Bangladesh

Expanding Tradable Benefits of Inland Waterways

CUTS International

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Case of Bangladesh

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#1718

Contents

List of Boxes, Figures and Tables

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Abbreviations

6FYP	6th Five-Year Plan
7FYP	7th Five-Year Plan
ADP	Annual Development Programme
BBIN	Bangladesh-Bhutan-India-Nepal
BIWTA	Bangladesh Inland Water Transport Authority
BIWTC	Bangladesh Inland Water Transport Corporation
BSC	Bangladesh Shipping Corporation
CNRS	Centre for Natural Resource Studies
CSO	Civil Society Organization
DoS	Department of Shipping
EPIWTA	East Pakistan Inland Water Transport Authority
FGD	Focus Group Discussion
GBM	Ganges-Brahmaputra-Meghna
GDP	Gross Domestic Production
GMDSS	Global Maritime Distress and Safety System
ICT	Inland Container Terminal
IWT	Inland Water Transport
KII	Key Informant Interview
MoS	Ministry of Shipping
MVA	Motor Vehicle Agreement
NRG	National Reference Group
PIWTT	Protocol on Inland Water Transit and Trade

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Executive Summary

In terms of intra-regional trade and investment Bangaldesh, Bhutan, India and Nepal (BBIN) sub-region appears to be lagging way behind the global trend. New hopes about regional trade have emerged as BBIN governments are now emphasizing on trade facilitation through bilateral and multilateral agreements. Major positive changes are expected as both government and non-government stakeholders are working hard to facilitate inter-country trade through land and waterways.

Livelihood, culture and civilization of this sub-region has an intrinsic relationship with the GBM river basin. Yet waterways connectivity situation has deteriorated over the years due to deterioration of the rivers as well as due to political reasons. Government of Bangladesh has put renewed emphasis on developing Internal Waterways (IWs) in its Seventh Five Year Plan, and aims to increase the length of navigable waterways within the country from 4,000 km to 5,750 km by 2021. It has to be noted that promoting navigational usage of IWs is not just about new construction projects solely focused on trade facilitation. Poverty, livelihood, gender and environmental concerns have to be built-in to any IW development plan.

Project and the Country Diagnostic Report

The project titled "Expanding Tradable Benefits of Trans-Boundary Water: Promoting Navigational Usage of Inland Waterways in Ganga and Brahmatura Basin" (IW Project) intends to contribute to improving institutions for the governance of inland waterways in the BBIN sub-region. To attain this goal, the project has attempted to create an alternative policy discourse for enabling reform measures between policy makers, civil society and communities. With a view to document the existing policy discourse as well as the perception of different stakeholders regarding use of IWs for transboundary trade- a country diagnostic study has been conducted. The study has revealed numerous poverty, livelihood, gender and environment related concerns of stakeholders.

This report selected three important locations based on their significance in bilateral trade, transport and connectivity through inland water routes and Significant presence of major institutional stakeholders (e.g. BIWTA, BIWTC etc.) preferably established offices with adequate human resource and infrastructure. These three locations were (i) Sivalaya Upazila (Aricha) of Manikganj District, (ii) Ashuganj Upazila of Brahmanbaria, and (iii) Chandpur Sadar Upazila of Chandpur District.

Existing Policy Discourse

In general the policy discourse in Bangladesh regarding utilization of IWs lacks focus on lives and livelihoods of the people living by the river. Here major Acts, Ordinances and Orders currently in place and the identified gaps are shown.

Acts/Ordinances/Orders	Issues
National River Protection Commission Act, 2013	Lack of cooperation and coordination among the different bodies related to IWs, namely- BIWTA, DoE, Water Development Board, Dept. of Fisheries, Ministry of Commerce, Ministry of Shipping etc.
Inland Water Transport Authority Ordinance, 1958	• Possible damage to smaller vessels from collision with larger vessels not addressed adequately. • Inadequate facilities for women passengers.
Bangladesh Inland Transport Corporation Order, 1972	Absence of proper provision to get compensation from oil carrying vessels in case of leakage due to accidents.
Fisheries (Protection) Ordinance, 1959	• Fishing community is against licensing requirements (for fishing). • However, over exploitation is occurring due to lax implementation of licensing requirements.
Pilotage Ordinance, 1960	Provision of operating passenger vessels with masters instead of trained pilot should be revoked. However, there is lack of training facilities for pilots.
Bangladesh Water Act, 2013	Damage to cage fish farming due to increased river traffic not adequately considered.
Bangladesh Environment Conservation Act, 1995	Restrictions/regulations regarding vessels causing damage to environment not being implemented properly. Lack of resources as well as lack of coordination are the factors working behind.

Stakeholder Perception

Stakholders (sector experts, service providers and community) have been engaged to comprehend their concerns regarding scope and possible implications of expanding trans-boundary trade through IW in Bangladesh. Following are the key concerns that came through the national and sub-national level consutlations.

(i) Navigability & River Dredging

Maintaining navigability of the routes (especially during the dry seasons) is a major challenge faced by the respective authorities. Siltation and river erosion also pose

threats. While the government has recently initiated massive country wide dredging initative, there remains concerns about pace of implementation of the projects. Stakeholders have expressed need for improved and sustainable solutions to the navigability problem. There is also lack of logistics and capacity of the project implementing authrority.

(ii) Concerns about the Fishing Community

Over the years fish availability has decreased. While some perceive increased river traffic to be for this decrease, others opine that fish availability can be maintained despite increased river traffic if the rivers and canals remain deep enough. However, siltation remains as a major challenge in this regard. Stakeholders demand that livelihood oncerns of the fishing community have to be incorporated into IW development policies. Security of the fishermen as well as rent seeking behavior of the local elites are other critical concerns here.

Key Concerns

- *Maintaining navigability (siltation, river erosion).*
- *Livelihood of fishing community and Char people*
- *Creating IGAs for local people*
- *Addressing gender dimensions*
- *Increased pressure on rivers due to trans-boundary trade*
- *Slow pace in implementing policies*
- *Promoting local MSMEs*
- *Promoting tourism*

(iii) Income Generating Activities (IGAs) for Local People

There is a general perception that trans-boundary trade through IWs will create new IGAs for local people. However, lack of skill among the local people may become a critical challenge to overcome. Trans-boundary trade will definitely bring further institutionalization and the local community need preparation and support to adapt. For example, international vessels coming to local ports will definitely create greater need for support services, but without access to finance the local community will not be able to tap that opportunity.

(iv) Gender Concerns

There is little participation of women in IGAs related to IWs in Bangladesh. Very few are found to be providing informal support services (e.g. roadside food stalls for low-income customers). While gender concerns are prioritized in national policies, in practice there is not adequate reflection of those. However, there has been some recent developments, for example- breast feeding compartments in new passenger vessels, separate waiting rooms for women at the ports. Stakeholders have recommended that

instead of addressing gender dimensions after developing infrastructure and other facilities, implementors should incorporate these into their plans from the very beginning.

(v) Environmental Concerns

Stakeholders have been found to be concerned about potential deterioration of river conditions due to increased traffic (once there is increased trans-boundary trade through IWs). Increased use of IW may induce development of industrial infrastructure along the river. Those in turn may cause serious harm to the rivers. Increased number of larger vessles plying on the river may result in increased river erosion. Special emphasis on protecting the Hilsa sanctuary which is close to the IW hub at Chandpur has been recommended by many.

(vi) Other Issues

While people generally welcome developing the port facilities, delay in implementation of port development/expansion projects sometimes affect them adversely. For example, it has been over 7 years since the government circulated its intention to expand the port at Ashuganj in Brahmanbaria district. But till date no land has been acquired. But people living in that area have not been developing their establishments (houses, shops, mills etc.) as they presumed the government will be acquiring their land soon. Some have alleged that land value has decreased in the area due to this delay in implementing the policy decision.

To facilitate trans-boundary trade IWs are to be improved significantly. It has been recommended that once the IWs are improved those may also be utilized in promoting local MSMEs (because there will be improved access to the market place and new customers). Similarly, improved connectivity through IW will also create scope for promotion of toursim via IWs and trans-boundary passenger movement.

Remarks

Increasing trans-boundary trade through IWs will surely contribute towards achieving macro-economic objectives of Bangladesh as an economy. However, to ensure that the poor and marginal communities living along the rivers benefit equally, their concerns need to be incorporated in the overall development plans. At the same time, sustainability concerns also need to be properly emphasized so that benefits of IW-based trade remain singnificantly higher than the costs.

1. Introduction

Background

Bangladesh is a riverine country and the three mighty rivers – Padma, Jamuna and Meghna - from different points flow into the country. These rivers are important for transportation, culture and livelihoods. Nepal, Bhutan and Bangladesh and the eastern states of India are more or less connected by these rivers. About 60-70 years ago, these rivers were the only means of transport for riverine communities to traverse from one city to another. The low usage cost of the waterways as compared to other modes of transport was also beneficial for the communities. In the age of globalisation with more political boundaries, the scope of connectivity through the traditional waterways has become vital due to its economic benefits.

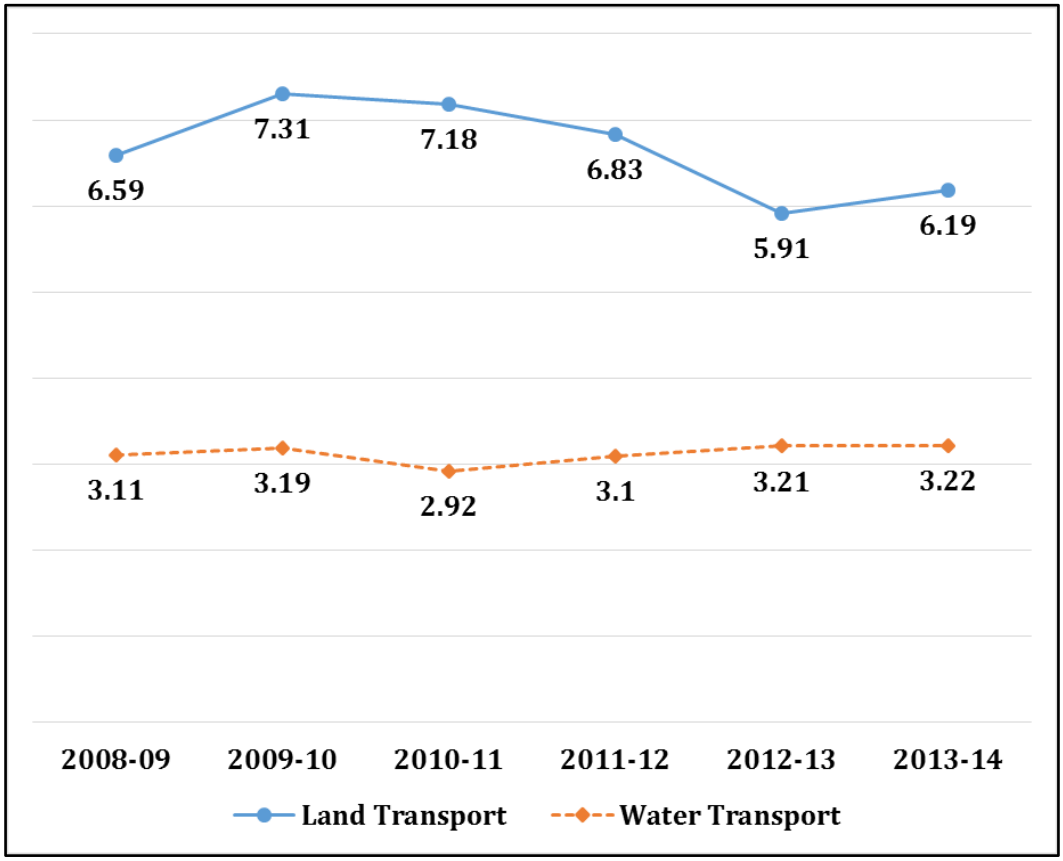
River management, planning and inland waterways on these rivers should be people-centric, however the political motive and boundaries impede the development of such initiatives. To strengthen regional connectivity and ensure that benefits accrue to the communities, government of Bangladesh has stepped up domestic investment on reviving the waterways, new navigation routes, and infrastructural development along the Indo-Bangladesh protocol routes. Policy and regulations for governing the inland waterways systems should be people-centric for development.

