road condition.) Source: Field Survey, Jan 2011.

### **Condition of linkage to the Ghats**

Shinnir Tek landing station is always remain closed because of crime and illegal events occurring in the surrounding areas and the landing station opens only when cruises or Minister's ship boats landed there. Boats landing in Shinnir Tek landing station area do not have any facilities. The users have to jump off the boat as the physical condition of the ghat is very poor. It is very risky and dangerous for the women to walk on the polluted water area, weedy environment and a very muddy and slippery river bank to

reach the embankment road to get transportation for destination. Foul odor, safety, high charge of boats as maximum time it hire from Ashulia, lack of facilities are the main problems encountered here.



Boat landing and linkage to the ghats condition of S hinnir Tek ghat area and near mudapara. (Source: Field Survey, Jan 2011.)



Local ghats accessibility condition. (Source: Field Survey, Jan 2011.)

#### **Photograph 4.4:** Condition of linkage to the Ghats

#### **4.1.3 Recreation activities in the route and route adjacent corridors**

For those who come to Dhaka and also the residents, boating has now become a recreational activity because when one is on water one can at least fantasize that he or she is not confined within this urban chaos. There are very few boating destinations in the city and Ashulia would be the best among these destinations. This route is a popular boating spot and the distance also means that one can indulge in a leisurely drive and it is quite a pleasant experience that soothes the soul after a hectic life in the city. One can hire a boat on hour basis which can be country boats or mechanized one. Boat fares are reasonable.

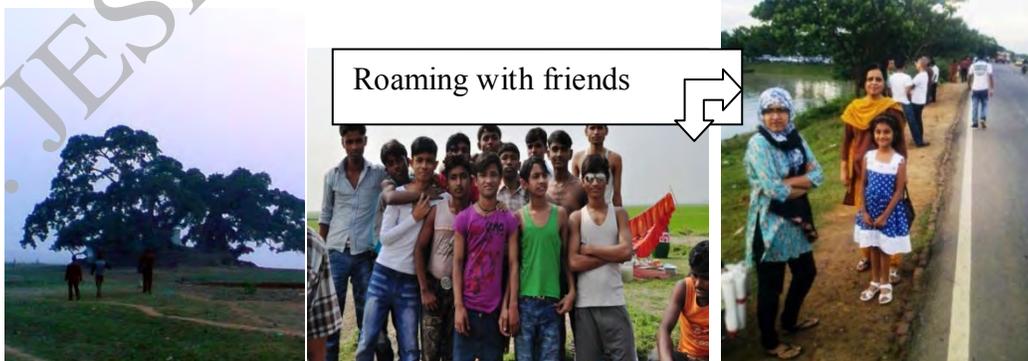
People usually have a walk along the road lined with large space of wetland. The Tongi

Ashulia road intersects the Turag River at this point and gives feelings of two big beautiful lakes, providing an ideal rendezvous for many people. The best time to go for a visit to this route area would be during the evening to watch the sunset. There are small islands spread all throughout the river and they have become a great place for picnics; families come to the area on a weekend and hire a boat to take them to these islands.

Tamanna Complex can be termed as true amusement park which provides all kind of recreational facilities like different riding system for children, food corner, swimming pool, boating facilities and from the survey it has been identified that visitors are very much satisfied with facilities and arrangements provided by the Tamanna Complex. Ashulia landing station area represents young group of visitors where Tamanna Complex mostly attract kids who come here with their parents for picnicking or to spend their weekend. Visitor also comes to take food from restaurants located along the route. From survey it has been identified that 'Mela' and 'Puja' take place at Bot-tola every year which generate huge amount of visitors; and people like to attend these kinds of events.



Outing with family members



Visit Bot-tola area

Picnic on the green area  
and Sight Seeing

Walking on river bankside



Site seeing



Boating



Dine at Keri Cruise



Walking on river bank side



Boating and dining at a floating Restaurant

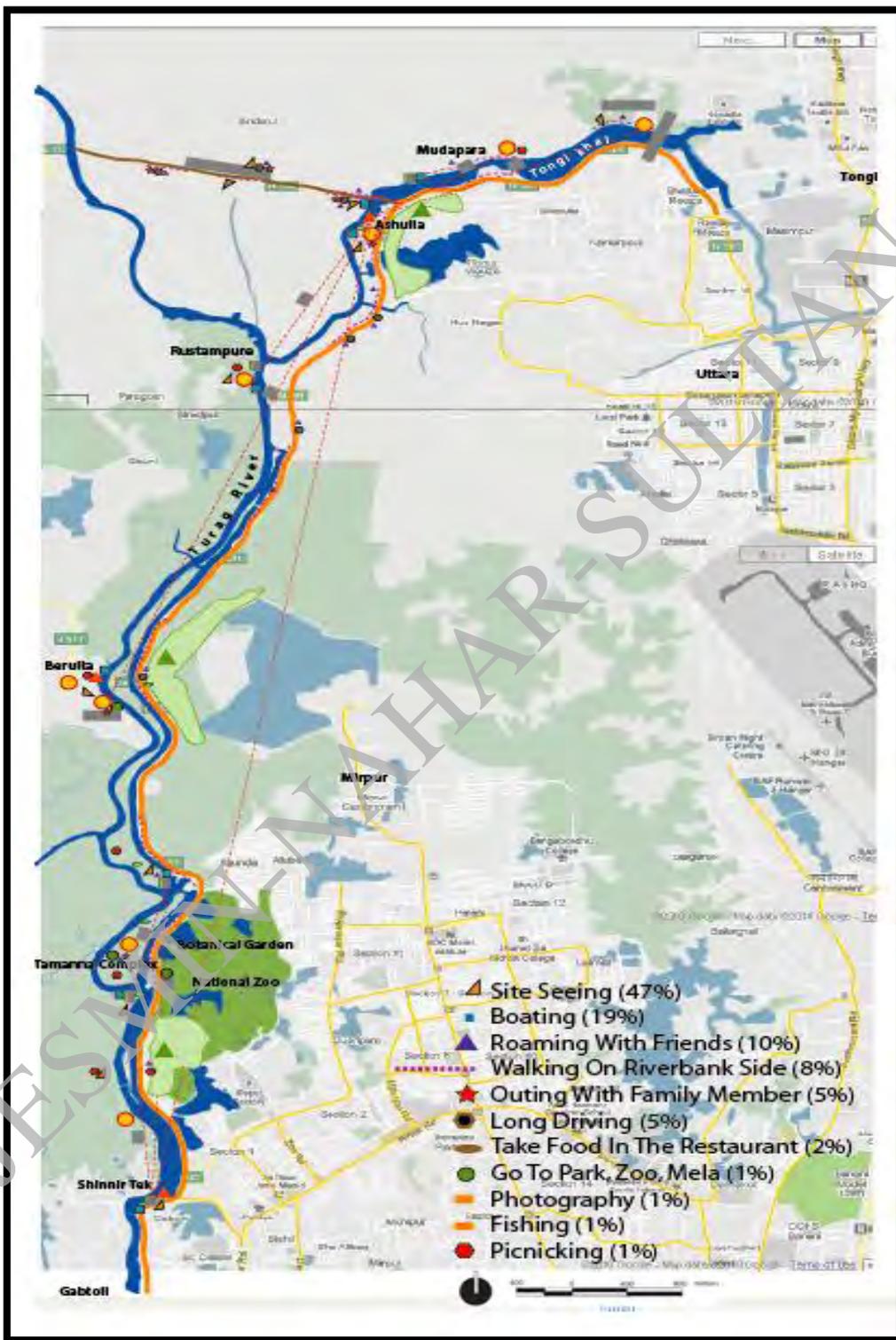
**Photograph 4.5:** Different types of recreation activities performed by the recreational users at “Tongi - Ashulia- Mirpur” Route

Site seeing is one of the most common activities of recreational users and it covers highest percentage among other activities on the site and though water quality do not support fishing, recreational fishing on the river side is becoming more popular.

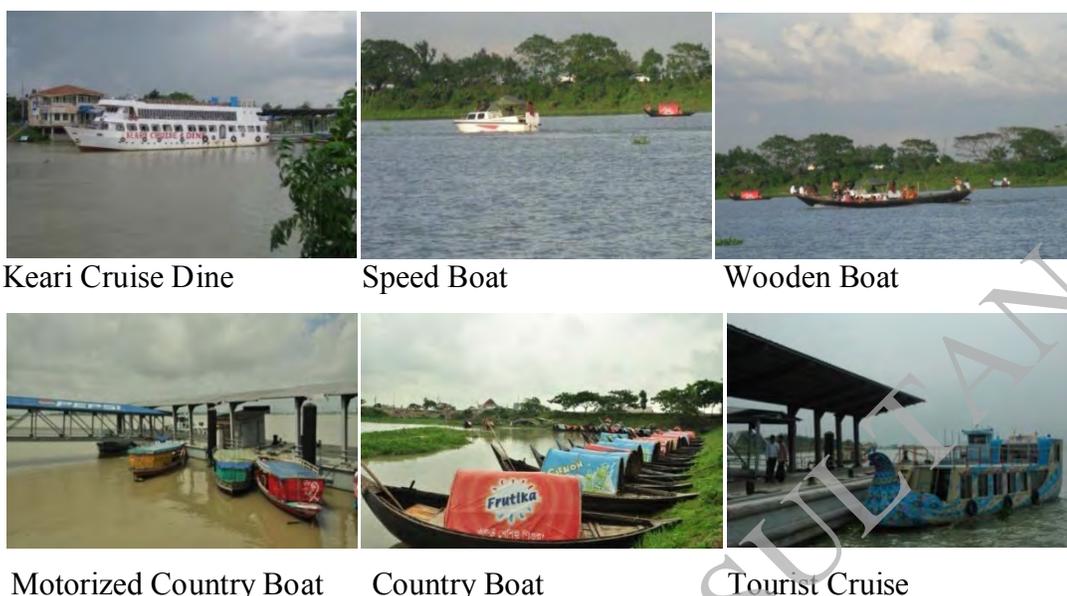
### Vessels

In this route, motorized country boats (MCB) and country boats (CB) are available and used by the users. There are 20 MCB and around 90 CB in the Ashulia landing station area. MCB charges taka 500/- per hour and CB charges taka 200/- per hour for making trip and for personal MCB reservation from 9.00 am to 5.00 pm in the surrounding areas it costs taka 3000/-. MCB usually do not operate on the lakes during winter but CB does in all seasons. During wet period a luxurious cruise ship named ‘Keri Cruise Dine’ always stand by at Ashulia landing station to serve lavish relaxation facilities at high cost.

There is a wide variety of boats available in Ashulia and the large wooden boats made for expansive fishing expeditions are the most popular ones; they are sturdy and can accommodate a lot of people therefore a large group of individuals can go together. On the other hand, the engine powered boats are smaller in size and are a lot faster than the wooden ones.



Map 4.2: Map showing different types of recreation activities performed alongside the “Tongi - Ashulia- Mirpur” Route



Kearsy Cruise Dine

Speed Boat

Wooden Boat

Motorized Country Boat

Country Boat

Tourist Cruise

**Photograph 4.6:** Different types of vessels ply on “Tongi - Ashulia- Mirpur” Route

#### 4.1.4 Existing Land Use in the Corridors adjacent to the River

Existing water route proximate areas are: Tongi, Ashulia, R ustampur, Binodpur, Birulia, Kaundia on right bank of the route and Mirpur, Turag, Dhaur, Diabari on the left bank of the route area. Ashulia is a suburban area near Dhaka. Nearby areas are Savar and Tongi. Two major theme parks namely Fantasy Kingdom and Nandan are also located at Ashulia. There are small islands or chars spread all throughout the route. Most of the route proximate areas are agricultural and vacant lands. [See map no. 4.3]

#### Existing land use on river banks

According to the Port Act 1908 and Port Rules 1966, up to 50 meters from where river water reaches during high tide is considered the river bank. According to the law, setting up any unapproved structures, digging soil and sand, filling through soil and sand or waste is punishable offence. BIWTA is responsible for protection and use of riverbanks. But the authorities were not given magistracy power to stop encroachment and river filling activities. The route is not physically demarked as per Cadastral survey and there is no fixed boundary for the river banks. There are Unauthorized and illegal setup and land uses surrounding the route corridor. Illegal encroachments, commercial outlets, sand trading on river banks and slums are set aside the route side river banks all of which are punishable offence and are prohibited in the regulations.



Illegal encroachment on river bank near Shinnir Tek area.



Sand trading on the river bank near Ashulia landing station and brick kilns on paddy fields.



Commercial outlets shops

River side floating restaurants

#### **Photograph 4.7: Existing land use on river banks**

#### **Vegetation type and walkways on the river banks**

RAJUK, DCC, DE and Parjatan Corporation have been assigned by the Tourism sector to implement a project to assist in the development of a green buffer around the Dhaka City and also to support in the safe keeping of drainage functions of water bodies by June 2014. A continuous greenbelt buffer zone in which development is restricted encircling the city incorporating both west and east fringes and Water Development Board to take measures to dredge the Dhaka Rivers. But no remarkable developments of these projects have been identified in the study area. A small number of malnourished

trees as a gesture towards the environment and aesthetics were found alongside the route. There is no marked off trails and walkways there.



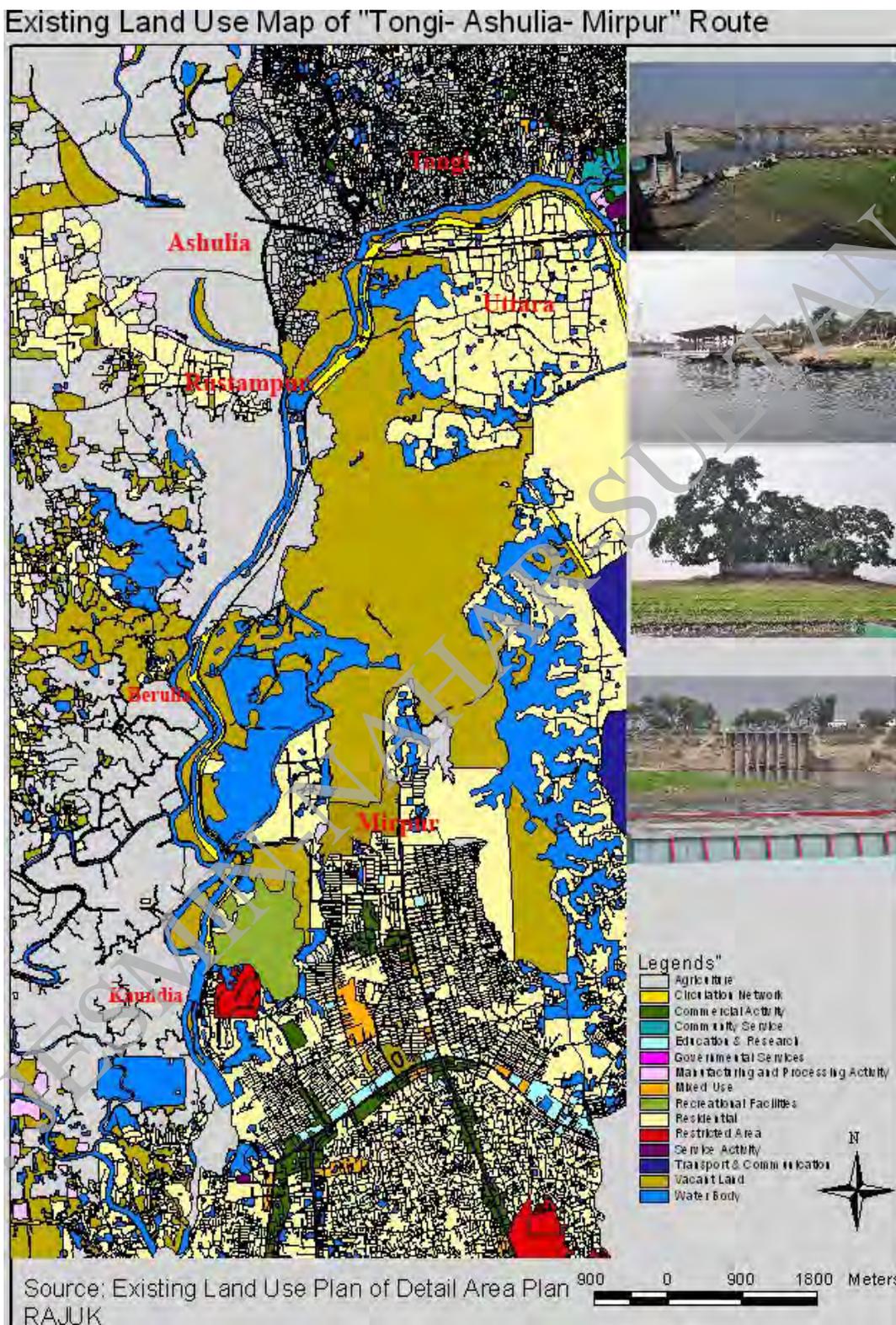
**Photograph 4.8:** Route side vegetation and river bank condition and condition of trails and walkway

#### **Permitted land use for specific area in the development plans and regulations**

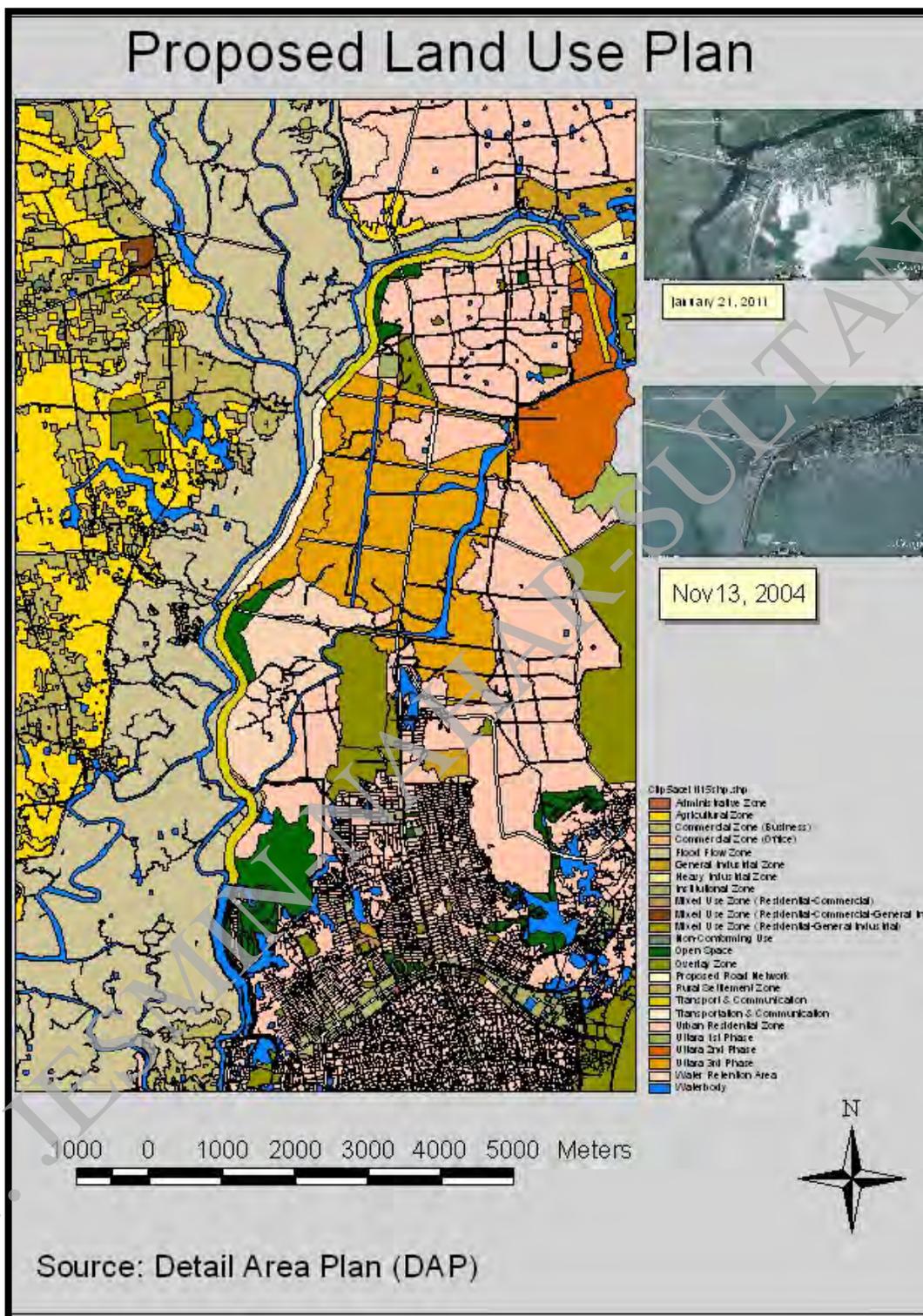
In the Dhaka Metropolitan Development Plan (1995-2015) Ashulia is demarcated as the main flood flow zone. According to the policy of structure plan land development for residential, commercial and industrial development is strictly prohibited in the main flood flow zone. According to the Water Body Conservation Act, 2000, for conservation of all playgrounds, open space, park and natural reservoir; change of the any land of nature is prohibited in all municipalities including municipalities in the capital, divisional towns and district towns. According to proposed Detail Area Plan (DAP), the route area land use belongs to flood flow zone and permitted land use for flood flow zone area are given below. In the zone, uses permitted by the Authority are: Aquatic Recreation Facility ( Without Structure), Dry Season Play Field, Marina / Boating Facility, Plantation ( Except Narcotic Plant), Static Transformer Stations and Transmission Lines / Utility Lines. The following uses may be permitted or disallowed in this zone after review and approval by the authority. Land uses conditionally permitted for Flood Flow Zone are Communication Tower within Permitted Height and Poultry. All kinds of uses except permitted and conditionally permitted are restricted uses. **(Map No. 4.4)**

#### **4.1.5 Navigability**

The depth of the channel depends on the width of the vessel and the number of



Map 4.3: Existing Land Use Map of “Tongi - Ashulia- Mirpur” Route. Source: RAJUK



**Map 4.4:** Proposed Land Use Map of “Tongi - Ashulia- Mirpur” Route

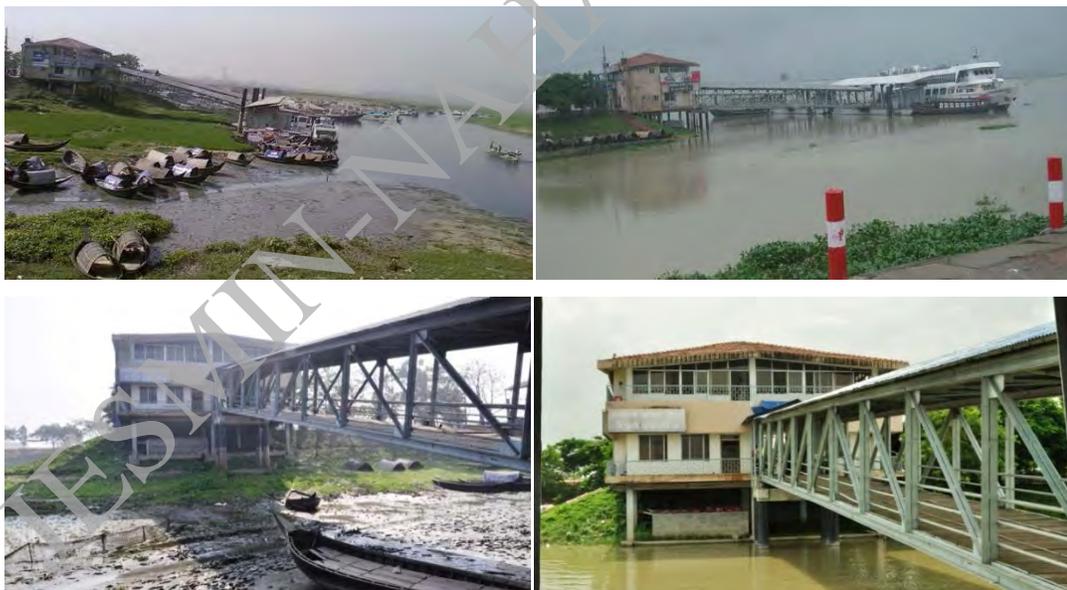
Source: RAJUK

vessels to be passed at the same time at a certain section. Width of the channel at the landing stations shall depend on the length of the vessels. From this point of view the width decided by BIWTA according to the classification of BIWTA class-I routes should have LAD (Least Available Depth) 3.6m – 3.9 m and Class – II routes 2.1 m – 2.4 m. The route from Sadarghat to Ashulia in fact up to Tongi is navigable during Monsoon as the available draft is over 12 ft. Traffic movement between Sadarghat to Mirpur Bridge is quite heavy but between Mirpur Bridge and Ashulia/Tongi is not so much. Considering this situation and the type of vessels that are plying BIWTA gave the following decision:

The route between Sadarghat to Mirpur Bridge should have a minimum width of 200 ft (63 m) and minimum depth of 12 ft. (3.7 m)

The route between Mirpur Bridge and Ashulia should have a minimum width of 120 ft (37 m) and minimum depth of 8ft. (2.5 m). (BIWTA, 2001) <sup>[44]</sup>

#### 4.1.6 Water Level



During dry season (04.01.11)

During wet season (27.08.10)

**Photograph: 4.9** Water level differences during dry and wet season in the Ashulia landing station area.

#### 4.1.7 Identified Route problems

- Avoidance of taskforce rules and regulations

- Negligence of the concerned authority and organizations.
- Physically limited as width do not permit
- Physically not demarked as per Cadastral survey and no fixed boundary for the river banks
- Encroachment by land grabbers
- Unauthorized and illegal setup and land uses surrounding the route corridor. The sand traders ply their trading during winter on the river banks and the sand fills up the river beds during wet season when the water level rises.
- A plenty of brick kilns in paddy fields
- Absence of facilities

## **4.2 “Washpur – Rayerbazar- Katashur” Route**

### **4.2.1 General information**

The route is also known as Sarai- Jafirabad Khal. Sarai- Jaffrabad Khal originated from Buriganga River has branched off near Rayer Bazar, and falls into the same river near Madhyer Char. The khal acts as the link of River Buriganga with Rayer Bazar and Mohammadpur. The Sarai- Jaffrabad Khal itself is so dynamic by its physical characteristics that a little touch will make its panoramic view more attractive (See Fig No 4. 10). This route is formed with an excellent shape already. With some modernization and by providing some required basic recreation facilities this place can be developed as an outstanding river side recreation place and meet up the necessity of recreation zone for the city dwellers. Approximately 3%-4% water route trip makers use the “Washpur- Rayerbazar- Katashur” route for recreational purpose and the daily average recreation trip makers generated in this route is about 223. (Nabi, A. M. 2006)

### **Routes identified in the “Washpur – Rayerbazar- Katashur” Route**

#### Recreation Routes:

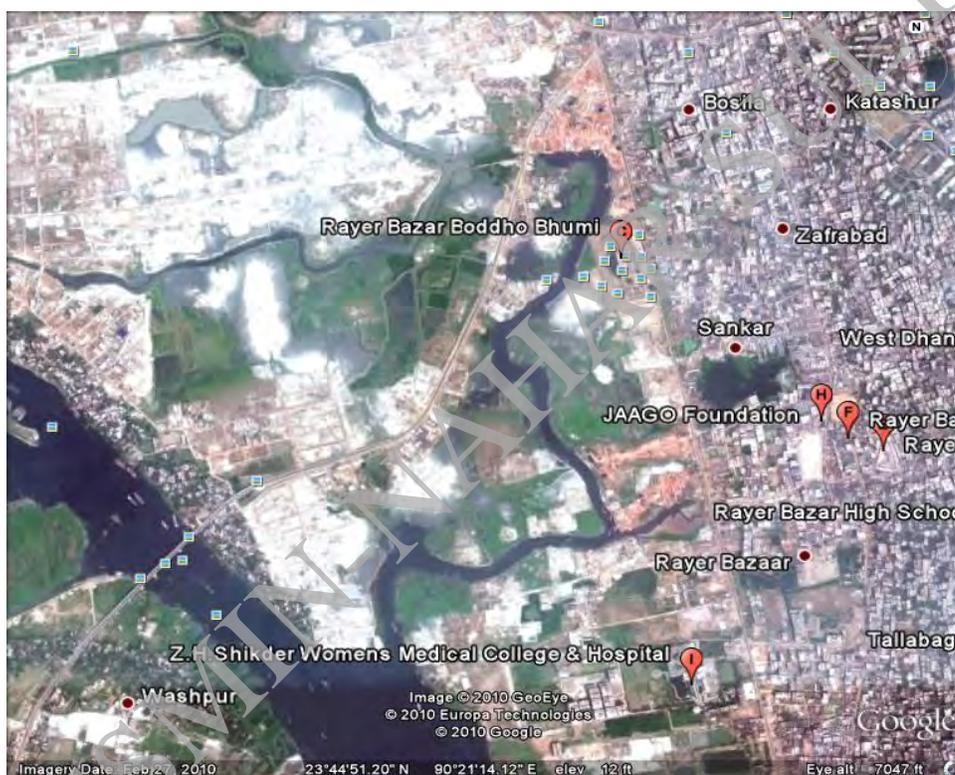
- Washpur ghat to Rayerbazar Landing Station.to Katashur ghat
- Rayerbazar Landing Station.to Basila ghat
- Washpur ghat to Basila ghat

#### Passenger Routes:

1. Washpur ghat to Basila ghat,
2. Washpur ghat to Katashur ghat

### Important Recreation Attraction Points along the route

This site has huge potentialities to be developed as an ideal recreation site because this site already contains the well-known **Martyred Intellectuals Mausoleum**<sup>15</sup> which generates a great number of visitors. Without any facilities this site has a ability to generate huge number of visitors, if necessary facilities and service is provided in this site, it would be flourished as a potential water way attraction point. Another important attraction point along the route is the ‘3<sup>rd</sup> Buriganga Bridge’ which is also known as the ‘Basila Bridge’.



**Fig 4.1:** Satellite imagery of the “Washpur – Rayerbazar- Katashur” Route

### 4.2.2 Existing Physical Infrastructure

#### Landing stations and ghats in the “Washpur – Rayerbazar- Katashur” Route

There is one BIWTA recognized Landing Station in the “Washpur – Rayerbazar- Katashur”

<sup>15</sup> Martyred Intellectuals Memorial near Mirpur Intellectual Graveyard symbolizes the sacrifice of the martyrs for Bangladesh, who were brutally killed on December 14, 1971, just a couple of days ahead of the final victory by the Pakistani occupation forces and their collaborators. It was built in the respect of their memory. This mausoleum is maintained by the DCC. ([http://www.dhakacity.org/Page/History/Link/143/List\\_id/163/Martyred\\_Intellectuals\\_Mausoleum](http://www.dhakacity.org/Page/History/Link/143/List_id/163/Martyred_Intellectuals_Mausoleum))



**Map 4.5:** Map showing attraction points, landing stations, ghats, recreation routes and DAP proposed overlay zone spaces. Source: Made by researcher.

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Route and three local landing ghats have been identified in the route area. The Landing Station is Rayerbazar Landing Station. The Landing ghats are: Katashur ghat, Washpur ghat and Basila ghat. Brief descriptions of the Landing Station and Ghats are given below.

#### Rayer bazar Landing Station

This is an important seasonal passenger and cargo station on the left bank of the Turag River just close to the landing station of Katashur and to its downstream. A landing area is downstream of the Shaheed Monument at the BWDBs flood control embankment. This landing station has one R.C.C step both for the passenger and cargo and a toll office which is in a deplorable condition and not in a form to make use of. (See Fig no. 4.11) For the use of country boats steps are constructed. The length and width of the step is 21 meter and 6 meter respectively. Mechanized boats are used to ply through Sarai- Jafrabad khal from Buriganga to this ghat from near and far. The passenger traffic is mainly originated from the nearby areas like Washpur, Basila, Ati- Bazar and Salamsee. The average volume of passenger traffic is about 3000 nos. and that of freight is about 300 MT per day.



**Photograph 4.11:** Deplorable Condition of Rayer bazar Landing Station toll office

#### Katashur Ghat

The Ghat is located about 8.5 km upstream of Sadarghat terminal on east bank of the Sarai- Jafrabad khal, a channel of the river Buriganga. The ghat is linked by mechanized country boats (trallers) with the opposite bank, and also with some nearby places. It is by the side of western bypass- the flood embankment road. There is no landing facilities

Mechanized boat service for passenger traffic operates in the same routes as at Katashur. The landing station is beside the western bypass and well accessed to mohammadpur and Rayer Bazar by road. Regular tempo service in the route Nawabganj to Gabtoli is in operation along the bypass road.

installed at the ghat and even no steps to access is available. The slope of the embankment is used to access boat. The R.C.C ramp of the flood embankment is used for discharging passengers and goods.



View from Rayer bazar Landing Station towards the route.



Katashur Ghat



Rayer bazar Landing Station Basila Ghat, ferry boats under the Buriganga Bridge-3

**Photograph 4.12:** Landing Ghats of “Washpur – Rayerbazar- Katashur” Route area

Passenger's traffic is mainly generated from like Washpur, Basila, Ati- Bazar and Salamsee. About 3700 passengers and 200 MT of cargo especially livestock are crossing this ghat everyday. Passengers generally use two routes from the ghat first one from Katashur to Washpur and the second one from Katashur to Salamsee. During monsoon season, the service upto Ati bazaar is available from the ghat. The ghat is well accessed to Mohammadpur and Rayer Bazar through approach road (the embankment road). There exist regular tempo services through the place in the route Nawabganj to Gabtoli.

Washpur Ghat

The landing station is located on the west bank of the Sarai- Jafirabad Khal. It is an

important landing station in respect of passenger volume. The daily average volume of passenger is about 2000 but the cargo traffic is negligible (field survey, 2006). The ghat stands between the Dhaka city and the northern part of keraniganj thana. Service up to Rayerbazar and Katashur is available through mechanized boat. There are no landing facilities in this ghat and the access roads are not developed. The ghat is accessed from Atibazar by road but there is no regular public transit service.

#### Basila Ghat

The landing station is situated on the left bank of the Turag River near Bosila primary school. One steel gangway with a pontoon serves both the passenger and cargo. Two spuds are provided and one R.C.C ramp is constructed. The station has one storey passenger shed cum- toll office at about 140 sq. m with provision for water supply, canteen and toilet facilities. Though there is a provision of a pontoon, it is not provided for the river erosion. There are no facilities for getting up into the gangway. Unplanned brick field is responsible for river erosion. The depth and width of river beside the Basila is high, the main stream of the river water struck at Basila. No regular passenger service is available at present, except that the boats to or from Washpur catch the ghat for passenger. Average passenger generated is about 3500 per day and 5 MT of cargo is also handled every day. Reserved boats are usually used to reach destination. People usually use the riverside near to their own houses as ghat to get on the boats.

#### **Accessibility condition of link road to the route**

The landing stations of Katashur, Rayer Bazar has good access to road transport facilities, and are well connected to each other by road. The flood embankment cum road is the main approach road for the landing station. The Washpur landing station



Accessibility condition of link road to the Katashur ghat



Accessibility condition of link road to the Rayer bazar Landing Station

**Photograph 4.13:** Accessibility condition of link to the route. Source: Survey Nov. 2010



**Photograph 4.14:** Boat landing/ghat condition of Rayer bazar Landing Station and Basila ghat has moderate type access facilities. One of the major problems of the existing water routes is the poor access condition of linkage road to the route. The access link road to the route of Katashur is a dirt road and that of Rayer bazar paved.

#### 4.2.3 Recreation activities in the route and route adjacent corridors

From survey it has been identified that people are involve with few activities in this site like- site seeing, roaming with friends, outing with family members, walking on riverbank side, photography and boating. There is inadequate arrangement of boating and fishing facilities in spite of having high demand during dry season. They would love to go on boat rides here but there are no boating facilities, they are highly disappointed with that. Boating held here mostly in visitors' private initiatives. No regular boating facilities is available at present, reserved boats are usually used to reach destination. Visitors come here with their kids to show 'Martyred Intellectuals Memorial' and try to introduce our rich history of liberation war to them. At the same time they visit surrounding area, introduce their kids with river, take photographs.



Roaming with friends

Walking on river bank side



Outing with family members, Site seeing Photography

**Photograph 4.15:** Different types of recreation activities performed by the users at “Washpur – Rayerbazar- Katashur” Route

#### 4.2.4 Existing Land Use in the Corridors adjacent to the River

Route adjacent area consists of Ward no. 46, 48, 47 and Washpur. The route is running through ward no. 46 and 48. The Thanas involved are Mohammadpur, and Hazaribagh. The important neighboring areas of this route are Katashur, Zafraabad, Rayerbazar, Madhubazar, Tallabag, Jigatola, Hazaribagh on east side and Basila, Washpur, Madhyar Char, Balur Char and Ati bazaar on west. Most of the route proximate areas are agricultural and vacant lands. [ See map no. 4.6] Unplanned brick fields are seen throughout the route area. Most of the surrounding areas are privately owned and private housing development scheme is seen here in Katasur and Ramchandrapur area. Lands within the embankment are very low and are flooded in the rainy season.

#### Existing land use on river banks

The route is also not physically demarcated as per Cadastral survey and there is no fixed boundary for the river banks. There are Unauthorized and illegal setup and land uses surrounding the route corridor. Illegal encroachments, filling through soil and sand,

waste dumping on river banks and construction material piled on the river banks all of which are punishable offence and are prohibited in the regulations.



Illegal settlements on the river banks.



Construction material piled on the Katashur ghat area bank



Waste dumping on river banks.

**Photograph 4.16:** Existing land use on river banks

#### **Vegetation type and walkways on the river banks**

RAJUK, DCC, DE and Parjatan Corporation have been assigned by the Tourism sector to implement a project to preserve the water bodies and develop recreation and plantation by June 2011. To provide much needed open spaces a continuous greenbelt buffer zone in which development is restricted encircling the city, parks and recreation facilities are suggested in the project. But no remarkable developments of these projects have been identified in the study area. A small number of malnourished trees were

found alongside the route. There is no marked off trails and walkways there except the walkways of Martyred Intellectuals Memorial.