River is an integral part for the people of Bangladesh not only as means of mobility and access to basic services, but also for agricultural production in totality (Czuczman 2004). Local produce like paddy, jute and fish are some key produce which depend heavily on the complex river networks of Bangladesh. Inland Water Transport (IWT) is also a substantial contributor to the economy of Bangladesh. The contribution of inland water transport sub-sector to Gross Domestic Product (GDP) growth is also increasing annually.

The mobility and access to the facilities depend on the sound infrastructure in both inland waterways and inland road facilities. Roadways, railways and waterways mainly establish connectivity within the country. Rivers, streams, and canals altogether covers 7 per cent of the total surface i.e. about 24 thousand km inland water transport is one of the oldest modes not only for economic efficiency but also for environmental sustainability of transport network system. Inland waterways network comprises over 5,968 km of navigable waterways for mechanised vessels during the monsoon season, and it comes to about 3,865 km during dry season.

Inland Water Transport (IWT) sector transports over 50 percent of the total freight traffic. Moreover, it carries around one-quarter of all passenger traffic in waterways. There are about 22 major ports (among them 11 ports are newly developed) and 448 secondary riverine stations all over the water network in Bangladesh. Approximately, seven lakh river vessels transport goods as well as passengers in the country. Annually, 50 million passengers are carried through this waterways network (BIWTA 2017).

Figure 1: Growth of GDP by transport sub-sector (in per cent)



Source: (Bangladesh Bureau of Statistics 2016)

However, the transportation network by waterways in Bangladesh are not utilized to its full potential. The economic benefit of waterways transportation is still very cost-effective compared to other modes of transport. This study tries to find out the challenges by fetching cross-country and multi-stakeholders buy-in in policymaking to revamp the IWT sector for regional and national connectivity.

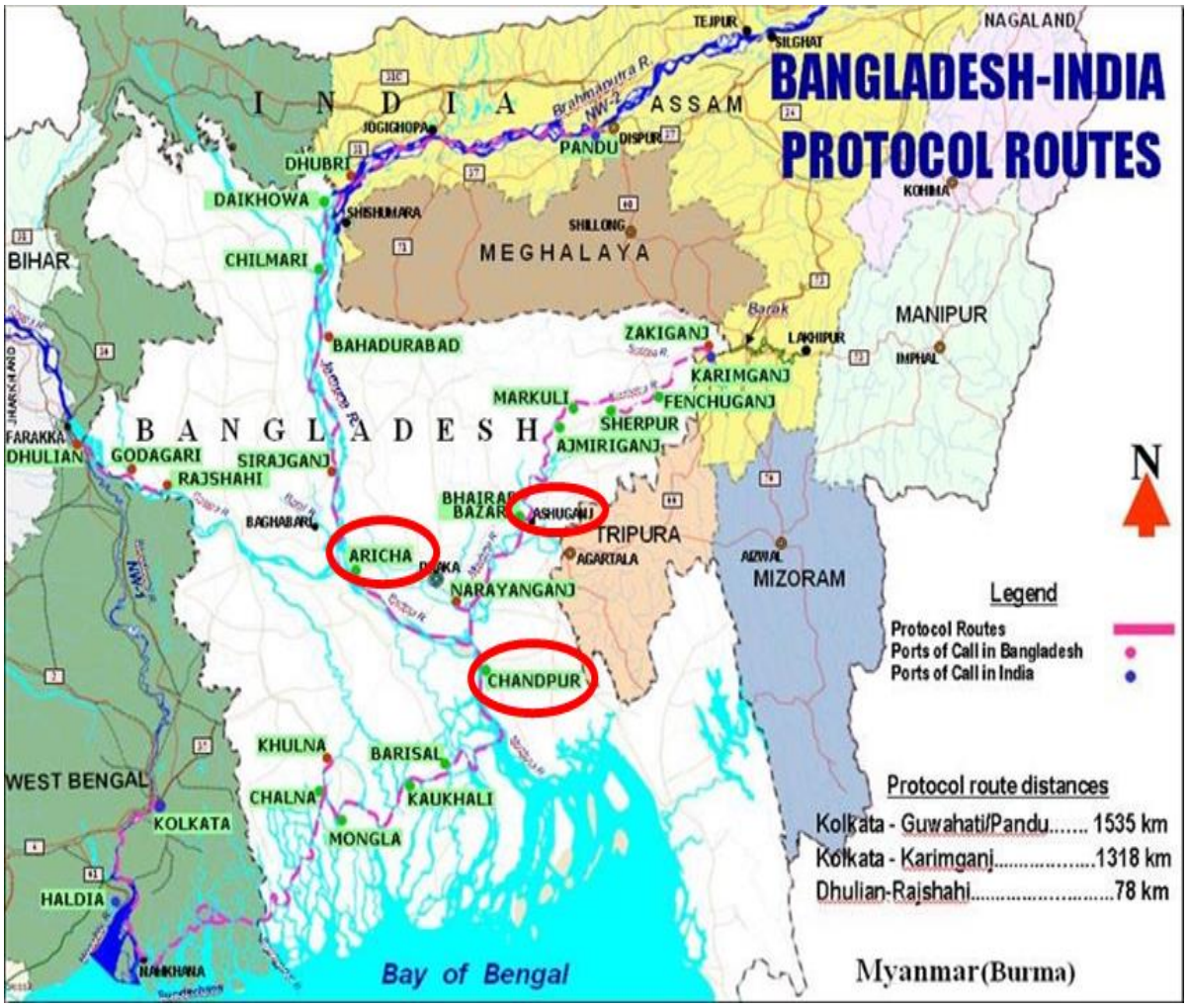
Methodology

This study is based on the qualitative information and perception of different stakeholders. The quantitative information is collected from the secondary sources, and in many cases the up to date data have not been available. Quantitative survey on

the river-based people might bring forward some more interesting results. The various sites selected for data collection of the diagnostic study were:

i. Shivalaya Upazila (Aricha) of Manikganj District;
ii. Ashuganj Upazila of Brahmanbaria; and
iii. Chandpur Sadar Upazila of Chandpur District

Figure 2: Locations in Bangladesh for the field study



The study team conducted three field visits for data collection to three of these sites in March 2017. Since this study is primarily a qualitative one, the study team used qualitative data collection tools, namely Focus Group Discussions (FGDs) and Key Informant Interviews (KIIs). A total of 12 FGDs and 34 KIIs have been conducted for this study. Additionally, four interesting case studies have been developed by the study team. The participants of the 12 FGDs are shown in Table 1.

Table 1 : Participation in FGDs at field locations

Category of Stakeholders	Shivalaya		Chandpur		Ashuganj		Overall	
	Total	Female	Total	Female	Total	Female	Total	Female
Union Parishad members	8	2	6	1	7	0	21	3
Women	6	6	5	5	5	5	16	16
Fisherman	5	0	5	0	5	0	15	0
Ferry Operators	5	0	5	0	5	0	15	0
Total	24	8	21	6	22	5	67	19

Four FGDs with four different types of stakeholders have been conducted in each of the mentioned sites, and around 67 participants were engaged in the 12 FGDs conducted. It is important to note that some quantitative data has also been collected while conducting the FGDs, which has been presented briefly and separately in the following section.

Table 2: Participation in KIIs at field locations

Stakeholders	Shivalaya		Chandpur		Ashuganj		Overall	
	Total	Female	Total	Female	Total	Female	Total	Female
River Port Authority	1	0	1	0	1	0	3	0
Ferry Operator	2	0	2	0	0	0	4	0
Vessel Owner	2	0	2	0	2	0	6	0
Freight Handler	2	0	2	0	2	0	6	0
Fisherman Vessel	2	0	2	0	2	0	6	0
Cargo Company	0	0	2	0	1	0	3	0
CSO	1	1	1	0	1	0	3	1
Media	1	0	1	0	1	0	3	0
Total	11	1	13	0	10	0	34	1

As shown above, the objective has been to cover a total of eight types of stakeholders through KIIs. However, not all stakeholders could be covered in all three sites. In some cases, stakeholders were not present, and in some other cases those present were found unwilling to interact with the study team.

Findings from the field levels were further analysed and then used for preparing this diagnostic study report. The draft report was also shared with the National Reference Group (NRG) comprising representatives from key stakeholder groups within the country and then finalized based on the feedback received from the interaction with the NRG. Based on the literature review and consultations with experts, various stakeholders for engagement were mapped out. Then following a participatory method and based on experience and knowledge of the team members checklists for the data collection have been finalised.

FGDs with BIWTA officials at Aricha, Bangladesh
PC: Unnayan Shamannay

2. Institutions Governing Inland Waterways

Institutions for Governance of Inland Waterways in Bangladesh

There are a number of umbrella institutions under the Ministry of Shipping (MoS) governing inland waterways, such as Department of Shipping (DoS), Bangladesh Shipping Corporation (BSC), Bangladesh Inland Water Transport Authority (BIWTA) and National River Conservation Commission. These institutions are directly working for modernisation of sea, river and inland ports, navigation conservation of waterways, creating efficient human resources for maritime sector, ensuring safe and economic transportation of passengers and goods and assisting in international trade expansion though waterways.

1. Ministry of Shipping

The Ministry of Shipping encompasses within its fold the shipping and port sectors. It includes national waterways, inland water transport, ports, ocean shipping, addressing safety and environmental issues and regulatory aspects of maritime shipping and maritime education. Formulation of policies and implementation of various projects are the prime responsibilities of this ministry. This ministry also ensures the maintenance and expansion of viable, efficient, dependable water transportation and communication system.

There are some directorates under the Ministry of Shipping, such as Chittagong Port Authority Bangladesh Land Port Authority, National Maritime Institute, Bangladesh Inland Water Transport Authority, Bangladesh Inland Water Transport Corporation, Bangladesh Marine Academy, Bangladesh Shipping Corporation, Mongla Port Authority and Payra Port Authority. The notable projects of this Ministry are listed below:

- Dredging in the outer bar of Pashur Channel
- Procurement of cargo handling equipment for Mongla Port
- Navigational Aids to Mongla Port
- Rehabilitation and reconstruction of infrastructure and other facilities damaged by Cyclone Sidr 2007
- Modernisation of Benapole Land Port (1st Phase)
- Procurement of Salvage Vessels
- Rehabilitation of two dredgers and related Ancillary Crafts of BIWTA
- Construction of port facilities to prevent unauthorised encroachment of the Buriganga River and its offshore land
- Introduction of circular waterways in and around Dhaka city (2nd Phase)

- Installation of river ports at Noapara, Bhairab – Ashuganj and Barguna
- Expansion of newly constructed jetty at Guptachhara in Sandeep
- Procurement of ancillary machinery including two dredgers, crane boat, speed boat, house boat and truck boat for maintaining navigability of inland waterway and
- Development and modernisation of Barisal river port

2. Department of Shipping

The Department of Shipping (DoS) is an agency under the Ministry of Shipping, Bangladesh. It is the maritime safety administration of Bangladesh, which is responsible for the formulation and implementation of the national policies and legislations. Ensuring safety of life and ships at sea, development of shipping industry, maritime education and certification, employment and welfare of seafarers and other shipping related matters are also managed by this department. The compliance of international conventions relating to maritime matters is a major task. The on-going project is titled 'Establishment of Maritime Navigation and Global Maritime Distress and Safety System (GMDSS) Communication System'.

3. Bangladesh Shipping Corporation

The Bangladesh Shipping Corporation (BSC) is the largest ship owner in Bangladesh. It is a state-owned and managed public sector corporation, which was established in 1972. The objectives of providing efficient, safe, reliable and economic shipping services to the local exporters, importers and business houses, and to develop sustainable shipping and ancillary infrastructures were defined as the core responsibilities of the corporation.

4. Bangladesh Inland Water Transport Authority

To set up an authority for development, maintenance and control of inland water transport and of certain inland navigable waterways the then East Pakistan Government on October 31, 1958 promulgated an ordinance called the East Pakistan Inland Water Transport Authority Ordinance 1958. On November 04, 1958 the Government by an order constituted a three-member Authority of East Pakistan Inland Water Transport Authority (EPIWTA). The Bangladesh Inland Waterways Transport Authority (BIWTA) came in to existence on promulgation of the above ordinance 1958 as the successor of the former EPIWTA. An advisory committee has subsequently been constituted to advise the authority in respect of all matters related to development, maintenance and operation of inland water transport and inland waterways in Bangladesh.

5. National River Conservation Commission

The National Conservation Commission Law 2013 has been enacted by the National Parliament in order to protect all the rivers and water bodies from illegal occupation, pollution of water and environment, construction of illegal infrastructure and various illegal interventions in the river. This is the law that strives for maintenance of the rivers and transforming them into source of multiple use for 169 socio-economic development.

National Strategies and Plan

1. Seventh Five Year Plan (2016-2020)

Focus on the investment in inland waterway was very limited as compared to land transport sectors in the 6th Five-Year Plan (6FYP). Successful development of the Bangladesh Delta Plan 2100 strategy for water management and management of other environmental hazards will be a major challenge for the 7th Five-Year Plan (7FYP). Two major problems have been identified in the 7FYP for inland water system which is - lack of full utilisation due to inadequate dredging and shortage of docking facilities. Moreover, government tariff rate is not sufficient enough to ensure the profitability although inland waterway is the cheapest means for transportation.

7FYP targets to increase the length of navigable waterways from 4000 km to 5750 km. Hence, the plan allows the other policies to consider the targets. Under 6FYP, BIWTA has been trying to revive the navigability and dead rivers by implementing dredging related projects like the navigability development of 'Madaripur-Charmuguria-Tekerhat-Gopalganj' river routes under the Padma basin. Besides, 12 important river routes are developing under mid-term project and long-term project captioned 'Capital dredging of 53 river routes (Phase-I: 23 river routes)' was under the 6th Five-Year Plan (6FYP).

Table 3: Inland water achievements against set targets during the 6FYP

Specific Sectoral Performance Indicators	Baseline Data	Sixth Plan Target	Performance
Improvement of waterways through dredging	Km/No. 2500 Km (in all seasons)	Km/No. 3120 Km	Km/No. 3000 Km
Procurement and installation of aids to navigation	5250 Km (monsoon season)	Not available	Not available
Establishment of river-based container port	0	3	1
Establishment of port infrastructure and installation of modern facilities	12	22	16
Procurement and installation of pontoons	475	575	480

Source: (MoP, GoB 2015)

It is evident that the inland water transport has persistently received comparatively less fund and less attention in allocation of resources in development and non-development budgets. The absence of a long-term dredging strategy is another problem. Lack of financial and management information system in BIWTA hinders planning and monitoring capacity as well. Besides, there are certain priorities defined in the 7FYP to support the development of a safe and low-cost inland transport alternative based on the use of the Bangladesh's vast inland waterways. These are given as following:

- Development of navigability of inland waterways by dredging and resuscitation of dead and dying river routes
- Maintenance of navigable waterways by regular dredging
- Facilitating flow of passenger and cargo by development of inland river ports, and by providing navigational aids for smooth and safe movement of cargo and passenger vessels
- Develop inland container river port for transportation of containers by waterways to/from two seaports
- Develop river port handling facilities as well as storage facilities and introduce mechanical equipment for handling cargo to save waiting time for berthing of vessels
- Develop rural launch landing stations by providing pontoon facilities for smooth embarkation/disembarkation of passenger and loading/unloading of cargo
- Digitise all the services provided by BIWTA introducing web-based data base application
- Protect the main channel of the river by clearing and removing garbage and unauthorised encroachment and
- Restoration of the Buriganga and waterways around Dhaka city for making it pollution- free, wider and navigable

Table 4: Inland water development programme in 7FYP

Goals	Targets
Development of new waterways and maintaining navigability of existing channels	• Hydrographic Survey in 6000 km of inland waterways and in 1000 sq. km of coastal waters • Dredging of 3600 lakh cubic meter river bed • Procurement of 30 dredgers • Numerous navigational aids • Procurement of different number of service vessels

Goals	Targets
Operation, maintenance and establishment of landing stations and river ports for bulk cargo and container	• Construction of 10 river ports • Modernisation of 9 river ports • Construction of 2 Container Terminal (ICT) • Procurement of pontoon of different number and size respectively, such as 5 (large); 45 (medium); 50 (small); and 35 (special type) • Several lots of Civil Structure
Digitisation of services related to IWT system	• Introduction of e-governance • Institutional Reform and Restructuring
Facilitating maritime education and training	• Establishment of training institution

Source: (MoP, GoB 2015)

The government proposed Ganges Barrage project, which is 82 km away from Bangladesh-India border and 52 km from Hardinge Bridge/Pakshi Bridge. Ganges Barrage Project comprised 78 spillways with 2.10 km barrage length; three off take structures; eight regulators; 265 km embankment improvement; 1,116 km river/khal re-excavation etc. This project will be beneficial for south west in consideration of salinity intrusion due to unavailability of surface water during dry season.

2. Mid-term Budgetary Framework (MTBF)

Based on the mid-termed budgetary framework, the Ministry of Shipping has defined some strategic objectives and functions, which are shown in **Table 5**.

Table 5 : Strategic objectives and functions of the Ministry of Shipping

Mid-term Strategic Objectives	Activities	Implementing Departments/Agencies
i. Overall development and expansion of shipping system	• Procurement of mother tanker, product carriers, bulk carriers, cellular container ships, etc. to form a modern fleet of ships	Bangladesh Shipping Corporation
	• Ensuring safe movement of water vessels by strengthening inspection and enforcing river laws • Enhancing skills of the deck and engine workers of ocean-going ships	Department of Shipping
	• Modernisation of training programmes for creating skilled manpower in maritime sector • Modernisation of training activities • Extension of infrastructure	Marine Academy

Mid-term Strategic Objectives	Activities	Implementing Departments/Agencies
	• Providing training to sea-men and improving the standard of training programmes	National Maritime Institute
ii. Development and maintenance of inland waterways and expansion of Inland Water Transport system	• Conserving navigability of inland waterways through capital and maintenance dredging and developing river ports and landing stations • Undertaking hydrographic survey of inland and coastal waterways • Keeping rivers and its banks free from illegal occupations • Skills development of deck workers and engine operators of river vessels plying across inland waterways	Bangladesh Inland Water Transport Authority (BIWTA)
	• Procurement and rehabilitation of ferries and pontoons • Developing and modernising the management of passenger vessels • Procurement and automation of modern water vessels and equipment and introduction of e-ticketing system • Modernisation and development of water vessels	Bangladesh Inland Water Transportation Corporation (BIWTC)
	• Taking actions against recommendations for coordinating the activities of various Ministries/Divisions and Agencies that are concerned with rivers • Making recommendations to the • Government for keeping rivers and river water pollution-free	National River Conservation Commission
iii. Expansion of export and import activities through development of physical infrastructures at land ports	• Developing and modernising physical infrastructures of land ports and enhancing managerial capacity	Bangladesh Land Port Authority

Source: (MoF, GoB 2016)

3. Annual Development Programme (ADP) FY 2016-17 and FY 2017-18

Annual Development Programme (ADP) programmes are target-based on the objectives of the mid-term budgetary frameworks.

The major ADP projects taken under the Ministry of Shipping and other relevant institutes are demonstrated in **Table 6.**

Table 6: ADP Projects under Ministry of Shipping and other institutes

Objectives	Projects	Implementing Ministry/Organisation	Duration
On-going Project: Modernisation of sea ports, development of channels, increasing the quality of efficiency and services	Internal container terminal in Ashuganj river port.	BIWTA	01.01.2011-30.06.2016
	10 dredgers, crane boat, tugboat, officer's houseboat and crew houseboat with supporting equipment	BIWTA	01.07.2011-30.06.2018
Running Project: Inland waterways development and maintenance, development and expansion of waterways transportation system	Excavating 12 important waterways	BIWTA	01.10.2011-30.06.2018
	Capital dredging in 53 routes of inland waterways (first phase-24 waterways)	BIWTA	01.07.2012-30.06.2019
	Establishing ship personal training	BIWTA	01.07.13-

Objectives	Projects	Implementing Ministry/Organisation	Duration
	institute in Madaripur		30.06.17
	Bangladesh regional inland waterways' project-1	BIWTA	01.07.16-30.06.24
New Project: Inland waterways development and maintenance, development and expansion of waterways transportation system	Feasibility study for development of Teknaf, Cox's Bazar, Chatok, Faridpur, Ghorashal Riverpoints: Ferry *ghat's* and jetty's at various locations	BIWTA	01.04.17-31.12.17
Running Project: Inland waterways development and maintenance, development and expansion of waterways transportation system	Passenger ships in different routes, especially in Dhaka-Barishal	BIWTC	01.04.15-31.12.18

Source: (MoP, GoB 2016)

Notable Inland Waterways Related Acts and Policies

In Bangladesh, the authority of formulating policies respectively, is the BIWTA. The Authority shall, subject to permission and approval of the Government, have powers to enforce rules and regulations or any laws, either wholly or partly, pertaining to inland waterways and control of traffic thereon. The list of significant policies and Acts is attached and few descriptive sections of notable ones are given below.

1. Bangladesh Water Act 2013

Bangladesh Water Act 2013 is designed for integrated development, management, abstraction, distribution, usage, protection and conservation of water resources in Bangladesh. This Act also makes provision for international exchange and regional cooperation in sharing information and data for common water resources, research on international rivers, prevention for chemical and organic pollution, take measures for development of water resources, knowledge sharing like educational and training programmes.

2. National Water Policy 1999

The issue of water transportation is also significantly noted in the National Water Policy 1999. The policy states that the inland water transportation has a great impact in the economy of Bangladesh because it costs less as compared to other sectors in

carrying products. But many routes are getting disqualified in carrying the watercrafts due to excess siltation in the riverbeds. In clarifying this problem, the policy indicated that maximum measures are to be taken to make the inland water transportation obstacle-free through dredging rivers and regaining the navigability.

Box 1: Notable inland waterway acts and policies in Bangladesh

i. National Water Policy, 1999
ii. Bangladesh Water Act, 2013
iii. National River Protection Commission Act, 2013
iv. The Inland Water Transport Authority Ordinance, 1958
v. The Inland Shipping Ordinance, 1976
vi. Inland Shipping (Amendment) Act 1990
vii. Presidential Order No. 28 of 1972 Ordinance for BIWTC
viii. Pilotage Ordinance 1969
ix. Mongla Port Authority Ordinance, 1976
x. Payra Port Authority Act, 2013
xi. Payra Port Project (Land Acquisition) Act, 2016
xii. Bangladesh Inland Water Transport Corporation Order, 1972
xiii. The Bangladesh Merchant Shipping Ordinance, 1983
xiv. Fisheries (Protection) Ordinance, 1959
xv. Local Government (Union Parishad) Ordinance, 1983
xvi. Water Resources Planning Act,1992
xvii. Interference with Aids to Navigation Ordinance,1962

3. Bangladesh Inland Water Transport Corporation Order, 1972

When it was convenient to provide for the establishment of a Corporation for the purpose of operating, promoting and developing of coastal and inland shipping and water transport services through vesting the assets and liabilities, then the then Pakistan Government took steps to form a Corporation, which was later turned into 'Bangladesh Inland Water Transportation Corporation Order, 1972'. The Corporation has been constituted to provide safe and efficient shipping and water transport services on coastal and inland water routes as it can carry out all forms of activities connected with or ancillary to such shipping and water transport.