**Photograph 4.17:** Condition of walkways near the Martyred Intellectuals Memorial river bank.

#### **Permitted land use for specific area in the development plans and regulations**

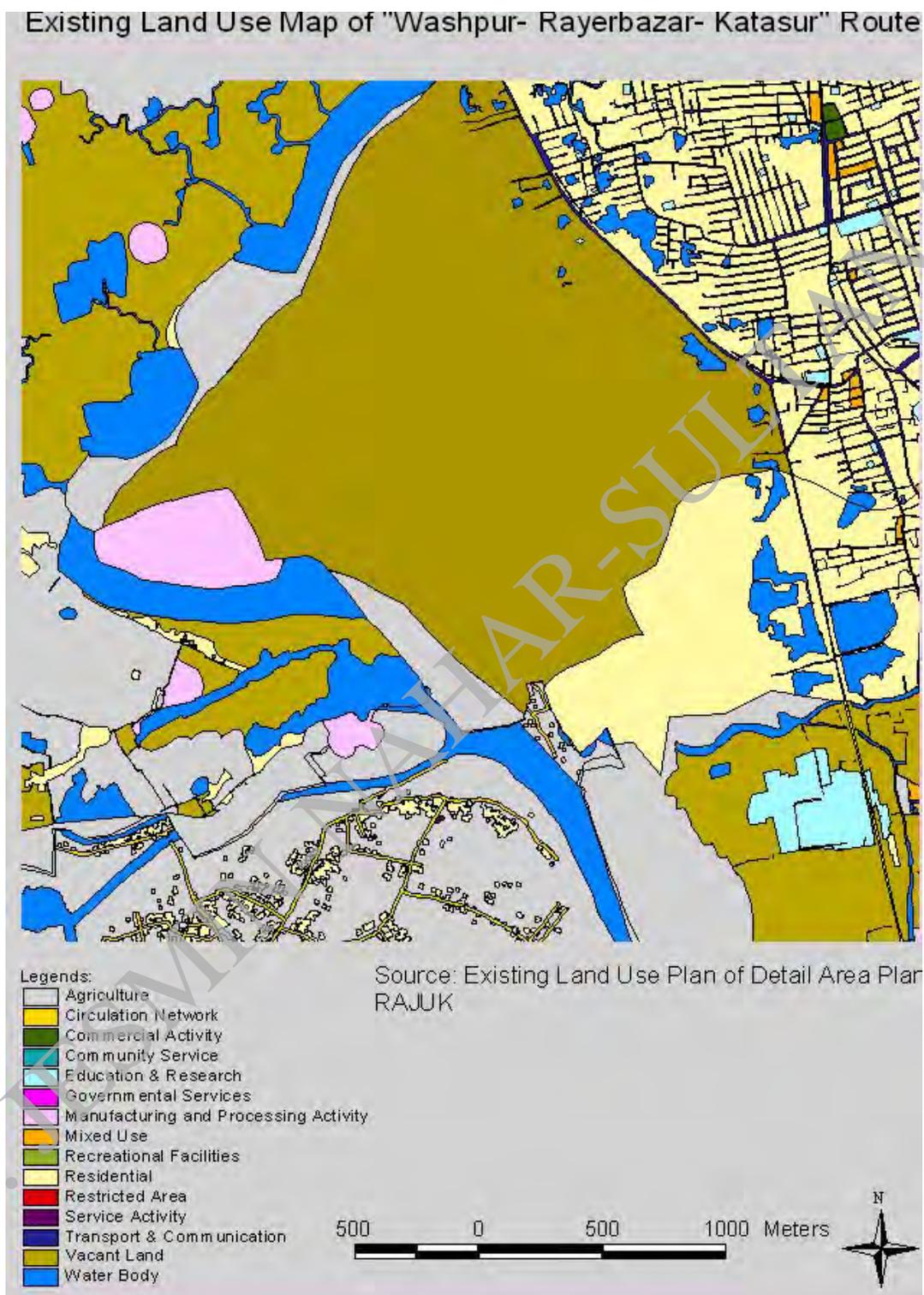
According to the proposed Detail Area Plan, the route area land use belongs to flood flow zone and Overlay zone. (See Map No. 4.7) The wetland/ Flood Flow Zone as suggested in Structure Plan and Urban Area Plan will remain as it is, both in West and Eastern Fringe. No recommendation has been set for Overlay Zone land use yet. River bank development with promenade, Civic facility, Greenbelt cum embankment and Hazaribagh Tannery area will be developed mostly as open spaces and recreational uses will complement the neighboring area of Zigatola, Rayer Bazar, Zafrabad, Madhubag etc. This route shall not be encouraged for private housing development because of their relative importance as flood water retention area cum a buffer zone featuring possible strip plantation, Park development and government reserve land propositions.

#### **4.2.5 Navigability**

In the landing station Katashur and Rayer Bazar, the water channel is seasonally navigable and a little quality of dredging could ensure the navigability throughout the year and also ensure the landing of large vessels.

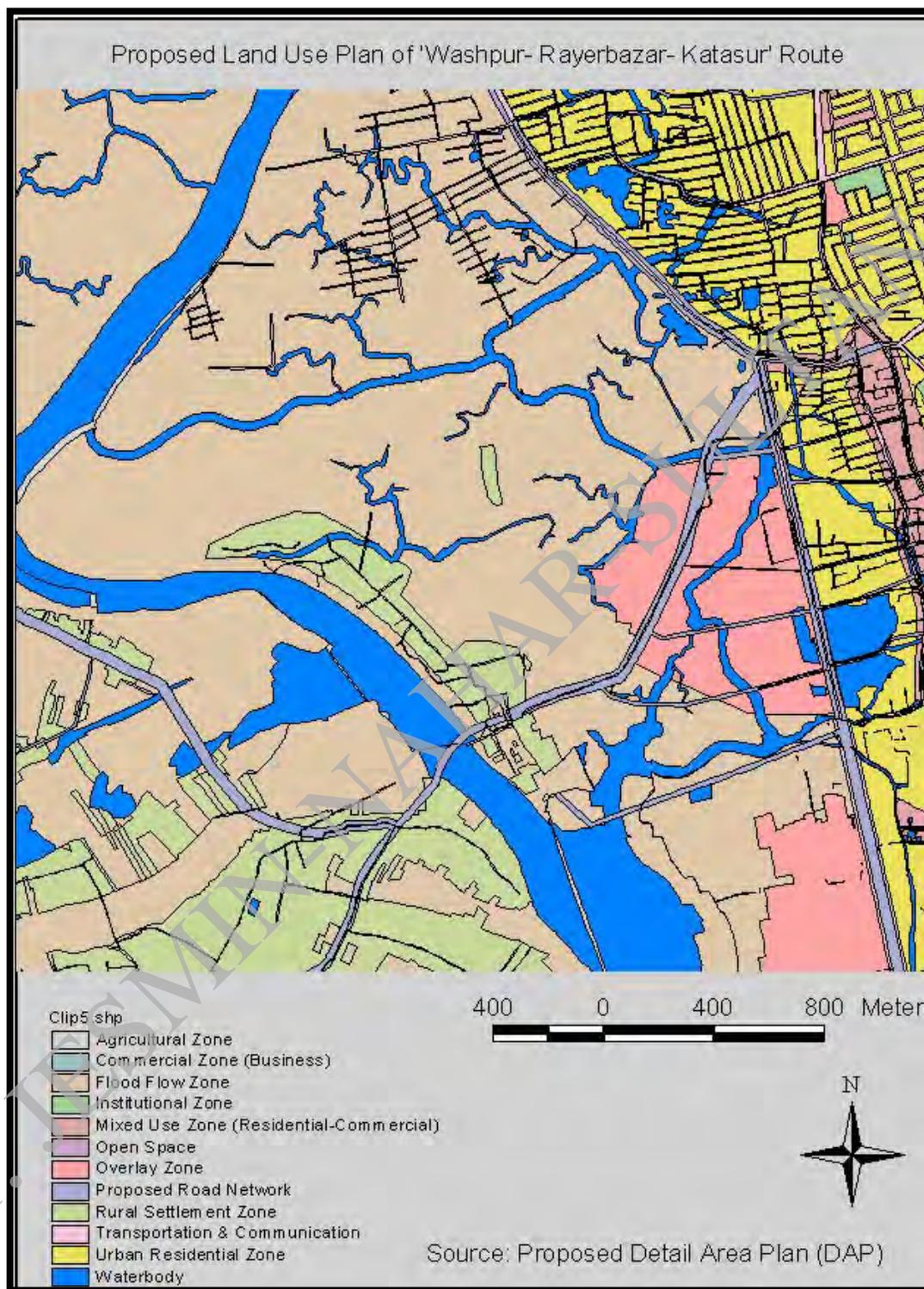
#### **4.2.6 Limitations and Problems identified in the route area**

- Physically not demarked as per Cadastral survey and no fixed boundary for the river banks.
- Unauthorized and illegal setup and land uses surrounding the route corridor and landing Ghats



**Map 4.6:** Existing Land Use Map of "Washpur – Rayerbazar- Katarpur" Route

Source: RAJUK



**Map 4.7** Proposed L and U se M ap of “Washpur – Rayerbazar- Katasur” R oute.

Source: RAJUK

- Concerned authority and organizations negligence
- Poor access and bad condition of the link roads to the landing station and Ghats
- Poor physical condition and maintenance of landing station and Ghats.
- Pile of construction materials hampers the aesthetic and environmental quality of the waterway surrounding.
- No fixed Ghats and facilities for passenger and cargo vessels.
- Absence of public facilities like drink and food corners or restaurants, toilet facilities, sitting benches, drinking water etc
- Inadequate arrangement of boating and fishing facilities in spite of having high demand.
- During dry season. No regular boating facilities is available at present, reserved boats are usually used to reach destination.

### **4.3 “Demra- Noapara” Route**

#### **4.3.1 General information**

Muslins and Jamdanis were amongst Bangladesh’s most prized contribution to the rich Textile heritage of the world. Most of the handloom goods are brought by the weavers to the local hat or weekly bazaar, where they are sold to traders, wholesalers and their agents. The two major cloth markets in Bangladesh are in Narsingdi near Dhaka and Shahjadpur in Pabna. But other markets exist for specialized goods like Jamdani Saries are sold at the Demra hat where as the Tangail cloths are sold at Patiya. It is estimated that the production is carried out in over 200 villages in Demra, Rupgonj, Sonargaon and Siddhirganj in Dhaka.

Demra Ghat is about 15 km east of Dhaka. From Demra Ghat it takes 15-20 minutes to arrive at Noapara village by boat. Noapara is famous for the traditional Jamdani weaving; one is welcome to visit the skilled weavers producing the intricate textile, a special kind of textile unique in Bangladesh. It will be possible for one to buy pieces of Jamdani cloths here as a souvenir.

#### **Important Recreation Attraction Points along the water way**

1. Jamdani Polli
2. Jamdani Hat

## Routes identified in the “Demra- Noapara” Route

### Passenger Routes

Demra Tarabo ghat to Chan Para 1 no ghat

Demra Tarabo ghat to Chan Para office ghat

Demra Tarabo ghat to Chan Para 6 no. ghat

Demra Tarabo ghat to Noapara/ Naya Para ghat

### Recreation Routes

Demra Tarabo ghat ↔ Noapara/ Naya Para ghat ↔ Finish ghat/ Ruposhi ghat.

### 4.3.2 Existing Physical Infrastructure

#### Landing stations and ghats in the “Demra- Noapara” route

There is no BIWTA recognized Landing Stations in the “Demra- Noapara” Route but six local landing ghats have been identified in the route area. The Landing ghats are: Demra Tarrabo ghat, Chan Para 1 no ghat, Chan Para office ghat, Chan Para 6 no. ghat, Noapara/ Naya Para ghat and Finish ghat/ Ruposhi ghat.

#### Demra Landing Ghat:

This is a very busy cargo and passenger landing ghat on the right bank of the river on the east of Dhaka city. The predominant passenger movement at this ghat is between Demra and Tarabo Bazar via using non mechanized country boats. A verage daily passenger is about 2257 (Bureau of Research, Testing and Consultation, BUET. (2007). [45]

Chan Para 1 no ghat, Chan Para office ghat, Chowdhuri Para Ghat, Noapara/ Naya Para ghat and Finish ghat/ Ruposhi ghat are situated on left bank of the route. In addition to Demra Tarabo ghat and Chan Para 6 no. ghat are situated on right bank of the route. Noapara ghat is situated opposite to the 6 no. Chan Bazaar Ghat. The Finish Ghat is just next to the Noapara Ghat.



Demra Tarabo Ghat



Chan Para Ghat no 1



Chowdhuri Para Ghat



Chan Para office Ghat,



Chan Para 6 no. Ghat



Noapara/ Naya Para Ghat



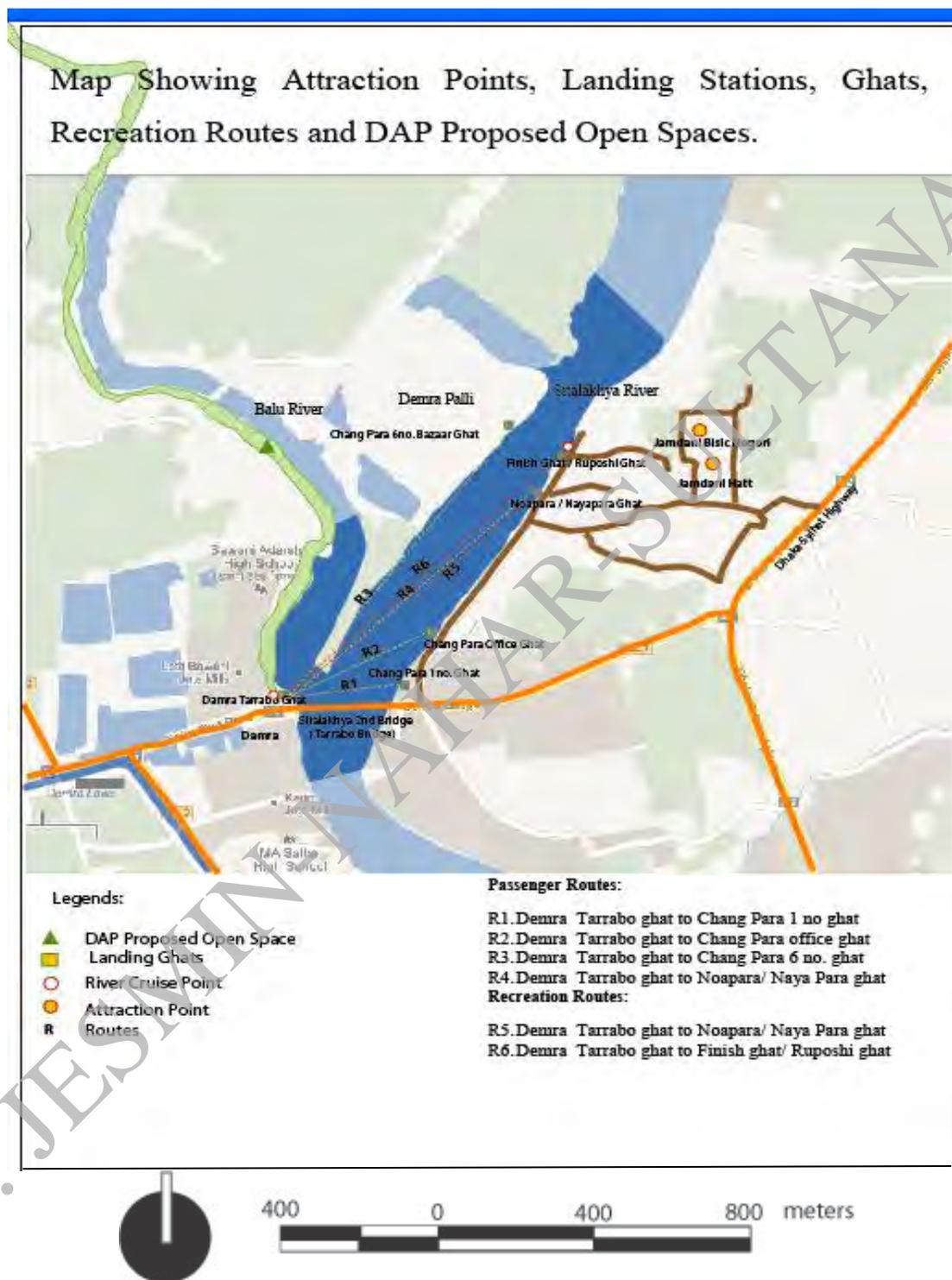
Finish Ghat/ Ruposhi Ghat

**Photograph 4.18:** Landing Ghats of ‘Demra -Noapara’ route

**Accessibility condition of link road to the route:** Demra Ghat is about 15 km east of Dhaka. There’s a good road link from the city. The Dhaka- Demra road is the main approach road of the Demra Ghat. But the link road accessibility condition to the route is not good enough. Proper Link between road network and water routes is absent. The access link roads to the route are mostly dirt roads.



**Photograph 4.19:** Demra Ghat accessibility condition of link road to the route



**Map 4.8:** Map showing attraction points, landing stations, Ghats, recreation routes and DAP proposed Open spaces. Source: Made by researcher.

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### Condition of linkage to the Ghat

This route area does not have any facilities for boats landing. For the use of country boats steps are constructed in the Chan Para 6 no. ghat, Noapara ghat and Ruposhi ghat. Rest of the ghats does not have that facility. The users have to jump off the boat as the physical condition of the ghat is very poor. It is very risky and dangerous for the women to walk on the polluted water area, weedy environment and a very muddy and slippery river bank. Foul odors, safety, lack of facilities are the main problems encountered here.



**Photograph 4.21:** Boat landing/ghat condition at Ruposhi Ghat and Demra Ghat.

#### 4.3.3 Recreation activities in the route and route adjacent corridors

This route is basically used by recreational users during morning. The hat starts there in the early morning and that is the main reason for morning use. Survey has identified three major groups of recreational users' – users' who come for shopping at Jamdani hat, visit Jamdani Palli and boating. People mainly come to attend the Jamdani hat. But if they miss it then they just visit Jamdani Palli for site seeing. People also are involved here in other type of recreation activities like-site seeing, walking on river bank side, roaming with friends, photography. For outing with family member or picnicking this

place is not suitable because this site is totally undeveloped for recreation purpose but has great potentialities to flourish as a recreation point. Tourist attraction spots were identified along the vicinity of the waterway. However, by providing water scooters, speed boats, floating restaurants, etc. facilities can create attractions for recreational use of this route.



Visit and shopping at Jamdani Hat and Children are playing with their invented water vessels and enjoyed thoroughly.

**Photograph 4.22:** Different types of recreation activities at “Demra- Noapara” Route.

### River Cruises

There are different types of river cruises offered in this route like “Full Day River Cruise”, “Sunset over Shitalakhya” and “Overnight river cruise” etc.

#### River Cruise on the Shitalakhya River (Full Day River Cruise)

Transport and guide meet one at 8:00 am at Gulshan circle II and drive them to Demra. Here the leisurely river cruise on the Shitalakhya River commences. On board traditional yacht is waiting for relaxing; enjoy the morning tea, luckily catch a glimpse of a Ganges River dolphin! At Murapara the boat will halt for a visit at the old Zamindar’s palace. If one wants he/she may also go for a refreshing swim in the river. Enjoy the freshly prepared lunch onboard and watch activities by the riverside. On the way back one can enjoy tea, coffee and snacks after stopping at Noapara, famous for the traditional Jamdani weaving, watch the weavers at work. After cruising back to Demra and disembarking, return to Dhaka, arriving in the late afternoon.

#### Overnight river cruise

During the monsoon season a special overnight river cruise with the great service and delicious food is offered. This special trip is offered on every weekend.

### Sunset over Shitalakhya: Evening Cruise with Barbeque Dinner



**Photograph 4.23:**Cruise at Ruposhi Ghat.

In the afternoon guide accompanies one to Demra. Here the cruise aboard traditional yacht S. B. Ruposhi on the Shitalakhya River begins. One is welcomed to visit Noapara. The cruise continues; tea, coffee and snacks are served. The boat anchors at a convenient place for one to enjoy the peaceful evening sunset mood or a refreshing swim. A delicious barbecue dinner is prepared and served on board. The boat starts the return journey, reaching Demra around 9:30 pm. After disembarking people drive back to Dhaka.

#### **Vessels**

In this route, non-motorized country boats (CB) are available and used by the users. There are around 119 CB in the Demra Ghat area. CB charges taka 70/- -100/- both for up and down for making trip to Noapara Jamdani Polli. MCB usually do not moving on the route but on demand it can be hired from adjacent route's ghats and landing stations with the help of the local boatman. There is a traditional cruise boat named 'M. B. Ruposhi'<sup>16</sup> which is a traditional local sailing boat ideal for day-cruises on the rivers, parties and weekend outings around Dhaka. The boat has open air dining space on the deck with seating arrangements for 12 guests. It provides accommodation in one large cabin with 8 beds and attached toilet.



#### **Non Motorized country boats**

<sup>16</sup> Specifications: Length: 55 ft. /17 m, Width: 15 ft. /5 m, Draft: 3 ft. /1 m.  
Max. Speed: 14 km/h and average Speed: 12 km/h; Power supply: 1 Robin, 1.2 kW.



Motorized boats (cruise boats, S.B. Ruposhi at Right) available in this route

**Photograph 4.24:** Varieties of motorized and non motorized vessels available in the “Demra- Noapara” Route.

#### **4.3.4 Existing Land Use in the corridors adjacent to the river**

Route adjacent prominent neighboring areas are Tarabo bazaar, Noapara, Dakshin Ruposhi under Tarabo Union and Rupganj Upazila on left side and Chanpara at right side. Most of the route proximate areas are agricultural, manufacturing and processing activities and residential lands. [See Map No. 4.9]

##### **Existing land use on river banks**

Up to 50 meters from where river water reaches during high tide is considered as river bank. The route is not physically demarked as per Cadastral survey and there is no fixed boundary for the river banks. There are Unauthorized and illegal setup and land uses surrounding the route corridor. Illegal encroachments, sand trading on river banks and slums are set aside the route side river banks, filling through soil and sand, waste dumping on river banks and construction material piled on the river banks all of which are punishable offence and are prohibited in the regulations.



Construction material piled up on the Demra Ghat river bank

**Photograph 4.25:** Existing land use on the river banks  
**River bank condition, vegetation type and walkways**

No remarkable development projects have been identified in the study area. The route area is rich with a plenty of trees as a gesture towards the environment and aesthetics but not in a planned way. There is no marked off trails and walkways there.



**Photograph 4.26:** Route side vegetation and river bank condition, condition of walkways and parking space in the “Demra- Noapara” Route.



#### **Permitted land use for specific area in the development plans and regulations**

According to the proposed Detail Area Plan, the route area land use belongs to flood flow zone, non conforming use zone and rural settlement zone. All kinds of uses except permitted and conditionally permitted are restricted here. No recommendation has been set for non conforming use zone land use yet. A continuous green belt open space is suggested in DAP on the right bank near Demra Ghat. (See Map No. 4.10)

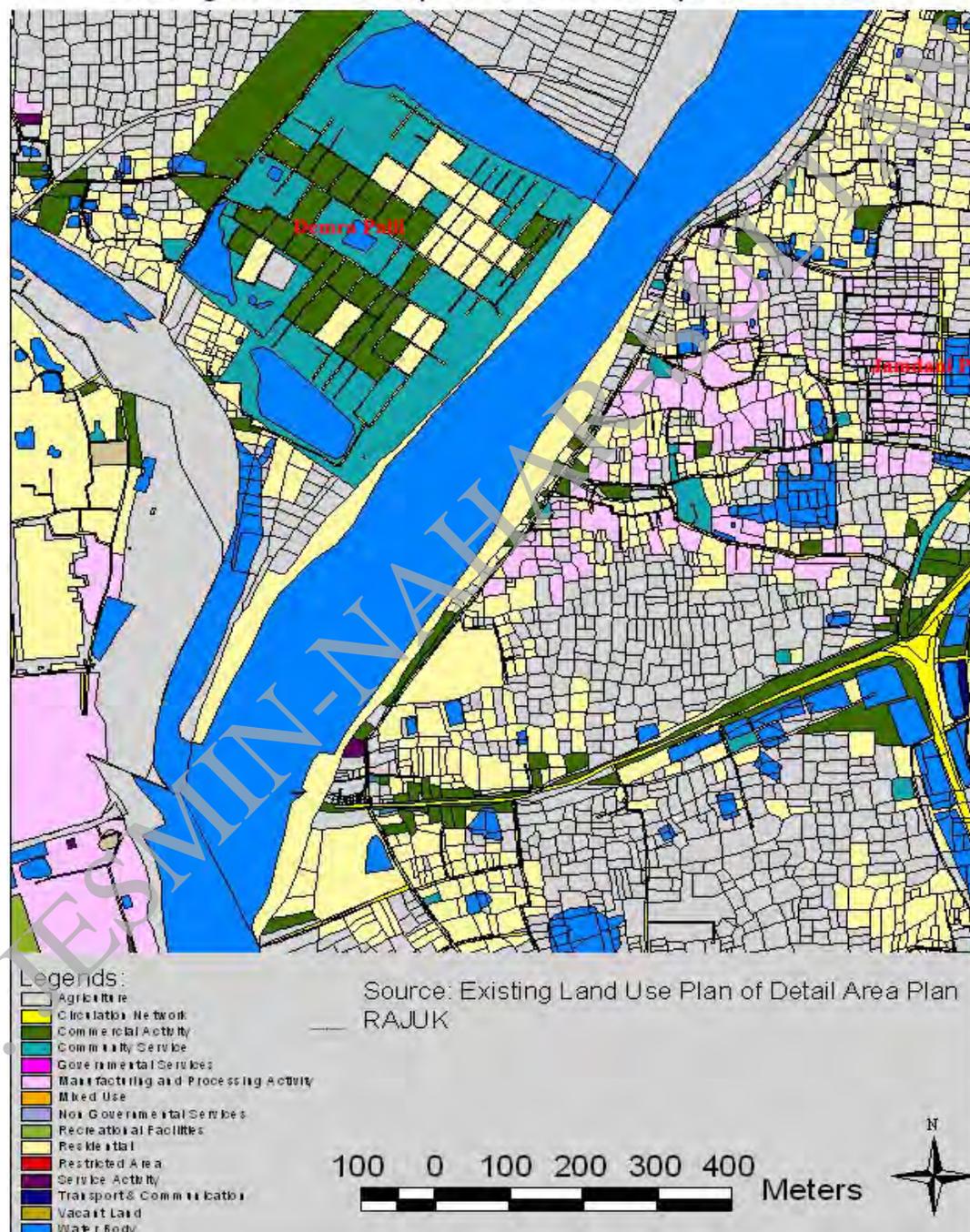
**4.3.5 Navigability:** The required draft and width of the Sitalakhys is available. No dredging is required at the moment. The water depth along the center of the river was seen to vary between 20 and 30 ft.

#### **4.3.6 Route limitations and Problems identified in the route area**

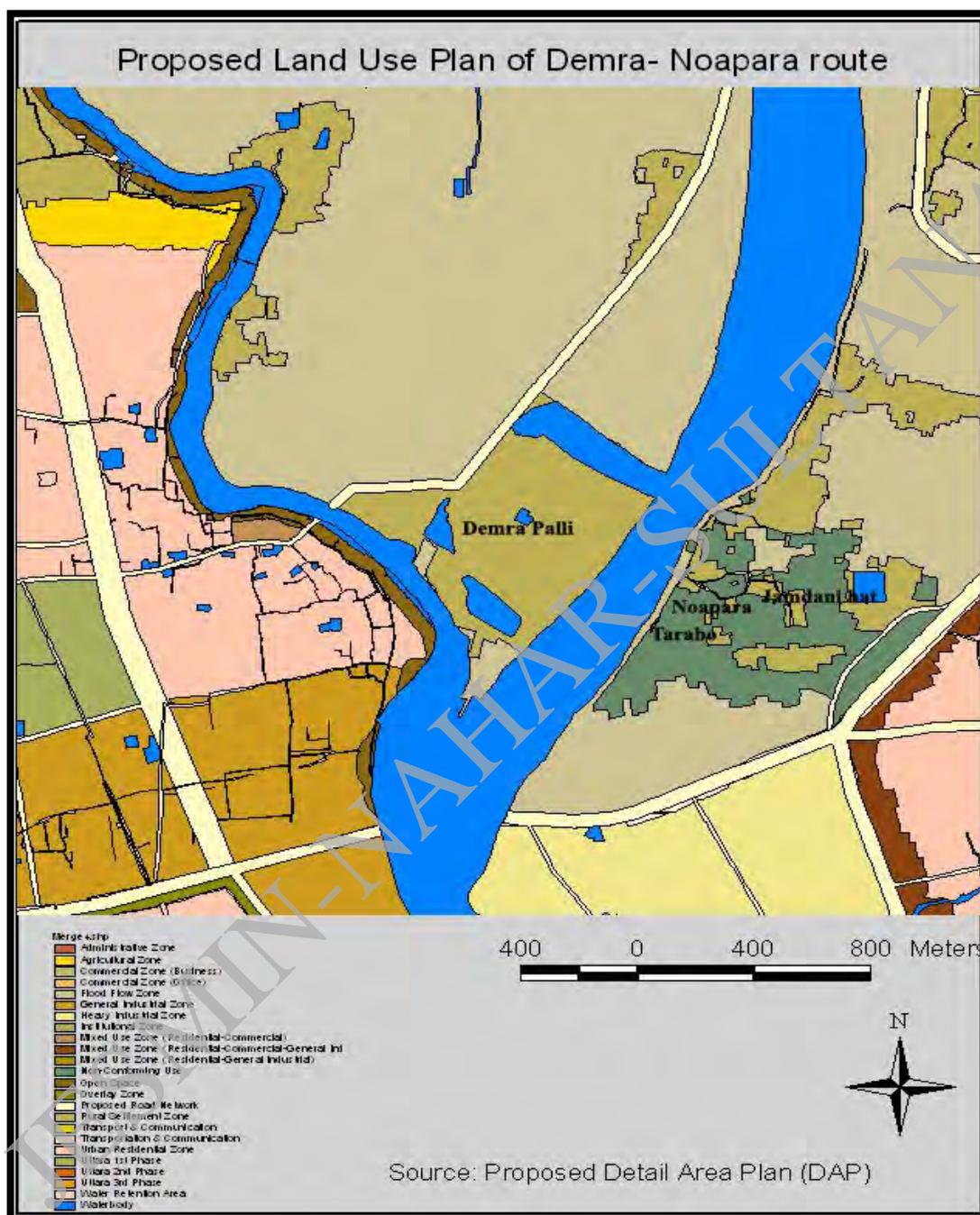
- Bad condition of the approach roads and poor access to the landing Ghats
- Absence of properly well located landing station and fixed Ghats for passenger and cargo vessels and no fixed facilities for cargo traffic
- Poor physical condition and maintenance of the landing Ghats
- Lack of organized routes and distribution of passenger trips
- Poor quality of vessels
- Unauthorized and illegal setup and land uses surrounding the landing Ghats. Piled construction materials hamper the aesthetic and environmental quality of the waterway surrounding.
- No fixed boundary for the river banks and marked off walkways
- Water quality and pollution due to vessel waste product, bathing, weeds etc

- No public facilities such as toilet facilities, sitting benches, drinking water, small commercial outlets etc
- Too distant from the city centre

#### Existing Land use map of "Demra- Noapara" Route



**Map No.4.9** Existing Land Use Map of "Demra- Noapara" Route. Source: RAJUK



**Map 4.10:** Proposed Land Use Map of “Demra- Noapara” route Route.

Source: RAJUK

## **Chapter 5: Users' Satisfaction Level Analysis and Expectations**

This chapter is one of the most important parts of this thesis. The recreational development of these routes highly depends on the visitors' satisfaction. Aim of this chapter is to find out the selected three route's visitors' expectations concerning the route's recreation. To fulfill this aim it is necessary to find out the visitors' satisfaction level according to the provided facilities and services by the authorities. So this chapter has tried to find out the gaps between their expectations and reality as well as explored their likings dislikings, problems they are facing there and the suggestions they have made for the development of these routes. This exploration has helped a lot to suggest their problem's solution and recommendation for these three routes recreational development and contribute the city's recreation and place making enhancement.

### **5.1 Introduction**

The purpose of this study is to explore the satisfaction level with various attributes of provided facilities among selected routes of water recreational users and also to examine the nature of relationships between satisfaction attributes and overall satisfaction. This study has been carried out with three groups of users –users of “Tongi-Ashulia-Mirpur” route, “ Washpur-Rayerbazar-Katashur” route and “ Demra-Noapara” route.

### **5.2 Survey design**

To explore users' satisfaction, this survey was designed with a number of items under a few domains to measure ‘levels of importance’ and ‘ levels of performance’. The number of domains can be ranged from three to ten, and the number of items can be ranged from 11 to 77 which was established by different researchers in their different studies like- Parasuraman, Zeithaml, and Berry (1985) for using in consumer research, and MacKay and Crompton (1990) and Howat, Absher, Crilley and Milne (1996) in the outdoor recreation field. ( Robert C ., Burns Alan R and Graefe. 2002) <sup>[46]</sup> After a

successful pretest this study fixed 33 items under six different domains to attempt to explain overall satisfaction level of recreational users'. Environment, Transport, Recreation Facilities, Service, Information and Recreation Experience are the six different domains. A 5-point Likert scale ranging from '1' to '5' (where 5 is highly satisfied and 1 is highly unsatisfied) was used to measure 'levels of importance' and 'levels of performance'. Descriptive statistics is used to summarize the Likert scale data and to measure gap between visitors' expectation and reality 'Gap Analysis' method was used. Then an inferential statistical technique (Chi-square) was used to establish the hypothesis of the study.

### **Questionnaire design**

It is an exploratory type of research, which has used both open ended and close ended questions. Some factors have been taken into mind during questionnaire design like-demographic characteristics of users' and factors influencing outdoor recreation behavior of users'. Users' demographic characteristics impact on overall satisfaction levels of users', their preferences and also type of recreation activities. Outdoor recreational behavior of a person or a group of people is influenced by economic changes (Technology, production market), socio-cultural (religious believes, social values, demographic condition, education), psychological (motivations, perceptions), physical and structural changes (transport and communications, land use pattern). It is noteworthy that these factors, although are presented separately, may act jointly to change the recreational behavior of visitors.

The questionnaire included open-ended questions to capture the wide range of activities, user perceptions and attribute preferences, liking-disliking issues, problems and possible suggestion to overcome these problems of visitors and closed-ended questions to identify demographic characteristics and their preferred recreational activities, to provide suggestion for enhancing the attractiveness of the route, and to find out river condition for recreational purpose.

On the basis of those factors questions focused on three major areas: **Demographics Characteristics** (sex, age, occupation, income, education, residence), **river use characteristics** (activities, transportation to the site, distance traveled to the site and the

time taken for the journey, visit length,); and *perceptions of the river* (importance of the river, potential problems, liked and disliked attributes, perceptions of recent improvements, present condition of river for recreational purpose, and suggestions for river improvement). Last portion of the questionnaire contains a 5-point Likert scale to explore the users' satisfaction level in selected routes. Some issues and points were eliminated from the questionnaire after pretest. Respondents were asked to rate both the importance and their satisfaction with the attributes. Response categories that were rated are Highly satisfied (HS), Satisfied (S), Neutral (N), Unsatisfied (U), Highly Unsatisfied (HU) and very Important (VI), Important (I), Neutral (N), Unimportant (UI), Highly Unimportant (HUI) and were coded as follows: HS = 5, S = 4, N = 3, U = 2, HU = 1 and VI = 5, I = 4, N = 3, UI = 2, HUI = 1. Then to depict the range of responses visually, charts were used to display the number and percentage of respondents who expressed satisfactory, unsatisfactory etc. with each item under all domains. This study has tried to bring some differences because of different context of Bangladesh from the developed world where river side recreation facilities already exist in a well developed form and in Bangladesh river side recreation –this concept is totally undeveloped but not new.

### 5.3 Findings

Data were further analyzed and interpreted to formulate the survey findings. However, the findings of the field survey at different routes have been described in the following sections. Demographic characteristics and river use characteristics of each route users' are illustrated below. Some subgroups are made under each group according to their demographic characteristics and river use characteristics by correlating them.

#### 5.3.1 Findings of “Tongi- Ashulia- Mirpur” route

##### 5.3.1.1 Demographic characteristics of visitors'

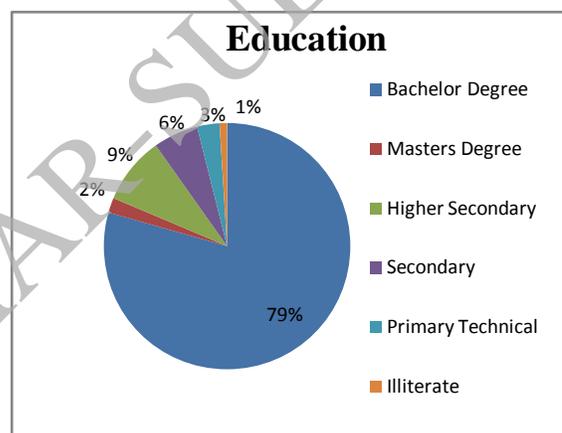
**Gender:** The survey represents that number of male users' (78%) are greater than female users' (22%) in the “Tongi- Ashulia- Mirpur” route. But actually the

difference between the ratio of male and female visitors is not so high. Maximum no. of visitors come to visit this route are couples. Most of the female visitors did not show any interest or hesitate in answering questions because they did not want to disclose their identities and then her male partner responded. Sometimes the male partners were interrupting in between the interview and then the female partners stopped.

### Education

Fig No. 5.1 shows that a prominent group of visitors are students studying in higher secondary school, secondary school and University. Maximum numbers of visitors, about 79%, are doing their Bachelor degree or already have completed it. About 2% and 3% of visitors are students of Masters Degree and primary respectively. The higher secondary scores at 9% whereas secondary 6%. Negligible percentage (1%) of people is illiterate.

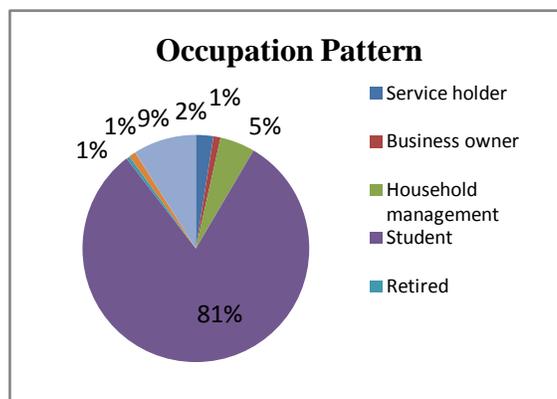
**Fig No. 5.1:** Education level of the users' of "Tongi- Ashulia- Mirpur" route.



### Occupation

Dominant occupation of visitors, about 81%, is student; that means young people are very much interested to visit here with their friends. Retired persons (1%) also come here to spend some time in calm and quiet environment. 1% of visitors is businessman, 2% of them are service holder, 5% is engaged in household management, 1% is unemployed and 9% is self-employed.

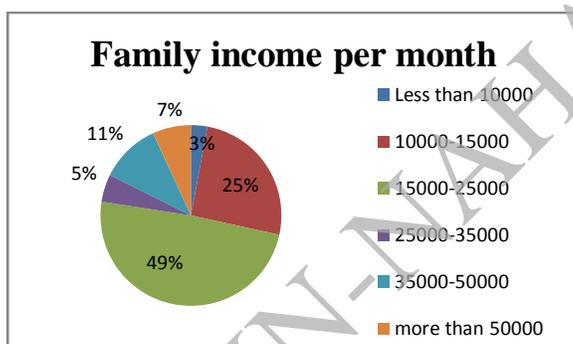
**Fig No. 5.2:** Occupation of the users' of "Tongi- Ashulia- Mirpur" route.



**Age:** Survey has identified that visitor of all age specially ranging from 10 to 40 years old gather here to spend some time with their family, friends and beloved person. Aged people also like to visit here but their intention is focused on health rather than recreation activities but they are very few in number. Young people, especially age between 20 to 25 years old, are the key focus group of visitors' in this route.

**Family income:** Following chart indicates that percentage of visitors with family income range between 15,000 to 25,000 taka per month is highest (49%) and second highest (25%) belong to 10,000 to 15,000 taka per month. So, this statistics has established that middle income people represents as the prime group of visitors here because people with family income between Tk. 10,000 to Tk. 25,000 (74%) belong to middle class (DEMOCRACYWATCH, 2002).<sup>[47]</sup> Along with middle income people,

**Fig No. 5.3:** Family income per month of the users' of "Tongi- Ashulia- Mirpur" route



the other prominent group is higher middle income (16%) and higher income visitors (7%) with family income above 50,000/- also like to spend their leisure here. But lower income visitors (3%) with family income less than 10000/- are not so much interested.

#### Living area of visitors

Visitors come from all the segments of Dhaka city and its surrounding areas like- Dhanmondi, Kochukhet, Uttara, Savar, Narayanganj, Mohammadpur, Kazipara, Gazipur, Agargon, Motijhil, Rampura, Mohakhali, Greed road, Dhaka University etc. But highest portion of visitors originate from Mirpur area. City center has scattered and clustered form of open spaces and recreation spots. Dhanmondi Lake, Crescent Lake and Gulshan Lake are notable open recreation spaces which are inadequate in number against demand of the city. People from different parts of the city come here to relish the juvenile beauty of this water route and are greatly fascinated to visit here with their friends and families to enjoy natural beauty and to pass their leisure time.