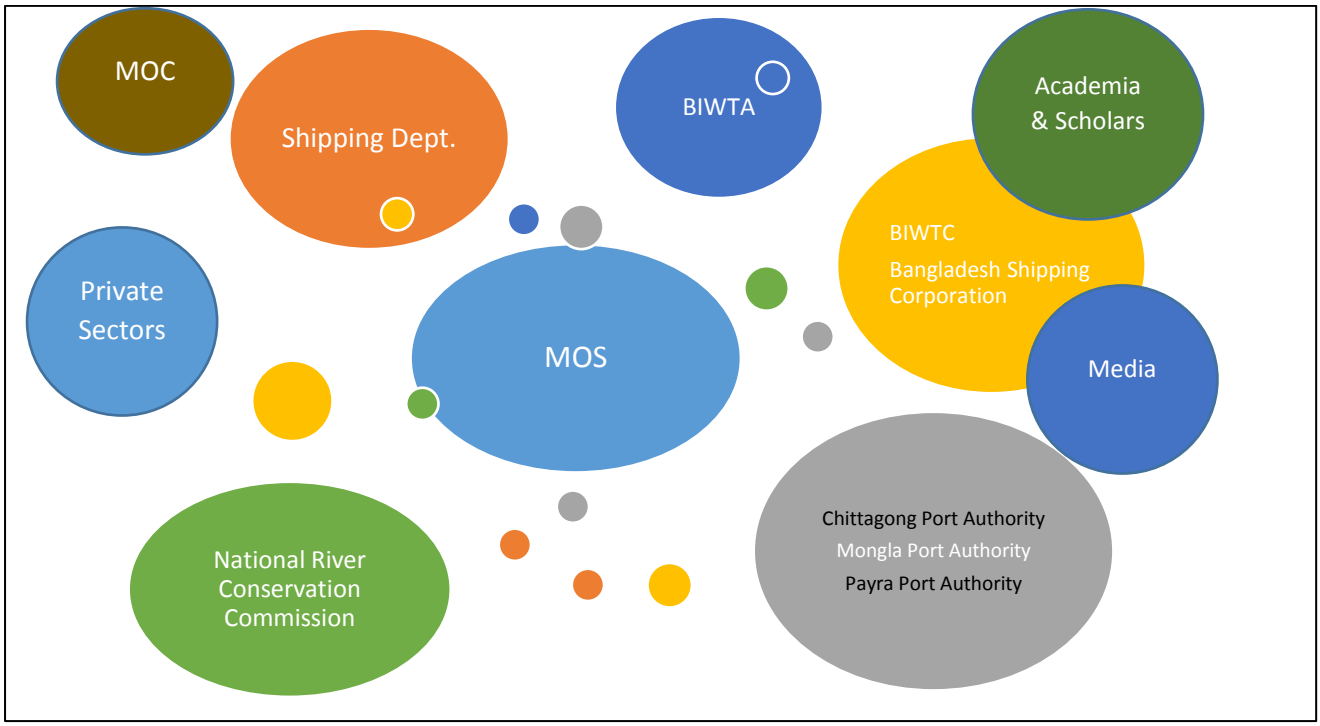
4. National River Protection Commission Act, 2013

This Act has been undertaken to establish a Commission and to develop the navigable facilities through which the multipurpose use of rivers for socio-economic development will be ensured. It has other objectives, such as to protect illegal encroachment of river, pollution of water and environment, river pollution by industries, construction of illegal infrastructure, to avoid inconvenience or irregularity and to recover the normal wave of rivers.

Mapping of Relevant Actors/Stakeholders

Important number of stakeholders are directly or indirectly involved to formulate as well as instrumenting the national policies, strategies, plan and other legislative documents. **Figure 3** shows the mapped stakeholders who are inter-linked with inland water development.

Figure 3: Stakeholders involved with inland waterway development



Current Policy Discourse

There are number of challenges related to the facilitation of inland waterway. The solutions to the challenges are expected to reflect by the policies. The current policies enlisted above addressed some of the features of the challenges that had been objected by different level of interest groups. It is also creating a policy discourse that the reduction of inter-conflicts of the policies, the absence coordination in accordance with the policies and the missing issues raised by the interest groups can help harvesting the benefits of the regional trade in BBIN region.

The interest groups have identified that there are lack of coordination among government agencies resulting in slow and conflicting project implementation. The National River Protection Commission Act 2013 urged to set up an independent Commission, which can only monitor the concerns related to the rivers, but has less authority to take action against the concerns.

The interest groups also had focused on the traffic management in the protocol route. The traffic will eventually increase if the international trade starts. It will also increase the risks of the accidents, hence the increased traffic in the route. The stakeholders pointed that issue as the present capacities of the BIWTA cannot afford such traffic management. The related technology and investment for such management is urgent for ensuring a safe protocol route.

Table 7: Issues related to various water protection and transport laws

Laws	Issues	Interest Groups
National River Protection Commission Act 2013	• Lack of cooperation and coordination among IWT Institutions BIWTA, DoE, Water Development Board, Department of Fisheries, Ministry of Commerce and Ministry of Shipping • One Implementing Cell under River Commission should be introduced for implementation of gazetted rules	BIWTA, local news correspondence, BIWTA
Inland Water Transport Authority Ordinance 1958	• Damage due to the collision of large vessels with fishing boats and small trawlers for transporting goods should be considered • Women related amenities like breast feeding rooms, waiting compartments, etc. in ferry and water passengers crafts should include in craft design to help in the implementation of policy	Fisherman group, NGOs BIWTC
Bangladesh Inland Water Transport Corporation Order 1972	• Compensation for oil tanker's leakages should be mandated by laws to reduce accidents	NGOs
Fisheries (Protection) Ordinance, 1959	• Boat with fishing contrivances will be seized without valid authority or licences and fishing community urged that they wanted to continue fishing with boat without licence related issues • Over-exploitation of river fish resources will be happened without licensing of fishing boats (small, medium and large scale fishing boats can be categorised for licensing requirement)	Fishing community Researchers (ECOFISH/CNRS)
Local Government (Union Parishad) Ordinance, 1983	• 'Ports of Call' under PIWTT are open for foreign vessels' operators; they will use the stoppage for resting place and entertainment for cultural practices and health issues. This should be included in the Union Parisad Act for mitigating local	Journalists

Laws	Issues	Interest Groups
	smuggling and restrict development of local illegal villages	
Pilotage Ordinance, 1969	• Provision of operation of passenger vessels with masters instead of pilots should remove (lack of pilot training facilities is the main reasons for operation of vessels with masters)	Labour Union, BIWTC
Bangladesh Water Act, 2013	• Leakages from oil tankers, water pollution by vessels, etc. can pollute water that must be regulated by Environmental Conservation Act 1995. People urged for controlling water pollution as river line people utilised for daily work, especially *Char* people. Fish cultivation with fencing through river line is hampered due to increased number of traffic	*Char* People

Source: Compiled by author

The oil spillage is ecologically a vital concern as the movement of the vessels would increase. Moreover, any unwanted hazards, such as the vessel collapse are likely to affect the environment immensely. A number of fish sanctuaries are available on the rivers of Bangladesh. There is also a Hilsa fish sanctuary at Chandpur, which is ecologically critical for Bangladesh's Hilsa fish production. The increased movements of the vessels are likely to destroy the breeding places of fish. The scarcity of the fish has been observed since the reduction of the water flow and the open access to the rivers. The official authority has recently introduced licensing system but it has increased unwanted hassles. Growing up intermediary classes are also taking advantages of the bureaucratic process and are securing rent in issuing licences.

This cross-border trade requires heavy investment for the construction of the infrastructure. The financing to infrastructure is a major concern. Moreover, for maintaining a depth of 4 m with 300 feet width, the dredging programme has to be continued. Consequently, the cost for keeping the navigation route will require a significant amount for investment. This would also help increasing the external economies. Therefore, how financing would be ensured to the local entrepreneurs has to be reflected in the policy prescription.

The policy discourse can be seen through four different lens: firstly, the impact on the livelihood; secondly, the gender issue; thirdly, the institutional and the infrastructural up-gradation and lastly, the environmental issues. No matter how trade increases competition and economic growth, inland waterways are likely to raise a number of

threats. Moreover, the prospect of increasing livelihood is limited as currently the concerned parties are having their own labour for loading and unloading.

Regional Framework and Cross-border Protocols

Under Indo-Bangladesh Protocol on Inland Water Transit and Trade (PIWTT) routes, India and Bangladesh is connected through waterways. However, the Bangladesh, Bhutan, India, Nepal (BBIN) Motor Vehicle Agreement (MVA) routes with waterways PIWTT routes can opportune trade enhancement among the BBIN regions.

The Protocol was signed in accordance with the Article viii of the Trade Agreement between Bangladesh & India PIWTT. It is for mutually beneficial arrangement for the both countries. The use of waterways for commerce and passage of goods between two places in one country through the territory of the other is the main purpose of this Protocol. The Protocol was first signed in 1972 and since then it continued without any disruption, and was in force till March 31, 2015.

Different pros and cons of the Protocol are being discussed. There are four functional routes under this protocol. Five ports of calls on each sides are to provide facilities to the vessels of the other countries engaged in inter-country trade. Vessels (watercraft) registered under Inland Shipping Ordinance, 1976 in case of Bangladesh Vessel and Inland Vessels Act, 1917 in case of Indian vessel, are permitted to pass through these specific routes. The vessels of either country plying under the Protocol will be permitted to purchase fuels and essential stores at eight certain points.

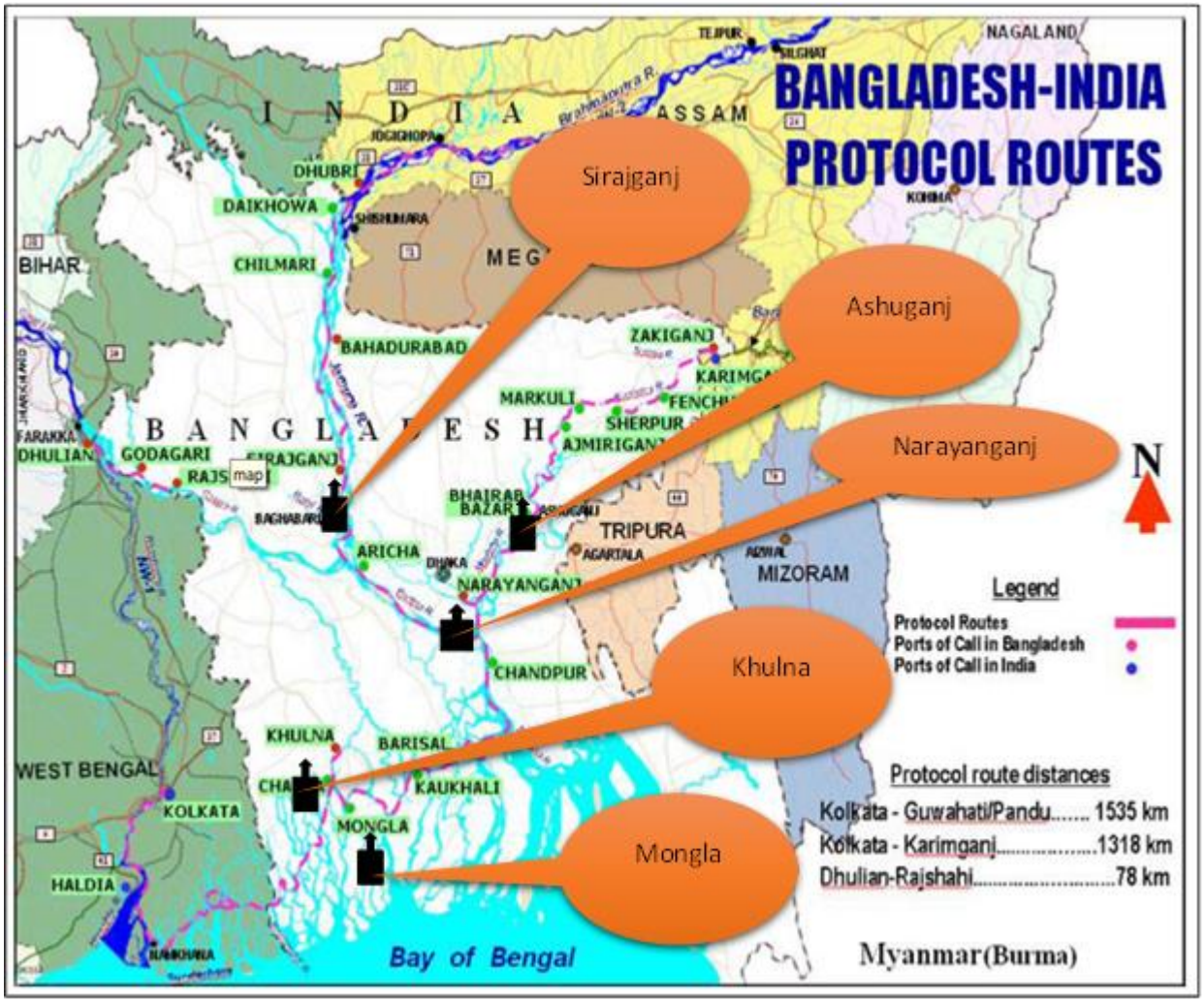
Under voyage permission it is said that the vessels wanting to operate under the Protocol have to obtain the permission of the Competent Authorities appointed by the respective governments. There are common freight rates implemented in both the countries will charge to the extent of uniform rates for both inter country trade and transit traffic at par those charged from the local vessels. Port dues might be levied by the competent authorities in either country on the vessels belonging to the other country and engaged in inter-country trade.

The four international routes, which are signed to be active under this protocol are as following:

i. Kolkata-Chandpur-Pandu
ii. Kolkata-Chandpur-Karimganj
iii. Silghat-Pandu-Ashuganj-Karimganj
iv. Rajshahi-Dhulian

There are five Ports of Call on each side to provide facilities to the vessels of the other country engaged in inter-country trade. The vessels of either country plying under the Protocol will be permitted to purchase fuels and essential stores at points like Narayanganj, Khulna, Mongla, Sirajgan and Ashuganj in Bangladesh and in India they are Kolkata, Haldia, Shilghat, Pandu and Karimganj.

Figure 4: Port of call in Bangladesh part under PIWTT agreement



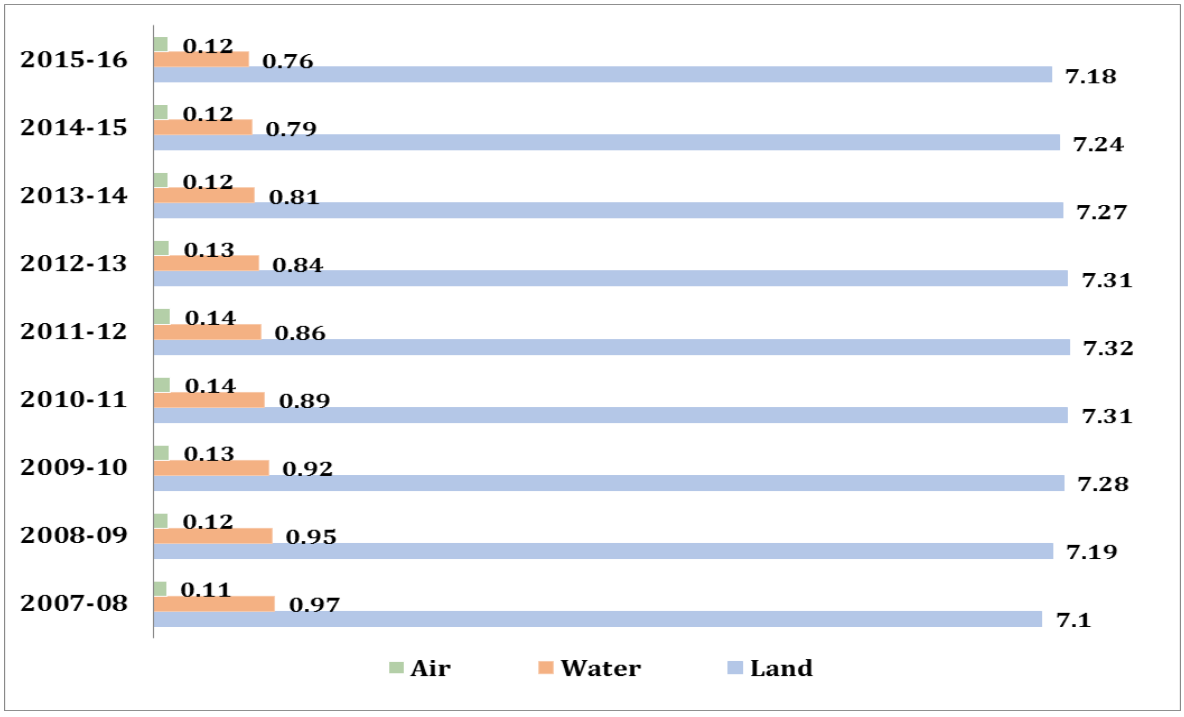
3. Current Status and Viability of Inland Waterways

Transport Connectivity

Transport connectivity is the fuel of economic growth for the economy of any kinds. Bangladesh has four types of transport connection namely1] Road,2] Rail,3] Waterways, and 4] Airways. Land and rest twos are by water and by air respectively connect the first two types. Within the four modes of transport connection, the water transport is cost-effective mode of transport.

The contribution of transport sector (including communication) to GDP is 6.08 percent (in 2015-16 at constant prices). Land transport sub-sector GDP growth rate is increasing and on the other hand, the growth rate for water transport is fluctuating during the last five fiscal years (FY12-FY16). In case of the sectoral share of GDP for transport sector (including communication) was 11.31 which is relatively lower among the last five fiscal years.

Figure 5: Transport sub-sectoral share of GDP (%) at constant prices



Source: (Bangladesh Bureau of Statistics 2016)

It realises that the land transport (Railways and Roads) is most contributor to national GDP compared to water and air. It is also evident the Sub-Sectoral share of water transport is decreasing over the time. The Government of Bangladesh gives priority to develop the roadways, railways and waterways to ensure the inclusive growth and higher employment generation economy by 2021. The targets in 7th Five Year Plan for transport sub-sectors are included in Table 8.

Table 8: Targets in transport sectors

Performance Indicators	Baseline (Year)	2016	2017	2018	2019	2020
Length of targeted four-lane road (km)	98 (2014)	377	389	459	519	556
Share of Roads and Highways Department (RHD) highway road network in good and fair condition (% of network)	76% (2014)	78%	79%	81%	83%	85%
Length of Metro Rail Transit (MRT) network (km)	0 (2015)	0	0	0	10	20
Upazila and Union Road network in good and fair condition	33% (2014)	43%	52%	62%	72%	80%
Length of targeted new railway network (km)	2877 (2014)	2925.5	3076.5	3273.5	3543.3	3733.3
Length of targeted new double railway network (km)	0	7	182	540	901	1110.5
Length of navigable waterways (km)	4,000	4,200	4,500	4,850	5,250	5,750

Source: (MoP, GoB 2015)

In the 7FYP, the Government targets to expanding the railway networks as well as the length of navigable waterways for promoting cost-effective transport modes. About 30 percent expansion of railways network is likely to be constructed. On the other hand, the length of navigable waterways will be increased to 5750 km (about 44 percent).

Table 9 demonstrates that the navigable waterways are increased by 547 km in dry season in 2014-15 fiscal year and the number is being constant in monsoon season for

the last five years. Moreover, the number of passengers is fluctuating but the volume goods transportation in increasing except fiscal year 2015-16.

Table 9: Bangladesh waterways at a glance

Information	Quantum				
	2011-12	2012-13	2013-14	2014-15	2015-16
Length of Inland Waterways (km)	24,000	24,000	24,000	24,000	24,000
Navigable Waterways (km)					
Monsoon	6,000	6000	6,000	6,000	6,000
Dry Season	3,824	3800	3,800	4,347	4,347
Yearly No. of Passengers (in million)	209.8	232.8	175.8	196.3	188.1
Yearly Quantum of Cargo (in million tonne)	16.7	20.3	23.9	24.6	17.4

Source: (BIWTA 2017)

Scenario of study locations

Three locations in Bangladesh are selected for the field study. The three locations are Ashuganj, Chandpur and Shivalaya. Ashuganj is situated at north east side of Bangladesh, Chandpur is located at south side (buffer zone) and Shivalaya is positioned at south west side of Bangladesh. These three points are important in decision making of waterways operation. Ashuganj and Chandpur river ports are very important compared to Shivalaya points in reasons of passengers and cargo transportation. Besides that the Chandpur and Ashuganj ports are positioned on the currently operational PIWTT routes entitled 'Kolkata-Chandpur-Ashuganj-Karimganj', Ashuganj port is being developed as ICT.

Table 10: River routes of Ashuganj area and its characteristics

Characteristics	Ashuganj to Jokiganj via port Karimganj	Bhairab/ Ashuganj to Satok	Lalpur (Sunamganj) to Langrin takarhat
Length of Stretch (km)	370	220	55
Origin of waterway (Natural / Man-made)	natural	natural	natural
Type of waterway (River / River estuaries / Canal / Lake / Other)	River/River estuaries	River/River estuaries	River/River estuaries
Classification of inland waterway, if any, in totality or stretch wise	2nd class	2nd class	2nd class
Length of stretch (in km)	370	220	55
Minimum depth (in feet)	7-8	7-8	7-8
Minimum bottom width (in m)	25-30	40	25-28
Minimum bend radius (in feet)	500-600	500-600	300-400
Minimum vertical clearance (in feet)	40	40	40
Minimum horizontal clearance between piers (in feet)	250	250	250
Average flow velocity during lean season (in nautical mile)	0.78	0.75	0.50
Average flow velocity during flood season (in nautical mile)	14	4	3

Source: Compiled by authors

Table 11: River routes of Chandpur Sadar area and its characteristics

Characteristics	Chandpur to Sadarghat	Chandpur to Narayanganj	Chandpur to Azadbazar	Chandpur to Char Aleczander	Chandpur to Barishal via Kaliganj
Length of Stretch (Km)	61	51	96	94	93
Origin of Waterway (Natural/Man-made)	Natural	Natural	Natural	Natural	Natural
Type of waterway (River/River estuaries/Canal/Lake/Other)	River	River	Estuary	River	River
Classification of inland waterway, if any, in Totality or Stretch-wise	1st class	1st class	1st class	1st class	1st class
Length of Stretch (km)					
Minimum depth (feet)	12-13	12-13	12-13	12-13	12-13
Minimum Vertical Clearance (feet)	60	60	60	60	60
Minimum Horizontal Clearance between Piers (feet)	250	250	250	250	250
Average Flow Velocity during Lean Season (in nautical mile)	Below 2	Below 2	Below 2	Below 2	Below 1
Average Bed Slope Stretch-wise (m)	200	200	200	200	200

Source: Compiled by authors

Table 12: River routes of Shivalaya area and its characteristics

Characteristics	Maoa to Paturia	Paturia to CNB *ghat* (Faridpur)	Paturia to Pakhsi	Paturia to Baghabari	Paturia to Kaulia	Paturia to Daulatdia
Length of stretch (km)	70	50	212	50	50	4.5
Origin of waterway (Natural/Man-made)	Natural	Natural	Natural	Natural	Natural	Natural
Type of waterway (river/river estuaries/Canal / Lake/other)	River	River	River	River	River	River
Classification of inland waterway, if any, in totality or	2nd class	2nd class	4th class	2nd class	3rd class	1st class

Characteristics	Maoa to Paturia	Paturia to CNB *ghat* (Faridpur)	Paturia to Pakhsi	Paturia to Baghabari	Paturia to Kaulia	Paturia to Daulatdia
stretch-wise						
Length of stretch (in km)	70	50	212	50	50	4.5
Minimum depth (in feet)	3.04	2.74	1.5	2.74	1.60	3.30
Minimum bottom width (in feet)	240	240	240	240	240	240
Minimum vertical clearance (in feet)	40	40	16.50	40	25	60
Minimum horizontal clearance between piers (in feet)	250	250	66	250	100	250
Average flow velocity during lean season (in nautical mile)	Below 1	Below 1	Below 1	Below 1	Below 1	Below 1
Average flow velocity during flood season (in nautical mile)	5-6	5-6	5-6	5-6	5-6	5-6

Source: Compiled by authors

Based on the river classification, the 1st Class routes are available in the two points – Chandpur and Shivalaya. The three routes under the Ashuganj area are 2nd class by the report of BIWTA and River Port Authority. In case of Shivalaya, a route between Paturia and Daulatdia is 1st class route whereas rest of the routes are either 2nd or 3rd class. Paturia to Pakhsi route might be an important route but due to navigational outfit, this route cannot be used to its full potential.

Due to navigational problem in the rivers, the Government of Bangladesh is trying to revamp its waterways by implementing major projects. The World Bank is implementing a project called 'Bangladesh Regional Waterway Transport Project 1'. This project will likely to improve the efficiency and safety for passengers and cargo along the Chittagong-Dhaka-Ashuganj Regional Corridor and to enhance sector sustainability. Besides this, a major project on capital dredging in 53 river routes project is implement, which would help to revive the waterways during the dry seasons.

In addition, the capital dredging project in the channel of Mongla to Rampal Power Plant and dredging in outer bar of Poshur channel are also plying for improving the regional protocol route (called PIWTT routes).