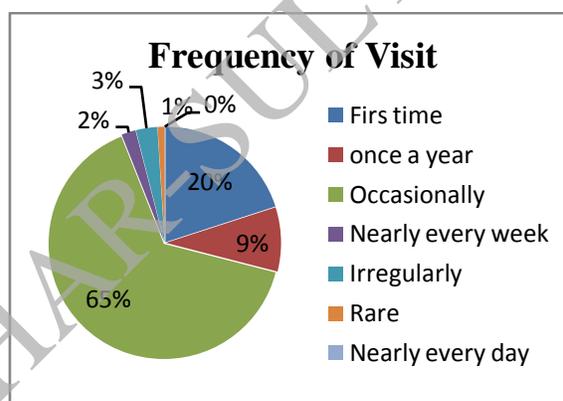
### 5.3.1.2 River use characteristics

#### Transport Pattern

Public transport is used by 40% users, it means this route is well connected and easily accessible by road way. 20% of visitors travel by private cars, 16% use bike and 10% use auto to reach here whereas 14% use rickshaw. This site is basically dispersed from locality so without transport, this site is not reachable on foot. Most of the visitors travel over two to four miles to reach this site and it takes maximum 1.30 to 2 hours.

#### Frequency of visit

Survey shows that maximum visits are held on the basis of personal or other special occasions of visitors; 65% of visitors has agreed that they like to make a visit here to celebrate their birthday or marriage anniversary or Valentine's Day, Friendship Day; religious festivals like Eid- Ul- Fitr, Eid- Ul- Azha, P uja, Christmas; cultural festivals like Pohela Fulgun,



**Fig No. 5.4:** Frequency of visit of the users' of cultural festivals like Pohela Fulgun, "Tongi- Ashulia- Mirpur" route.

Pohela Baishakh, and other special Occasions. 20% visitors have visited this route for the first time, 9% have visited it once a year, whereas 3% come here irregularly, 2% nearly every week. 1% users' visits the route rarely and there was no visitor found who visits the route every day.

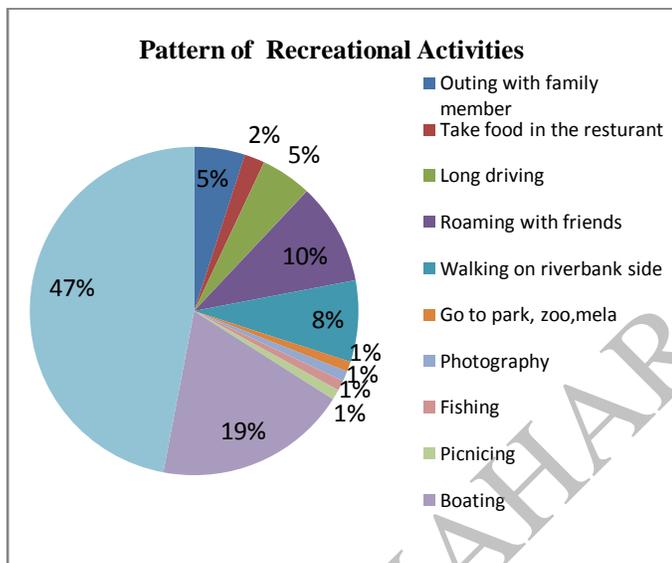
#### Visit time

Generally visit length is large enough (3 to 4 hours), as a result visitors (60%) prefer to come here at afternoon to enjoy recreational activities but about 40% of the respondents majority of whom are young couples have a preference to get there at morning because of maintaining their privacy. Due to lack of security and safety, a bsence of r required facilities at recreation spots etc. visitors try to return before sunset; hence at evening no one is interested to come here. Thereafter, the visitors, especially the young people who

have their own vehicles like private cars, motor cycles, etc. sometimes tries to enjoy the juvenile night's beauty under the full moon.

### Recreational Activities

Survey has identified that visitors are engaged in eleven different types of activities here like site seeing (47%), boating (19%), roaming with friends (10%), walking on riverbank side (8%), outing with family member (5%), long driving (5%), take food in



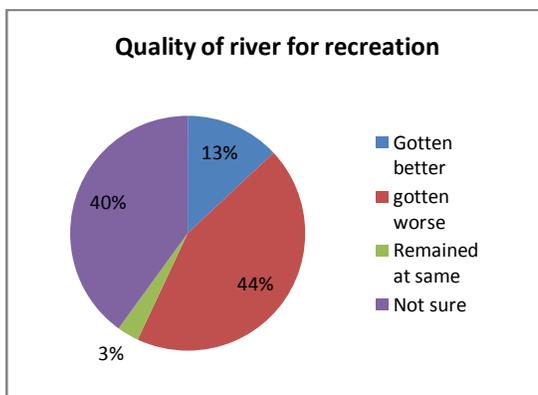
**Fig No. 5.5:** Pattern of recreational activities of the users of "Tongi- Ashulia- Mirpur" route.

the restaurant (2%), go to park, zoo, mela (1%), photography (1%), fishing (1%), and picnicking (1%). Most of the visitors have agreed with the fact that river is the key element for generating their recreational trip. Though water quality of river is terrible and causing detrimental effects to its surrounding area, it is not interfering with visitor's use and enjoyment of the river.

### Enhancement of attractiveness of the route

Most of the respondents have agreed with the necessity of enhancing the attractiveness of the route. During the survey, some possible proposals were provided to them to know their opinion about which option they like most as the prerequisite of enhancing attractiveness of the route. 5% of them went with the provision of planting seasonal flowers and plants, 40% of them supported regular cleaning and maintaining initiatives, the highest percentage (50%) of them suggested to take initiatives about increasing facilities to the site and 4% and 1% of them recommend respectively about incorporating commercial outlets and reserving area for vegetation and wildlife along the route.

### Quality of river for recreation



**Fig No. 5.6:** Quality of river for recreation according to the users' at Tongi- Ashulia- Mirpur" route

44% of respondents think that over the last several years' rivers in a nd a round Dhaka has gotten worse for recreation and 40% of respondents have no idea about it. That means a huge portion of visitors have no interest in anything related particularly on rivers or they are very much familiar or used to with this existing situation. 13% of respondents think river condition has gotten better than before for recreation purpose as Ashulia tourist spot, Tamanna Complex,

Monpura restaurant are established and flourished as recreation attraction points few years ago. Dhanmondi Lake and Crescent Lake are most favorite water side recreation areas beside this peripheral river side recreation point.

#### 5.3.1.3 Likings, Dislikings, Problems, and Suggestions

##### Likings and dislikings

During survey, respondents were asked to response open ended questions about what they liked and disliked about the site. Majority of users' did not provide any concrete answer or said not sure when asking for their opinion about open ended questions because of their lack of perception about that concerning issue but when they were asked to answer the close ended Likert scale for their satisfaction level measurement their responses were quite satisfactory. Very few respondents (37%), comparatively aged person rather than young people responded to the open ended questions and express their experience about their disliking and problems.

The visitors like most the scenic beauty and solitude of the river. Serenity and relaxing environment, picturesque landscape, and views of a nd from the river, river side green paddy fields and open spaces the river provides attracted the visitors. Boating facilities

of Ashulia landing station, physical arrangement and facilities of Tamanna complex also satisfied them.

Water quality problems with pollution, color, odor of river mainly disappointed them the most. Although male visitors love boating as popular recreation activities here but they dislike poor and unimproved ghats condition the most or boat landing area condition. Those who come here with kids and women do not show much interest for boating for all these reasons most of the time.

### **Problem identified by the visitors here**

When the visitors were asked about the problems they faced here, many respondents said “nothing” because of their lack of perception, avoiding tendency due to lack of time. Some of them willingly expressed their experience about the problems like –

- Poor physical condition of the boat landing ghats and inadequate facilities.
- Poor quality and absence of public equipments like-sitting arrangement, waiting space, shades, insufficient food and drinking corners, drinking water scarcity etc.
- Absence of toilet facilities; especially for female visitors it is their most common problem
- High cost of food and drinks
- Another important problem is because of unethical behavior and attitude of young couple, other visitors who attain here with their family and kids have to fall into embarrassing and awkward situation. They said that because of this type of circumstance they are not interested to come here next time with their family specially kids and they demand separate zone for young couple to get relief from this type of uncomfortable situation.
- Disturbing and annoying attitude of Transsexual (Hizra) toward the couples.
- Sand traders encroach river bank areas by sand lifting up from river bed and deposits here and there on river banks which hampers the aesthetic beauty of the river route.

- Enormous numbers of brick fields are established by river side low land area destroying aesthetic beauty and environment of this route.
- The users' want to come closer to the water but no provision for that is present there.
- Absence of definite trail or walking way, seasonal plantation and vegetation along route side area and also no fixed boundary for the river banks.
- Due to absence of provision for safety, security and regular services like lighting, guard arrangement etc incidents like hijackings are happened there in this route sometimes.
- Due to absence of parking facilities visitors, especially male visitors has to concentrate more on their private vehicles rather than enjoying their leisure.
- Absence of any authority that is responsible for taking care of these river side recreation spots.
- Overall absence of modern information system.

### **Suggestions**

The users' have suggested solving these problems immediately and this site should include different types of recreational activities specially which attract the kids more. Also increase recreational facilities, develop more restaurants and other riverside destinations reachable by foot or boat, plant seasonal plantation and vegetation along river side, develop park space and a river walk. They also have suggested that this area should be protected enough to ensure visitor's safety and security. The users' most desirable expectation is to come closer to the water. Another expectation is to have modern type of vessels and boating facilities and specific parking space for car parking. During survey most of the visitors have showed high desire to do fishing here but this route do not provide such type of arrangements. So they demand fishing club and fishing arrangements like-specific spot and sitting arrangements for fishing, fishing instruments etc. According to this group of recreational users', any organization like Porjoton Corporation may take over the responsibility of these river side recreational

spots or this can be held by any other government or private organization. With existing commercial development and public equipments, they are very much upset. Demands of visitors are limited; according to them basic necessities should be fulfilled by the concerned authority.

#### 5.3.1.4 Performance level analysis of different domains at “Tongi-Ashulia-Mirpur” route

To identify the performance level of items under different domains at Tongi-Ashulia-Mirpur route, a five point likert scale has been used and highest scored domain and lowest scored domain are identified. Significant differences are noted for satisfaction within six domains. Recreation experience domain shows the highest scores for this measure (mean = 3.05) and ‘Information’ shows lowest satisfaction levels and its mean value is 1.63. This statistics reveals that those visitors are comparatively satisfied with ‘recreation experience’ domain and this selected route area failed to provide minimum range of information facilities to its visitors. No significant difference is noted among other domains.

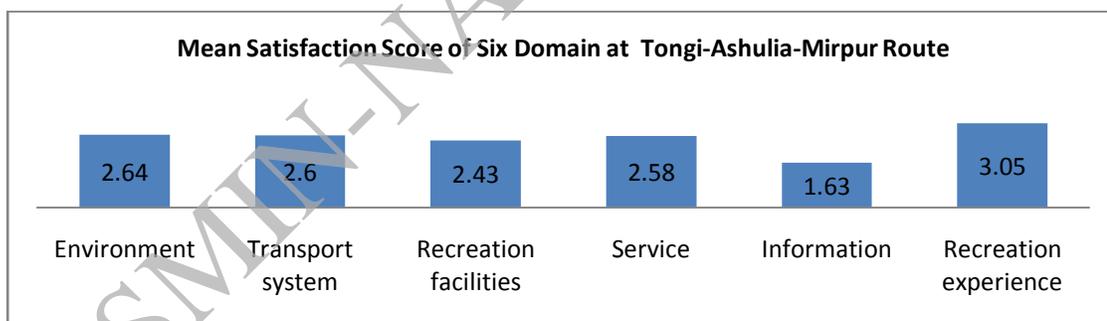
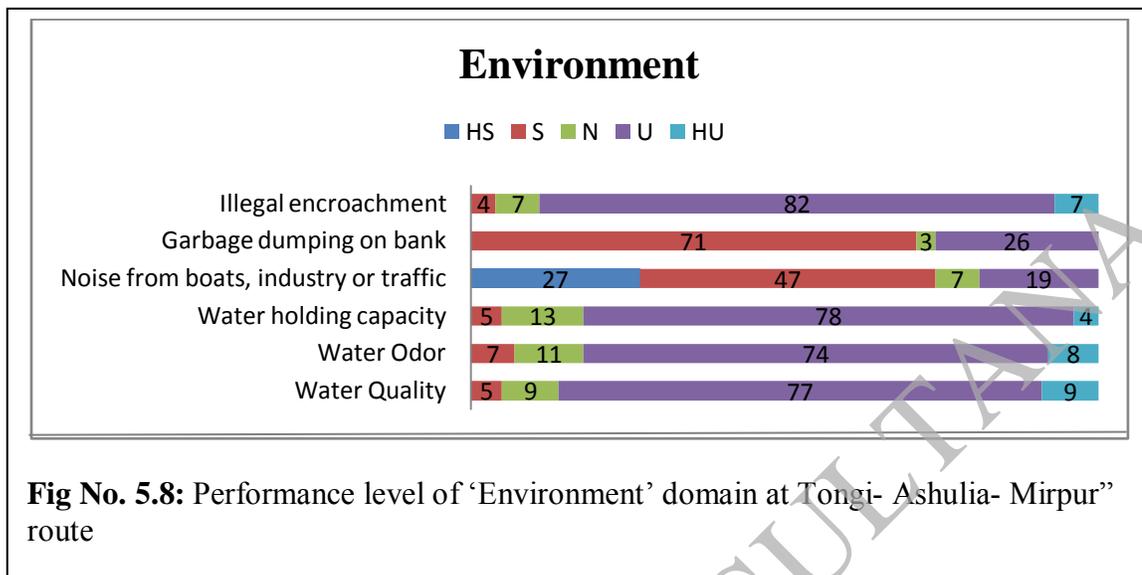


Fig No. 5.7 Performance level of six domains at Tongi- Ashulia- Mirpur” route

#### Environment

Items under ‘Environment’ domain are: ‘Water quality’, ‘Water odors’, ‘water holding capacity’, ‘Noise from boats, industry or traffic’, ‘Garbage dumping on bank’ and ‘Illegal encroachment’. Among six items under this domain ‘Noise from boats, industry and traffic’ and ‘Garbage dumping on bank’ get highest satisfactory scores and other four items are mostly unsatisfactory to them.



item ‘Noise from boats, industries and traffic’. Actually noise from boats or traffic is not bothering to recreational users at all; it exists there in limited extent. Some of them are enjoying the sound of mechanized boat and according to them it creates a charming and fascinating environment to them which adds extra recreation value. Industrial setting is absent here and this route is not a crowded place at all. So this item has chosen as a most satisfactory item.

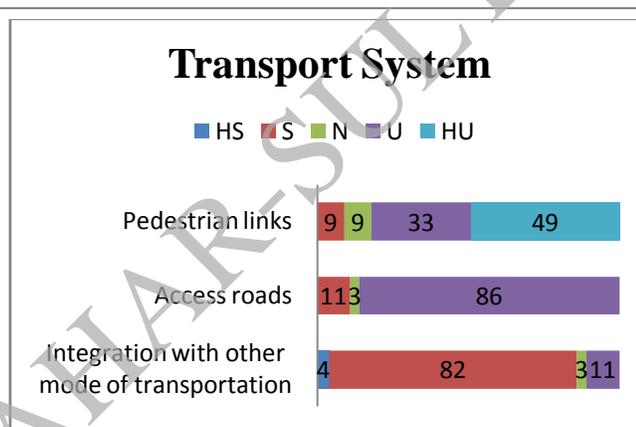
‘Water quality’ (77%), ‘water odor’ (74%), ‘water holding capacity’ (78%) and illegal encroachment (82%) has got comparatively largest vote for unsatisfactory condition. Water quality and water odor is one of the major issues to the recreational users of this route. Because of absence of river dredging, its holding capacity remains always low and it is also identified as an issue by recreational users. They identified this issue as a significant problem and more or less it is deteriorating fresh atmosphere of study area. They said that existing water holding capacity of river is not satisfactory; need increase its level of water. They suggested that government should take immediate initiatives to improve water quality of city’s circular water way as early as possible. Because of lack of perception quality maximum number of visitors has no idea about water holding capacity of river. After understanding about this issue properly they try to rate its satisfaction level on Likert scale. Illegal encroachment has been identified as problem

by visitors and they want government's special initiatives in this sector to protect the river.

### Transport system

Items under 'Transport system' domain are: 'pedestrian links', 'access roads' and 'integration with other mode of transportation'. 'Integration with other mode of transport' has become satisfactory item among those three items under transport domain. As 'pedestrian links' and 'access roads' are in poor condition and absent in some places here, these two items become unsatisfactory items under 'transport system'

domain. According to 82% of visitors 'Integration with other mode of transport' is satisfactory item. 33% of visitors are unsatisfied and 49% of visitors are highly unsatisfied with the item 'pedestrian links' and 86% of visitors unsatisfied with the item 'access road'.



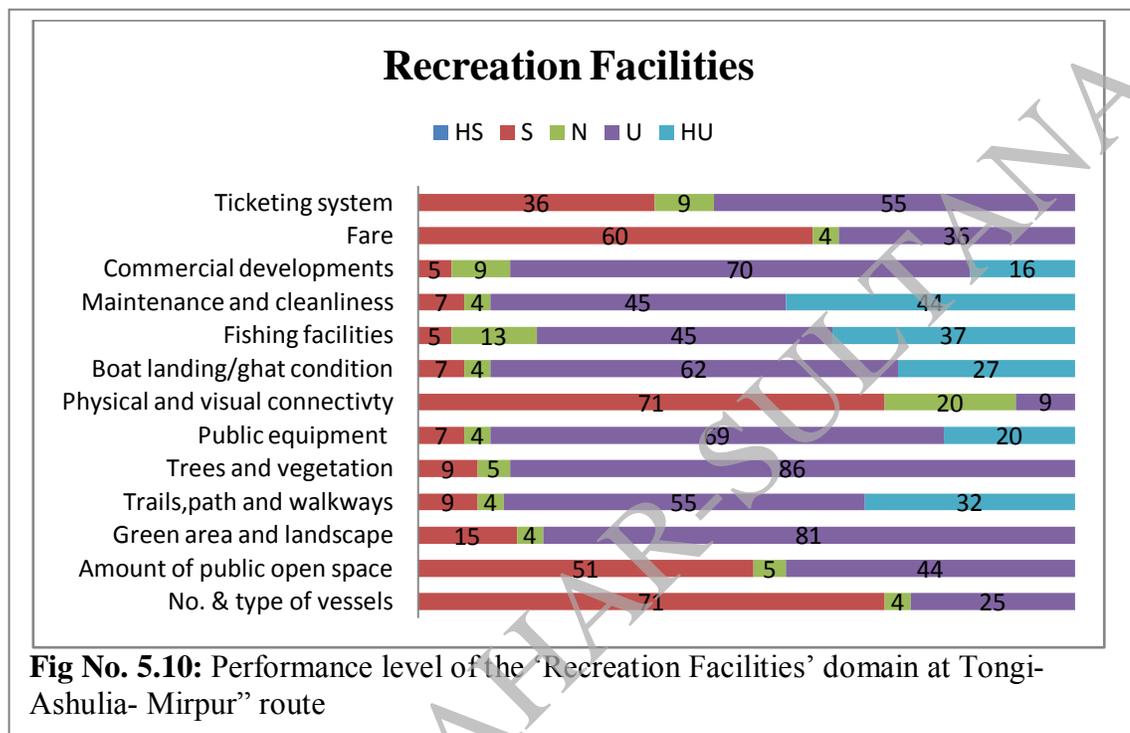
**Fig No. 5.9:** Performance level of 'Transport System' domain at Tongi- Ashulia- Mirpur" route

Recreational users are satisfied with its integrated road network system; through public or private transport they can easily get here. According to them pedestrian link and access road should be developed here to enhance their recreational purpose. Because of lack of understanding the term access road and pedestrian link a few of visitors have said that they are satisfied with these two items.

### Recreation facilities

According to visitors 'No. and type of vessel' (71%), 'amount of public open space' (51%), 'physical and visual connectivity' (71%), fare (60%) and 'ticketing system' (36%) are most satisfactory items among 13 items under 'recreation facilities' domain. Others get unsatisfactory score where 'trees and vegetation' has got the highest (86%). According to visitors, this route contains limited number of trees and area for vegetation

which directly affects its aesthetic beauty and they expect govt. to take initiatives to this sector as early as possible.



62% of the users’ are unsatisfied and 27% are highly unsatisfied with the item ‘boat landing and ghat condition’. Especially for women visitors’ ‘poor ghat condition and boat landing’ became a problematic issue. They have to be lifted from boat on ghat with high risk and for new comers it is very scary also. That’s why visitors demand for improved condition of boat landing and ghat area. According to them improved boating system and different types of vessels could attract more visitors who loves boating. Fare is considerable for 60% of visitors who come here occasionally. But if they want to come here frequently for boating they have to think on their financial condition. For this reason 36% of visitors vote for unsatisfactory. 55% of visitors are unsatisfied with the item ‘Ticketing system’.

Visitors highly objected about the maintenance and cleanliness of existing facilities at this route. ‘Maintenance and cleanliness’ item has got 45% unsatisfactory and 44% highly unsatisfactory score. Maintenance and cleanliness issues are totally ignored here.

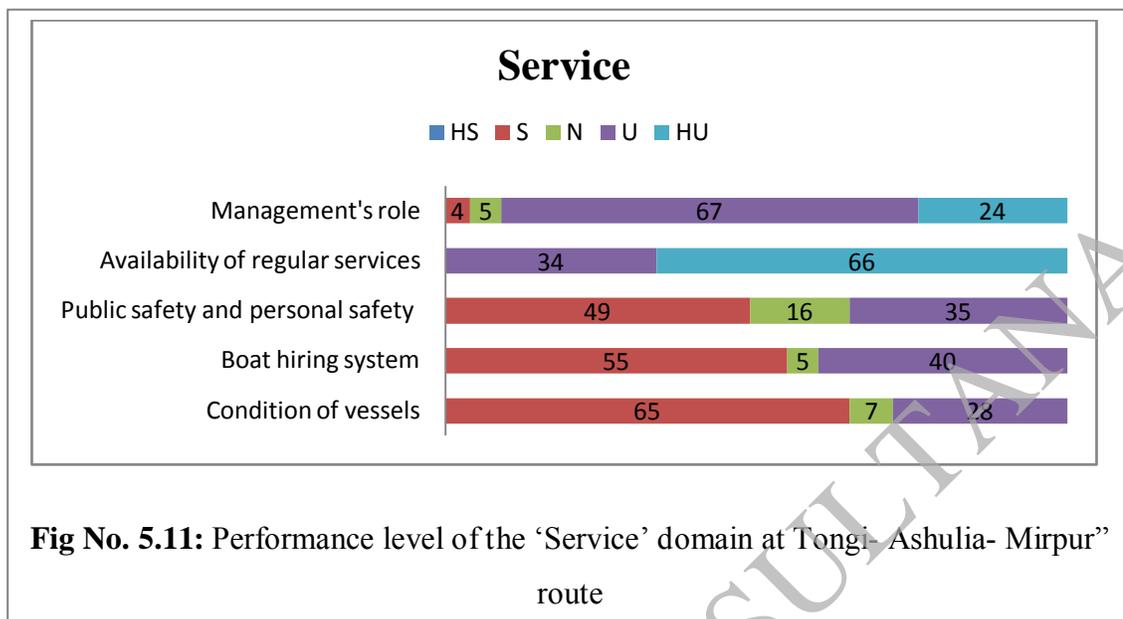
'Public equipment' ( 69%) and 'commercial developments' ( 70%) fully unsatisfied them. Young group of people shows interest in having small restaurants, community boat club, and open air theater on the site. Maximum time they come as couples and expect to have a small gift shop from which they can present something to their beloved person in a special occasion. But except a small food shop located in Ashulia landing station this route has no that type of arrangement.

About 32% users' are highly unsatisfied and 55% are unsatisfied with the item 'trails, paths and walkways'. No exclusive walkways or trails for recreation users' exist here but survey finding has showed that a great number of them are involved here with 'walking on river side' as recreation activities. According to them a well-defined path or walk way is essential and if a trail can be established it could add extra value to their recreation on site. 81% of visitors' rated 'Green area and landscape' as 'unsatisfactory one. This item exists here in a limited scale so according to visitors, as a recreation place this area demands great amount of green area to attract more recreational users'.

From survey it has been observed that fishing activities was totally absent during the survey period (February to March) because of low water holding capacity of river; but in moonsoon young people have high desire for fishing activities as study area not provide such type of facilities like special site for fishing, fishing equipment etc. at all. That's why 37% users' are highly unsatisfied and 45% are unsatisfied with the item.

### **Service**

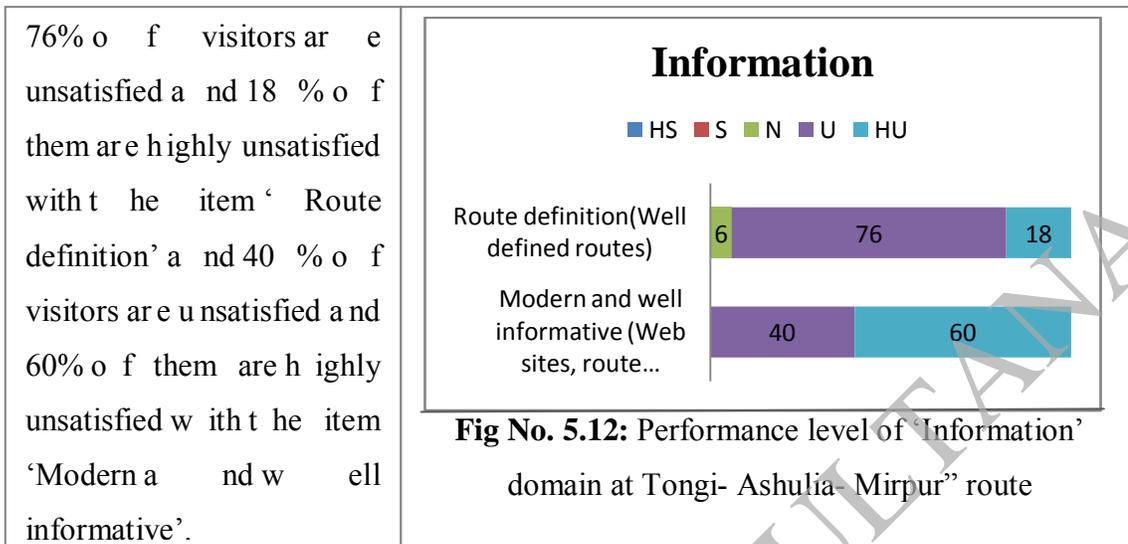
According to visitors' 'condition of vessels', 'boat hiring system' and 'public and personal safety' are considered as satisfactory items among five items under this domain. 55% and 65% of visitors are satisfied with the items 'Boat hiring system' and 'Condition of vessels' respectively. But visitors who come here with kids are comparatively less interested to boating because of vessel condition. According to them existing vessel type and condition is not secured or safe for kids. They demand more improved vessel type and that's why 28% are not satisfied with the item.



49% of visitors are satisfied with safety issues. There is a reason behind this type of response; because 95% of young visitors especially who come with their boyfriend or girlfriend come here at morning and try to leave this place before sunset. Beside this, because of hesitation visitors especially women have not been comfortable to answer such type of question during survey. Basically this area has no arrangement of guarding or police protection but because of poor perception most of them fail to identify safety item as a problem. 35% users are unsatisfied with public and personal safety. Visitors are unsatisfied with the items ‘Management’s role’ and ‘Availability of regular services’ because these two items are absent from this route and they demand improved and strong initiatives from government or private organization. 67% and 24% visitors have rated ‘Management’s role’ as unsatisfactory and highly unsatisfactory item respectively. 66% and 34% visitors have scored ‘Availability of regular services’ as unsatisfactory and highly unsatisfactory item. Due to absence of management’s role and regular services, visitors especially who come here with kids, have to face different problems.

### Information

According to visitors ‘information’ is totally unsatisfactory domain among other domains and they agreed that because of absence of improved information system they have to face many hassles.

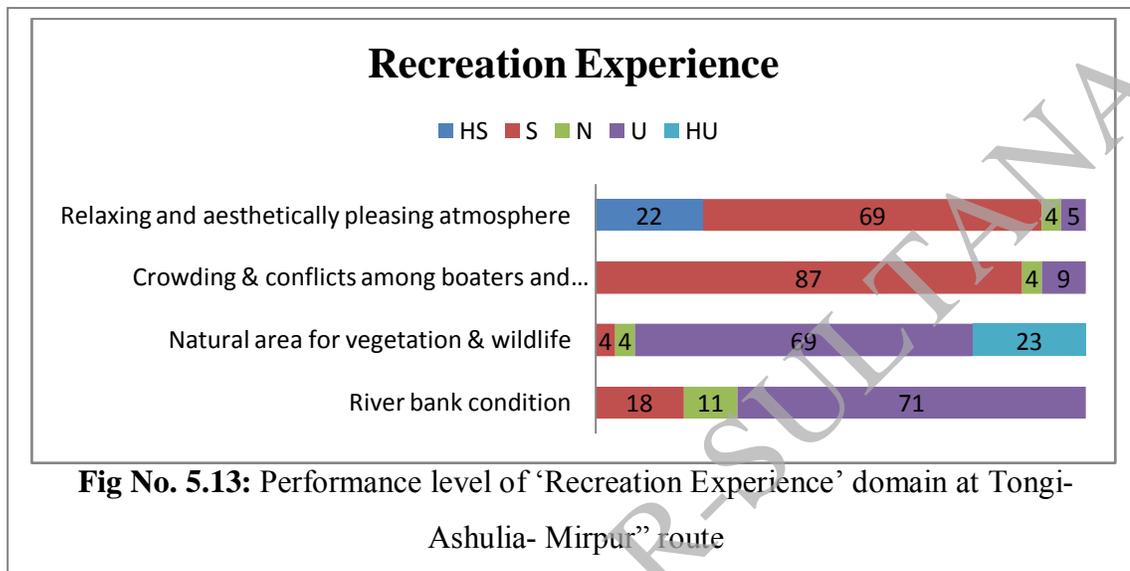


Modern and well informative information system of this route for recreational purpose is absolutely absent. Modern and well informative arrangements including web sites, route maps, printable timetable, and brochure containing current information, natural historical information, educated and knowledgeable staffs and volunteer to help recreational users’ are absolutely absent here. Visitors can realize its importance for recreation purpose. Generally they get basic information about route and fare of boats from boatmen but there is no surety about its accuracy. There remain some constraints because older and experienced boatmen can give correct answer rather than younger boatmen.

### Recreation experience

Recreational users’ are completely satisfied with two items ‘crowding and conflict among boaters’ and ‘relaxing and aesthetic pleasing atmosphere’. Visitors love to come here to spend time and enjoy with their beloved one or friends and family. Only because of its aesthetic pleasing atmosphere they come here again and again. They find this space more attractive and preferred one to celebrate any personal or national occasion. 22% of visitors are highly satisfied and 69% are satisfied with the item ‘Relaxing and aesthetically pleasing atmosphere’ and 87% of visitors are satisfied with the item ‘Crowding and conflict among boaters and recreationist on shore’. Except holidays and

special occasions, this route is never crowded enough to create conflict or such type of incidents. So visitors like this item most.



69% of visitors are unsatisfied and 23% of them are highly unsatisfied with the item 'Natural area for vegetation and wildlife'. The item is totally absent here and they would love to welcome that kind of initiatives. 71% of visitors are unsatisfied with the item 'Riverbank condition'. According to them, Government initiatives are necessary to protect the river banks.

### 5.3.1.5 Relationship between demographic characteristics and river use characteristics

By conducting correlation between visitors' demographic characteristics and their river use characteristics, some important group of visitors has been identified and their illustration has given below.

#### 5.3.1.5a Visitors who come here occasionally at morning and spend a long time

Mostly the middle income group ( 83%) usually come to this route occasionally at morning and spends long time. upper middle income group ( 10%) also come here. Students ( 71%) mainly represent this group. Visitors engaged with household management ( 2%) come here with their kids at weekend to spend long time or for picnic or attend mela. Age range of this group of visitors is from 22 to 30 years of old.

Visitors for the most part come here as couple. According to them, most favorite characteristic of this route is its quiet and calm atmosphere which makes a romantic and attractive environment for them. Because of easy access to get here, this place is perfect for them to meet their beloved one. Boating is their main attraction and they reserve boat for 1.30 to 3 hours. They have complained about water quality, color and odor of river. Problems they face here most are:

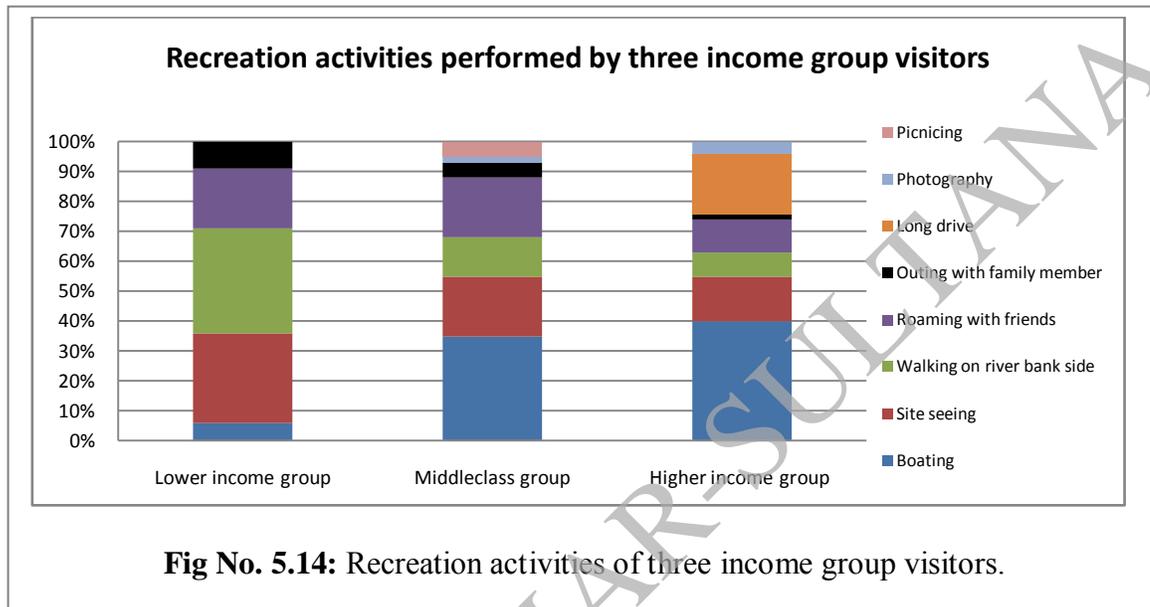
- Absence of commercial outlets like-retail shops, gift shops etc
- Absence of sitting arrangements, shaded and resting place.
- Poor physical condition of the boat landing ghats and riverbank condition.
- Lack of modern information system
- High price of food and drinks and lack of basic facilities for the recreational users’.

According to their opinion about present river condition for recreation, rivers in and around Dhaka has gotten worse for recreation over the last several years’. This group of visitors mainly comes here for boating so they demand improved boating facilities and different types of boats here. They also expect provision for modern commercial developments and minimum quantity of public equipments at this route. According to 45% of visitors, enhancement of attractiveness of this route can be done by increasing facilities and for 30% maintenance and cleanliness is important one. 20% of them have expressed their desire for including commercial outlets in this route.

#### **5.3.1.5.b Relationship between income groups and recreational activities**

Recreational activities change with financial structure of a n individual. From the survey, it has found that pattern of recreational activities varies with family income per month of the users’. All recreational users’ can be segregated into three groups. They are-higher income group (above middle income group), middle income group (income between 10, 000/- to 25,000/-) and lower income group ( family income less than 10000/). From chart it can be seen that lower income group (3%) like site seeing and walking on river bank side most as recreational activities here. Boating is the most favorite recreational activity of middle income group (74%) visitors. They also like to

engage in other activities like roaming with friends, site seeing and walking on river bank side whereas the higher group (23%) visitors like boating and long drive most.



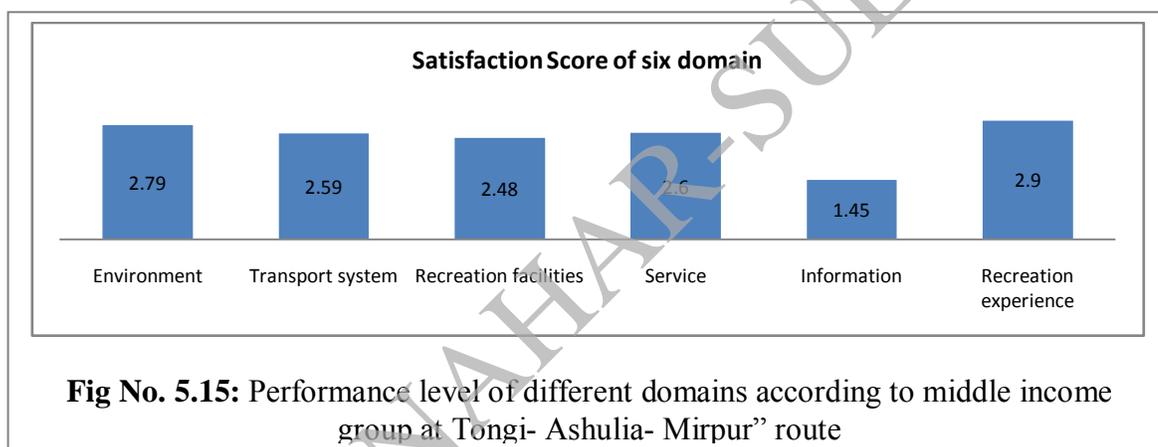
Problem faced by different income groups of visitors are: Poor quality and insufficiency of public equipments like-sitting arrangement, waiting space, shades, inadequate food and drinking corners, drinking water scarcity and toilet facilities etc. For middle income and lower income visitors, safety problem is identified as the most significant issue for this route. Hijacking occurs frequently here that's why visitors can not stay here after sunset though they wish for it. There is no definite trail or path or walk way and no fixed boundary for the river banks. They identify water quality, odor affect aesthetic view of the river and surrounding area. Poor physical condition of the boat landing ghats and inadequate facilities are identifying as problems. Absence of parking facilities is recognized as most dominant problem for higher income group who come here with private vehicles.

According to higher income visitors different types of modern recreational activities should be included here. Modern type of vessels and boating facilities, fishing arrangements, food and drinking corners and souvenir shops may be included here to attract more visitors. Middle income visitors have limited demands and expectations

like provide basic requirements of a any standard recreational place, necessary public equipments and improvement of water quality. Lower income visitors have no precise suggestion or demand, they are happy with existing setting of this route.