Physical, Operational and Commercial Viability of Inland Waterways Connectivity

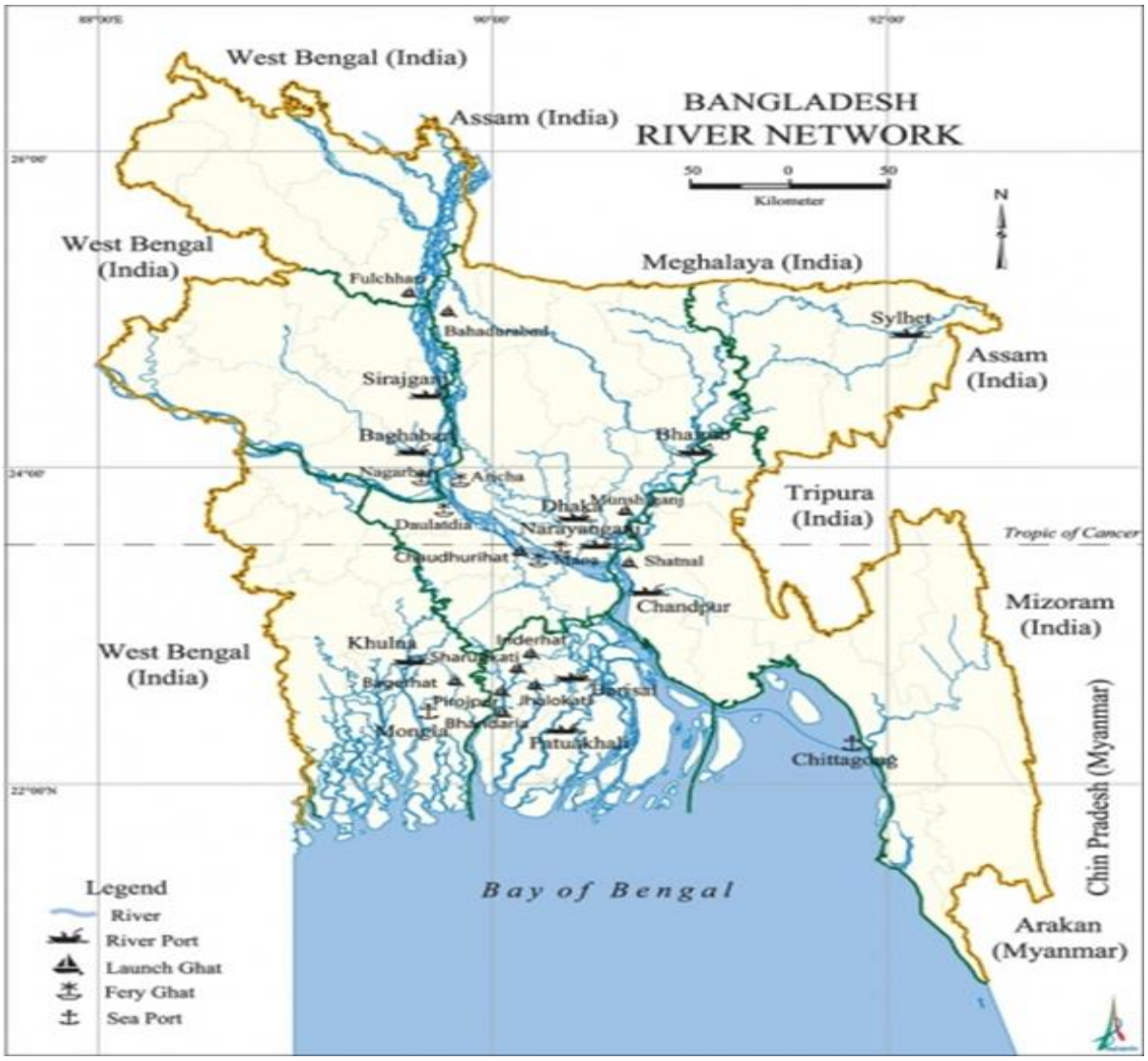
1. Physical viability

In Bangladesh about two-thirds of the land is vulnerable to flooding. Most areas remain under water for two to five months a year. Therefore, the costs of development and maintenance of roads and rail are high, whereas inland water transport has always been a natural and relatively cheaper means of transport.

In certain areas, it is the only mode of transport. Including the country's unclassified routes, the total length of its waterway (700 rivers) is about 13,000 km. Of this, 8,433 km is navigable by larger vessels in the rainy season (5,968 km of which is classified for navigation). In the dry season about 4,800 km is navigable (as classified 3,865 km).

The inland navigable waterway routes are classified into four groups: Class-I: Four Trunk Routes, the depth range of which is 3.66-3.96 m and length is about 683 km, includes the way comprising: Chittagong – Chowkighata – Chandpur – Shambhupura – Narayanganj / Dhaka; Shambhupura - Demra; Shambhupura - Bhairab Bazar / Ashuganj; and Chowkighata – Barisal – Mongla – Khulna - Maheswarpasha. Class II is named as Eight Link Routes, the depth range of which is (d 1.83-3.65m and length is about 1,000 km. This category includes: Mohanpur - Daikhawa; Bhairab Bazar - Chhatak; Chalna - Raimongal; Hijla - Saistabad; Satnal - Daudkandi; Chittagong - Cox's Bazar; Diara - Barisal via Nandir Bazar; and Chandpur - Ichuli waterway.

Figure 6: Bangladesh river network



Source: (Banglapedia 2017)

Table 13: National waterways class and coverage

Class	Class Name	Max Vessel Draft & Min Advertised River Depths	Minimum Channel Width	River Length	% of total IWT (km)
C-I	Four trunk routes	3.65 m (3.96m)	76.22 m	683 km	11%
C-II	Eight link routes	2.13 m (2.43m)	76.22 m	1,027 km	17%
C-III	Twelve secondary routes	1.52 m (1.82m)	30.46 m	1,886 km	32%
C-IV	Seasonal routes	Below 1.52 m	20.00m	2,400 km	40%

Source: (BIWTA 2017)

It is quite evident from Table 13 that 60 percent of IWT is under the four trunk routes and they can be used for cargo vessels or other passenger ships (i.e. 3569 km). It is feasible to operate the vessels within the country. For the Brahmaputra basin and some part of Ganges basin (Godagari point to Pankha river point), inland water transportation is not much functional. But, these river routes can be physically viable for transportation within the country. The Farakka barrage is responsible for physical hindrance along with the international protocol route Dhulian-Godagari-Rajshahi.

2. Operational viability

The revenue income of BIWTA in FY2015-16 is Tk.334.64 crores up to May 2016. Table 14 shows year-wise income and expenditure of BIWTA during the period from FY2006-07 to FY2015-16.

Table 14: Income and Expenditure of BIWTA (Tk crores)

Fiscal Year	Income	Actual Expenditure	Profit/Loss
2006-07	122.09	142.72	-20.63
2007-08	120.29	137.93	-17.64
2008-09	160.22	160.53	-0.31
2009-10	177.55	182.74	-5.18
2010-11	228	229.57	-1.57
2011-12	263.18	245.31	17.87
2012-13	304.02	284.33	19.69
2013-14	320.02	378.48	-57.54
2014-15	268.29	194.26	74.03
2015-16*	495.32	515.14	-19.82

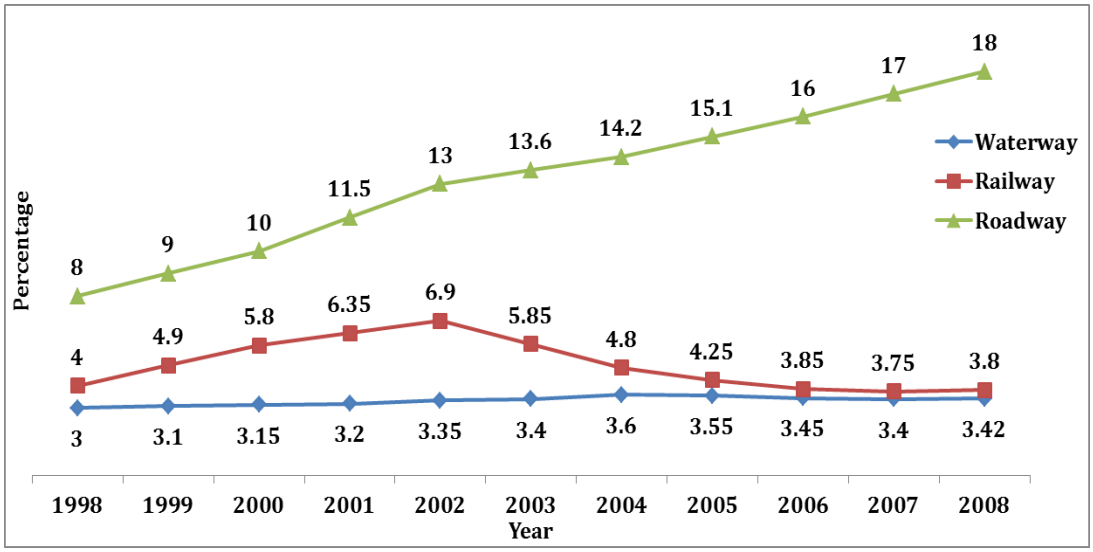
Source: (Ministry of Finance 2016)

Profit of BIWTA does not follow any smooth trend during the mentioned fiscal years. In an operational aspect, the economic profit is important for the investment decisions but that lacks due to several reasons like navigability problems, wanting of human resources, lengthiness and time-consuming routes due to reduction of navigation, etc. Currently, about 70 per cent inland cargo movement is operating under roadway network whereas there is only 10 per cent inland cargo moving through waterways.

3. Cost Sensitivity Analysis

The waterway is the least costly mode of transports. The growth difference among the rail, road and waterway transports are very interesting in case of Bangladesh.

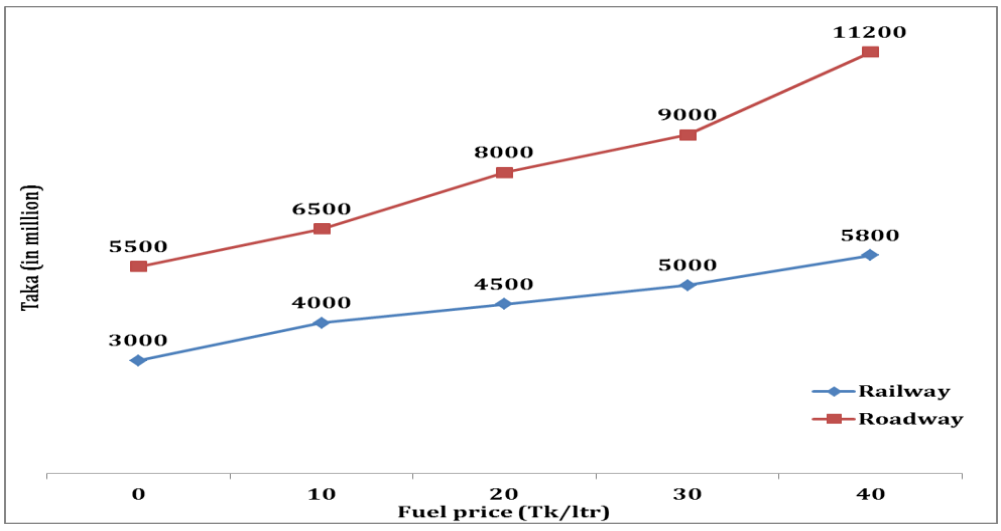
Figure 7: Difference in growth (%) between rail, road and water transport



Source: (Nasirullah, Mortuza and Hossain 2011)

It is shown in the Figure 8 that the roadway growth (calculated based on passengers and cargo transport) is upward sloping over 1998 to 2008 whereas the railway and waterways' growth is relatively very less than roadway (which is about 14 percent higher for roadways). However, the development in waterways can gain economic efficiency in view of environment and production cost.

Figure 8: Cost of travel in roadway and railway versus fuel price



Source: (Nasirullah, Mortuza and Hossain 2011)

Roadways are much sensitive as compared to railways. Figure 8 shows that the higher the fuel price per litre the higher the roadway cost than that of railway and though there is no data regarding waterway but it can be concluded that this figure for waterway will be lower compared to road and rail ways.