#### Performance level of different domains according to middle income group visitors

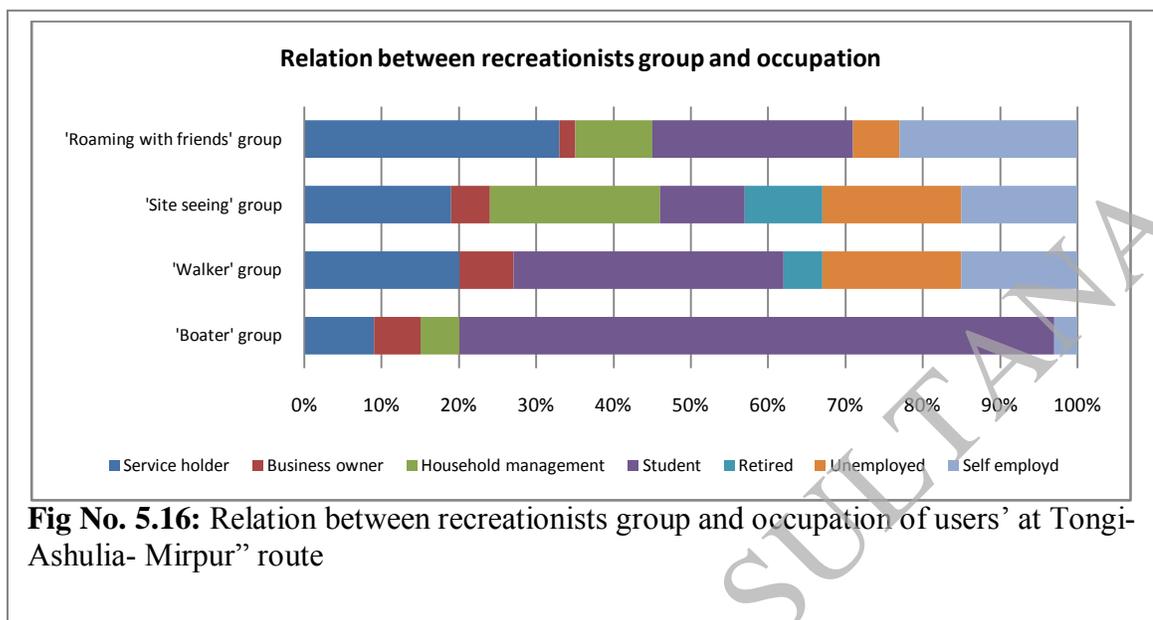
Survey has identified that middle income group (74%) is prominent group of visitors among others. According to the middle income group, among six domains visitors are impressed with their recreation experience ( 2.9) and information ( 1.45) domain disappoints them the most.



#### **5.3.1.5.c Relationship between Occupation and Recreation groups**

Among 11 types of recreational activities mainly four types of activities has got highest vote according to their preference. These activities are – site seeing ( 47%), boating (19%), roaming with friends ( 10%), walking on riverbank side ( 8%). So, problems, likings-dislikings, desires, suggestions related to this route according to these four groups of recreational users are illustrated below.

Students represent the boating group; although they are common in all those groups. Service holders like roaming with friends and site seeing most. Unemployed and self-employed visitors equally prefer site seeing and walking on river bank and retired persons also like those two types of activities. Visitors who involve with household management prefer site seeing and outing with family member rather than other three activities.



Problems identified by 'boating' group are: Unimproved boat landing ghat and poor river bank condition, Poor water quality, odor affect aesthetic view of the river and surrounding areas, absence of any responsible authority to take care of these river side recreation points and lack of well informative route and surrounding area information. Boating group has suggested that if Ashulia landing spot could arrange improved boating facilities and different and modern type of boats this spot could be able to generate huge amount of visitors and they will come here more frequently than now. Problems identified by 'roaming with friends' group are: absence of sitting arrangements and shaded areas for resting. Due to absence of lighting facilities and security guard arrangements at night visitors cannot spend time after sunset and absence of parking facilities. Absence of well-defined path trail or walk way is identified as Problem by the 'walker' group.

According to these four group of visitors, 'increasing facilities' get highest preference because this route has minimum range of recreational facilities which are not adequate for satisfying recreational user's demand. Facilities may be included- basic public equipments, fishing facilities, information system, improved boating facilities etc. According to them over the last several years rivers in and around Dhaka has gotten worse for recreation.

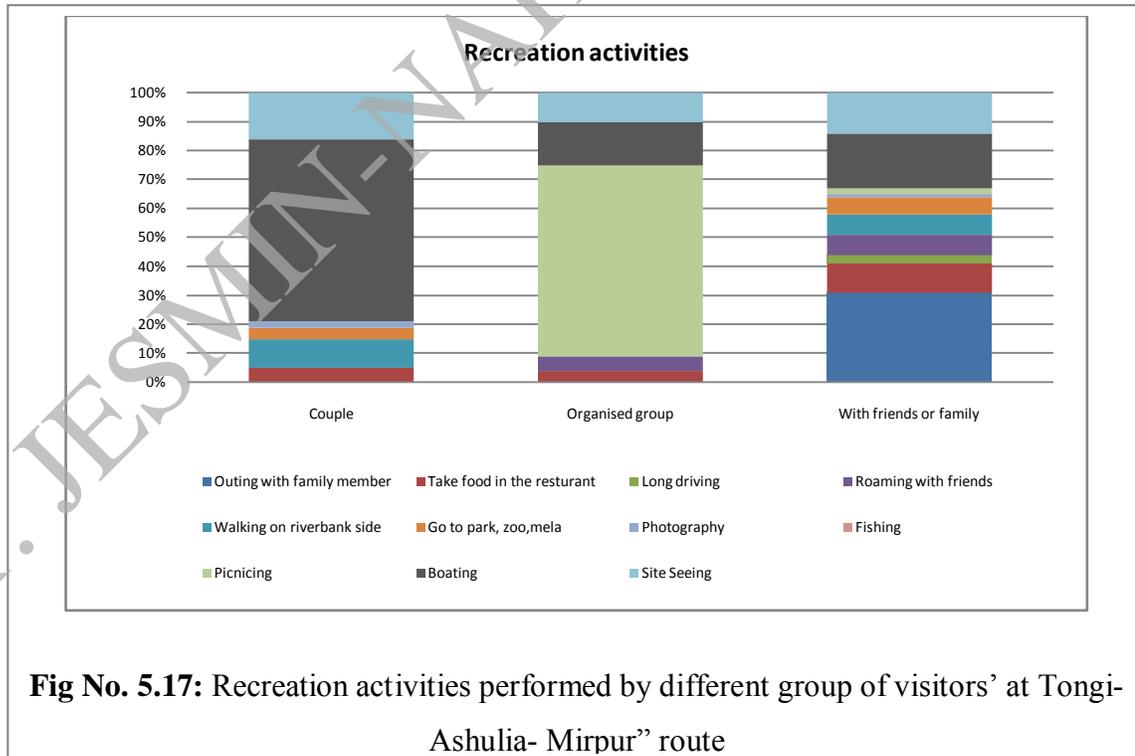
### Performance level of different domains according to the different group of visitors

‘Recreation experience’ domain has got the highest satisfaction score and ‘information’ domain has got the lowest satisfaction score. The other domains have not shown any significant differences among them and have got unsatisfactory scores from the users’.

#### **5.3.1.5.d Organization of visitors’ group**

A mentionable number of visitors come here as couples (76%), 18% of them like to come here with friends and family and 6% of them visit here as an organized group from any organization or other way. These different groups of visitors like to do different types of activities here, their problems, suggestions, importance, likings dislikings also differ from each others.

These three groups of visitors like to do all kind of activities that are providing by this route but their preferences have differed from each other. Couples who come here like to go boating very much; maximum time they arrive here at morning and return before



afternoon or sunset; it means they want to spend a long time here. A notable number of visitors covered by this group and they mainly prefer Ashulia landing station as a recreational spot because only this spot has organized boating facilities which is their main attraction. They also like walking on river bank and site seeing here. Organized group come here for picnic and they prefer Tamanna Complex as picnic spot. They also like to picnic at the open spaces and small islands by the river. They also go boating and site seeing.

Visitors also like to go outing with family members at this route and their main attraction is Tamanna Complex as a recreation spot. Tamanna Complex can be said as a true amusement park which provides all kind of recreational facilities like different riding system for children, food corner, swimming pool, boating facilities which attract kids mainly. For get together or roaming with their friends, a number of the visitors like Ashulia landing station area. For boating, site seeing, walking on river bank side, photography etc. it is perfect place for them and they also prefer long driving.

#### **Problems identified by young couple group**

- Disturbing and annoying attitude of Hizra; they harasses visitors for money.
- Absence of waiting space and sitting arrangements, toilet, inadequate drinking and food corner
- Poor water quality and odor
- According to them safety provision of this site should be strong enough and commercial development like gift shop, well furnished restaurant or food corners should be established here.

#### **Problems identified by those visitors who come here with family or friends**

- Lack of safety and security provision
- Absence of parking facilities
- Inadequate commercial development
- lack of maintenance and cleanliness
- Visitors want to go fishing here but there is no arrangement

Visitors who come here with kids said that Ashulia landing station mainly represent as a recreation spot for young group of people. If this spot is provided with some kid's suitable facilities and activities they also can come here to enjoy with their kids. Safety and security issues are also very much important for them. Scenic beauties of this route, its peaceful atmosphere, are equally liked by these three groups of visitors. According to them poor water quality and odor, low water holding capacity of rivers all are disliking issues of these route. According to them over the last several years rivers in and around Dhaka have gotten worse for recreation and facilities should be included to make rivers of Dhaka used as recreational areas for the dwellers of the city.

### 5.3.2 “Washpur- Rayerbazar- Katashur” Route

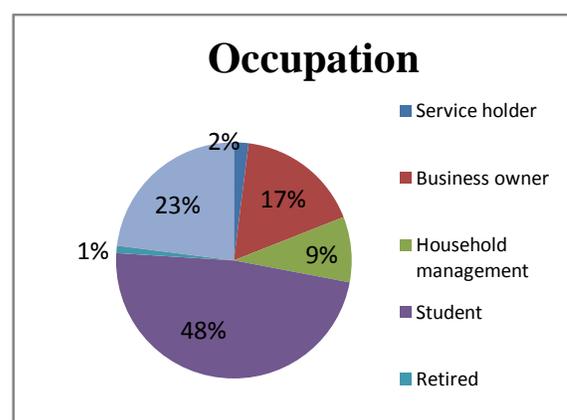
#### 5.3.2.1 Demographic characteristics of visitors

**Gender and Age:** Female visitors cover only 22% and remaining 78% are male visitors. Survey has identified that visitor of all age ranging from 14 to 50 years visit here. Major portion of visitors belong to the age group of 20 to 25 years old.

**Education:** Among the respondents, majority fulfill both the bachelor degree (26%) and secondary school criteria (26%), 17% are in higher secondary school, 22% belong to the master's degree group and remaining 9% are illiterate.

#### Occupation

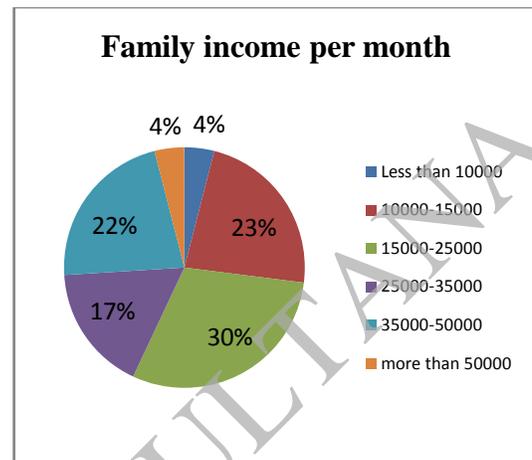
Dominant occupation of recreational users who visit the “Washpur- Rayerbazar- Katashur” route is student (48%). The percentages of other recreational users' occupation are self-employed (23%), business owner (17%), household management (9%) and others (3%).



**Fig No. 5.18:** Occupation of the users' of “Washpur- Rayerbazar- Katashur” route.

### Family Income per month

30% of visitors with family income ranging from 15,000 to 25,000 taka per month are highest and 23% of visitors have family income between 10,000 to 15,000 taka per month; Family income of 22% visitors is 35,000 to 50,000. 4% of total visitors have family income above 50,000/- and 4% have family income less than 10000/-. So, 53% visitors belong to middle income group and 4% belong to lower income group.



**Fig No. 5.19:** Family Income per month of the users' of "Washpur- Rayerbazar- Katashur" route.

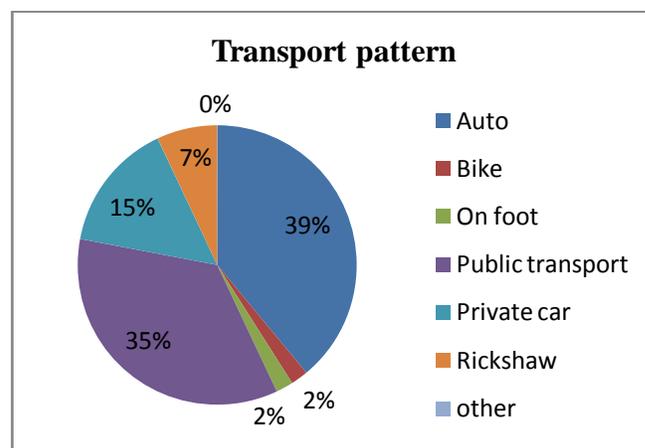
### Living area of visitors

From survey it has been identified that visitors come here mainly from Savar, Mohammadpur, Mirpur, Hazaribagh, Farmgate, Kazipara and Sadarghat area.

### 5.3.2.2 River use characteristics

#### Transport Pattern

39% of visitors make a trip here by auto and 35% of visitors use public transportations. 15% of visitors come here using private transports. People living near the river or the monument (7%) come here by rickshaw. 2% come here by bike and 2% of total visitors get here on foot. Most of the visitors have to travel over two to four miles and it takes maximum 1.30 to 2 hours.



**Fig No. 5.20:** Transport Pattern of the users' of "Washpur- Rayerbazar- Katashur" route.

### Frequency of visit

During the survey it has been identified that 48% of visitors come here for the first time, 39% of visitors like to come here occasionally, 9% come here by chance and 4% of them come here irregularly.

### Visit time

70% of the total visitors usually come here at morning and the rest 30% frequently visit in the afternoon. Visitors generally come here for site seeing and roaming with friends and normally visiting time of these visitors last for 2.5 hours to 3 hours.

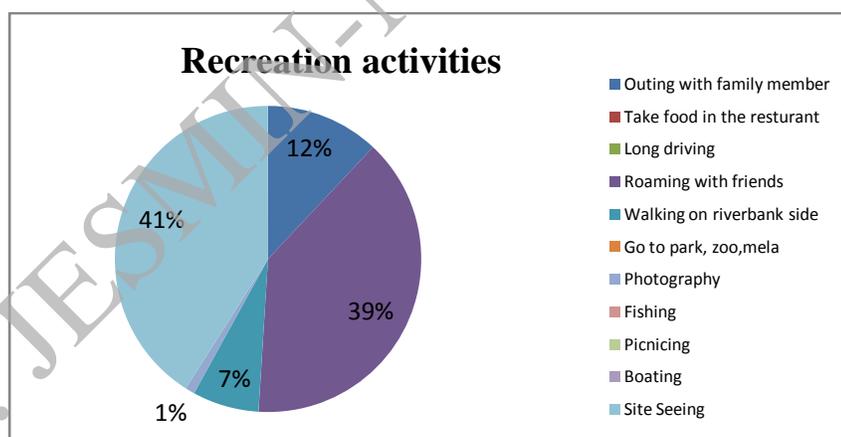
### Importance of river for recreation purpose

According to 60% of visitors, river is somewhat important for their recreation purpose. For 22% of visitors river is not important and 18% of them find it very important recreational element.

### Quality of river for recreation

According to 77% of respondents, over the last several years rivers in and around Dhaka has gotten worse for recreation and 21% of respondents are not sure about it and 2% of them said that it has gotten better.

### Recreational Activities



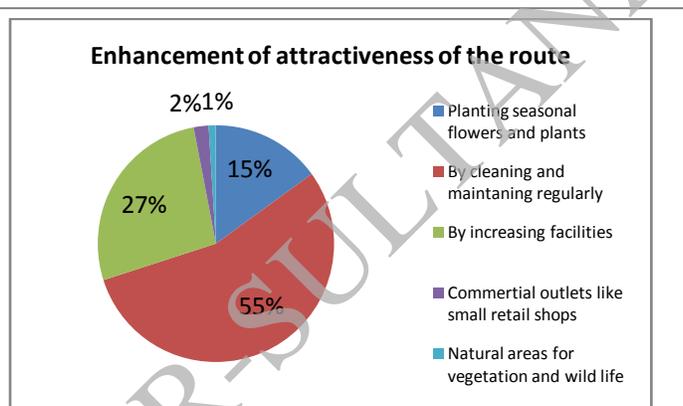
**Fig No.5.21:** Recreational Activities of the users' of "Washpur- Rayerbazar- Katashur" route.

From survey it has been identified that this site is involved in few activities like- site seeing (41%), roaming with friends (39%), outing with family member (12%), walking

on riverbank side (7%) and 1% visitors are involved in boating. In wet season boating is also held here but in visitors' private initiatives. They love to do boating here but due to the absence of boating facilities; they are highly disappointed with that.

### Enhancement of attractiveness of the route

Most of the respondents agreed with the necessity of enhancing the attractiveness of this route. As the provision of enhancing attractiveness of the route, 55% respondents went with provision of cleaning and maintaining facilities, 27% by increasing facilities, 15% supported planting seasonal flowers and plants, 2% liked commercial outlets and 1%



**Fig No.5.22:** Suggestions of the users' for the enhancement of attractiveness of "Washpur- Rayerbazar- Katashur" route.

preferred reserved area for vegetation and wildlife along the route. Beside this peripheral river side recreation site, they mostly prefer Dhanmondi Lake as water side recreation point.

### 5.3.2.3 Likings Dislikings, Problems and Suggestions

#### Likings and Dislikings

The Martyred Intellectuals Memorial and one of its surrounding areas are main attraction for the recreational users'. Visitors define this place as relaxing and aesthetically pleasing area and its openness and refreshing air attract them more to visit here. To introduce our rich history of liberation war visitors come here with their kids to show Martyred Intellectuals Memorial. At the same time they visit surrounding area, introduce their kids with river, and take photographs. They disliked river bank

condition; polluted water and river bank encroachment, poor condition of ghats and absence of boating facilities the most about this route.

### **Problems**

- Poor river bank condition and water quality, odor all are problematic issues here.
- They also complain about safety issue. Local goons and drug addicted vagabonds reside along the monument or river side areas.
- Especially for women and kids, absence of toilet facilities identified as a significant problem
- Visitors are extremely disturbed by vagabond's annoying attitude and they identified it as a great problematic issue for all visitors.
- Absence of food corners or restaurants.
- This site is perfect for boating or fishing and visitors have high demand for that type of activities but this site lacks such type of arrangement.

### **Suggestions**

They have suggested that government should take initiatives to develop this route and its surrounding area as recreation attraction point for city people. They demand different kinds of recreational activities especially which attract kids, they also like to have water based recreational activities like boating, fishing etc. After construction of Bosila bridge water way transportation become less important for people and their access become much easier. They want different types of recreational activities to do here; only site seeing could not satisfy them at all. They have said that this site is completely suitable for boating but authority has no concern about it; which can be possible if authority cooperates. Authority can also provide fishing facilities or arrange and develop some specific point along the river side for fishing by private initiatives.

Visitors said that huge amounts of low land had already been encroached by different housing company and encroachment is still going on, which is very risky for city ecology and environment. They are very much anxious about this issue. Water pollution of the river is mainly caused by domestic waste and domestic sewage which adds odor to waters. Visitors have suggested that development of river side area as a recreation

spot is one of the best opinions to stop river encroachment. They suggested that if authority take any initiatives to include basic recreation facilities like boating facilities, fishing facilities, regular services, maintenance and cleanliness in this site, it will be able to generate and attract huge quantity of river recreation visitors. Government should take initiatives for this type of plan or program.

#### 5.3.2.4 Performance level analysis of different domains at “Washpur- Rayerbazar- Katashur” Route

To identify the performance level of items under different domains at “Washpur- Rayerbazar- Katashur” route, a five point likert scale has been used and highest scored domain and lowest scored domain are identified. Each and every domain gets poor or unsatisfactory score because more or less all items under each domain cannot satisfy its visitors. Little differences were noted for satisfaction within six domains. Recreation experience domain showed the highest scores for this measure ( mean = 2.89). ‘Information’ domain showed lowest satisfaction levels and its mean value is 1.62.

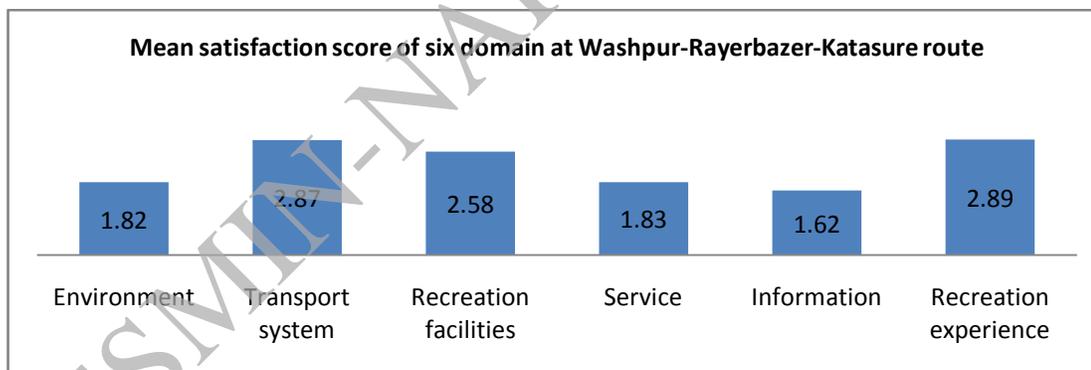


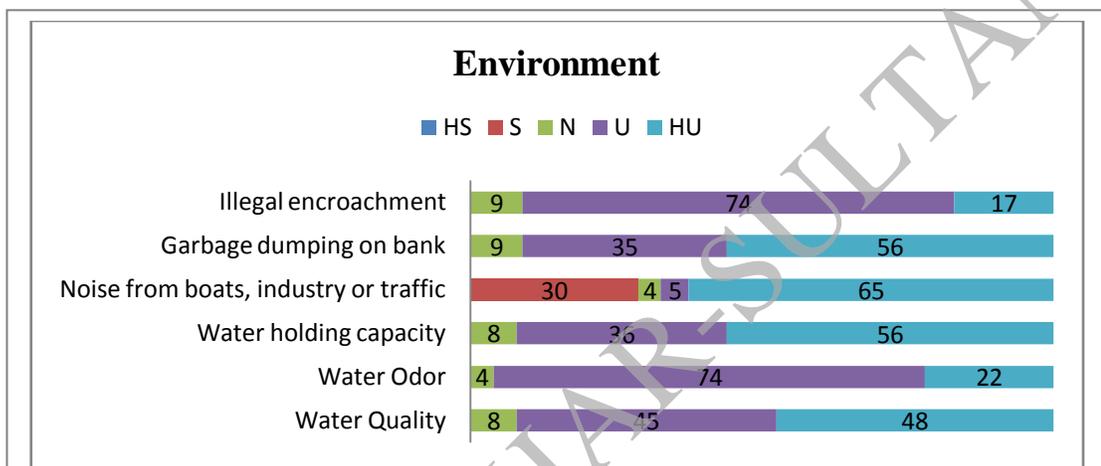
Fig No.5.23: Performance level of six domains at “Washpur- Rayerbazar- Katashur” route

During survey, some items had to be eliminated from ‘recreation facilities’ domain, ‘service’ domain and ‘recreation experience’ domain because those items are totally absent from the site.

#### Environment

Except the item ‘noise from boats, industry and traffic’ all other items are noted as unsatisfactory. 30% of visitors are satisfied with the item ‘Noise from boats, industry

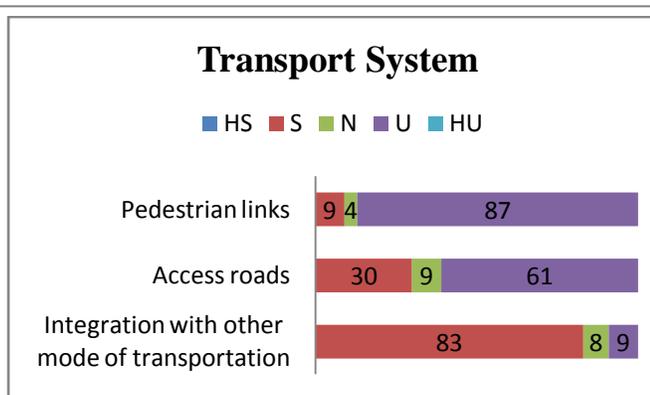
and traffic’. 74% visitors are unsatisfied with the item ‘illegal encroachment’ whereas 65% are highly unsatisfied with the item ‘Noise from boats, industry and traffic’. 56% visitors rated both the items ‘garbage dumping on bank’ and ‘water holding capacity’ highly unsatisfactory. Water quality item is rated highly unsatisfactory by 48% visitors and 74% rated water odor as unsatisfactory one.



**Fig No.5.24:** Performance level of ‘Environment’ domain at “Washpur-Rayerbazar- Katashur” route

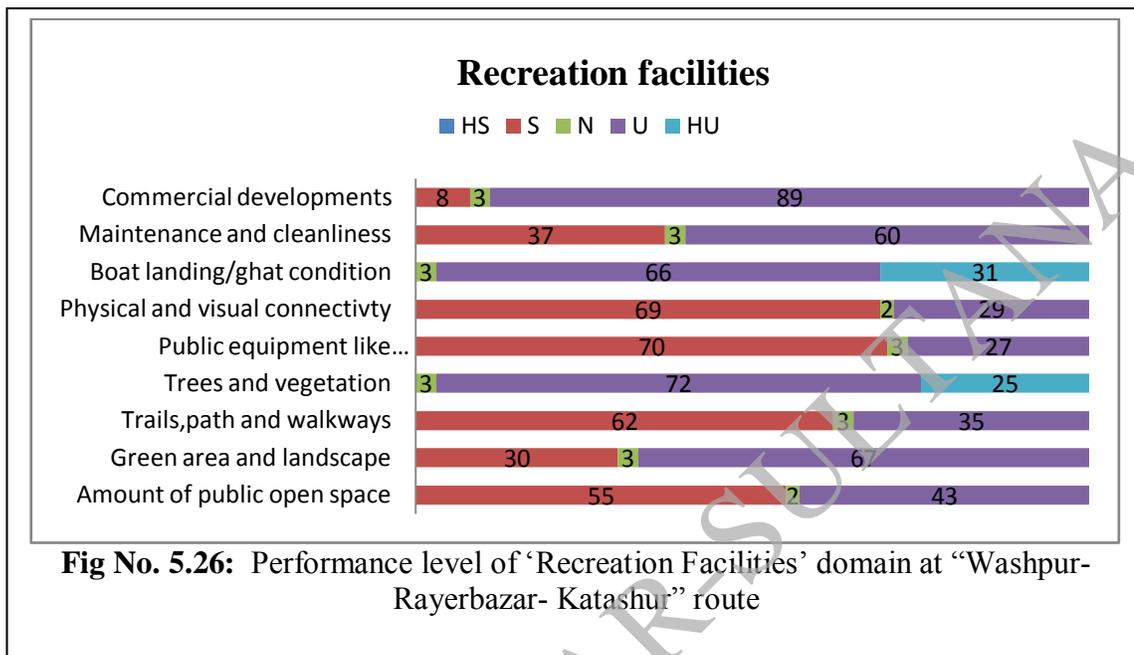
### Transport system

About 83% of visitors are satisfied with the item ‘Integration with other mode of transportation’. They can easily get there from any part of the city. 61% of visitors are unsatisfied with access roads condition and 87% of visitors unsatisfied with pedestrian links.



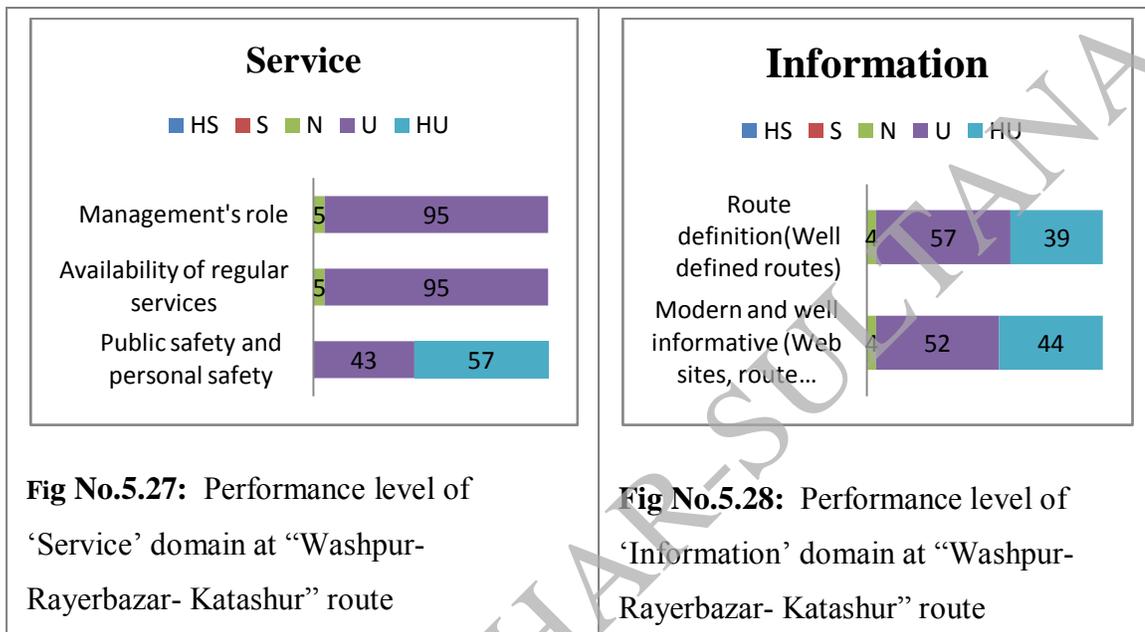
**Fig No. 5.25:** Performance level of ‘Transport System’ domain at “Washpur- Rayerbazar- Katashur” route

## Recreation facilities



According to visitors physical and visual connectivity is well enough and they are also satisfied with the item ‘public equipment’ because of some sitting arrangements are set within the monument. A walkway exists in back side of the monument for which 66% of visitors like it the most. 69%, 70%, 62% and 55% of visitors respectively are satisfied with the item ‘Physical and visual connectivity’, ‘Public equipment’, ‘Trail, path and walkway’, ‘Amount of public open space’. Remaining items are fully or partially unsatisfied for them. Among all ‘commercial developments’ (89%) is rated the highest unsatisfactory item because of absence of this kind of facilities. 31% visitors are highly unsatisfied and 66% are unsatisfied with the item ‘boat landing and ghat condition’. People in favor of boating as recreation activities have high demand to authority for doing arrangements for this type of facilities here. Also same time ghat condition should be improved and developed. This site has BIWTA established minor landing station and few ghats but these are in unusable condition; for lack of maintenance, people cannot use it and boatmen lands boats in scattered way in different points of river bank. So for the item ghat condition visitors’ satisfaction score become low. ‘Trees and vegetation’ (72%), ‘maintenance and cleanliness’ (60%), ‘green area

and landscape' (67%) items have got unsatisfactory score. This area has no tree or vegetation because maximum portion of land around the river are encroached by land grabber through sand filling.



### Service

This domain is totally absent in this route. But visitors have high demand for those three items to make their leisure more attractive and smooth. That's why 95%, 95% and 43% of visitors are totally unsatisfied with 'management's role', 'regular services' and 'public and personal safety' respectively. 57% visitors are highly unsatisfied with public and personal safety issue.

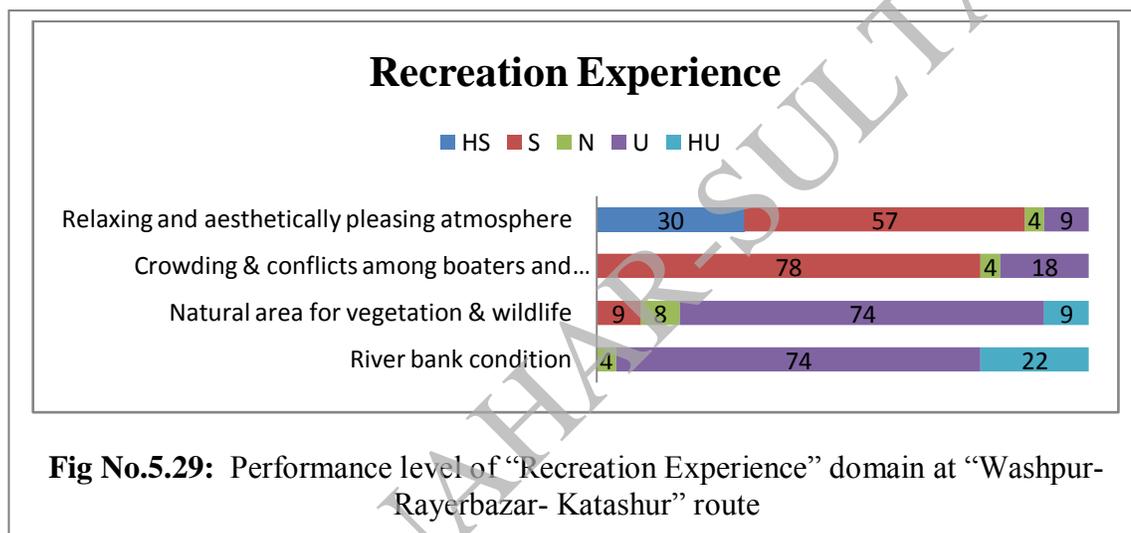
### Information

57% and 52% of visitors are totally unsatisfied with the items 'route definition' and 'modern and well informative'. 39% and 44% of visitors are highly unsatisfied with these two items information domain. This domain is the most unsatisfactory domain among the route visitors of this route.

### Recreation experience

It's relaxing and aesthetically pleasing atmosphere are highly appreciated by the visitors and mainly they come here for only this characteristic. 30% visitors are highly satisfied and 57% of visitors are satisfied with the item 'Relaxing and aesthetically pleasing

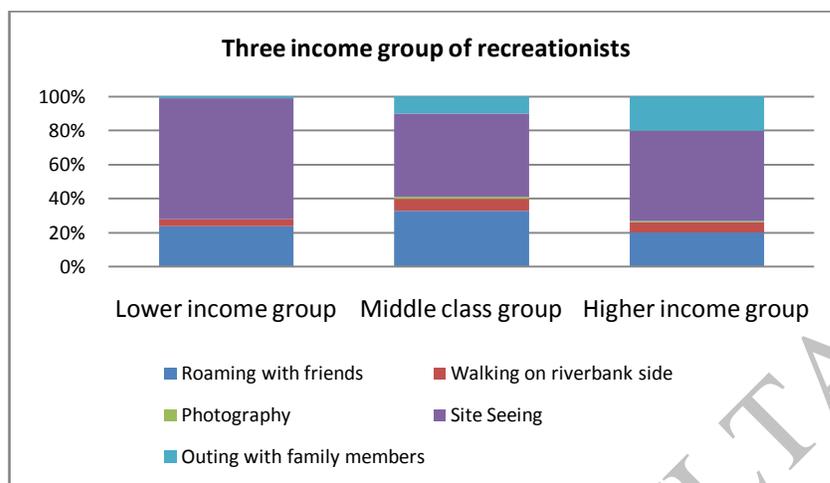
atmosphere’. 78% of visitors are satisfied with ‘Crowding and conflict among boaters and recreationists on shore’. River bank condition is unsatisfactory to all and they identified it as a negative characteristic of this route. 74% of visitors are unsatisfied for both the items ‘Riverbank condition’ and ‘Natural area for vegetation and wild life’. From the above discussion it is found that the items related to natural beauty and atmosphere satisfied visitors the most and create a relish incitement into their mind rather than the facility related items.



### 5.3.2.5 Relationship between demographic characteristics and river use characteristics

#### 5.3.2.5.a Relation between income groups and recreational activities

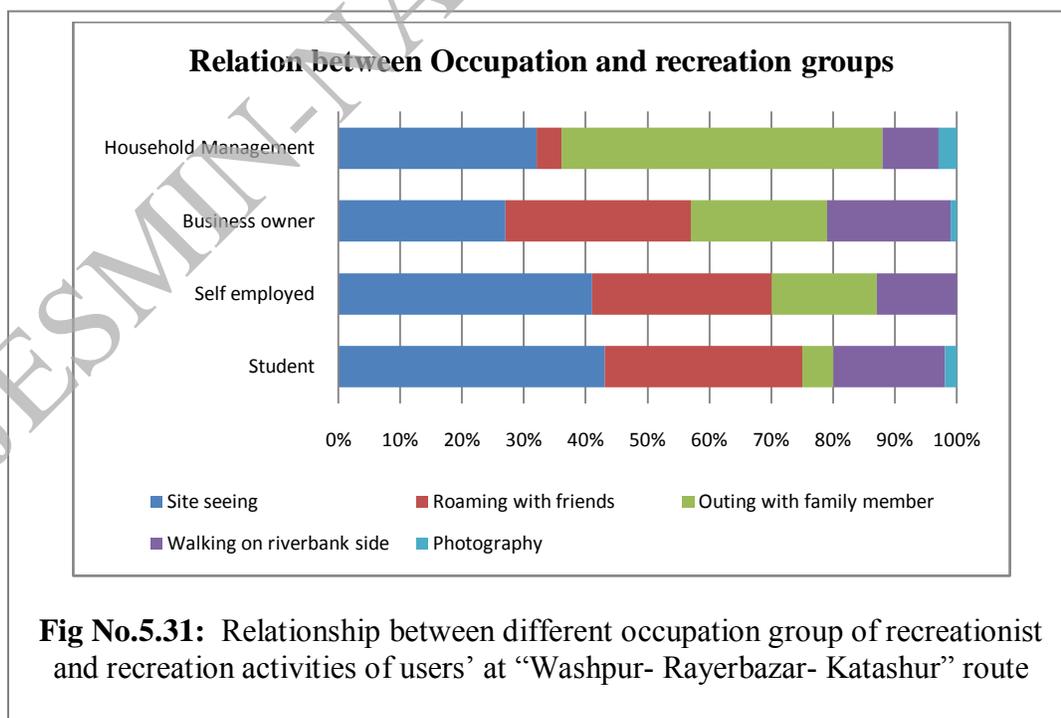
Middle income group of people mainly represent this site; survey has found out that 53% of visitors belong to the middle income group of visitors. 55% of visitors like site seeing, 22% of visitors love to roam with friends and 17% of visitors visit here with family. They also like doing photography (9%) or taking picture of river beauty and 2% of visitors like to walk on river bank. According to preference of recreation activities there is no significant difference among these three income group of visitors. Following figure shows that all three income groups enjoy site seeing here; ‘Roaming with friends’ has got second highest preference and ‘Outing with family’ has got third highest preference by visitors as recreational activities.



**Fig No.5.30:** Relation between income groups and recreation activities of users’ at “Washpur- Rayerbazar- Katashur” route

**5.3.2.5.b Relation between Occupation and recreational activities**

From survey it has been identified that visitors are mainly involved here with site seeing (41%), roaming with friends (39%) and 12% of visitors like to go outing with family here.



**Fig No.5.31:** Relationship between different occupation group of recreationist and recreation activities of users’ at “Washpur- Rayerbazar- Katashur” route

Site seeing and roaming with friends, these two have rated as common and most favorite activities among 'Business owner', 'self employed' and 'Student' groups of visitor. These three groups also like to come here for roaming with friends. 'Household management' group enjoy outing with family and site seeing here most.

Visitors who come here for site seeing and roaming with friends are considered here as one group because these two activities are common for major portion of visitors and people outing with families are considered as another group of visitors and illustration of these groups are given below.

#### Visitors who come here for site seeing and roaming with friends

Visitors who come here with friends or with their beloved ones love to site seeing at river side area or chatting at the spot of Martyred Intellectuals Mausoleum (Buddijibi Monument). Although they love to site seeing here and especially come here for enjoying its refreshing atmosphere, poor water quality, odor of river create a negative collision which directly impact on their satisfaction level of site seeing. Other than site seeing and roaming with friends they want to do different types of recreation activities and their high demand is to reach near to the river so that they could touch river water. This group of visitors is mainly concerned about safety issues because incidence of hijacking by local goons or drug addicted people who reside at nearest slum area of embankment often takes place here.

Trees, greenery and vegetation areas are important items for any recreation area and absence of these element loses the importance of recreation value. Majority of visitors become unsatisfied with the item of river bank condition and natural area for vegetation and wild life, because natural area for vegetation and wild life is absent from the site and encroachment of river has turned river bank conditions vulnerable.

Major portion of visitors wish to do boating here but there exists no private or public authority that have any interest to provide such type of recreation facilities which is disappointing for them. Visitors expect the government will take initiatives to develop this area as an attracted recreation points, at least basic requirement and facilities for

visitors should be included in this site. For enhancement of attractiveness of the route, 45% of visitors want cleaning and maintaining initiatives, 40% of visitors like increased facilities, 8% of visitors want planting seasonal flowers, and 6% of visitors demand for commercial development.

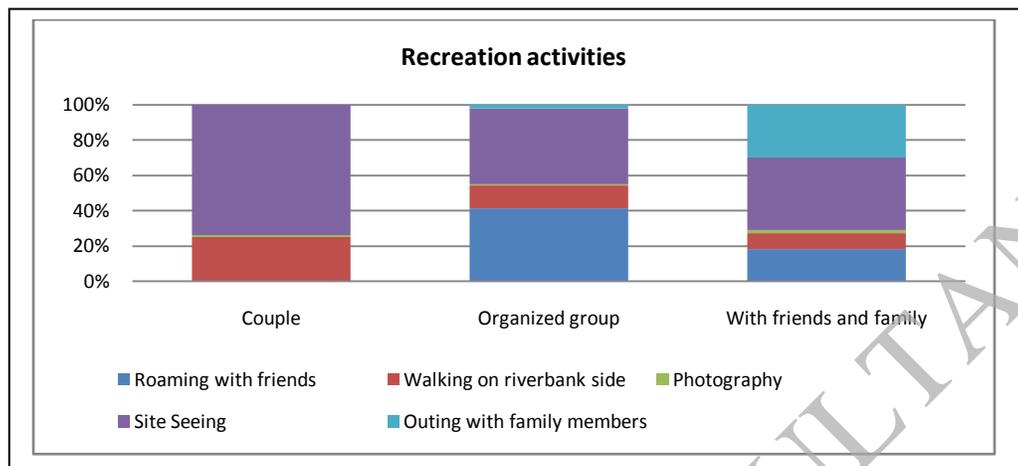
#### Visitors who like to outing with family

This group of visitors likes to come here at morning in weekend and at evening in week days and like to spend a long time here. Their main intention is to visit Martyred Intellectuals Mausoleum and then it's surrounding area, walking along the river side, and taking photograph etc. But they are very concern about safety and security of this site because this route area has a large size of slum where all types of unethical activities are done.

Public equipments like toilet facilities, shade, food corner are absent from this site which are very necessary requirements for this group of visitors. They have said that if this site could be provided with necessary facilities and arrangement of recreation activities kids would love this place more. They also demand for an arrangement that they could reach near the river as they want to spend some time there or do river related activities like boating. Absence of greenery along the river side is an issue for this group of visitors. For enhancement of attractiveness of the route, this group has given priority on increased facilities (43%); 32% of visitors put importance on cleaning and maintaining initiatives, 15% of visitors want planting seasonal flowers, 8% of visitors demand for commercial outlets and 2% of visitors liked natural area for vegetation and wild life.

86% of visitors are unsatisfied with pedestrian link and 67% of visitors are unsatisfied with access roads. 85% of visitors are satisfied with the item integration with other mode of transport. For its natural scenic beauty and attractive atmosphere, 59% of visitors are satisfied and 28% of visitors are highly satisfied with the item 'relaxing and aesthetic pleasing atmosphere'.

### 5.3.2.5.c Organization of visitors' group



**Fig No. 5.32:** Recreation activities performed by different groups of visitors' at "Washpur- Rayerbazar- Katashur" route

People come here as an organized group or couple or with family members and friends. So these different groups of visitors like to do different types of activities here. 59% of visitors come here as couple and 39% of them like to come here with their friend and family. A negligible portion of visitors (2%) come here as an organized group.

For the visitors of 'Couple' group 'site seeing' and 'walking on river bank side' are main attractions to draw them to this route. Organized group like to do 'site seeing' and 'roaming with friends' most and they also prefer 'walking on river bank side' here.

Visitors who come here with friends and family prefer 'Site seeing' and 'outing with family members'. They also prefer to do 'walking on river bank side' and 'roaming with friends'. Photography is common activities for three groups of visitors; although a negligible portion of visitors prefer to do it here as recreation activities.

### 5.3.3 "Demra- Noapara" Route

#### 5.3.3.1 Demographic characteristics of visitors

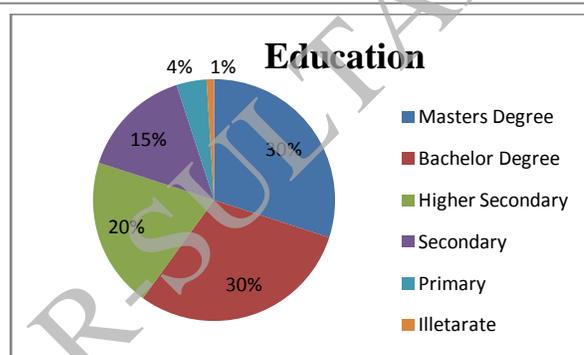
##### Gender and Age

During survey it has been observed that major portion of visitors is male (66%); although difference between male and female visitors are not significant. In some cases

because of high distance from city center female visitors are not always very much interested to come here. Survey has identified that young aged group of visitors; especially age ranging from 20 to 25 years old like to visit here; young people especially young couple come here to enjoy boating and site seeing and older people like to shop at Jamdani Palli.

### Education

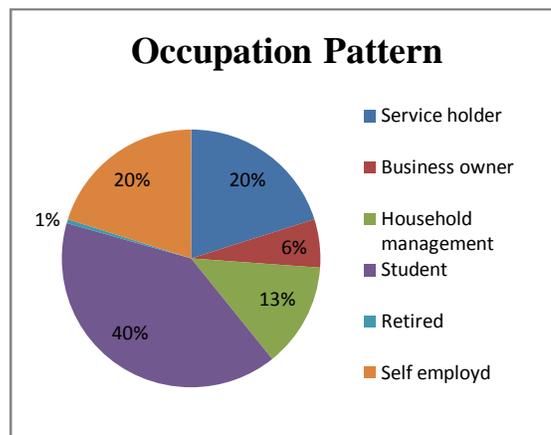
Survey shows that majority of visitors are higher educated; Masters Degree (30%) and Bachelor degree (30%). Illiterate visitors cover 1% of them. 20% and 15% of visitors were studying in higher secondary and secondary level respectively. 4% of them are primary students.



**Fig No. 5.33:** Education level of the users' of "Demra- Noapara" Route

### Occupation pattern

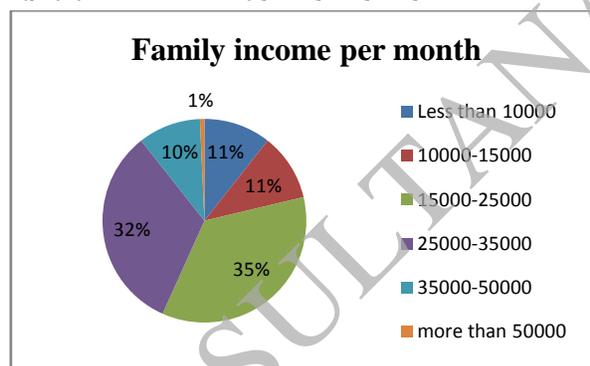
Survey has concluded that 40% of visitors were students; basically they come here to enjoy natural beauty of river and boating or photography. Service holder (20%), self employed person (20%) and people involved in household management (13%) also very much interested to spend their leisure here or like to attend to Jamdani Hat held in Jamdani Palli every Friday. 6% of visitors involved in business; most of them come here for business purpose like buying Jamdani sari for their cloth shop and enjoyment.



**Fig No. 5.34:** Occupation of the users' of "Demra- Noapara" Route

### Family income

Two income group of visitors; income ranging from 15,000 to 25,000 and 25,000 to 35,000 got first and second highest percentage of visitors (35% and 32% respectively). 11% belongs to 10,000 to 15,000 income ranging group. So, middle income group major portion of the total respondents. 11% of visitors for less than 10,000 income ranging group belong to lower income group and 10% belongs to 35,000 to 50,000 income group. So it can be said that all categories of income group like to make a recreation trip here.

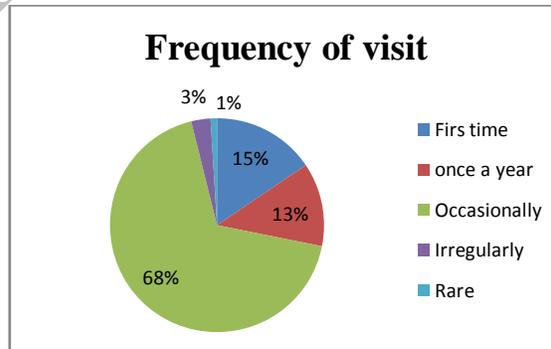


**Fig No. 5.35:** Family Income per month of the users' of "Demra- Noapara" Route

### 5.3.3.2 River use characteristics

#### Visit frequency

68% of visitors said that they come here occasionally, especially for shopping from Jamdani Hat. 15% of them visit here for the first time and also want to come here again. 13% of them come here once a year for visit or shopping purpose. 3% of visitors irregularly come here and 1% of them come here in rare case.



**Fig No. 5.36:** Frequency of visit of the users' of "Demra- Noapara" Route

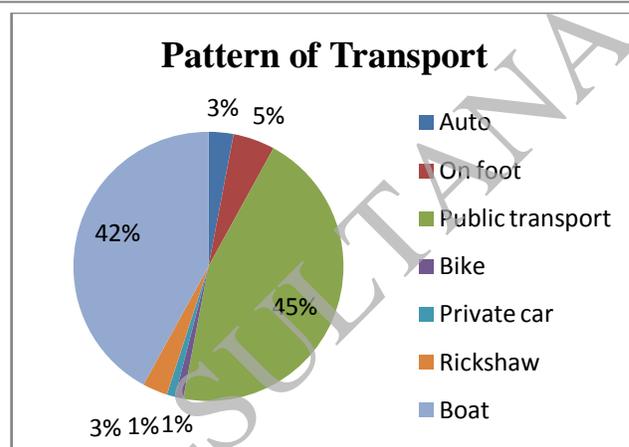
#### Visit time

Visitors come here only in weekend and maximum numbers of people come here to attend Jamdani Hat that is held at "Jamdani Palli" which starts from 4.00 am and end at 8.00 am. Beside this, because of the long commute and large distance from city center, maximum people prefer to come here at morning; 85% of visitors agree with that. 15%

of visitors especially who live in the surrounding areas of this route come here at afternoon. Evening is totally not preferred by visitors as recreation period.

### Transport Patten

Some respondents lived or worked near the site where survey was done (Ruposhi ghat) and they came here on foot or by bike or rickshaw, but others who traveled miles from their homes (city center) usually reached here by public transport or boat or using both type of transportation or private vehicles. After ‘Tarabo Bridge’ has been constructed; usage



**Fig No. 5.37:** Transport Pattern of the users’ of “Demra- Noapara” Route

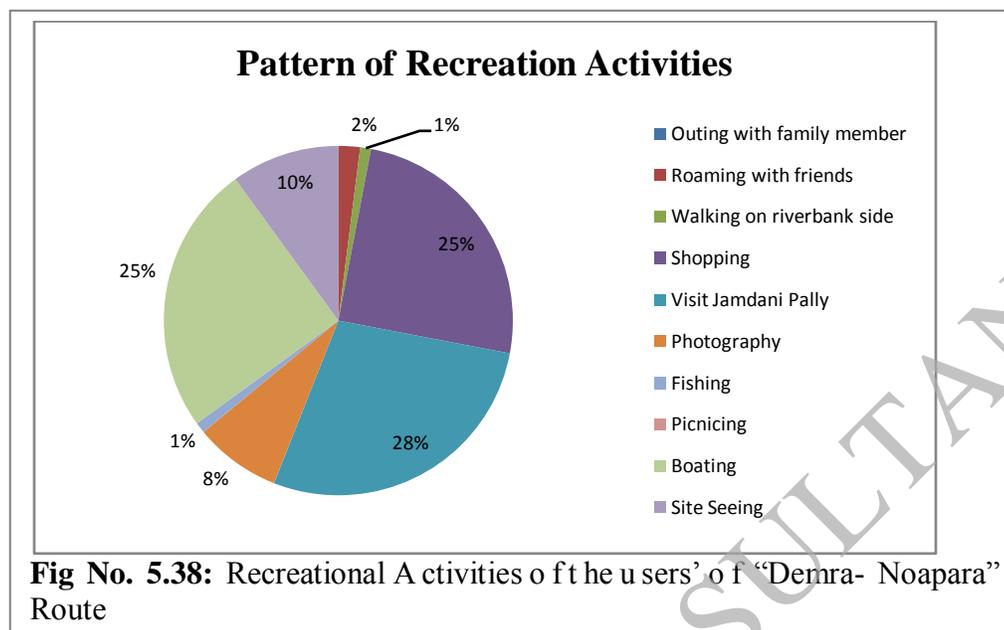
of land transportation has increased, but many people still prefer both water ways and roads to get here. The second “Sitalakhya Bridge” is locally known as “Demra Tarabo Bridge”.

### Importance of river

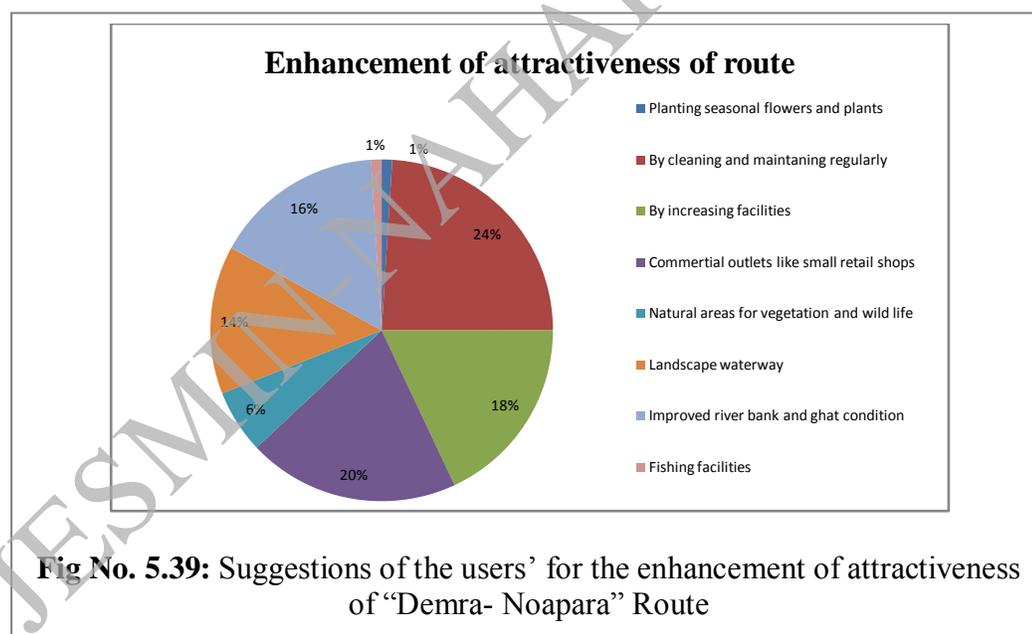
According to 40% of visitors, river is very important for making their recreation trip. For 27% of visitors, river acted as a passive element for their recreation purpose and 33% of them agree with that it is not so much important for their recreation activities.

### Recreation activities

Survey has identified three major groups of recreational users’ –who come for shopping (25%), visit Jamdani Palli (28%) and boating (25%). People also involve here in other type of recreation activities like-site seeing (10%), walking on riverbank side (1%), roaming with friends (2%), photography (8%) and fishing (1%). For outing with family member or picnic this place is not suitable because this site is totally undeveloped for recreation purpose but has great potentialities to flourish as a recreation attraction point.



#### Enhancement of attractiveness of the route



People have not showed any interest to provide some suggestion against those problems they felt but they started answering with full spirit when they were provided with some option or closed ended questions. Most of the respondent agreed with the fact that the necessity of enhancing the attractiveness of the route. 1% of them suggested about provision of planting seasonal flowers and plants, 24% of them supported about regular

cleaning and maintenance initiatives, 18% of them suggested taking initiatives about increased facilities to the site and 20% and 6% of them recommended respectively about commercial outlets and reserved area for vegetation and wildlife along the route. 14% of them went with landscape water way, 16% suggested to improve the condition of the water way and 14% supported including fishing facilities for recreational users?

### **Quality of river for recreation**

According to 85% respondents, over the last several years rivers in and around Dhaka have gotten worst for recreation purpose and 7% respondents had answered that river condition remained same as past condition. 5% of respondent opined that river condition has gotten better than before for recreation purpose and 2% of them had no idea about this statement. Other attractive water way recreation place for visitors' are- Ashulia, Beribadh, Gulshan Lake, Dhanmondi Lake, and Crescent Lake.

### **5.3.3.3 Likings, disliking, Problems and Suggestions**

#### **Likings disliking**

The respondents like 'Jamdani Hat' the most where they can buy Shares at reasonable price, atmosphere of 'Jamdani Palli', scenic beauty of river and the surrounding areas. Rural environment of this route also attract them.

Poor water quality and odor, Demra slum, river bank pollution and especially poor ghat condition and absence of fixed ghat all are identified as negative characteristics of this route. Visitors don't like the monotonous type of country boat and its existing conditions. Boating is their preferred recreation activities here but poor vessel type and condition often discourages them. Existing vessels are all country boat type which has no shade; so they have to come here for boating at morning or evening. During wet season they fall into awkward situation. Visitors who come here with beloved ones and want some privacy, due to these problems they become uninterested and sometimes return without completing the journey.

#### **Identified problems by the users'**

- According to them hijacking by local goons is the common problem for visitors here and it has no solution because this site is mainly a rural area with no police

protection and if visitors complain about it at concerned police stations they show unwillingness to take such types of cases.

- According to visitors especially who like to boating here water accident is identified as a problem because this route is used by passenger carrying boats and sand carrying vehicles (Bolgates).
- Water pollution by spilling oil from mechanized boat, dumping human waste from boats and by villagers, dumping domestic waste into river and rotten water hyacinth.
- Absence of BIWTA provided landing station and scattered distribution of ghats.
- Poor ghat condition and absence of fixed ghat identified as an important problem here.
- Poor vessel quality
- Due of lack of information many visitors sometime miss the 'Jamdani Hat'
- According to female visitors most common problem is absence of basic requirements, especially like toilet facilities. Because of lack of safety in this area they are scared to come here or visit for a long time. Female visitors are not comfortable to come here without male partners or relatives.

### **Suggestions**

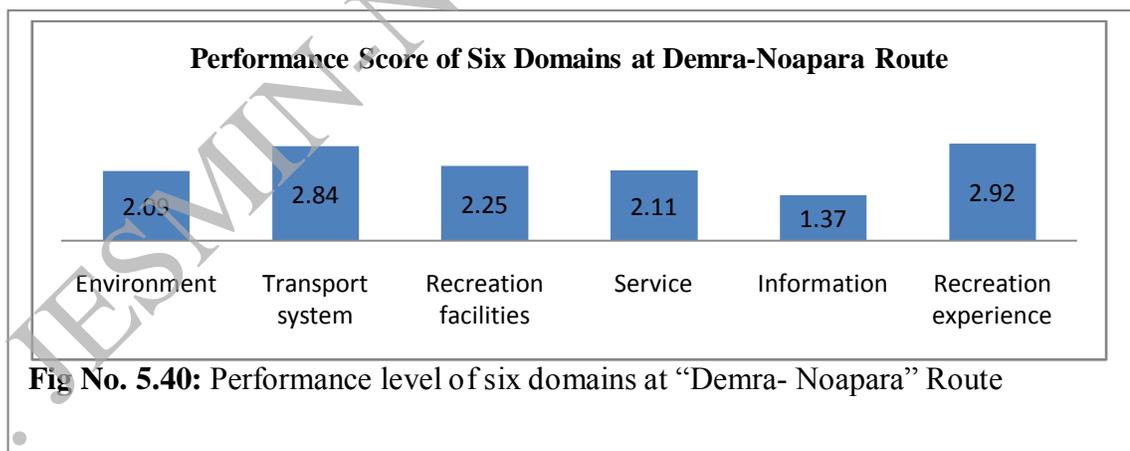
They suggested that basic requirements for visitors' like toilet facilities, retail outlets etc. should be provided here. The visitors also wanted food corner and sitting arrangements along the river side. The basic prerequisites should be improved for the development of the ghat, as boating is common activities for both passenger and recreational users.

According to the visitors safety issue should be considered as high priority. Although they have high desire to visit 'Jamdani Palli', because of such incidence they don't feel safe to come here again. They also want proper development of this site a true recreational attraction point and hope that safety issues would automatically be solved then.

Safety and security of visitors should be taken into attention by concerned authority. Visitors suggested and demanded for a responsible authority who will take charge of this route to establish it as an attractive recreation point. Authority should take initiatives to flourish 'Jamdani palli' as an attractive tourism spot and will take initiatives for wider range of publicity and advertisement through media.

#### 5.3.3.4. Performance level analysis of different domains at "Demra- Noapara" Route

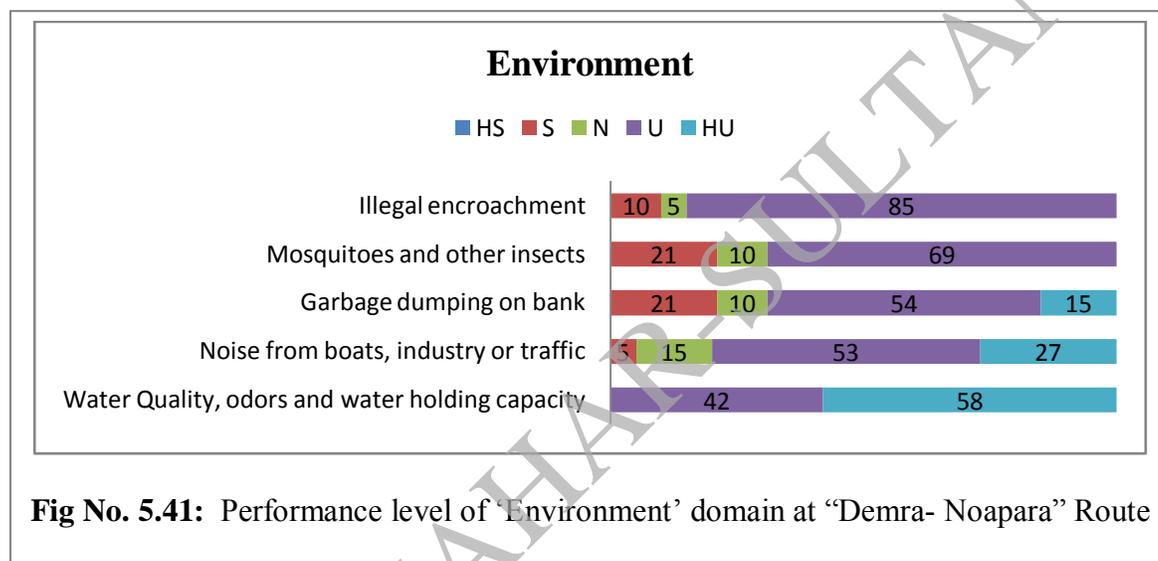
Recreation experience domain showed the highest scores (2.92) and 'Information' domain showed lowest satisfaction levels and its mean value is 1.37. This site is totally undeveloped and especially for recreation purpose this site is not able to provide its basic requirements. But this area has high potentialities to explore as attractive recreation site because from survey it has been identified that without any facilities this site already has a great number of visitors. For this reason items under each domain contain very low satisfaction scores and except few items all of them expressed as unsatisfactory or highly unsatisfactory item.



#### Environment

54% of visitors are unsatisfied and 15% of visitors are highly unsatisfied with the item 'garbage dumping on the bank' because villagers living a long river side always dumping household waste and human waste on river bank. Household garbage

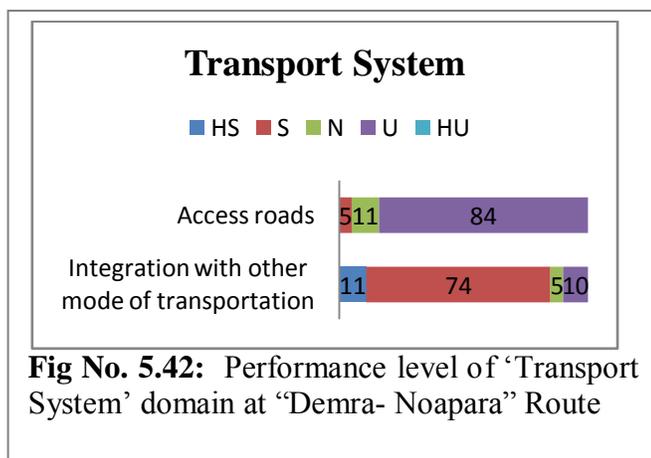
dumping on river pollutes water and it produces mosquitoes and other insects. Visitors are unsatisfied with the item 'Mosquitoes and other insects' under this domain. 69% of visitors' have rated them as unsatisfactory. Because of illegal encroachment of river side areas, scenic beauty of river is being destroyed and that's why 85% of visitors are unsatisfied with the item 'Illegal encroachment'.



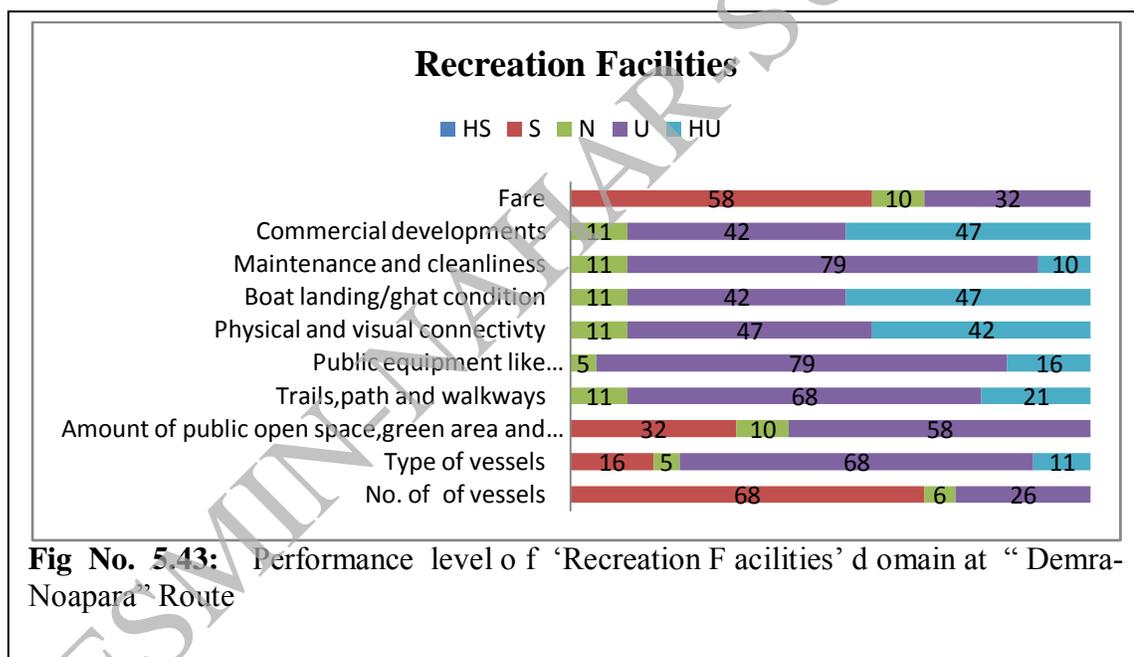
42% of visitors are unsatisfied and 58% of visitors are highly unsatisfied with the items 'water quality, water odor and water holding capacity'. 53% of visitors has rated 'noise from boats, industries and traffic' item as unsatisfactory and 27% of visitors are highly unsatisfied with the item because of a great number of bolgates are moving in this route and make noises.

### Transport system

Because of easy access by both road way and water way 74% of visitors are satisfied and 11% of visitors are highly satisfied with the item 'Integration with other mode of transport' and young people wants to come here frequently. Access road is fully unsatisfied to 84% of visitors.



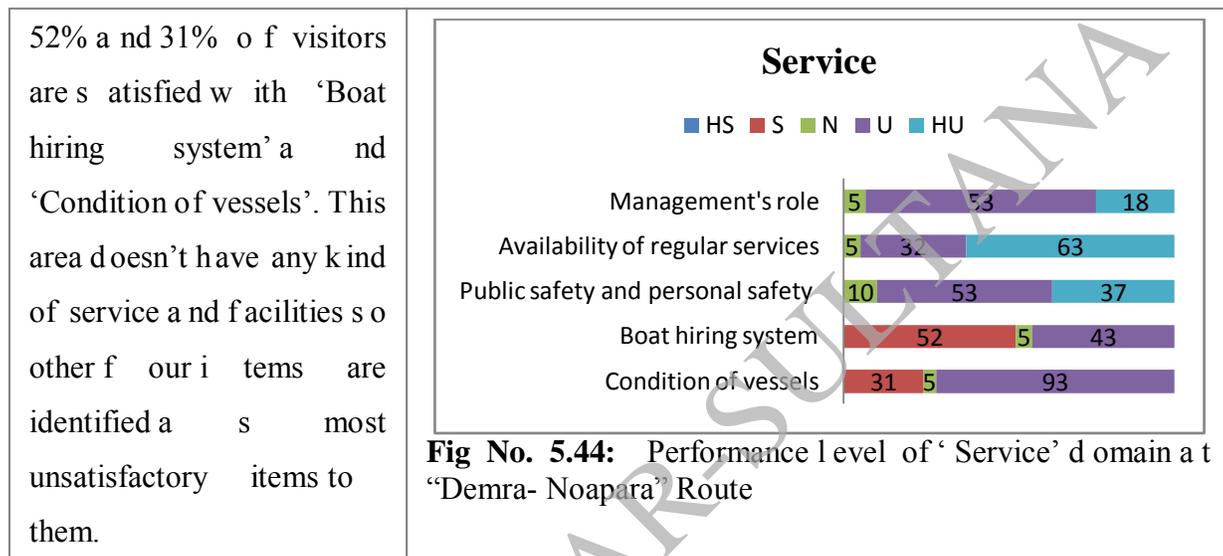
### Recreation Facilities



As this place is not established as traditional recreation spot, that's why satisfaction level of visitors is low and recreation facilities are completely absent here. The items 'Fare' and 'Number of vessels' have got mentionable satisfaction scores. Because of availability of boat and its reasonable fare system 68% and 58% of visitors are satisfied with 'No of vessels' and 'fare' respectively. But other items are totally absent from this study area so their satisfaction level exists between neutral levels to highly unsatisfactory level on Likert scale. 'Type of vessels' (16%) and 'amount of public

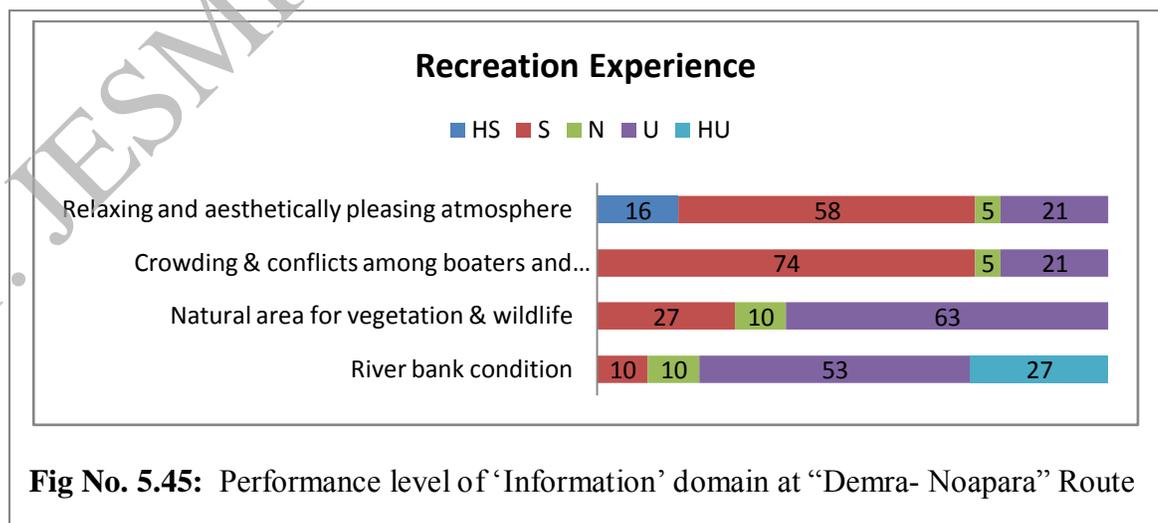
open space, green area and landscaping’ (32%) somehow satisfied them but other six items totally has got unsatisfactory.

**Service**



**Recreation experience**

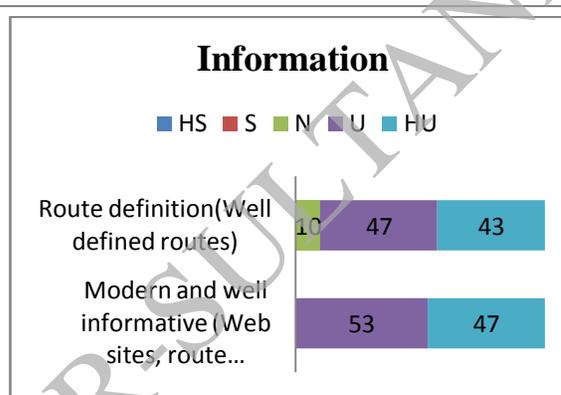
According to 58 % and 16% of visitors, ‘Relaxing and aesthetically pleasing atmosphere’ is satisfactory and highly satisfactory item respectively. Only because of relaxing and aesthetic beauty of the site visitors intend to visit here again and again. 74% of visitors satisfied with the item ‘crowding and conflict among boaters and recreationist on shore’.



63% and 53% of visitors are unsatisfied with the item ‘Natural area for vegetation and wildlife’ and ‘River bank condition’ because of absence of natural area for vegetation and wild life here. Although river bank condition is vulnerable and poor, 10% visitors define it as satisfactory item. This domain got the highest satisfaction score.

**Information**

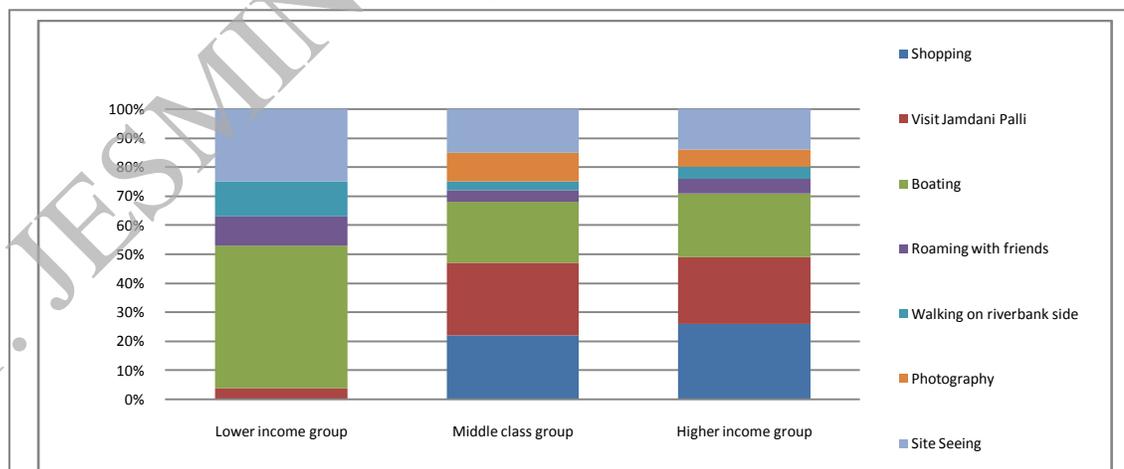
Due to lack of information many of the visitors who come here for the first time sometime miss the ‘Jamdani Hat’ Because of absence of this domain 47% and 43 % of visitors are unsatisfied and highly unsatisfied with the item ‘Route definition’ and 53% and 47% of visitors are unsatisfied and highly unsatisfied with the item ‘Modern and well informative’



**Fig No. 5.46:** Performance level of ‘Information’ domain at “Demra- Noapara” Route

**5.3.3.5 Relationship between demographic characteristics and river use characteristics**

**5.3.3.5.a Relation between income groups and recreation activities**

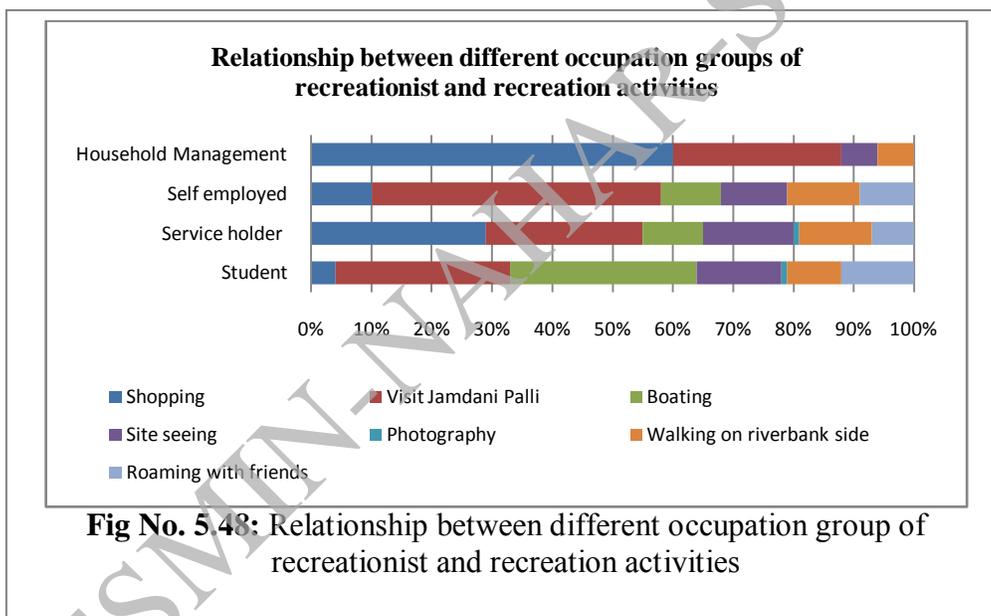


**Fig No. 5.47:** Recreation activities of three income groups of visitors

Middle income group of visitors are most prominent group among all other income groups of visitors here. Most favorite recreation activities are visiting ‘Jamdani Palli’ (27%), shopping (25%), boating (23%), site seeing (10%), photography (8%) and roaming with friends (4%) of this group.

From the above fig it has been identified that boating and site seeing are most preferred recreation activities of lower income group of visitors. Middle income group of visitors like to do visitors hopping at jamdani palli and boating here. Shopping is most preferable activities for higher income group of visitors but they also like to do visit and boating here.

### 5.3.3.5.b Relationship between different occupation groups and recreation Activities



‘Jamdani Hat’ is the key attraction point of this route; so the main objective of visitors is to come here with their friends or family or beloved ones to spend some memorable time with them and does some recreational activities. Household management group mainly enjoys shopping at ‘Jamdani Palli’ and ‘Self employed’ group enjoys only visit here as recreation activities. ‘Service holder’ group equally prefers visit and shopping at ‘Jamdani Palli’. Boating and visit in ‘Jamdani Palli’ are two most preferable activities of student group.

Survey has identified that visitors mainly come to this route to enjoy shopping (25%), visit 'Jamdani Palli' (28%) and boating (25%). So their likings and dislikes about this route, problems, suggestions, main attraction are illustrated below.