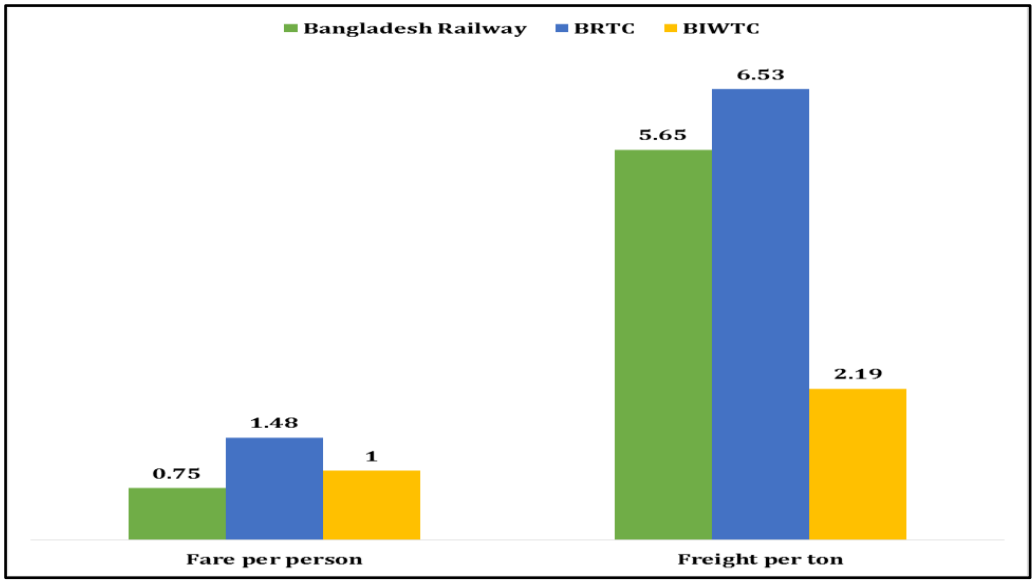
4. Commercial viability

In FY 2015-16, the contribution of transport sector (including storage and communication) to GDP is more than 11 percent whereas the growth rate of waterways is poor compared to land transport (7.06 vs. 4.12 percent).[1] But, it is true that the water transport sector is beneficial to poor people for two basic reasons- (i) cheapest mode of transportation and (ii) most accessible in terms of availability. Bangladesh is currently enjoying length of approximately 6,000 km navigation for water transport which is quite high case comparing to USA and EU. On the other hand, the environmental cost is lower for water-ways transportation. So, the IWT is in good position to contribute significantly in economic growth.

Linkages and Comparison between Inland Waterways and other Modes of Transport

Though, the quantum of passengers and volume of cargoes were decreased in 2011-12 to 2013-14, the cost comparison was shown that the inland waterways are relatively cheaper compared to land transport.

Figure 9: Rate of different modes of transport in 2013-14 (in BDT)



Source: (Bangladesh Bureau of Statistics 2016)

[1] Source: Bangladesh Economic Review (2017)

The fare per person per km is lower for railway transport compared to road and water transport. On the other hand, the freight per tonne per km is lower for public water transport relative to other transportation. The improved water transport facilities and infrastructure can foster the higher economic benefit. The higher volume of goods has been carrying through the two major routes of Bangladesh. The other routes are not much significant in transporting the goods as well as passengers. It is found from the literature that time consideration, navigability of rivers are the pertaining reasons lower volume of goods transports through waterways in other routes.

Besides that, the ADP allocation for IWT development by 7th Five Year Plan (7FYP) is less in comparison with roads and rails networking investment. It is found in the below table that the ADP allocation for roadways and railways are increasing more than that of IWT sector according to the targeting of 7FYP (Planning Commission, Government of Bangladesh).

Table 15: ADP allocation (in BDT billion)

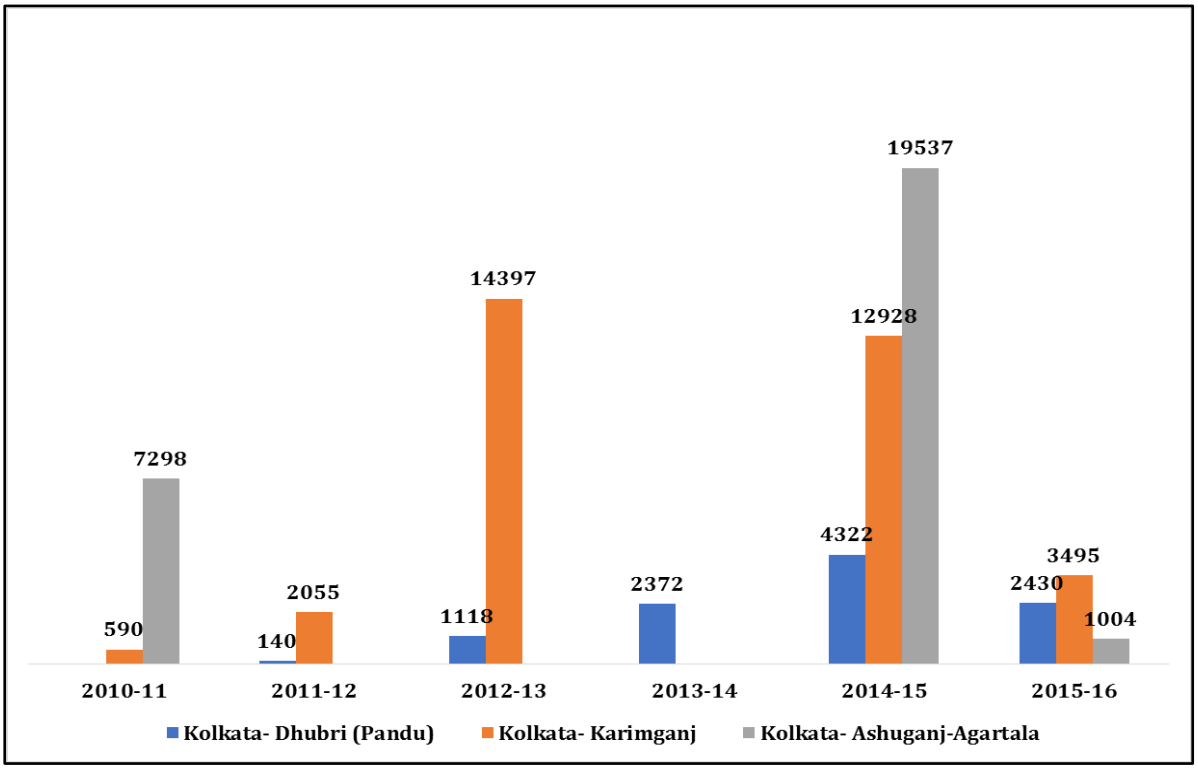
Year	Road	Rail	IWT
2016	146	56	11
2017	197	64	11
2018	234	76	14
2019	274	89	16
2020	322	105	19

Cross-border Connectivity Aspects of Inland Waterways

The statistics of Transit trade cargo transported under PIWTT between Bangladesh and India (route wise Transit cargo statement) from 2010-11 to 2015-16 (million tonne) is shown in the next figure.

From a close observation of the graphical representation, which is showing route-wise transit statement by cargo, it would be found that the product shipment in the Kolkata-Dhubri (Pandu) and Kolkata-Karimganj has been reduced with the years. Additionally, the shipment through the Kolkata-Ashuganj-Agartala route has been increased in significant level. But the overall shipment curve has shown an increasing trend in the fiscal year 2012-13 whereas a decreasing trend is visible at overall estimation.

Figure 10: Route-wise transit cargo statement (in MT)



Source: (BIWTA 2017)

4. Stakeholder Perceptions on Socio-economic Aspects of Inland Waterways

This chapter captures the perceptions of various stakeholders who were consulted during the course of project in Bangladesh. The evidences were gathered through Key Informant Interviews and focus group discussions conducted with government officials, academia, civil society, freight handlers, private sector, boat associations, boatmen, tour operators, fishermen, sand traders etc. This information was further validated in a series of consultations at sub-national, national and basin levels. This chapter will aim to collate the evidences from the field study as well as juxtapose the evidence on the current governance and policy scenario for inland waterways in India.

Field Findings

About four FGDs and 11 KIIs have been conducted at Shivalaya upazilla of Manikganj district. Major findings from these FGDs and KIIs are presented in the following table.

Table 16: Field findings from Shivalaya, Manikganj

Stakeholders	Findings
UP Members	• Navigability of the waterways is a major challenge • The river dredging related practices are faulty. The right amount of silt is not being excavated • Lack of governance than lack of resources and/or technical knowhow is the cause of such practices • Administrative conflicts are there between BIWTA and BIWTC • Condition of local marine vessels is another challenge. Most of them are not suitable for transportation (passenger and/or goods) • Lack of good governance is creating scope for malpractices like unfit vessels getting certified, lack of proper monitoring mechanism. etc.)
Women	• Availability of fish is an issue of concern for local women (of the Char area) whose livelihoods are directly related to the river • During recent years, there is a drop in fish availability. Increasing the number of boats plying in the river might further decrease availability of fish, according to local women • The drying out of the river has not only resulted in lower availability of fish, but also made life difficult in all other fronts (for example, communication, access to different services etc.) • Local women have little access to public administration officials and/or policymakers. They sometimes raise these issues with the local non-government organisations (NGOs) working with the poor and marginal

Stakeholders	Findings
	households. But NGOs can hardly do anything about navigability of the river and other related issues
Fisherman	• Fishermen are more concerned about availability of fish than navigability of river Padma • Fishermen also perceive that increasing number of vessels impact negatively on the number of fish. Consequently, there will be inadequate fish to catch • They have also expressed their concerns regarding the security of the fishermen mostly spending numerous days in/around rivers to catch fish. They consider criminal activities as a direct threat to their lives and livelihoods • Reluctance of the concerned authorities (police, coast guards) in ensuring proper measures to ensure security and their corrupt practices, are also perceived by the fishermen as major impediments
Ferry operators	• Lack of human resource considered as a major obstacle on the way of ensuring safe and quality service • There is much scope of improvement regarding logistics and technical capacities • Maintaining navigability of the waterways is the most crucial concern Dredging projects are on-going, yet better plan, more modern technology and efficient dredging operation is needed to make the maximum out of the waterways • Government of Bangladesh has already taken up several initiatives to ensure better utilisation of the internal waterways • Security of the vessels plying on the waterways should be ensured. Plying increased number of vessels requires more efforts to ensure security • Cross-border trade through inland waterways will definitely benefit all involved parties. For ensuring this overall institutional as well as infrastructural change are the pre-requisites • Up-stream countries need to come forward in ensuring adequate flow of water in Brahmaputra and Padma rivers
River Port Authority (BIWTA Officials)	• Six routes are currently in use, namely: (1) Maoa to Paturia; (2) Paturia to CNB Ghat (Faridpur); (3) Paturia to Pakshi; (4) Paturia to Baghabari; (5) Paturia to Kaulia; and (6) Paturia to Daulatdia • In comparison to many other ports across the country, Shivalaya is better equipped in terms of infrastructure and available logistics support • However, there is still need for improvement. For example, there is still no provision of mechanised cargo handling • There is need for comprehensive research to better understand the demand for improvement. No such effort has been there for over a decade. • While cross-border trading through inland waterways have real potential, there is much to do to prepare the institutions and infrastructure. • Regular data collection should be conducted to record the impact of use of internal waterways on the ecology as a whole.