#### Visitors who like to shop here

Main aim of this group of visitors is shopping at 'Jamdani Hat' and for this reason they have to come to the Hat at 4.00 am when Hat starts and ends at 8.00 am on Friday. But absence of well informative system about Hat and its schedule, some of the visitors come here after the Hat has already over and they fail to shop from the Hat. After Hat is over, they like to visit its surrounding area or villages. But safety issue identified as most common problem to a great portion of the visitors. From survey it has been realized that, goons from local areas are mainly involved with hijacking; as this area has no police protection, local goons get plenty chances to seize money or any valuable things from visitors.

This area has no basic facilities such as sitting arrangements, food or drink corners. Environment of river is most detest feature for them, many of them prefer water way for travel but poor water quality often discourages them to have a trip by river. As a result visitors use road way rather than water way.

This group of visitors provides emphasis mostly on cleaning and maintenance initiatives (35%) as an option for enhancing attractiveness of the route. 23% of visitors has demanded for improved river bank and ghat condition, 19% of them want to increase facilities in this site and 17% of them suggest for establishing commercial development.

#### Visitors who come here for visit Jamdani palli

For this group main attraction point is 'Jamdani Palli'. Occasionally they come here with friends or family members. This group of visitors mainly comes here at morning after the Hat is over because they only come here for site seeing and visit 'Jamdani

Palli' and the surrounding area. Open and refreshing atmosphere of this route is also attracting visitors most.

According to them water pollution is identified as a problem of this site. Hijacking by local goons is a common issue for visitors. Due to this reason many visitors feel insecure about visiting this place again. Poor ghat condition, deprived river bank condition all act as negative characteristics of this route.

#### Visitors who come here for Boating

Couples mainly come here for boating and arrive here in the morning. For this group of visitors river is the most important element for their recreational purpose. This group of visitors has mentioned some specific problems which bother them most when they come for recreation.

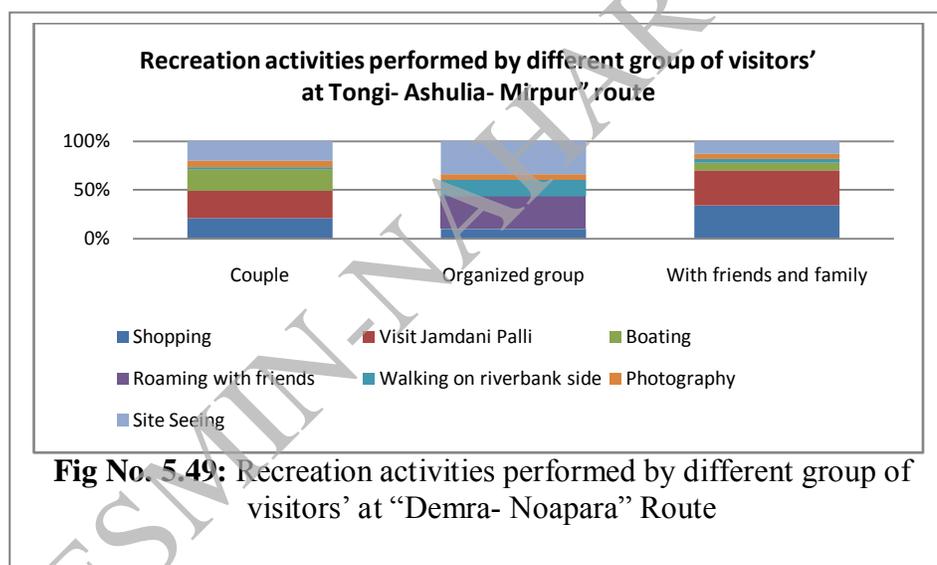
- Absence of BIWTA provided landing station and scattered distribution of ghat,
- Meager ghat condition and absence of fixed ghat,
- Poor vessel condition is a problematic issue for boating as recreational activity here.
- Type of vessels is monotonous and has no variation. Only country boats are found here which have no shades. So during wet season it is risky for boating here.
- According to visitors 'water quality, water odor and water holding capacity' are totally unsatisfactory. Because of poor quality of water this group of visitors cannot enjoy boating and after a while they turn back from river. 54% of visitors are unsatisfied and 46 % of them are highly unsatisfied with that.

This group of visitors provides equal importance on cleaning and maintenance initiatives (30%) and commercial development (30%) as options for enhancement of attractiveness of the route. 26% of visitors vote for increased facilities and 7% of them want development and improvement of river bank and ghat condition. According to all groups of visitors, over the last several years rivers in and around Dhaka have gotten

worse for recreation purpose. They suggested that governments should take initiatives immediately and this site should function under any government or organization like Porjotan Corporation or any private organization.

### 5.3.3.5.c Organization of visitors' group

People come here as an organized group (16%) or couple (79%) or with family member and friends (5%). Visitors who come here as couples visit 'Jamdani Palli' are their main attraction at this route. They also like to do boating here but poor water quality of river disappoints them very much. Visitors come here as an organized group mostly prefers to do site seeing and roaming with friends. Visit 'Jamdani Palli' and shopping at 'Jamdani Hat' is the most favored recreation activities of visitors who come here with friend and family.



## 5.4 Analysis of the Overall Sample

This section presents highlights of the overall sample. A total of 180 respondents were surveyed; 100 in 'Tongi- Ashulia- Mirpur' route, 50 in 'Washpur- Rayerbazar- Katashur' route and 30 in 'Demra- Noapara' route. Among the 180 samples, 100 (56%) samples were surveyed on weekends and 80 (44%) samples were surveyed on weekdays.

### 5.4.1 Demographics

**Table 5.1:** Demographic characteristics of overall recreational users at a glance:

Demographic characteristics by area (% reporting)			
	Tongi-Ashulia-Mirpur route (Sample size-100)	Washpur-Rayerbazar- Katashur (Sample size-50)	Demra- Noapara (Sample size-30)
<b>Gender</b>			
Male	78	78	66
Female	22	22	34
<b>Mean Age group</b>	Age between 20 to 25	Age between 20 to 25	Age between 20 to 25
<b>Education</b>			
M. degree	2	22	30
B.degree	79	26	30
Higher secondary	9	17	20
Secondary	6	26	15
Primary	3	9	4
Illiterate	1		1
<b>Occupation</b>			
Service holder	2	2	20
Business owner	1	17	6
Household management	5	9	13
Student	81	48	40
Retired	1	1	1
Unemployed	1	-	-
Self employed	9	23	20
other	-		-
<b>Family income</b>			
Less than 10000	3	4	11
10000-15000	25	23	11
15000-25000	49	30	35
25000-35000	5	17	32
35000-50000	11	22	10
More than 50000	7	4	1

For the three groups of visitors demographic characteristics are more or less same. The majority of visitors interviewed for this study were males; almost two-thirds (74%). The mean age of study respondents was ranging between 20 to 25 years old, that means young group of visitors represent these sites and almost two third (68%) reported that their income is in between 15,000-25,000 /- taka. This group of respondents was highly educated, 45% reporting that they completed a bachelor's degree or studying at this level and 18% of visitors completed master's degree. 15% of the respondents indicated

that they had a high school degree or less. More than half of the visitors are student. About half of the interviews (52.8%) took place during 8:00 am--12:00 pm shift, and the remaining ones during 3:00pm--6:00 pm shift.

#### **5.4.2 River use characteristics**

During survey, recreational users were asked some question about their river use characteristics like what activities they engage in during their visit, how long they plan to stay on site, how often they visit, how they get there, and what size their group is. Highlights of those results are given below.

##### **Activities**

Activities varied considerably by the area and available facilities affected this to some extent. Respondents of “Tongi-Ashulia-Mirpur” route were involved in ‘outing with family member’, ‘take food in the restaurant’, ‘long driving’, ‘roaming with friends’, ‘walking on riverbank side’, ‘go to park, zoo, mela’, photography, fishing, picnicking, boating, and ‘site seeing’. This site mainly contains three group of recreational users- site seeing group, boating group, and roaming with friends group.

Recreational users of “Washpur- Rayerbazar- Katashur” route were involved with site seeing, roaming with friends, outing with family member, walking on riverbank side and photography. Boating is the most popular activity in “Tongi- Ashulia- Mirpur” route and “Demra- Noapara” route. Though it is most preferred by the visitors of “Washpur- Rayerbazar- Katashur” route, but the absence of adequate boating facilities and poor arrangements have resulted in very disappointed customers. During the wet season some boating activities are held here by private initiatives. This site is consisted of mainly two groups of recreational users- site seeing groups who like to visit with friends and family member here.

Respondents of “Demra- Noapara” route were mainly involved with visiting ‘JamdaniPalli’, and go for shopping and boating. People also like site seeing, walking on riverbank side, roaming with friends, photography, and fishing. This site mainly contains three group of recreational users- Jamdani Palli visitors, shopping and boating group. So, most common activities done by the respondents of these three routes are -

site seeing, outing with family members, roaming with friends, walking on riverbank side and photography.

**Table. 5.2:** Major Activities reported by overall respondents.

<b>Activities reported by respondent</b>		
<b>Tongi-Ashulia-Mirpur route</b>	<b>Washpur-Rayerbazar-Katashur route</b>	<b>Demra - Noapara route</b>
1. Outing With Family Member 2. Take Food in the Restaurant 3. Long Driving, 4. Walking on River bank Side, 5. Go to Park, Zoo, Mela, 6. Photography, 7. Fishing, 8. Picnicking, 9. Boating, 10. Site Seeing 11. Roaming With Friends	1. Site seeing, 2. Roaming with friends , 3. Outing with family member, 4. Walking on riverbank side 5. Photography.	1. Visit Jamdani Palli 2. Shopping 3. Boating 4. Walking On Riverbank Side 5. Roaming With Friends, 6. Photography 7. Fishing 8. Site Seeing

### **Transportation, visit length and frequency**

Transportation type to the site, their visit length and frequency of visiting the river - all these aspects are more or less same for three groups of visitors. Respondents traveled to the route by a variety of means, stayed from a half hour to four hours, came here as couples or in groups and had come occasionally. Usage pattern highlights include:

- Visit lengths varied considerably by area and activity; visits of one hour or more were most common overall. Visits of less than an hour are common in 'Washpur- Rayerbazar-Katashur' route. The longest visit reported in the 'Tongi-Ashulia-Mirpur' route was about four hours.
- One third of the respondents were occasional visitors. Daily visits were absent in these three routes.
- Most of the visitors lived at city center and traveled over four and a half miles to reach the area. Respondents varied greatly in their transportation to the sites. To visit the route of 'Tongi- Ashulia- Mirpur', recreational users prefer public transport; to visit the route of 'Washpur- Rayerbazar- Katashur', recreational

users prefer auto and public transportations; and to visit the site of ‘Demra – Noapara’, recreational users prefer public transport and boat.

- Most of the recreational users who come here are young couples; they love to visit here with their beloved ones.
- Visitors of these three groups mostly arrive here at morning; recreational users found only in weekend at ‘Demra- Noapara’ route. But other two routes generate visitors at both weekdays and weekends.

**Table 5.3:** River use characteristics of overall recreational users at a glance

<b>River use characteristics by area (% reporting)</b>			
<b>Transportation to the site</b>	<b>Tongi-Ashulia-Mirpur route(Sample size-100)</b>	<b>Washpur-Rayerbazar-Katashur(Sample size-50)</b>	<b>Demra- Noapara (Sample size-30)</b>
Auto	10	39	3
Bike	16	2	1
On foot	-	2	5
Public transport	40	35	45
Private car	20	15	1
Rickshaw	14	7	3
Boat	-	-	42
<b>Distance traveled</b>			
<b>Visit length</b>			
30 minute	-	5	-
1 hr	20	48	20
2 hr	45	36	55
3 hr and above	35	11	25
<b>Visit frequency</b>			
First time	20	48	15
Once a year	9	-	13
Occasionally	65	39	68
Nearly every week	2	-	3
Irregularly	3	4	1
Rare	1	9	-
Nearly every day	-	-	-
<b>Number of people come with respondent</b>			
One	78	65	41
More than one	22	35	59

### 5.4.3 Perception of the river

Open-ended questions were asked to the recreational users concerning what they liked and disliked about the route where they were interviewed. Respondents were also asked

closed-ended questions about the importance of the river to their recreational activities enjoyment and about their perceptions of problems such as water quality interfering with their use and enjoyment of the river. Questions about river in general were used to assess what they thought most needed changing to improve the rivers for recreation, and whether they felt river recreational quality had improved, stayed the same or gotten worse in the past few years. Highlights from the sample include:

- The majority of the respondents indicated that the river was “very important” for their enjoyment. River was particularly important to the respondents of the route of ‘ Tongi-Ashulia- Mirpur’ but for the visitors who gather at ‘ Washpur-Rayerbazar- Katashur’ route, it was somewhat important.
- The visitors like most the scenic beauty of river, it’s quite a nice calm environment, peacefulness, refreshing atmosphere and other nature-related features etc.
- When asked what they did not like about the river, 55% respondents said “nothing”. Others who did express a dislike cited issues like water pollution, odor, poor facilities and service, safety etc. Water pollution, odor and poor water quality was mentioned the most in all three routes. Poor facilities also were mentioned as a problem in all those areas.
- Water quality was the most-cited problems that might interfere with the use and enjoyment of the site; they were mentioned by entire sample group. Water quality was rated more of a problem in the ‘ Tongi-Ashulia- Mirpur’ route and ‘Demra- Noapara’ route. Waste dumping was rated a problem by recreational users of ‘ Demra- Noapara’ route. Deprived river bank condition was also considered as a problem by the visitors of ‘ Washpur- Rayerbazar-Katashur’ and ‘Demra- Noapara’ route.
- Respondents wanted clean water of river. When asked what changes were needed to improve the river recreation, 39% said to take cleaning and maintaining initiatives, 31% said by increasing facilities. Commercial outlets and river bank-related improvements were also mentioned frequently.

	Sample size	Gotten better	Gotten worse	Remain same	Not sure
<b>Tongi-Ashulia-Mirpur route</b>	100	13	44	3	40
<b>Washpur - Rayerbazar-Katashur route</b>	50	2	77		21
<b>Demra- Noapara route</b>	30	5	86	7	2

#### 5.4.4 Importance of river use

The river was very important to most of the visitors; few rated the river as somewhat important to their recreational enjoyment. The importance of the river was related with river access. Where access was greatest, the significance of the river was highest to the recreational users there. This discussion is based on several survey items about the river at the interview site, including ratings of the river's importance and of some specific problem areas, the likes and dislikes mentioned, and comments about desired changes for rivers.

**Table 5.5:** Importance of river for recreational enjoyment by area

	Very important	Somewhat important	Not important and detrimental	Sample size
<b>Tongi-Ashulia-Mirpur route</b>	91 (91%)	9 (9%)	-	100
<b>Washpur-Rayerbazar-Katashur route</b>	9 (18%)	30 (60%)	11 (22%)	50
<b>Demra- Noapara route</b>	17 (57%)	8 (27%)	5 (16%)	30
<b>Total</b>	117 (65%)	47 (26%)	16 (9%)	180

When asked “how important do you feel the river here is to the enjoyment of your recreation activities today (very important, somewhat important, not important, or detrimental) the majority of the respondents, (65%) said ‘very important’. While most of the respondents in ‘Washpur- Rayerbazar- Katashur’ route and ‘Demra- Noapara’ route reported river is somewhat important for their recreation. Water-based activity groups like boaters were most likely to rate the river very important and river was also important to walkers and who come here for site seeing or for roaming with friends. The

river was rated very important to more than 50% of the respondents in each activity group.

**Table 5.6:** Importance of river for recreational enjoyment by activities

<b>Importance of river for recreational enjoyment by activities (% reporting)</b>			
	<b>Very important</b>	<b>Somewhat important</b>	<b>Not important or detrimental</b>
Outing with family member	64	36	
Take food in the restaurant	92	8	
long driving, roaming with friends	94	6	
roaming with friends	37	40	23
Walking on riverbank side,	83	17	
Go to park, zoo, mela,	83	10	7
Photography,	75	25	
Fishing,	50	50	
Picnicking,	72	15	13
Boating,	98	2	
Site seeing	74	20	6
visit Jamdani Palli	13	37	50
Shopping	14	43	43

#### 5.4.5 Water quality

**Table 5.7:** Perception of water quality deterioration, by area

<b>Perception of water quality deterioration, by area (% reporting)</b>							
	Sample size	*WQ mentioned by respondents	*WQ rated a problem	Dumping rated a problem	Water odor rated a problem	Want improved water quality	Overall WQ deterioration index
<b>Tongi-Ashulia-Mirpur route</b>	100	76	76	44	62	70	66
<b>Washpur-Rayerbazar-Katashur route</b>	50	85	85	69	84	82	81
<b>Demra-Noapara route</b>	30	88	88	82	82	85	85

\*WQ=Water Quality

Water quality is a major issue to the recreational users who were interviewed. 95% of visitors mentioned that water quality of river had gotten worse. Water quality and dumping garbage in the river and along the banks were very important issues to many people interviewed in every area. Water quality perception is differing by demographic group. Respondents, especially young group of visitors not considered water quality a serious problem than older age groups.

#### 5.4.6 Facility and development issue

Facilities were important to the respondents but reality is facilities and developments are totally or partially absent in these three routes. Ashulia landing station has some facilities like boating facilities, small food corner. Except 'Tongi- Ashulia- Mirpur route', other two routes are under developed and unimproved for recreation purpose.

#### 5.4.7 Crime and safety

**Table 5.8:** Safety related issue by area

Safety related issue (% reporting)				
	Sample size	Hijacking/ vandalism	Personal safety a problem	Annoying attitude of drug addicted people or hijra
<b>Tongi-Ashulia-Mirpur route</b>	100	25	22	48
<b>Washpur-Rayerbazar-Katashur route</b>	50	20	45	44
<b>Demra- Noapara route</b>	30	77	55	

Concerns about crime and safety issues could affect the recreational use of the river corridors. Hijacking, vandalism are mentioned as major problems at 'Demra- Noapara' route most; these are also identified as emerging problems at 'Washpur- Rayerbazar-Katashur' because of the large size slum area located along the embankment where unsocial activities have always been taken place. Safety is also an important issue for the site of 'Tongi- Ashulia- Mirpur' route but due to hesitation they did not respond properly.

#### 5.4.8 Natural area and scenic quality

The opportunity to experience nature was important to all respondents, and scenic qualities were also important to them. These qualities were most often mentioned as the most attractive attribute about the interview site. Only because of scenic beauty of those site respondents gather there in a great numbers and this is an important element of these sites for attracting huge amount of visitors here. But lack of greenery along the river was rated a problem by at least two quarter of the respondents everywhere and 55% rated lack of space for vegetation and wildlife a problem and they have high demand to have this type of initiative at these routes corridors.

**Table 5.9:** Nature related issue by area

Nature related issue (% reporting)					
	Sample size	Like scenic quality	Like natural area	Lack of greenery and trees a problem	Suggested improved natural area
<b>Tongi-Ashulia-Mirpur route</b>	100	94	77	68	46
<b>Washpur-Rayerbazar-Katashur route</b>	50	90	70	65	51
<b>Demra- Noapara route</b>	30	90	57	72	55

**Table 5.10:** Recommendation of recreational users for enhancement of attractiveness of the route

Recommendation for enhancement of attractiveness of the route(% reporting)									
	Sample size	Planting seasonal flower and plant	By cleaning and maintaining regularly	By increasing facilities	Commercial outlets like small retail shops	Natural area for vegetation and wild life	Landscape water way	Improved river bank and ghat condition	Fishing facilities
<b>Tongi-Ashulia-Mirpur route</b>	100	5	40	50	4	1			
<b>Washpur-Rayerbazar-Katashur route</b>	50	15	55	27	2	1			
<b>Demra- Noapara route</b>	30	1	24	18	20	6	14	16	1

**Table 5.11:** Perception of river recreation at a glance

Item	Perception of river (% reporting)		
	Tongi-Ashulia-Mirpur route(Sample size 100)	Washpur-Rayerbazar-Katashur(Sample size 50)	Demra –Noapara (Sample size 30)
<b>Importance of river for enjoyment</b>			
Very important	91	18	57
Somewhat important	9	60	27
Not important and detrimental		22	16
<b>Most liked attribute</b>			
Scenic quality	90	82	90
Refreshing atmosphere	90	77	88
Peacefulness	89	65	72
<b>Most disliked attribute</b>			
Water quality and odor	71	90	94
Ghat condition	65	88	86
Limited or absence of trees and greenery	77	55	52
<b>Perceived problem area</b>			
Water pollution	95	96	89
Riverbank condition	55	90	76
Absence of basic facilities	85	78	72
Safety problem	42	75	88
<b>Desired changes</b>			
Increase recreation facilities	80	82	75
Various type of activities	51	56	35
Government initiatives to take the area under Porjoton corporation or other private organization	65	70	68
Improved water quality	80	86	86

**Table 5.12:** Suggestion of three groups of visitors

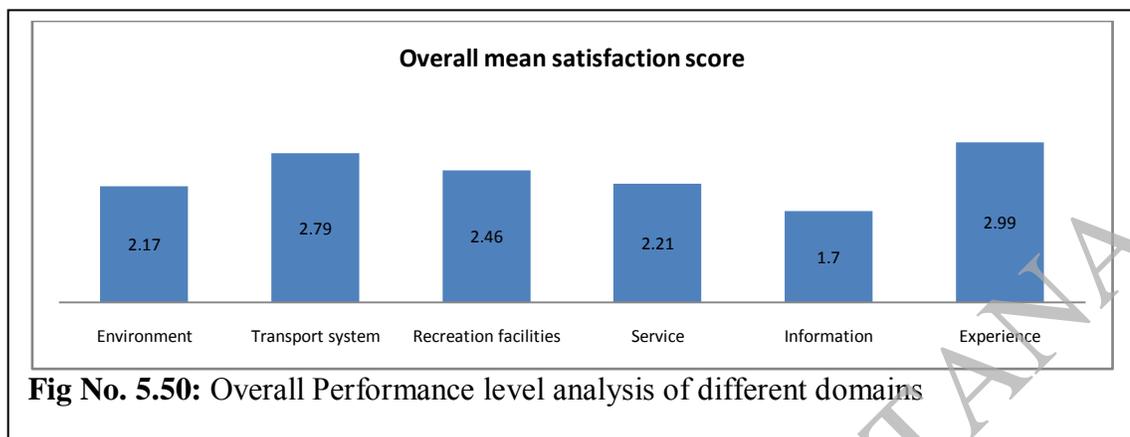
<b>Suggestion of three group of visitors</b>		
<b>Tongi-Ashulia-Mirpur route</b>	<b>Washpur-Rayerbazar-Katashur route</b>	<b>Demra -Noapara route</b>
<ol style="list-style-type: none"> <li>1. Provide basic facilities like sitting arrangement, toilet facilities and food corner</li> <li>2. Improvement of ghat landing and river bank condition</li> <li>3. Improved water quality</li> <li>4. Route should be taken by any government or private organization for its development</li> <li>5. Include parking facilities and kids corner</li> <li>6. Safety provision like-guarding system or mobile police protection to ensure staying at night to enjoy river beauty</li> </ol>	<ol style="list-style-type: none"> <li>1. Make link between recreational users and river by providing water recreations like Boating facilities, fishing etc.</li> <li>2. Provide basic facilities.</li> <li>3. Improvement of river bank condition and water quality</li> <li>4. Government's initiatives to stop illegal encroachment because it impacts on aesthetic view of the river</li> <li>5. Prevent encroachment by developing this site as a recreation point.</li> </ol>	<ol style="list-style-type: none"> <li>1. Organized and improvement of ghat condition and landing facilities.</li> <li>2. Well information system to inform starting and over time of Jamdani hat.</li> <li>3. Government's initiatives to develop this area as a tourist spot on basis of Jamdani hat.</li> <li>4. Improved quality and condition of vessels.</li> <li>5. Discourage villagers to dumping household waste and human waste into river.</li> <li>6. Police or guarding initiatives because hijackings by local goons are common complain of most of the visitors.</li> </ol>

**Table 5.13:** Major activity groups their Problems and Suggestion (See Page 194)

#### 5.4.9 Overall Performance level analysis of different domains

Among the three routes, Performance level of "Environment" domain is relatively low for the area of 'Washpur- Rayerbazar- Katashur' (1.82). Highest performance score of "Transport System" domain is found in 'Demra- Noapara' route (2.91). The lowest performance score of "Service" domain is noted for 'Washpur- Rayerbazar- Katashur' route. Mean score of "Information domain" is low for all three routes, negligible differences exist between them. Highest performance score of "Recreation Experience" domain exist in 'Tongi- Ashulia- Mirpur route' (3.05). For all three routes, highest satisfaction score is found in the "Recreation Experience" domain and lowest satisfaction score has been observed in "Information" domain.

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Among six domains, highest performance score is found in the domain 'Recreation experience' (2.99) and lowest performance scores is noted for the domain 'Information' (1.7). Third and fourth highest score has obtained by 'Transport system' (2.79) and 'Recreation facilities' (2.46). 'Service' domain has got second lowest performance satisfaction score (2.21).

### 5.5 Recreational users Satisfaction Analysis

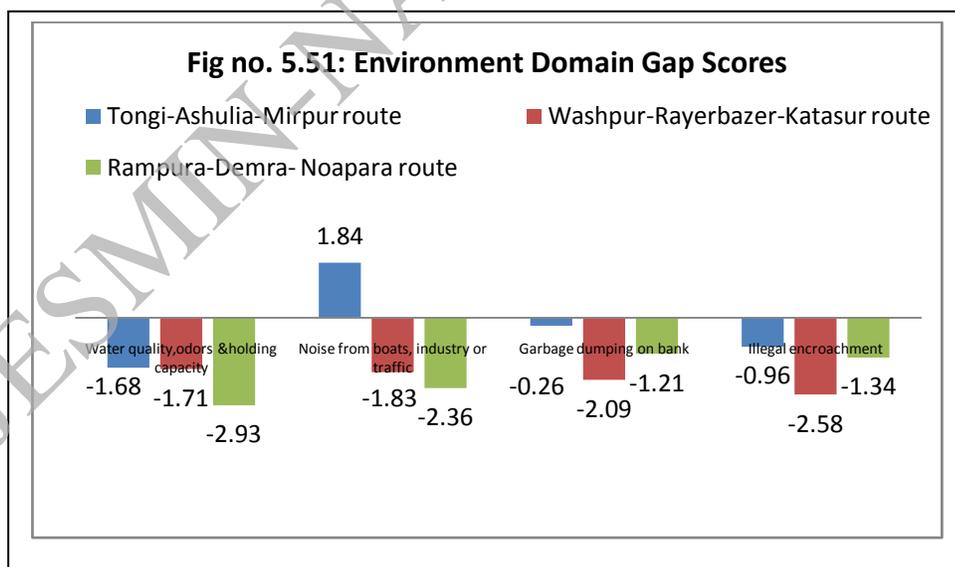
This section of the study has organized with an analysis of the gaps between the level of importance that visitors place on each of the below listed items, representing visitors' expectations, and the performance level of that same item, representing their satisfaction. The optimal situation for a manager is that expectations are met or exceeded for each satisfaction item. Explained simply, if a mean performance score is higher than the mean importance score, a positive score exists. Conversely, if a mean importance score is higher than the corresponding mean performance score, a negative gap score exists for that item. For ease in understanding these scores for the importance/performance items, here the 33 satisfaction items have been broken down into six logical domains of satisfaction: "Environment", "Transport System", "Recreation Facilities", "Service", "Information", and "Recreation Experience". Each of these domains includes 2-13 individual satisfaction items. Table no. 14 shows the items in each domain, along with the average importance and performance scores for the route of 'Tongi-Ashulia- Mirpur', 'Washpur- Rayerbazar- Katashur' and 'Demra- Noapara'.

### 5.5.1 Gap Analysis

The gap score is simply the difference between the performance and importance scores for any given item (Burns, Graefe, Absher, and Titre, 1997; Wright, Durray, and Goodale, 1992) [48]. In general, gap scores can be either *positive* scores or *negative* scores. A positive gap occurs when performance is greater than expectation, i.e., an item exceeds a visitor's expectations, and the positive score represents satisfaction with these items. The term "strong" or "weak" refers to the magnitude of the difference between the user's expectation regarding an item and the performance of that same item. Strong gaps indicate a significant difference between expectation and performance, while weak gaps indicate a smaller difference. Conversely, a negative gap score denotes an item where the performance is less than visitors' expectations. Such an item is not meeting visitors' expectations and the negative score represents the lack of satisfaction for that item. A negative gap can be either "large" or small".

### 5.5.2 Comparison of mean gap scores for six domains and its items

#### Environment Domain Gap Scores



- Here only 'Tongi- Ashulia- Mirpur' route has got positive gap score in the item 'Noise from boats, industry or traffics' which means performance of this item

**Table no. 5.14** Average Importance and Performance scores for each domain

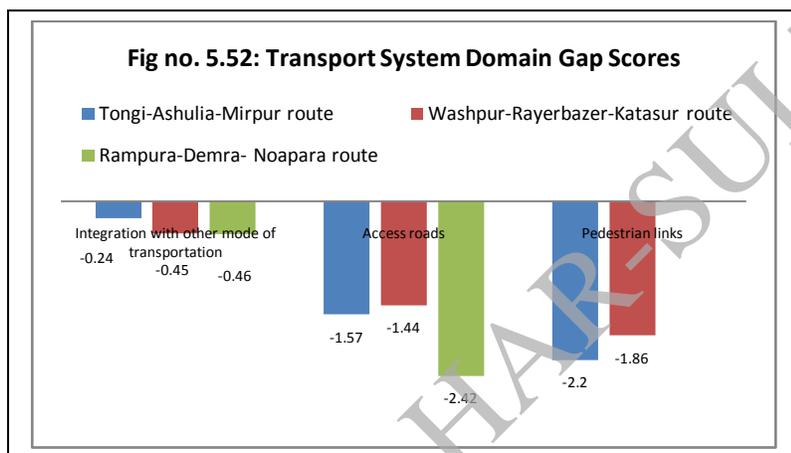
Environment	Mean Importance			Mean Performance		
	R1	R2	R3	R1	R2	R3
Water quality, water odors & water holding capacity	4.00	4.19	4.35	2.10	1.91	1.42
Water odors	3.78	3.71		2.18	1.52	
Water holding capacity	3.74	3.32		2.2	2.65	
Noise from boats, industry or traffic	2	3.22	4.25	3.84	1.39	1.89
Garbage dumping on bank	3.71	3.91	3.57	3.45	1.82	2.36
Mosquitoes and other insects	-	-	3.74	-	-	2.53
Illegal encroachment	3.00	4.18	3.60	2.04	1.60	2.26
<b>Total mean score</b>	3.37	3.76	3.91	2.64	1.82	2.09
<b>Transport system</b>						
Integration with other mode of transport	4.02	4.18	4.30	3.78	3.73	3.84
Access roads	3.82	4.13	4.26	2.25	2.69	1.84
Pedestrian link	3.98	4.07	-	1.78	2.21	-
<b>Total mean score</b>	3.94	4.13	4.28	2.60	2.87	2.84
<b>River bank recreation facilities</b>						
No. & types of vessels	3.25	-	3.96	3.45	-	2.84
Amount of public open space	3.60	3.89	4.10	2.96	3.09	2.73
Green area & landscape	4.17	3.78		2.33	2.57	
Trees & vegetation	4.20	4.22		2.24	3.22	
Trail, path & walkways	3.70	4.25	4.31	1.89	3.22	1.89
Public equipment like-benches, shade, pavilion,lighted, Fountains, sitting arrangements, drinking water, toilet facilities	4.33	4.28	4.30	1.98	2.56	2.05
Physical & visual connectivity	4.00	4.00	3.91	3.04	3.30	1.68
Boat landing/Ghats condition	3.98	3.77	4.09	1.91	1.74	1.63
Fishing facilities	3.48	-	-	1.87	-	-
Maintenance & cleanliness	4.25	4.33	4.22	1.74	2.73	2.00
Commercial developments (Functions like food kiosk, drink corner, small restaurants, community boat club, community health club, open air theatre and children's play area)	3.66	3.95	4.30	2.04	2.21	1.63
Fare	3.56	-	-	3.80	-	3.21
Ticketing system	3.25	-	-	-	-	-
<b>Total mean score</b>	3.80	4.05	4.09	2.43	2.58	2.25
<b>Service</b>						
Condition of vessels	3.70	-	4.05	3.38	-	2.68
Boat hiring system	3.51	-	3.91	3.14	-	3.10
Public safety-water accidents & personal safety from crime/unsociable activities graffiti & vandalism	4.18	4.27	4.35	3.15	1.43	1.73
Availability of regular services	3.75	3.90	4.28	1.35	2.04	1.42
Management's role	3.53	3.85	4.10	1.89	2.04	1.63
<b>Total mean score</b>	3.73	4.01	4.13	2.58	1.83	2.11
<b>Information</b>						
Modern & well informative (web site, route maps, printable time table)	4.15	4.17		1.25	1.73	1.56
Route definition (Well defined route)	4.08	4.25		1.87	1.82	1.84
<b>Total mean score</b>	4.12	4.21	4.28	1.63	1.62	1.37
<b>Recreation experience</b>						
River bank condition	4.00	4.02	4.20	2.47	1.82	2.05
Natural area for vegetation & wild life	3.72	3.88	4.00	1.87	2.17	2.42
Crowding & conflicts among boater & recreationists on shore	3.65	3.82	3.97	3.78	3.60	3.52
Relaxing & aesthetically pleasing atmosphere	4.20	4.21	4.19	4.07	4.00	3.68
<b>Total mean score</b>	3.89	3.98	4.09	3.04	2.89	2.92

(R1= Tongi-Ashulia-Mirpur route; R2= Washpur-Raverbazar-Katashur route; R3= Rampura-Demra-Noapar route)

exceeds visitors' expectation. Here the positive gap is strong in character which indicates a significant difference between expectation and performance.

- Other items under environment domain at all routes have got negative scores.
- 'Tongi- Ashulia- Mirpur' route indicates smallest negative score and 'Demra- Noapara' route has got largest negative score among these three study areas.

### Transport System Domain Gap Scores

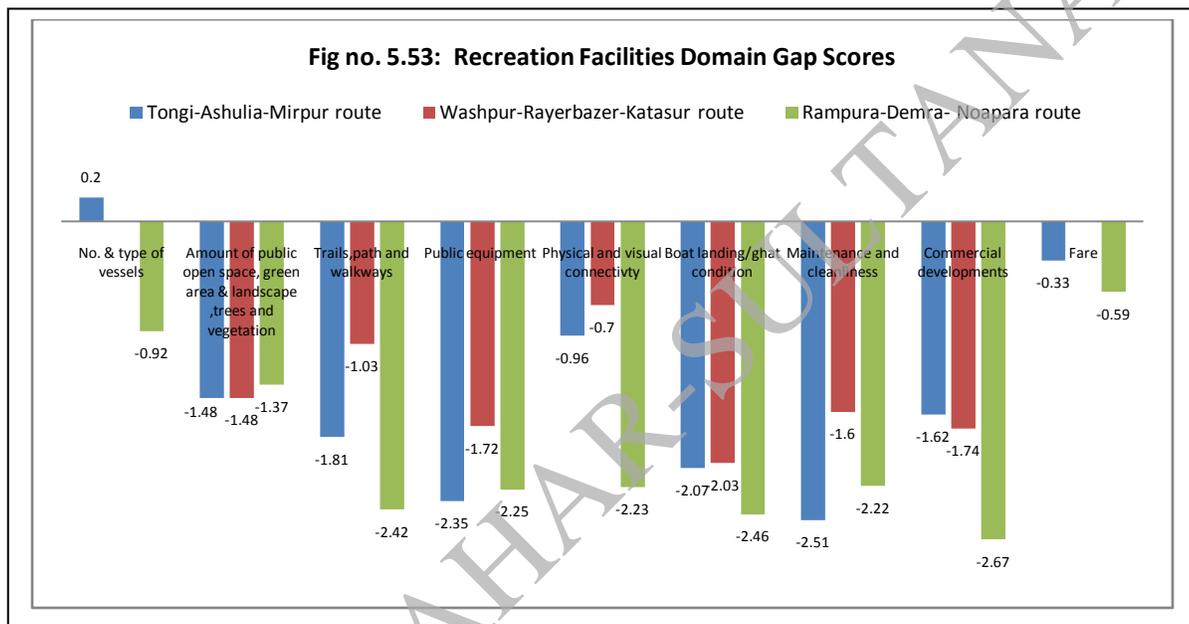


- All items of the transport system domain have performed negative gap score.
- 'Tongi- Ashulia- Mirpur' route shows smallest negative gap score than the other two routes at the item 'Integration with other mode of transportation'.
- 'Washpur- Rayerbazar- 'Katashur' route shows smaller negative gap score than 'Tongi-Ashulia- Mirpur' route at the item 'Access road'. 'Demra- Noapara' route get smallest score at these two items but because of absence of the item 'Pedestrian link' at this route, gap score has not shown here.

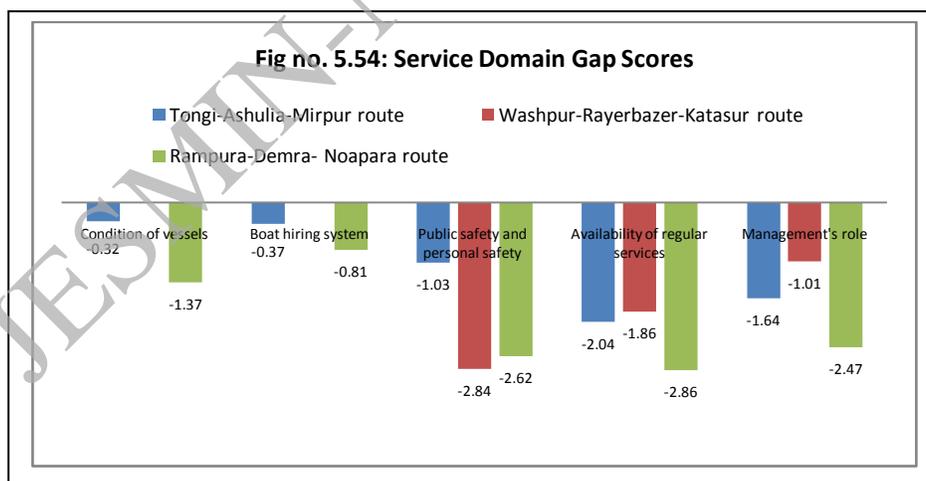
### Recreation facilities Domain gap scores

- Demra- Noapara' route shows largest negative gap scores among all items under this domain except the item fair.
- 'Washpur- Rayerbazar- Katashur' route has no arrangement of boating; for this reason items that are related to boating like-no. and types of vessels, fare are absence here.

- Here only one item (No. and types of vessels) under this domain at ‘Tongi-Ashulia-Mirpur’ route has got positive gap score which means performance of this item exceeds visitors expectation. Here the positive gap is weak in character which indicates a smaller difference.



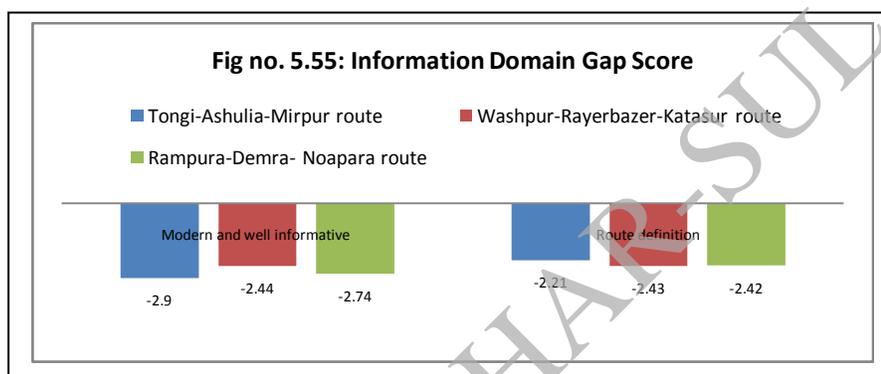
**Service Domain Gap Scores**



- Because of absence of boating arrangement at ‘Washpur- Rayerbazar- Katashur’ route, the items ‘Condition of vessels’ and ‘Boat hiring system’ are not mentioned here.

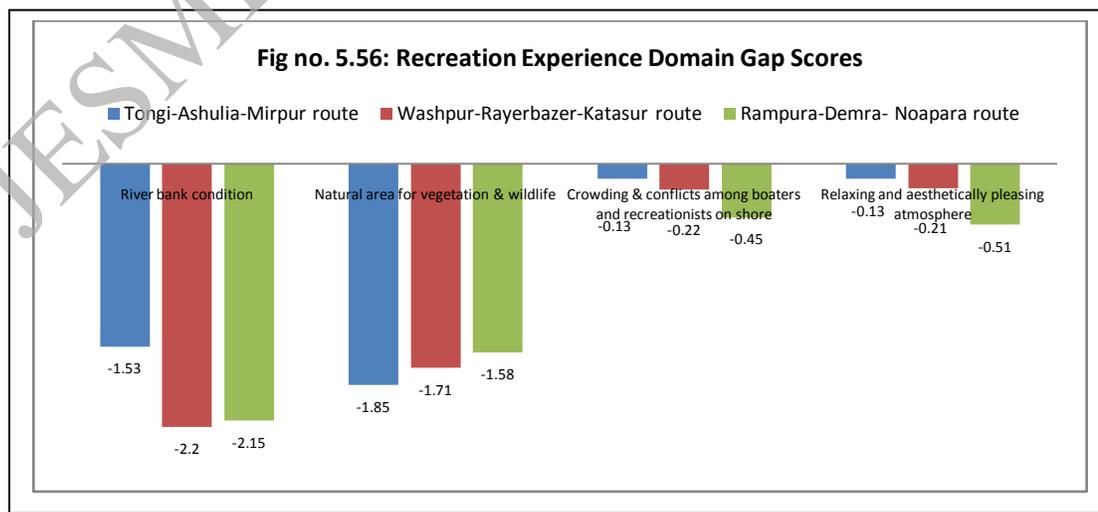
- Among the three selected routes ‘Demra- Noapara’ route shows largest negative gap score at all items under service domain except the item ‘Boat Hiring System’.
- For the items ‘Condition of vessels’ and ‘Boat hiring systems’ under this domain visitors of ‘Tongi- Ashulia- Mirpur’ route have shown small gap score rather than the other two routes.

### Information Domain Gap Scores



- Those two items have rated as large negative scores at ‘Demra- Noapara’ route, ‘Washpur- Rayerbazar- Katashur’ route and at ‘Tongi- Ashulia- Mirpur’ route.

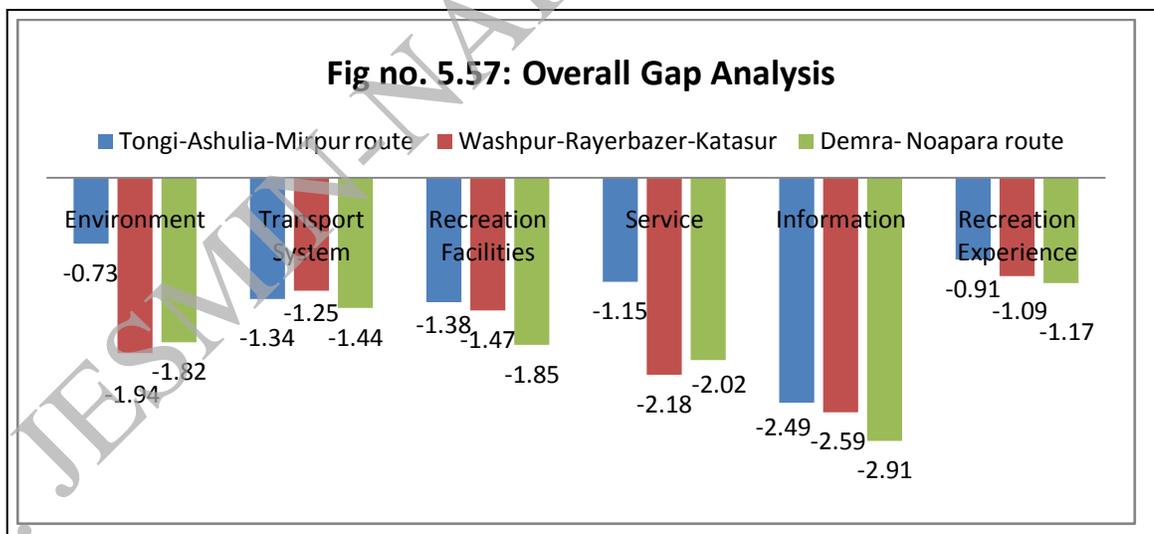
### Recreation Experience Domain Gap Scores



- Within the ‘recreation experience’ domain, ‘Tongi- Ashulia- Mirpur’ route has shown small negative gap scores on the items ‘Relaxing and aesthetically pleasing atmosphere’ and ‘Crowding & conflicts among boaters and recreationists on shore’ and large negative scores on the items ‘Natural area for vegetation & wildlife’ and ‘River Bank Condition’.

### Overall gap analysis

- Among all the domains ‘Recreation Experience’ domain has got the smallest negative gap scores and ‘Information’ domain has shown the largest negative gap scores.
- Among the three routes ‘Tongi- Ashulia- Mirpur’ route has shown the overall smallest negative gap scores and ‘Demra- Noapara’ route has shown the largest negative gap scores comparatively.
- ‘Washpur- Rayerbazar- Katashur’ route has shown the smallest gap score on ‘Transport system’ domain.



### 5.6 Expectations

Depending on the responses of both open ended and close ended questions and satisfaction analysis of the visitors of these three routes, specific expectations anticipated by the recreational users are given below.

- Pollution free and accurate level of water for water holding capacity
- Encroachment and illegal settlement free well defined river banks.
- Well defined and landscaped paths, trails, walkways and bike trails.
- Adequate amount of trees, vegetation and green spaces along river side
- Developed park space and river walk promenade along river bank side and provision for connect them close to the water.
- Well equipped route corridors containing public equipments and facilities like-sitting arrangement, waiting space, shades, sufficient food and drinking corners, toilet facilities etc.
- Well accessed link roads and pedestrian connected to the water routes.
- Proper and fixed distribution of ghats and landing stations
- Improved ghat area and appropriate boat landing facilities
- Modern and different types of vessels and organized boat hiring system
- Specific parking space for parking vehicles
- Separate zone for young couple
- River recreation activities like boating, fishing, walking promenade, and other riverside destinations reachable by foot or boat.
- Commercial developments ( like-food kiosk, drink corner, small restaurants, community boat club, community health club, open air theatre, children's play area, small gift shops, fishing club and fishing arrangements like-specific spot and sitting arrangements for fishing, fishing instruments etc.
- Clean and maintained water routes and corridors.
- Availability of regular services
- Improved, Modern and well informative information system including web sites, route maps, printable timetable, brochure containing current information, natural historical information, educated and knowledgeable staffs and volunteer to help recreational users'
- Reasonable cost of food and drinks
- Ensured safety and security of the visitors

- Responsible Management authority to take care of the routes and visitors

### 5.7 Chi square as a non- parametric test to test the Hypothesis

As a non- parametric test, Chi- square ( $X^2$ ) can be used as a test of independence. We require only the degrees of freedom for using this test. As a test of independence,  $X^2$  test enables us to explain whether or not two attributes are associated. For instance, in this study we are interested to know whether river is important for the river side recreational users or not.  $X^2$  test has helped us in deciding this issue. In such a situation, we proceed with the null hypothesis that the two attributes ( viz., river and importance) are independent which means that river is not important for the river side recreational users. On this basis we first calculate the expected frequencies and then work out the value of  $X^2$ . If the calculated value of  $X^2$  is less than the table value at a certain level of significance for given degree of freedom, we conclude that null hypothesis stands which means that two attributes are independent or not associated ( i.e., the river is not important for the river side recreational users). But if the calculated value of  $X^2$  is greater than its table value, our inference would be that null hypothesis does not hold good which means the two attributes are associated and the association is not because of some chance factor but it exists in reality ( i.e., River is important for the river side recreational users). It may, however, be stated here that  $X^2$  is not a measure of the degree of relationship or the form of relationship between two attributes, but is simply a technique of judging the significance of such association or relationship between two attributes.

In this study Chi square test has been used to test the hypothesis. The hypothesis has been tested according to Importance of river for recreational enjoyment by area. To measure, how important the river for the respondents to the enjoyment of their recreation activities, an close ended question was asked to find out whether the river is “very important” that the respondent would not be there if the river was not there or is it “Somewhat important” that river plays some part in the enjoyment of their recreation there or “not important” that river just happens to be there and plays no part in the

enjoyment of their recreation and last of all “detrimental” that river detracts the respondents from the enjoyment of their recreation.

1. Null hypothesis: River is not important for the river side recreational users

Importance of river for recreational enjoyment by area				
	Very important	Somewhat important	Not important and detrimental	Sample size
<b>Tongi-Ashulia-Mirpur route</b>	91	9	-	100
<b>Washpur-Rayerbazar-Katashur route</b>	9	30	11	50
<b>Demra-Noapara route</b>	17	8	5	30
<b>Total</b>	117 (65%)	47 (26%)	16 (9%)	180

$X^2 = 112.95$ , tabulated value = 9.488 [df = 4, 5% level of significance = 0.0]

$112.95 > 9.488$

Decision: Null hypothesis is rejected. The calculated value of  $X^2$  is greater than its table value, the inference is that null hypothesis does not hold good which means the two attributes (river and importance) are associated i.e., River is important for the river side recreational users.

### 5.8 Concluding remarks

Statistics established that for middle income people these routes are ideal recreation spots specially “**Tongi- Ashulia- Mirpur**” route. Young people, particularly aged between 20 to 25 years old, are key focus group of recreational users in these routes. Prominent group of visitors are students that means young people are very much interested to visit these routes with their friends and beloved ones to enjoy natural beauty, fresh air and boating and these types of recreational spots are mainly supported by youth group of society.

From the analysis it is found that the items related to natural beauty and atmosphere satisfied visitors the most and create a relish incitement into their mind rather than the facility related items. These routes are deprived of proper facilities and services. That's

why these routes have not revealed any positive gap scores except the two items under 'environment' and 'recreation facilities' domain of **“Tongi- Ashulia- Mirpur” route**. That means the items are not meeting visitors' expectations. The respondents have appreciated water based recreation activities here like boating; fishing etc. but absence of proper arrangements in 'Washpur- Rayerbazar- Katashur' route respondents are not able to relish these kinds of activities.

As we have seen that the 'Recreation Experience' domain has got the highest satisfaction level of the recreational users and lowest negative gap scores among all the domains it can easily be said that the recreational users come to these three routes for relaxation and aesthetic beauty and atmosphere of the routes though the provided facilities and services are not up to the mark and sometimes absent. If facilities and services are provided and basic requirements of the recreational users are fulfilled, the routes will be flourished. From the analysis it is found that 'Tongi- Ashulia- Mirpur' route has the true essence of a water based recreation route. People gather here for water based recreation and River is their main attraction for them for enjoying their activities. Among the three routes only this route provides some facilities to its recreational users. The river is “very important” to the maximum respondents (91%) and they were not there if the river was not there. In addition to 9% respondent “Somewhat important” that the river plays some part in the enjoyment of their recreation there. On the other hand, 'Washpur- Rayerbazar- Katashur' route has the huge potentialities to expose as an ideal recreation area because this site already contains an attraction point 'Martyred Intellectuals Memorial' which generates a great number of visitors. Although they want to come closer to the river but due to absence of proper service and facilities they are not be able to do that. That's why this route has got large negative gap scores. According to 60% respondents the river plays some part in the enjoyment of their recreation and to 22% river just happens to be there and plays no part of their recreation. But according to 18% the river is “very important” and they were not there if the river was not there. Without any facilities this site has a ability to generate huge number of visitors, if necessary facilities and service is provided in this site this place can be developed as an outstanding river side recreation place.

'Demra- Noapara' route is comparatively busy from the other two selected routes; this route is mainly used for transportation –passengers and goods carrying transports. 'Jamdani Hat' and 'Jamdani Palli' are the two main attractions for the recreational users which also indirectly encourage them to engage in river based recreation. 57% respondents thought that the river is 'very important' to them while 27% and 16% thought that the river plays some part and plays no part to their recreation respectively. This route has shown the largest negative gap scores among the three routes because the route is not developed yet and absence of basic required facilities and services.

From the analysis it is found that only 9% respondents of the overall respondents' thought that river is just happens to be there and plays no part to their recreation whereas 65% river is "very important" and to 26% it is "Somewhat important". Consequently statistics established that river plays a very important role directly and indirectly to the enjoyment of their recreation.

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## **Chapter 6: Proposed concepts for recreational development along selected routes through place making**

In the previous chapter the gaps between the visitors' expectations and reality as well as the importance of the river in their recreational enjoyment and the type of improvements they want to see along the water routes have been explored. With the help of these information some proposals and recommendations have been suggested for the recreational development of the study routes in respect to the existing situation for enhancing the water based recreation for the city dwellers. Proposals have been suggested through sketches to show how specific problems may be solved and to make them understandable to the reader. The CW can be developed as one continuous route and could be performed like an entity which has the immense scope for providing water recreation facilities and tourism in the inner part of Dhaka as well as the outer side. The CW can relate the whole city to its city dwellers through its continuity and water sensitive urban design which will improve places along the routes and offer various scenic places to its inhabitants. In this chapter some examples have been shown to give an idea how these routes can be developed through place making and can make a contribution to the planning and urban design of the city.

### **6.1 Introduction**

Place making is an approach that aspires to create a place that has a strong sense of "place ness" and a comfortable image to its dwellers as well as outsiders. Identity of a place must be maintained as it is what makes a place unique when compared with other major places. Consistent themes to its form, materials, items, arrangements and symbolism will be more likely to produce positive place experience. Settings that can trigger off memories and fantasies will be more likely to provide rich place experience; but still depending on the users themselves. However place making can help to refine the memorable experience of visitors through activities that give an impact to them.

Water bodies can serve as an attraction, a place where people gather and enjoy the calm that viewing and hearing the splashing of water creates. Water can be integrated into

cities in many ways, thereby enhancing the beauty and pleasure of living in that city. Even in entirely paved areas, fountains and tiny channels of water running in the middle of a pedestrian street—as they famously do in Freiburg, Germany—can serve as attractions to passersby and sources of play for children (Efroymson, D. and Shama, R. 2007).<sup>[49]</sup>

According to Geddes, the river front could be exclusively developed as a park and recreational space. Along with that the river itself can provide various recreational facilities, like boat racing and boating in the afternoon and the islands can be developed as parks and gardens for the citizen to enjoy afternoon promenades and holiday picnicking. In accordance with Geddes's consideration the riverfront could be used as one of the open spaces and could be developed as an esplanade. It could be extended and designed in details with addition of parks, gardens and trees. This promenade may enhance the use of the river as boating events can take place on them while the spectator will be able to watch from the embankment.

## **6.2 Concepts appropriate for the overall Circular Waterway**

The Circular Waterway around Dhaka can be a good source of water recreation for the city dwellers. The building of embankment all around the city was not the right way to solve the problem of flooding. A single bund along the river makes people unable to connect with the river. The western embankment is such an example for that type of case where the river was totally neglected during planning, design and construction phase. When the banks of the river were stabilized for flood protection years ago, little thought was given to either aesthetics or public enjoyment. But the eastern part still has the potentiality to connect the people with rivers and make proper utilization of the resources and provided with a significant amount of accessible open spaces.

- **1. A series of small embankments Concept instead of a single bund along the river or other waterscape**

The completion of the eastern embankment will turn Dhaka into an island surrounded by embankments and walls all around. The idea and practice of embankment needs creative expansion. Instead of a single bund along the river, a series of small

embankments can be created to develop a matrix of spaces and functions can be arranged throughout the route in some specific points. The idea behind such mini-embankments is to link the built and natural environments, as well as to control and retain water for agriculture, water table recharge, and everyday human needs. The embankments also act as dynamic circulation paths. Producing these embankments will also help to restore the natural dynamics of the river and create interesting recreational landscapes and gardens.

## 2. Creating an extra channel concept

Building an extra channel of the river to take excess water, the island produced as a result and channel will act like a large recreational park. To avoid disastrous floods, the city can build an auxiliary channel of the rivers to flow the length of the city. This channel, and the long island separates it from the surrounded rivers, the new channel can be claimed exclusively for recreational use. Instead of allowing the channel and its banks to be developed privately, the city will carefully regulate how the buildings, roads, sidewalks and plazas are designed and placed in the new district, guaranteeing the waterfront as a public amenity.

### 6.3 Visitors' demands as per expectations

Activities are the basic essential of a place. Offering things to do give people a reason to come to that place and possibly return again. The water itself **draws attention**, is the greatest asset of any waterfront, and should become the centerpiece for programming and activities. Activities may include water-taxis, boat tours, restaurants or shops on anchored boats, fishing, floating pools, and swimming. Many of these activities not only attract users to waterfront but also generate interest among onlookers. Embracing the natural uses of a waterfront leads to thematic programming such as boat festivals, fish markets, bait and tackle shops, and performances on floating stages. Rain or cold is no reason for a waterfront to sit empty. Indeed river front places are often known for their chilly winds and gray skies. Waterfront programming should take rainy-day and winter activities into account, and amenities should provide protection from inclement weather. Waterfronts that can thrive in year-round conditions will reap the benefits of greater

economic activity and higher attendance at public facilities. The following demands are desired by the visitors to be fulfilled.

- Improved ghat and Landing facilities
- Public equipment and facilities like-sitting arrangement, waiting space, shades, toilet facilities, food and drinking corners, resting place
- Separate zones like kids' recreation zone and zone for young couple etc.
- Trail system or walking ways and facilities like Platforms and stools that can bring people close to the water.
- Seasonal plantation and vegetation and river walk promenade along river side.
- Regular safety and security services like lighting, patrol police and guard arrangements.
- Parking facilities
- Modern type of boating facilities.
- Recreational facilities like develop more restaurants and other riverside destinations reachable by foot or boat,
- Fishing club and fishing arrangements like-specific spot and sitting arrangement for fishing, fishing instrument, fishing pier etc.
- Commercial outlets like-retail shops, food, drink and gift corners, etc
- Bike trails, bicycle storage facility

In addition to that, open recreational space for daily recreational use and public plaza and open air theatre for festivals, badminton court, elevated pier, outdoor seating and events pavilion. To provide the visitors with their demanded facilities the following design elements can be used. Different kinds of paths: footpath, sidewalks with steps, rock paths and plank boardwalks built along water; platforms and stools that extend into water encourage users to play in the water; elaborate plantings, gazebos, tiles with historic elements and graceful railing featuring aesthetic details; variety of pavement patterns all artfully designed and incorporating different materials; unique bridge designs; landscaping alongside the trails and walkways, pergolas and other features provide shaded rest areas. All these elements can give these places different identities as

a place usually has a fixed location and features in forms that can be identified.

#### **6.4 Design concepts**

Based on recreational users' expectations of the study routes the below listed design concepts can be used to revitalize the river and the river side areas and offer various scenic places to its inhabitants.

##### **Main Considerations**

- Main Focus has given to maintain the existing river width as far as possible.
- Use the waterfront as an amphitheater with the water as a natural stage.
- Facilitating and encouraging passive recreation where possible, i.e., trails and walkways, jogging track, exercise space, cycling track, paddle boating, fishing etc.
- Minimum construction of permanent structures.
- Facilitating some income generation earns some revenue to support the maintenance cost of the river corridor.

##### **Design decisions**

- Bring people close to the water
- Encourage pedestrian friendly Dhaka city
- Places to celebrate water – learning places
- Allow children to play, increase knowledge and adults to socialize outdoors
- Convert the neglected embankment area to a popular meeting place.
- Physical and Visual Connectivity
- Continuation of 50m (one hundred fifty feet) wide green belt buffer zone
- Continuous route of walking and cycling track which connects both sides of the water body with resting pockets along the walkway track after some intervals which consist, sitting arrangement, drinking water fountain, small exercise space, garbage bins, light post and toilets at every alternate point, and seating throughout the route, as well as steps where the walkway spaces is wide and

green banks slope gently down toward the river's edge.

- The islands can be developed as parks and gardens and can be connected by suspended bridge
- Less permanent establishments and movable vendors to maintain the natural essence
- Provision for small scale commercial outlets like, restaurants serving pre-cooked items, souvenir kiosks, food and drink corners, pottery stalls, paddle-boat club etc.
- Using the open space as a park and setting up temporary structures for nightly events.
- Unique identity of the Bridges
- Multi level traffic resolve idea
- Changing the overall environment through proper and adequate plantation.
- Providing necessary services
- Financially Self Sustainable

#### **Encourage Pedestrian friendly Dhaka city**

As Peñalosa says, a good city is a place where people can walk or ride bicycles and feel safe doing it. Not just safe, but find pleasure in the activity (*Efroymsen, D. and Shama, R. 2007*). People can exercise *and* recreate while transporting themselves. Instead of sitting in traffic, movement by foot, cycle or rickshaw could be pleasurable. Walking and cycling along waterways makes a unforgettable voyage of discovery and also offers ideal surrounds for fishing. According to Dhaka Urban Transport Project (DUTP-1996) about 60% of all passenger movement is pedestrian and rickshaw account for about 19.2% of passenger trips. The green landscape along continuous waterways will encourage people to walk. The roads should design with lights, stools and steps which can make the environment closer to people.

#### **Bring people close to the water**

A good footpath along water is very important to make people feel closer with water.

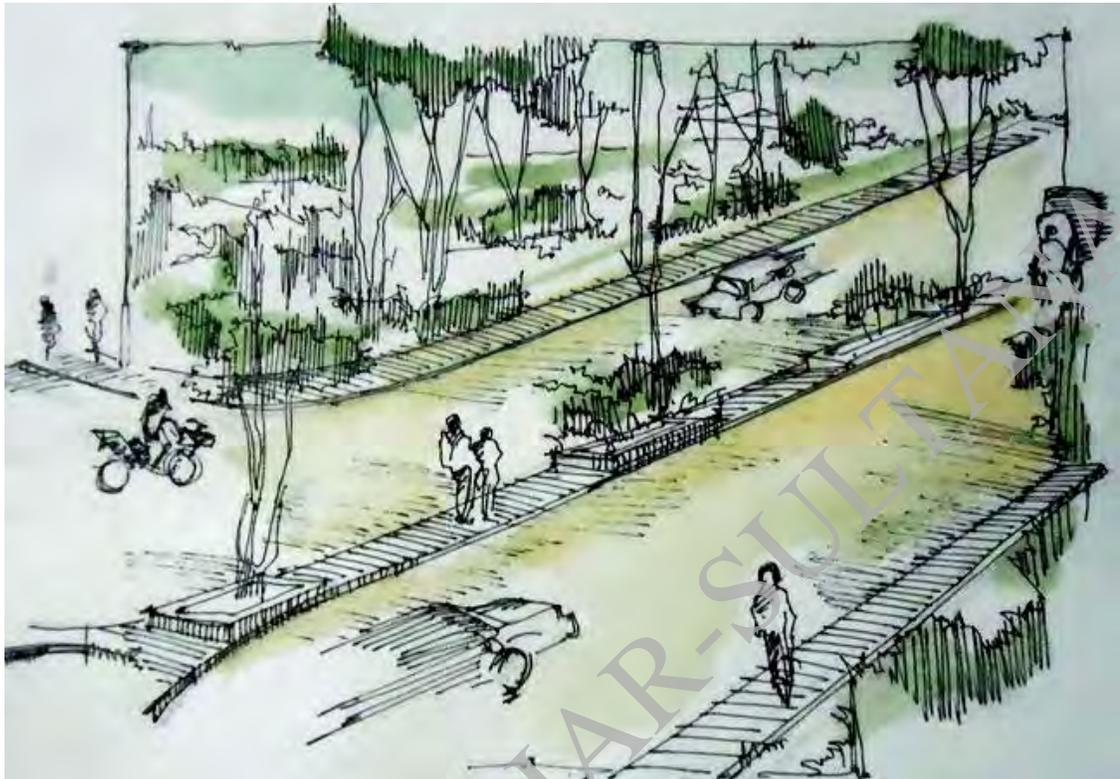
The Grand Promenade in Jinji Lake is a place special for this feeling. Platforms and stools extend into water encourage visitors to play in the water. The depth of water often changes, so the platforms should design in different steps or terracing system. When the water rises, people can play with water on the second step. Boardwalks provide opportunities for people to interact with wildlife along natural shorelines.



**Figure 6.1:** The embankment roads could be designed with lights, stools and steps and make the environment closer to people.

### **Places to celebrate water – learning places**

Through walking people could recognize the different plantation which changes the environment\_simultaneously changing with the seasons and get informed with the information related to them. Children could easily learn about wildlife, fishes, trees while playing from which our children are deprived off. Terracotta reflecting cultural heritage with informative lessons could be used in the paving to inform people. Information and digitized route map containing retaining walls and monuments can be used to get acquainted with our surrounded waterways.



**Figure: 6.2** Landscaped walking trails and Green belt along the water routes could be used to enhance the route side environment.

### **Changing the overall environment through proper and adequate plantation**

Trees play a vital part in urban life, offering visual delight, the sense of contact with nature, and relief from heat and flooding. Unattractive box-like buildings and few malnourished trees by wide roads are an unappealing gesture towards the environment and aesthetics. If the roads are narrower, the footpaths wider, and more trees are planted the environment will be more appealing. More trees and water bodies also means more place for nature's creatures—fish, birds, even small animals, which are all key to the ecosystem.

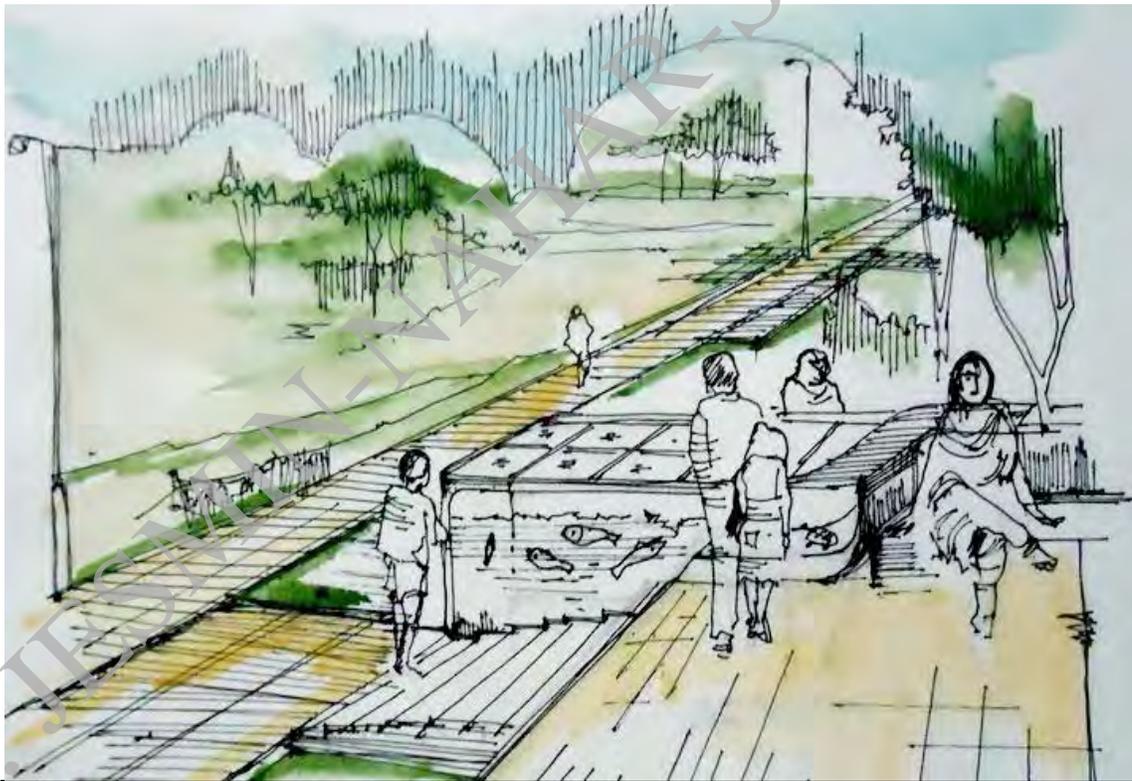
### **50m green belt buffer zone**

A 50 m (one hundred fifty feet) wide green belt buffer zone is proposed along the embankment on the city side in compliance with the proposal for Circular Water Ways around Dhaka city and is to ensure the protection of the embankment from natural erosion as well as manmade destructions. Available open spaces in and around the area

needs to be integrated with the river side open areas. Landscape of the total recreational area and public spaces along the embankment needs to be developed in harmonizing with the above mentioned green belt.

**Allow children to play, increase knowledge and adults to socialize outdoors**

Children and youth need places to run around and play sports; adults need pleasant places for recreation and exercise. Parks and playgrounds should serve these purposes to some extent, though it is important to note that even in wealthy countries with pleasant parks, children often prefer playing on the lively streets than in quieter parks or playgrounds. To make the water adjacent walking routes livelier, producing fish tanks to recognize fishes, turtle, water creatures etc will encourage the little ones to spend their time around the water routes.

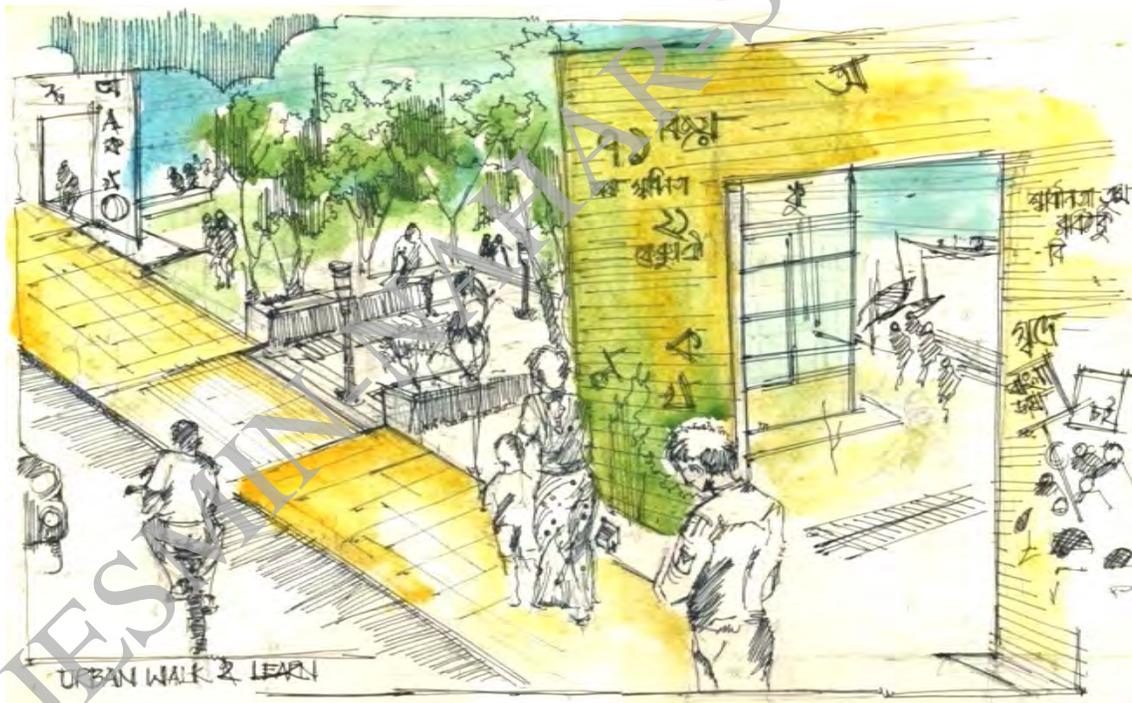


**Figure 6.3:** Provision for water tanks to encourage the kids for recreation around water routes.

**Convert the neglected embankment area to a popular meeting place**

People need recreation and socializing—not just with friends and family indoors, but

outdoors, where they can watch and sometimes interact with strangers, thus tightening social connections within the city. In Dhaka, people gather on footpaths, at Dhaka University's Teacher Student Center (TSC), and in other open spaces, but for many, the chief gathering place is in shopping malls. The outdoor environment is not conducive to meeting; almost nowhere are places set aside for people, and buffered from the noise, fumes, and risks from motorized vehicles. According to Peñalosa<sup>17</sup>, "When a shopping mall replaces public space as a meeting place for people, it tends to be a symptom that the city's ill. There are a lot of ill cities in the United States and all over the world." (Efroymson, D. and Shama, R. 2007) Convert the embankment area into small recognizable spaces according to our history, culture etc and name places after famous freedom



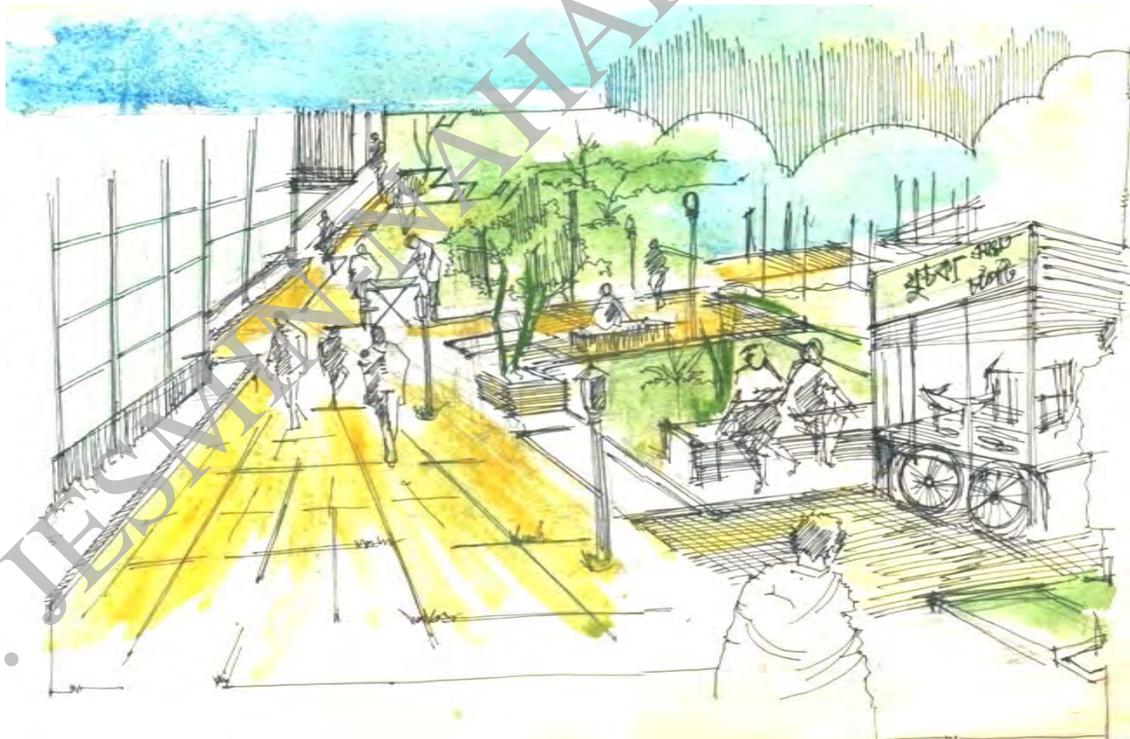
**Figure 6.4:** Continuous route of walking and cycling track along with small recognizable spaces with resting pockets along the water routes.

<sup>17</sup> **Enrique Peñalosa Londoño** is a [Colombian](#) politician and [New Urbanist](#). He was [mayor](#) of [Bogotá](#), from 1998 until 2001. He is running in 2011 for mayor as the [Green Party](#) candidate. He has also worked as a journalist and consultant on urban and transportation policy. In 2009, Peñalosa was elected President of the [Board of Directors](#) of the [Institute for Transportation and Development Policy \(ITDP\)](#).

fighters, flowers et c. w hich g ive t he spaces identity, provides i ts i ndividuality or distinction from o t her places, and serve as the basis for its recognition as a separable entity. One can comfortably find out the friends waiting for them at the decided place.

[See Fig no.6.4]

People's fondness for t heir c ity a lso depends o n t he qua lity o f pu blic spaces. When people have t he o pportunity t o r ecreate enjoyably a nd w ithout ex pense i n a ttractive places free from the noise, fumes, and risk from vehicles, they are, simply happier. In many cities, the high point of the week is a family bike ride on a street closed to traffic for part of the weekend; up to two million people come out, on bicycle, skates, or foot, to e njoy such a n e vent e very S unday i n B ogotá. Good p ublic spaces ar e eas ily accessible by foot, bicycle, and rickshaw; large enough to accommodate many people, but not so large or empty as to be intimidating or feel unfriendly; provide plenty of places to sit, including benches, steps, low walls, and even statues, flower pots, and



**Figure 6.5:** Continuous landscaped walkway along the water body with resting pockets at intervals containing sitting arrangement, movable food and drink corner, rest space, garbage bins, lighting and mobile toilet facilities.

other “unconventional” seating; offer things to look at, buy, and things to do; and are located safely distant from the noise, fumes, and danger of traffic.

**Less permanent establishments and movable vendors to maintain the natural essence**

According to Gunn’s (1994) explanation place making is the retention of the essence of place while giving it new physical and psychological meaning and is aimed to create better settings and functioning spaces for the intended users, while at the same time sustaining certain identities that belongs to that particular place. The visitors like most the serenity, relaxing environment, picturesque landscape, and tranquility provided by the river and open spaces. That is why the ‘recreation experience’ domain has got the highest satisfaction score. For this reason to keep up the raw essence of the space minimal use of permanent establishment has suggested on the route area. Movable vendors and operable structures can be used to provide the facilities and maintain the natural fragrance of the route. At times, as per demand of visitors, electricity could be switched off and lanterns could be provided to create the rural setting or keep up the natural essence of that area. Thereafter, the visitors, especially the young people could sometimes try to enjoy the juvenile night’s beauty under the full moon.

Food and book corners, retail flower shops, gift corners, juice corners, and drinking water facilities even the toilet facilities could be mobile to keep untouched the natural fragrance of the scenic place by building less permanent establishments. The vendors could come to that place early in the morning and leave the place at night. The shelters and the shadings, rest places can be operable and use open or remained closed when necessary according to the necessity of the users from protecting them from the sun and rain.

**Increase facilities and encourage vendors to operate, as their presence prevents crime**

Food corners, retail flower shops, gift corners, juice corners, toilet and drinking water facilities, permanent and temporary shades, information centers, well informed digitized route maps etc. are needed for these route areas. Certain basic conditions like sufficient lighting, clean up services, to ensure safety is also needed. Safety can also be increased

by encouraging vendors to operate, as their presence prevents crime. To prevent crime and giving the service to the visitors, movable food vendors, book carrying vehicles from 'Bishwa Sahitto Kendro' and other organizations may be encouraged to serve their vendors. A well drawn vendors' policy can be incorporated into the overall policy of developing these routes.

#### **Providing necessary services**

Public areas do not thrive without some sort of maintenance and security. The essential problem with recreational areas is that by being available to everyone, they are owned by no one. Lack of ownership means lack of maintenance; they can quickly become dirty and dangerous, inhabited only by people with nowhere better to go and avoided by most of the area's residents. There should have a direct authority that has responsibility to take care of these particular river side recreation spots to whom the recreational users can inform about their complains and also should have a modern and informative information system.

#### **Multi level traffic solution idea**

Traffic should be solved in multi levels. The walkway should below grade level in some places and screened from the adjoining road by flood walls in others. It must be easily accessible by stairs and ramps descending from the bridges, which mean pedestrian levels, are below the noise and traffic. [See Fig No. 6.18]

#### **Financially Self Sustainable:**

Considering the management aspects of the project and to make it financially self sustainable, these facilities provided here would generate income and hence could be maintained modestly by a public private partnership. In reality, the idea will contribute to the restoration of the overall environmental quality of the serene water route side areas.

### **6.5 Implications of the concepts on the study routes**

#### **House boat Concept for 'Demra- Noapara' route.**

House boat concept can be used in "Demra- Noapara" route and there can be arranged some house boats which may solve the problem to attend the "Jamdani Hat". As the

“Jamdani Hat” sits only on Friday morning (starts early in the morning at 4.00 am and finishes at 8.00 am), if the recreational users come here on Thursday evening after work, they can attend not only the hat on Friday morning but also have the pleasant experience of staying on the house boats at night and can enjoy the divine night milieu that the water offers to them. The boats will pick them from particular point and bring them back to the same point. There will be some specific cruises such as the one night cruise and two nights cruise. The houseboats traditionally can be used as grain barges to transport the harvested grains and vegetables from the alongside villages to the destination points during the working days (Sunday to Wednesday) and can be converted into houseboats during weekends (Thursday to Saturday).



**Figure 6.6:** Ruposhi Ghat in the ‘Demra- Noapara’ Route could be designed like this to welcome people come to visit ‘Jamdani Palli’ and ‘Jamdani Hat’. [For existing ghat picture see page no 120].

There are very limited opportunities in Dhaka for residents to spend their leisure time or short holidays within the city. House boat concept for ‘Demra- Noapara’ route will

make them able to solve this problem a bit. Like The Assiniboine River Walk, when not flooded, ‘Demra- Noapara’ route can provide walkers with a paved path along the River, where visitors can take their time to enjoy the sights; bike trails and tours could also be available there.

Due to improper practice of plot creation and land use, the shore-line is not a smooth curve. In many points there are sharp corners created by plots advanced into the water through encroachment in eastern portion. These notches are suggested to be cross checked with CS and RS maps and demark the boundary area permanently through proper landscaping. Ex: Demra ghat area.



Existing ‘Demra Tarabo’ ghat area

Proposed

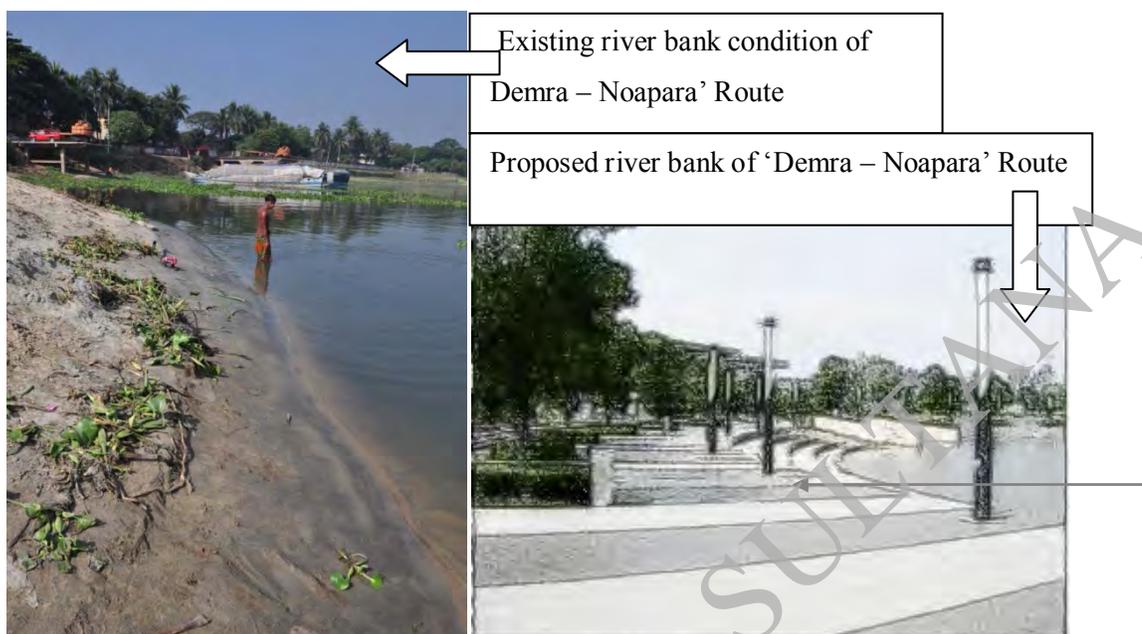
**Figure 6.7:** Replacing hard edges with natural vegetation brings people closer to the river and provides habitat.



Existing

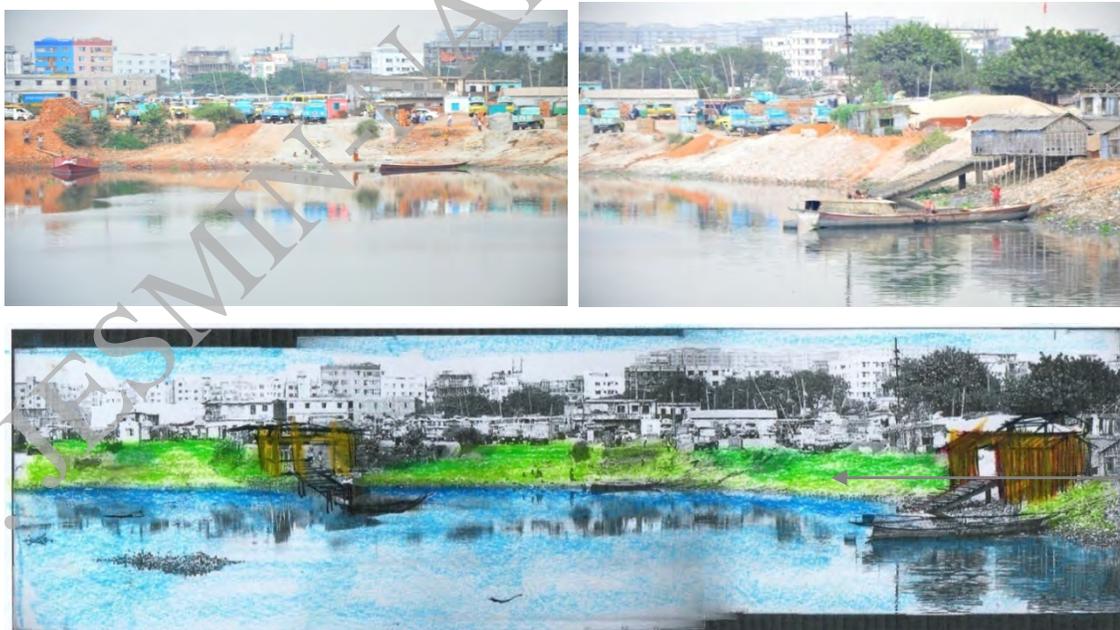
Proposed

**Figure 6.8:** Residences alongside the ‘Demra – Noapara’ Route of the eastern side can be solve like this.



**Figure 6.9:** Existing river bank condition and proposed river bank of ‘Demra Noapara’ Route near Demra Ghat with green belt buffer zone and landscaped steps to bring people close to water.

Poor ghat or landing facilities condition



**Figure 6.10:** Existing condition and proposed solution of ghats of “Waspur – Rayerbazar- Katasur” Route (Katashur Ghat and Rayer bazar landing station).



**Figure 6.11:** Proposed solution for the ghat points at Ashulia Ghat, Rustampur ghat, Tamanna Ghat, Shinnir Tek Ghat and Local ghats of Tongi Ashulia Mirpur' route. [For existing ghats picture see page no 93 and 95].



Floating river walk, on Mirpur- Ashulia- Tongi' route

Due to flood embankment, the surrounding area of the "Mirpur- Ashulia- Tongi" route is fixed and there is insufficient area remain for recreational purpose. In that case, floating river walk can be suggested in those places where space is limited on the embankment side and route width is maximum to utilize the minimum resources.

**Figure 6.12:** Floating river walk

Multi level traffic and river bank solution: Pedestrians are designed below the noise and traffic and could have the atmosphere of relatively quiet and serene. Pedestrians and

vehicular traffic should be segregated by utilizing the river banks and provide terracing system or stepped pedestrian trails and landscaped walkways which bring people close to water and give them quality spaces to spend quality time. A continuous bike trail could be provided along with the walkways in different levels.



**Figure 6.13:** Proposed river bank solution



**Figure 6.14:** Proposed multi level traffic and river bank solution

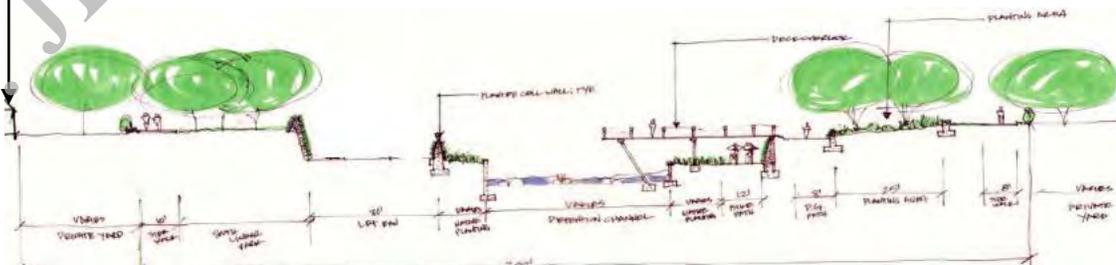


**Figure 6.15:** Existing condition of connection between river banks and Bridges at 'Demra- Noapara' route (**Shitalakkhya 2<sup>nd</sup> Bridge**) and 'Tongi Ashulia Mirpur' route (Tongi Ashuli bridge).

River bank solution



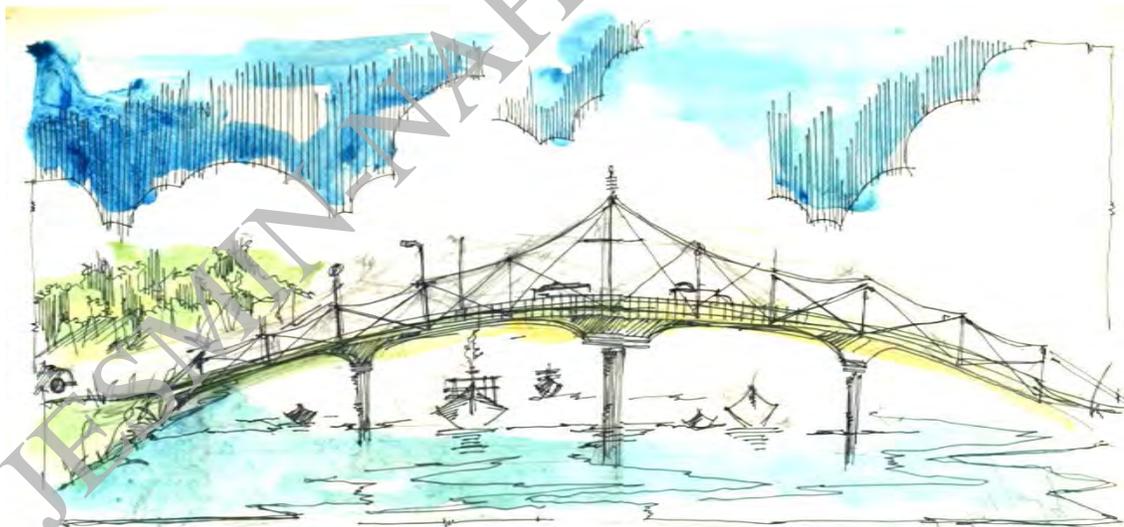
**Figure 6.16:** Proposed solution



Proposed solution for the river bank

### Unique identity of the Bridges

There are 16 finished and unfinished bridges over the east, west and north waterways around Dhaka. Among these 16 bridges 15 were constructed without following proper law and regulations. The taskforce identified 13 low bridges on rivers around the capital as obstacles to watercraft. The bridges are on the rivers Buriganga, Turag, Shitalakkhya and Balu. The identified bridges are Mirpur-Gaboli Bailey Bridge over the Turag, Ashulia Bridge (on Abdullahpur-EPZ Road), Dhaur Bridge-2 over Tongi Canal, Pratyasha (Nolnichala Bailey Bridge), Kamarpara Bridge, Tongi Road Bridge (West), Tongi Road Bridge (East), Tongi Rail Bridge-1 (East), Tongi Rail Bridge-2 (West), Trimukh-Rupganj Bridge on the Balu, Esapur Bailey Bridge, Kayetpara Bridge and Demra Bridge. The taskforce would urge the Local Government and Rural Development (LGRD) ministry, Roads and Highways Department and Bangladesh Railway, which constructed those bridges, to knock them down and rebuild them with proper clearance (The Daily Star, 2010).<sup>[50]</sup> There are bridges over all the three study



**Figure 6.17:** Unique identity of the Bridge with proper vertical and horizontal clearance

routes which are low bridges and stands as major obstacles to the Circular Waterway and were recommended to reconstruct them according to the vertical (25 feet of clearance from the highest level of water flow) and horizontal clearance (distance between two pillar is 100 feet). As a result the bridges could be redesigned and rebuild

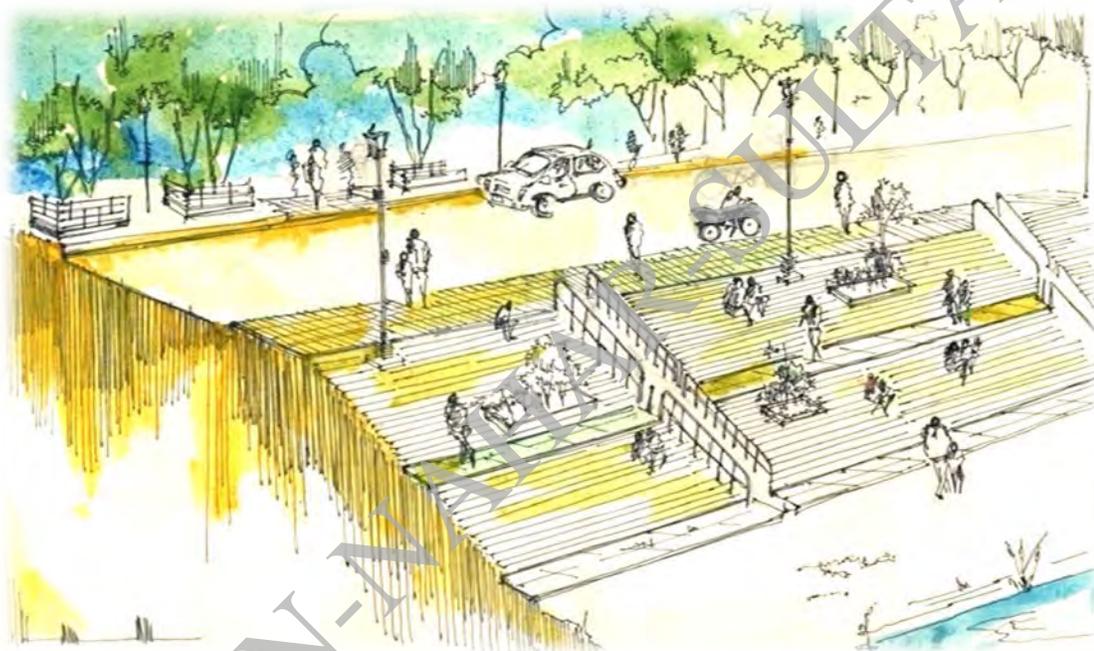


with unique identity and itself could be the exhibit. Boats pass under unique bridges of different designs. Bridges will illuminate at night, and the reflection of lights on the river brings a romantic mood to the cruise. At night, lighting will use to make a fancy colored belt impression to the bridge and make the feel of being itself an exhibit.



This type of suspended bridges could be suggested for the pedestrian connectivity and shorter distances.

Solutions for the embankment to make it a positive space and bring people close to water



The embankment roads could be designed with lights, stools and steps and make the environment closer to people.



The route has the potentiality to act as an amazing place to stroll, take a boat ride or just sit a spell. A beautifully landscaped walkway dotted with wooden benches, food stalls restaurants and entertainment facilities can leads to the attraction points.

**Fig6.18:** Existing embankment condition of ‘Tongi Ashulia Mirpur’ route and proposed

Continuous route of walking and cycling track along the water body with small recognizable spaces and resting pockets at intervals containing sitting arrangement, movable food and drink corner, lighting and other facilities can make it a positive space and bring people close to water. See figure no. 6.4 and 6.5.

As the routes mostly are represented by the young couples as visitors especially in 'Tongi Ashulia Mirpur' route, they want some isolation to spend time with their beloved ones. Through design some spaces might be created in such a way with the help of terraced platforms and plantation that they can maintain their privacy without irritating other visitors especially who come here with their kids. Not only the young couples want the solitude but also many other peoples who come here to seek some quiet and calmness from the busy urban life can use those places.



By utilizing the embankment slope in a positive way with the help of trees and terraced platforms some separate zones can be created.

#### Tamanna complex of 'Tongi Ashulia Mirpur' route



**Figure 6.19:** Land use development of Tamanna complex in 2001 and 2011.

The visitors of 'Tongi Ashulia Mirpur' route were very much satisfied with the Tamanna complex and its provided facilities. But the complex was established on by

filling up the river. As the complex is on flood flow zone and permanent structure establishment on this zone is prohibited, according to the Policy Regarding Flood Flow Zones in DMDP, Land development by raising the level of land, via land filling, will be strictly prohibited in order to avoid obstructions to flood flow. Structures should build on stilts.



**Figure 6.20:** View of Tamanna complex from the route (existing).

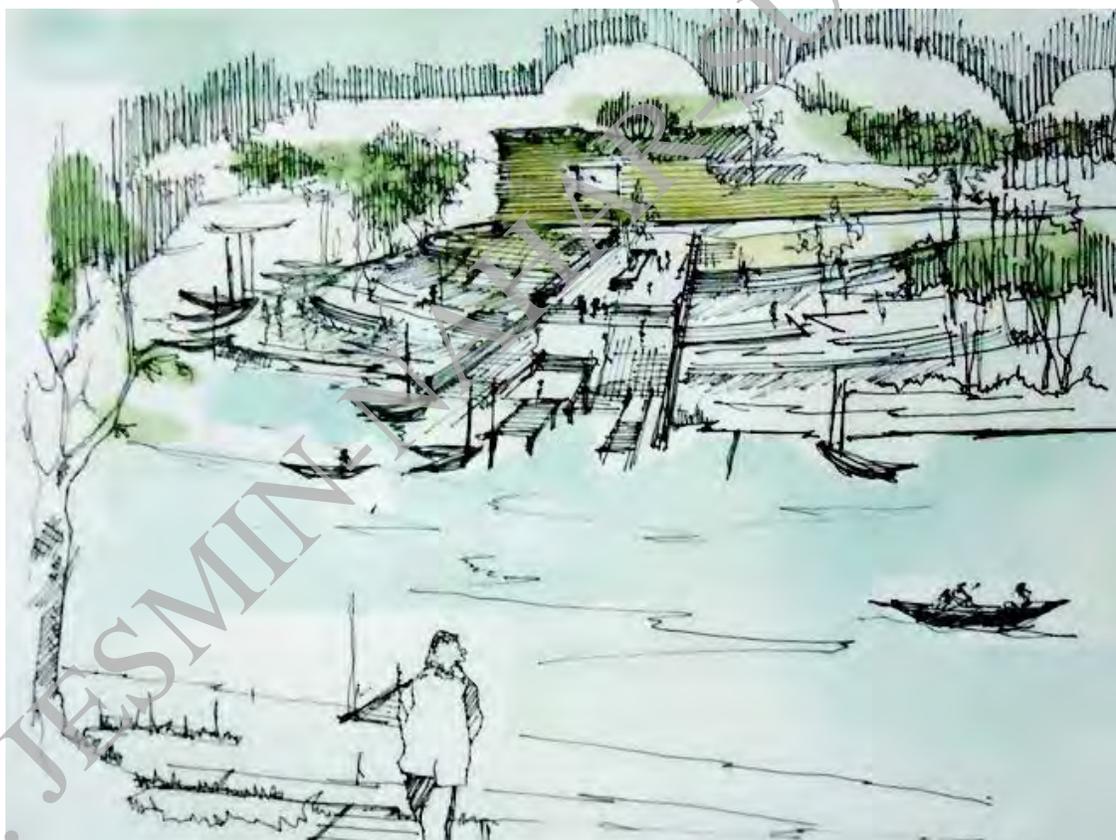


**Figure 6.21:** View of Tamanna complex from the route (proposed).

“Washpur – Rayerbazar- Katashur” Route development



**Figure 6.22:** Existing condition of the route area (View from the Basila Bridge).



**Figure 6.23:** Proposed solution of the route area (View from the Basila Bridge).

The visitors' have suggested that if the authorities take initiatives to include basic recreation facilities like boating facilities, fishing facilities, regular services, maintenance and cleanliness of this site, the route will be able to generate and attract

huge quantity of visitors. Through demarcating the route boundary permanently with proper landscaped river walk promenade and provide water route with recreational facilities will also discourage the land grabbers to encroach.



**Figure 6.24:** Example of a string of parks that has built to combat flooding and promote wildlife habitat (Can be suggested in Muda para green area).



**Figure 6.25:** Traditional market place area proposed solution.

Most of the visitor agreed about the fact that river is key element for generating their recreation trip. Though water quality of river is terrible and causing detrimental effects of its surrounding area but it is not interfering visitor's use and enjoyment of the river. Most of them want to come near to the water but due to lack of facilities they are unable to do that. It is expected that with the help of these above suggested concepts the routes

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could provide quality public spaces for recreation to the city dwellers. The proposals however are not the footprint of every solutions but rather can be a starting point where the transformation can occur.

The proposed concepts for the water routes development will offer things to do people and provide them with choices and options to come to that place and possibly return again. This experience would give the visitors' rich material for fantasies and memories. Also these concepts will offer these routes uniqueness which will provide a sense of identities to these routes corridors and serve as the basis for its recognition as a separable entity. Thus these routes can retain the essence of its place while improving its physical and psychological aspects so that people are attracted to that place.

#### **6.6: Recommendation and policies**

Dhaka's water bodies have made the city unique, which required a different strategy for urban development and planning. But since the 1950s all that has been destroyed, either systematically or as the fall-out of one misplaced decision after another. To bring changes to a city like Dhaka, we need political will, bold imagination, and a serious commitment to carry that out. The planning of Dhaka needs imagination more than technocracy. People who understand the designing of cities should be brought to the helm and not bureaucrats and seemingly uninformed technocrats (Ashraf, K. K. 2010).

For river recreation first of all we have to save our rivers and restore to their original condition as much as possible. For this we need to have proper policy and planning and their sincere implementation. To retain and enhance the aesthetic and recreational value of the study water routes around Dhaka city, some effective steps should be taken.

##### Basic considerations

- a. Agencies involved in the matter should involve the local community in every stage of planning, implementation, operation and maintenance.
- b. Connections of the Circular Waterway with various inner channels should be improved and no development plan should impede such continuity.

In future, STP proposed Port at Rampura Bridge with associated khals upgrading for Water Taxi and Cargo Vessels is recommended, which will be a part of up gradations of water way rings and selected khals.

### Restoration and Conservation of the Water body

- a. Defining and demarcation of the route area and fixing the boundary once and for all.

To preserve and protect the water routes as from encroachment some landscape measure felt urgent. DAP proposes to keep at least 2-4 m of buffer zone with paved area around the small sized wetlands in the built up areas of Dhaka. However, in case of large areas of wetlands or for scattered and congruous pockets of wetlands large areas of green belt are proposed. In such cases 5-15 m buffer zone with green belt is proposed which can serve as neighborhood recreational spot for local people.

- b. Ensuring buffer space (50 meter) surrounding the water routes by implementing existing laws and regulations.

Establish green areas within the buffer zone, both new areas and areas recovered from encroachment, with planting of trees shrubs, gardens and development of walkways. Moreover it is suggested to acquire land where necessary to create the 50 meter buffer zone either on river side/banks or canal banks. A number of temporary structures are there within this 50m belt which should be demolished and the river bank needs to be recovered. However, there are few permanent structures within this reserved landscape zone, among which only the mosques and important public services should be kept. Besides, the number of the permanent structures within this belt is very few and most of those are illegal development or encroachments. Those structures are to be identified and demolished.

- c. Increasing water holding capacity by excavation of sludge from the water-bed
- d. Preventing encroachment by strictly implementing laws and regulations.

Consider hard banking of canals to reduce the risk of encroachment (similar to the Bangkok canal refurbishment program).

- d. Improving the water quality by
  - Preventing dumping of garbage in the water
  - Redirecting the sewer lines out of the water body
  - Increasing dissolved oxygen in the water by means of biological, chemical and mechanical ways; such as, controlled hyacinth growing, fishing,

paddle boating, mechanical oxygen inducing, adding chemicals like phosphorus etc.

- Bulrushes plant in the land along water in order to clean the water.
  - Preventing industrial waste and toxic materials releasing into water.
- e. Embankment protection by adopting any of the following type of treatment
- Staging, where the river width is enough
  - Staging with 'shal-bolli' retainers, where the width is not enough
  - Retaining walls, where river width is minimum
  - Layering of embankment by using Geo-textile fabric.

#### Type of Physical Development on the river shore

- a. The river should never become a commercial extravaganza, however lucrative the money spinning offers may appear to be.
- b. Avoiding construction of permanent structures. The essential structures should be of minimum height and ground area coverage and can be operable.
- c. The route areas should be used mainly for passive recreation like, jogging, cycling, boating, fishing, community gathering place.
- d. Facilities that would generate lesser waste and garbage must be allowed to establish.
- e. Provision of essential facilities like, public toilets, drinking water fountains, proper lighting, recycling bins.
- f. Walkways and cycling tracks should be continuous in a circular route.
- g. Mobile vendors should be encouraged to prevent crime and maintaining the natural fragrance of the route.

#### Landscaping and plantation type

A good landscape plan protects water quality and encourages native plants, fish and wildlife close to shore.

Riparian Zone - This zone extends about two feet up the bank from the edge of the water. Fluctuating water levels and the wave action from boats and wind impact this zone. Plants here must tolerate wet soils for long periods and have deep root systems to minimize erosion. Low-growing plants are best, so the view from the residences is

unobstructed. Examples of plant varieties suitable for this zone are: lady fern, sedges (many species), and blue flag iris.

Lower Bank - This two to 10 foot zone is adjacent to the riparian zone. The soil here tends to be moist but not wet. Plan for this zone should include at least three shrubs (such as red osier dogwood, red elderberry, and evergreen huckleberry) and two ground cover varieties (such as lady fern, bunchberry, and sword fern).

Upper Bank - This zone extends from the end of the lower bank zone toward home. The landscape here should include at least three shrubs (such as serviceberry, mock orange, and red flowering currant) and two ground cover plants (such as salal, sword fern, and pig-a-back).

- a. Screening from pollution and noise can be done by planting appropriate kind of trees.
- b. Proper drainage system for surface runoffs should be a major concern.
- c. Large shady and deciduous trees are not suitable for water boundary.
- d. Plant types which would strengthen the banks and prevent erosions should be used.

#### Management and maintenance

Lack of maintenance can make any area unattractive and under-used. Recreation associations at ward level are recommended for Dhaka City. Recreation associations should work in partnership with local authority/ward commissioners to identify gaps in local level water based recreation services and develop a plan to provide these services. Agencies involved in the matter should involve the local community in every stage of planning, implementation, operation and maintenance. Local authorities should budget for operation and maintenance. Safety and security should be monitored by them and providing security and regular service like lighting, guard arrangement etc. Proper maintenance of the route areas by local area committees, preventing the bank areas from encroachment is necessary.

BIWTA is upgrading the rivers and canals under their existing *Circular Waterway project* in order to make them navigable and provide some berthing and landing facilities. The project is a victim of absolute incompatible management and of pathetic

planning. It is the appropriate time for taking initiatives to incorporate water based recreation through planning and urban design. By providing recreation facilities along it, the navigable route will also protect the rivers and canals from encroachment and enable people to enjoy and recreate along the route side while experiencing and understanding the historic waterway environment as part of a managed and protected landscape. Initiative will have to be taken to introduce fast moving vessels and water bus system circling the city, following the natural course of rivers framing Dhaka. The circular waterway does not require extensive infrastructure and can connect with major transfer nodes for other modes of communication. Different types of boats should be introduced to attract visitors.

As design and planning are absent from every development sectors concerning urban design and development, design solutions can be provided by the students of different educational institutions having a architecture, planning and urban design discipline. Specific problems concerning recreational route development can be given to them as class projects or arrange some competition by the authorities to get some nice designs and concepts from them. This will not only produce good designs but also build the sense of belonging among the future nation builders.

An integrated approach to protect the rivers has always been missing. Every political party should be very keen to save the rivers, improve the environment of Bangladesh and reduce the impacts of climate change. Lack of Institutional Co-ordination between different agencies and overlapping of tasks fades the water related projects' potentials and makes the total system inefficient. The institutions which are involved for waterway transportation planning and implementation of the projects are not capable of undertaking their mandated functions due to lack of trained and experienced manpower. An effective separate or "Unitary Authority" needs to be formed to monitor and coordinate agencies related in the river-saving projects. The authority should work sincerely not for show off. BIWTA, Tourism Board, PWD, BWDB, DCC, WASA and RAJUK should take the decisions together and should be the part of this Unitary Authority. The authority should take initiatives to develop a web site containing modern and well informative information about the waterways in and around Dhaka.

The government has failed to prevent developers and traders from occupying river banks around the city. Local goons, in league with a section of BIWTA officials and police, are allegedly backing the illegal encroachers, defying warnings of the Prime Minister and the High Court. Encroachers have already grabbed the embankments of the Buriganga and Turag rivers to run their sand and stone chip business in Ashulia and Amin Bazar. According to a sand trader at Dour, local businessmen continue to grab river embankments by paying money to a section of the police, some BIWTA officials and local goons (Khan, R. A, 2011).<sup>[51]</sup> When the custodians act such outrageous offenses ruthless handling of this matter is required. Properly developed and well managed river corridor can lessen the illegal encroachment of the river bank. Authority should provide defined land use permitted in the river corridor. That can alleviate the illegal encroachment of the river bank and give the rivers land back to them.

The area besides river banks must be surveyed as per CS map and the existing land use has to be recorded in CS Mouza Map. But since the feature found in CS mouza map is often distorted now (often it is seen that river banks has turned into plots and used for residential or commercial purposes or river banks which existed in CS maps no longer exists, instead they are in different location). In this case, both the CS and RS maps should be consulted before any physical feature survey made and final decision is taken. To encourage people for using water routes in spite of others, first discourage road network in some certain areas. In the proposed detailed area plan (DAP) road connection over the "Sarai Jafraabad khal" is totally negative which will discourage people to use the water route. As there is a major road (Basila) connected this area to the Washpur, these link roads will totally destroy the fully used water route and destruct the "Sarai Jafraabad Khal".

77% domestic tourists and 35% foreign tourists come to visit Bangladesh for her scenic beauty. From a foresaid finding, it is revealed that the domestic tourists firstly choose to tour to see places which are famous for scenic beauty. On the other hand to the foreign tourists they choose to see archeological and historical places as a first causative reason while second choice to them is scenic beauty (Ali, M.M and Rehana Parvin, R.2010).<sup>[52]</sup> In spite of having the asset and knowing the truth tourism board did not incorporate the

waterways in the tourism plan though waterways can play a significant role in tourism and recreation activities. In spite of being the proud host of 2011 cricket world cup for the first time the tourism board was not wise enough to incorporate the water routes for tourism like the world popular water front's some fireworks, light shows could take place there during this mega event.

There should be a separate department under BIWTA that is responsible for the formulation of policy based on needs assessments for water based recreation according to age, gender and socio-economic groups at ward level. The committee should comprise government, non-government organizations, and other community-based and local organizations. The authority should make a waterways initiate action—research to make them more attractive for recreation purposes. Based on ward-level needs, the authority should prepare a yearly plan; this should consider the provision of adequate financial support from government, establishment of new water recreation facilities, improvement of landscape, security, regular maintenance and management aspects.

Planner's aim should be to bring people close to the water. Measures should be taken to ensure that while planning housings near water bodies' water based recreation should be provided for that local area. Land owners who have waterways or wetlands in or near their properties should be aware of enhancement schemes. Encourage beautification programs, with planting of gardens by individual residents and businesses. Architects, landscape and interior designers, planners, teachers, and recreation specialists should increase their knowledge of water based recreation. Programs should be organized by the professionals for capacity building of the general one.

Water based recreational users can sensitize decision makers, urban officials and community leaders to their needs and priorities for recreation facilities through workshops, demonstrations, action research and public events. Such awareness-raising can bring water based recreational users together with city officials and community leaders to discuss issues and draft action plans. Planners and decision makers should apply a water friendly lens to policy affecting water based recreational users particularly in the design and planning of water corridors.

It is hoped that these recommendations will make Dhaka more water-friendly,

ultimately producing happier recreational users, better water corridors and green open spaces in community areas as well as city dwellers.

### **6.7 Conclusion**

Dhaka, seen from the river was a stunning sight and presented a spectacular image to passerby. However the city authorities failed to preserve the urban fabric, most of the structures adorning the river bank and also the places surrounding that area. Inconsiderate development of the city destroyed most of the natural assets it possessed, which contemporary cities struggle to achieve with hard-hearted planning measures. Most of the development concerned authorities are silent watcher to most illegal land filling and river bank encroachment.

Many scenic places existed, and some still exist in Dhaka. There were no plans to preserve them as scenic places within the city. Many canals were covered by box-culvert and many people are least aware of their existence. Many of the places could have been designed by including them and this would have given those places special significance. Still we have the opportunities to make it again a scenic land of greeneries and water. The CW can be developed as one continuous route and could be performed like an entity which has the immense scope for providing water recreation facilities and tourism in the inner part of Dhaka as well as the outer side and can relate the whole city to its city dwellers through its continuity and water sensitive urban design. In this thesis I have tried to discover that potentials through some examples. Few ideas have been shown to establish that.

CW will also act as a tourism asset and provides a link between existing and new attractions and support the holiday industry through water-based activities. Visitors drawn to the waterways contribute to the economy of the waterway corridor through expenditure on local goods and services. The old Zamindar's palace at Murapara and Jamdani Polli could be developed as small towns. Through conservation these places will offer some scenic places along the water routes and create immense income opportunities for the locals. The development of recreation and tourism along these water routes will bring together the community's needs for leisure and economic growth and act as a catalyst for urban regeneration. That will make a contribution to improving

the quality of life for those living in our more deprived communities along waterways as well as for other communities.

Riverfront Development could be a catalyst for an economic and social rejuvenation of the whole city. The whole length of the riverbank of CW should be developed as a tree-shaded promenade, largely a pedestrian public space that is linked to other open and green spaces, parks and gardens, historic sites, and especially designed buildings for special purposes creating a clear and legible pedestrian network. Innovative building types will have to be conceived that conform to the river and canal-front conditions. The Tongi bridge area, can be a more economically and culturally vibrant riverfront and an endearing entrance to Dhaka city. The area close to the bridge, along the banks of the Turag, can be developed as an arts district.

Dhaka's wetlands restoration can be termed as the life saving drug for the survival of our beloved city and its surrounds. Development authorities in collaboration with experts, NGOs, media personnel and civil society must undertake a dynamic role to protect the rivers around Dhaka and use of river as recreational element can do that in a praiseworthy manner.

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APPENDIX

Questionnaire for Tongi-Ashulia- Mirpur" route

**Questionnaire Survey**

Purpose: To measure the river users' expectation/ satisfaction level of the selected routes

Target Group: On site recreational users and route trip makers

All Information supplied will be used exclusively for academic purpose.

**1. Identification of the respondent**

- a) Name:
- b) Sex : Male..... Female.....
- c) Age:..... years
- d) Education:
- |           |           |                  |               |         |
|-----------|-----------|------------------|---------------|---------|
| M. Degree | B. degree | Higher Secondary | Secondary     | Primary |
| Technical | Literate  | Illiterate       | Underage/ N.A | Others  |
- e) Occupation:
- |                |                |                      |         |
|----------------|----------------|----------------------|---------|
| Service holder | Business owner | Household management | Student |
| Retired        | Unemployed     | Self-employed        | Other   |
- f) Family income per month:
- |                  |                 |                  |
|------------------|-----------------|------------------|
| Less than 10,000 | 10,000 - 15,000 | 15,000 - 25,000  |
| 25,000 - 35,000  | 35,000 - 50,000 | more than 50,000 |
- g) How many years have you lived in Dhaka and where?
- Years in total ..... Address .....

**2. River users' characteristics**

*First I'd like to ask you some questions about your recreation and leisure at this place today...*

- a) How many people are you here with today in addition to yourself? \_\_\_\_ others
- b) How many of these are 12 years of age or younger? \_\_\_\_ 12 or younger
- c) Are you here as part of an organized grouping? \_\_\_\_ no \_\_\_\_ yes
- d) How did you get to this place today?
- |             |          |         |                       |
|-------------|----------|---------|-----------------------|
| Auto        | Bike     | On Foot | Public Transportation |
| Private car | Rickshaw | Other   |                       |
- e) About how long did it take you to get to here today? \_\_\_\_\_ Minutes
- f) About how far is that in miles?
- |                  |             |        |           |
|------------------|-------------|--------|-----------|
| Less than ¼ mile | ¼ - ½ miles | 1 mile | 2-4 miles |
|------------------|-------------|--------|-----------|
- g) How often do you visit this place?
- |             |             |              |                    |
|-------------|-------------|--------------|--------------------|
| First time  | Once a year | Occasionally | Nearly every week, |
| Irregularly | Rare        | Others       | Nearly every day   |

- h) When do you visit this place?  
 Morning                      Afternoon                      Evening
- i) About how long do you plan on being at this place today? \_\_\_\_\_ hours
- j) How important do you feel the river here is to the enjoyment of your recreation activities today?
- Very important;*(I would not be here if the river wasn't here)*
  - Somewhat important;*(river plays some part in the enjoyment of my recreation here)*
  - Not important;*(river just happens to be here and plays no part in the enjoyment of my recreation)*
  - Detrimental;*(river detracts from the enjoyment of my recreation)*
- k) Which season do you like best?    Dry                      Monsoon
- l) What kinds of activities are you doing here today?
- Outing with family members
  - To take food in the restaurant
  - Long driving
  - Roaming with friends
  - Walking on river bank side
  - Go to park, zoo, mela(fair)
  - Photography
  - Fishing
  - Picnicking
  - Boating
  - Site seeing
  - Others
  - No activities
- m) What things do you like best about this route of the river and the areas around it?  
 .....  
 .....
- n) What things do you do not like about this route of the river and the areas around it?  
 .....  
 .....
- o) Do you feel the necessity of enhancing the attractiveness of the route?  
 Yes .....                      No .....
- If yes, then how?
- Planting seasonal flowers and plants
  - By cleaning and maintaining regularly

- By increasing facilities
- Commercial outlets like small retail shops.
- Natural areas for vegetation and wildlife

.....

.....

.....

p) What kinds of problems do you feel here?

.....

.....

.....

q) What are the suggestions to overcome these problems?

.....

.....

.....

.....

3. The next few questions refer in general to rivers in the metropolitan area...

a) Are there any other places **on waterways** in and around Dhaka that are especially important to you for recreation or other reasons?

Yes \_\_\_\_\_ No.....

If yes, then where and why?

.....

.....

b) Over the last several years, do you think the quality of rivers in and around Dhaka has changed for recreation?

• \_\_\_\_\_ gotten better \_\_\_\_\_ gotten worse \_\_\_\_\_ remained about the same \_\_\_\_\_ not sure

c) What changes do you think most need to be done to make rivers in the Dhaka area better for recreation? (*Suggestions—development & facilities, land policies, programs, etc.*)

Not sure.....