Stakeholders	Findings
Ferry Operators	• All ferry operations are conducted and overseen by BIWTC (a government entity), hence there is no competition from private sector • Ferries are grouped in three categories, namely: (1) Ro-Ro; (2) K-type; and (3) Utility • All the ferry vessels run on diesel • There are five *Ghat*s for operation of these ferries • BIWTC officials present at the local levels are usually less concerned about the environment related concerns as they perceive that higher officials are responsible for dealing with such concerns. Moreover, being a Government entity BIWTC officials perceive their operations are less likely to be investigated and reported by the Department of Environment • Cross-border trade through internal water-ways will definitely benefit all parties involved. But for that overall institutional as well as infrastructural change are the prerequisites
Vessel Owner	• Small vessel owners usually do not require any kind of certification from BIWTA, while large vessel owners have to get their boats scrutinised and then acquire a 'survey certificate' from the concerned authorities • Sometimes a vessel owner has to bribe officials to get such certification • There are both goods and passenger carrying boats in operation Transporting sand from one side of the river to another appears to be very common at this inland waterway point • Small vessels have to pay a fixed charge every time they use the route and there are fixed points of loading and unloading for both small and large vessels • Decreased navigability has been reported to be a major challenge especially during the dry season. This increases the time required per trip and challenges the financial viability of the transportation enterprises • Cross-border trading through inland waterway is most likely to be welcomed by the local vessel owners not only because of potential of increased business for them but also because of the possibility of boosting institutions and infrastructure
Freight Handler	• Freight handlers here are in charge of weighing the vehicles that goes on board the ferries. It has been claimed that approximately 1,000 vehicles are transported per day from this particular inland waterway point using the available ferries • The small trucks, which can carry up to 2.5 metric tonne, have to pay Taka1,060 charge to BIWTC. The larger trucks (with maximum capacity of 23.5 metric tonne) are to give Taka1,460. The 10-wheeler trucks which can carry up to 30.5 metric tonne, have to pay Taka2,980. Pickups (capacity up to 1 metric tonne) are supposed to pay Taka730 for each trip and others vehicles (capacity up to 3 metric tonne) have to pay Taka740 • BIWTC coordinates with the vehicle owner associations, local public administration and security agencies to ensure smooth operation. • The freight handlers face real difficulty when any of the ferries become non-operational due to technical issues, and in adverse climate, ferries cannot operate properly

Stakeholders	Findings
	• They also face difficulties during winters as the river dries out to some extent and there is fog also. This results in delayed services and causes severe traffic jams on both sides of the river • Promoting the use of inland waterways is most likely to reduce the pressure on ferry-based transportation. Combining these two transportation modes can be considered as an optimal solution
Fisherman Vessel	• Security of the fishermen working at night is a major concern • While no formal permits are needed for catching fish from such point, fishermen mostly have to pay to the local political elites and law enforcing bodies • Reduced navigability of the river coupled with increased river traffic has dried out the supply of fish. This has increased the problems of local fishermen. Many fishermen have been forced to switch to other IGAs. Some are already engaged in other IGAs along with fishing • Local fishermen believe that the Government should be careful while promoting inland waterway-based trade to ensure fish population in the inland waterway point is not endangered.
CSO	• The prime issue is the navigability crisis, which is the underlying cause of many other problems, such as scarcity of water, the siltation problem, loss of waterways, the reduction of fishery resources and the degradation of the quality of water • Local poor and marginal households (most of them living in the Char areas) suffer the most due to the river drying out. The Government's master plan of promoting use of inland waterway for trade should incorporate programmes focusing on enhancing the livelihoods for these households • Cross-border trade through inland waterway should be developed in a manner that creates scope of employment for the local poor especially the youth
Media	• While the inland waterway is of critical importance in enhancing trade (cross-border or internal), the authorities should also be concerned about the social and environmental impact of increased river traffic • Coordination of all the actors from both private and public end is of critical importance to ensure sustainable use of the inland waterways • The major impediments to smooth cross-border trade through inland waterways comprise inadequate navigability of rivers, institutional inadequacies and lack of public and duty bearers awareness

Further, four FGDs and 10 KIIs have been conducted at Ashuganj upazilla of Brahmanbaria district. Major findings from these FGDs and KIIs are given below.

Table 17: Field findings from Ashuganj, Brahmanbaria

Stakeholders	Findings

UP Members	• Regular flows of rivers are constricting
	• Fishing opportunities for fishermen are reducing. Hence, the increased number of vessel movement will hamper this community
	• Three identified issue are as following:
	  ○ Dredging carefully
	  ○ Developing modern river port
	  ○ Expanding rail communication with port to be considered
	• Though there is regular communication with the Government officials but there is lack of effective initiatives from the Government's end
	• VGF is a safety net meant to safeguard fishing community and it is being effectively implemented. While this is surely benefitting the fishing community, there is need for programmes aiming at creating alternative IGAs for them

Women	• Dredging is perceived to be harmful for the Char areas. Because it damages the ecological balance of the rivers and its movements • Future working opportunity for char people particularly female should be considered
Fisherman	• Rivers protection is very important for their livelihood opportunity • Frequent movements of vessels will harm the fishing points • Rivers flow are decreasing, the fishing opportunity is also reducing. Other employment opportunity can be beneficial for their minor communities living on fishing
Ferry Operators	• Sufficient work force is required to develop the management system of cargo operation • Navigational indications with lights in the rivers are not sufficient • Communication with government happens but connectivity with non-government actors are limited • Cross-border connectivity will be helpful for higher revenue generation and inter-country connection but the higher pollution of water systems and river erosion also need to be considered
River Port Authority (BIWTA Officials)	• Three routes are currently in operation – a. Ashuganj to Jokiganj-Karimganj (Internationally operated) b. Bhairab-Ashuganj-Chattak (Domestically operated) c. Lalpur (Sunamganj)-Lengrin Tekerghat (Domestically operated) • Ashuganj port lacks in several aspects like amicable infrastructure, mechanised cargo handling facilities, regular research and database updating, coordination among BIWTA higher officials • Inland Container Terminal (ICT) is under construction for smoother port operations • Freight handling operation is performed by the private companies. They seem to be reluctant about following the standard practices, rules and regulations

Stakeholders	Findings
Cargo Companies	• Requires some documents to operate, such as Clearance Certificate from BIWTA, Driving Certificate, Trade Licence, and Declaration for radio and life support tools. However, they do not face any difficulties to get these documents • Weak river flows and navigation, insufficient loading and unloading facilities are the main challenges for this inland waterway point
Vessel Owners	• Increased use of this inland waterway point will bring in larger vessel owners and eventually might crowd out small vessel owners • Vessel owners are totally dependent on rivers, yet they are not well aware about the policies and regulations • Usually, labour union representatives inform the vessel owners about new rules and regulations • The specified route can be helpful for many people provided there is more employment generation by utilising the same as BBIN inland waterways' trade route
Freight Coaches	• Small vessel owners only get registered from Chittagong Divisional Commissioner office and take permission from port authority • Owners revealed that there is no scope for larger vessels to be deployed in the Ashuganj-Chandpur routes due to weak navigational outfit of rivers • Private sectors can develop jetty for small boats to be docked for better goods transportation along the inland waterway routes and small boats might be used for passenger transportation from one to other side of rivers (Bhairab to Ashuganj) • They are not aware about the policy and regulations but need to know the rules for operating the boats or vessels in the Meghna river • When larger Indian vessel come to the port, other small vessels are taken away from the jetty for 7/8 days, which hampers loading and unloading schedule of local vessels • Labour force of Ashuganj port area does not get opportunity to load and unload from Indian vessels as the importing company hired labour from other districts like Chittagong or Comilla
Fisherman Vessel	• Documents are not required to catch fish in rivers • Fishing is unsafe during night due to unexpected robbery and informal fee charged by local political parties to operate in rivers • Dredging will not be beneficial for island (Char) area in rivers and river bed is very deep in the said route • There is opportunity to meet with government officials in a regular interval and government officials informed them about the new instructions to be followed to operate in the rivers • This protocol route when uses for international transport purposed the income generation opportunity will be further enhanced for the fishermen group to lean on seasons though the fishing nets damage will occur and fishes movements will be lower as compared to present situation
CSO	• Female employment is required and female related facilities for inland transportation is required • There is scope for working with river dependent people for awareness

Stakeholders	Findings
	building about the rules and regulations as well as river related opportunity for economic development
Media	• Usually interact with government officials • BBIN and its related consequence is not clear to him, but he knows about the River Commission Acts 2013 due to his working assignments • New rules and regulation are required for works but the existing web portal of port authority and BIWTA are not very user-friendly for gathering data. Web portal should be updated a regular interval to share the information with relevant stakeholders • One traffic inspector is deployed for maintaining the port activities which is not sufficient for operation • Opportunity for female should be confirmed to work in the port • This protocol route is not fitted enough for international operation as local vessels do not get priority to execute the port facilities • Government collected BDT 892 per tonne as revenue but now it has lowered the tax to BDT 192 per tonne, which will promote more cargoes to dock in the port. The revenue generation of the Government lowered due to the lower tax rates • Labour wage rate is quite low • Product restriction should be imposed for betterment of local economy • Advocacy related material development and campaign are required to develop awareness regarding rules and regulation for the grassroot people

FGDs with vessel operators at Ashuganj, Bangladesh
PC: Unnayan Sishumannay

Around four FGDs and 13 KIIs were conducted at Chandpur Sadar upazilla of Chandpur district. Major findings from these FGDs and KIIs are given below:

Table 18: Field findings from Chandpur Sadar, Chandpur

Stakeholders	Findings
UP Members	• Building dam or placing blocks adjacent the rivers • Increasing navigability problem • Conveying concerns to the higher government authority • Marking cross-border trade as positive phenomena
Women	• Increasing navigability crisis • Necessity of regular dredging • Reducing fish varieties in the rivers • No authority available for conveying concerns • Vague idea about cross-border trade
Fisherman	• Reducing the depth of the rivers • Decreased amount of fish varieties • Increasing flood and river erosion • Irregular communication with government officials • Positive perception about the profit of cross-border trade
Ferry Operators	• Facing disruption in moving ship due to navigational problems • Increasing dredging for uninterrupted ship movement • Emphasising on increasing security issue in the waterways • Formation of newer islands in recent years • Receiving positive response for increasing cross-border trading
River Port Authority	• Advantages like motorway access, railway connection, warehouse, cold storage, tracking system of vessel at the port • Availability of mechanised cargo handling advantages • Lack of regular stretch-wise studies • Way of sharing problems and discussing prospects in monthly coordination meeting • Availability of research-based monitoring in some departments like the engineering department • Availability of rescue vessels and fuel supplying vessels • Lack of ecosystem monitoring wing
Ferry Operator	• Necessity of having sufficient workforce to develop cargo operation management system • Navigational indications with inadequate lights in rivers. • Good Communication with the Government but connectivity but lesser interaction with non-government actors • Cross-border connectivity will be helpful for higher revenue generation and inter-country connection, but water systems will be more polluted and there is a possibility of river erosion
Vessel Owner	• Limited Dissemination of knowledge regarding the inland waterway policies are Coordination meeting is the only way to convey their concerns to the authority • Policies are gender inclusive but not regularly implemented

Stakeholders	Findings
	• Waterways can reduce transportation costs in cross-border trade • River training and regular dredging is important to help establishing ports and jetties • Controlling Informal fees
Freight Handler	• Enhancing navigability, so that the vessels can move easily • Private sector should work with public authorities to develop infrastructure at important locations
Fisherman Vessel	• Paper documentation not required to run a vessel • No fees or duties to pay • Expansion of inland waterways is possible from Chandpur to Lamatoli and Chandpur to Noyarhat • Variable jetty advantages • Awareness regarding policies to be generated through government campaigns • Reluctant in communicating with government officials due to less faith in expected results • Positive response regarding cross-border trade benefits • Decreasing fish rate due to passing of more vessels, is a concern • Considering safety issues, navigation and bribery create problems
Cargo Companies	• Rivers navigability is a concern • Unawareness of gender issues • Interaction possible either government officials • Expansion is possible from Chandpur to Dalighat and Roghunathpur • Awareness of inland waterway related policies/regulations by means of websites and Government officials • Regular interaction with Governmental officials as means of conveying concerns • Private public partnership required for successful cross-border trade • Lack of awareness about environmental issues • Positive response including increased economic profit and employment
CSO	• Awareness regarding respective policies through Government officials and Government web site • Lack of understanding about women empowerment • Positive response for profits from cross-border trade • Threats include environmental pollution, lack of safety, loss of fish sanctuaries, etc.
Media	• Awareness of inland waterway related policies through concerned Government Authorities • Lack of capable official for conveying inland waterway related problems • Policies are not gender inclusive • Larger benefits are possible from cross-border trade • Proper measures should be implemented to check water pollution

Shops along the river port at Chandpur, Bangladesh
PC: Unnayan Shamannay

Livelihood Aspects

People residing at river banks or adjacent river areas where agricultural farming activities like cultivation, fishing (by boats, trawlers, mechanised boats, etc.) are taking place, and people who operate or build boats, mechanised boats, trawlers, mini ships, ferries etc. are directly depending on rivers systems for their livelihoods. In Bangladesh, it is estimated that boat operating services provide 60 per cent of the overall employment in transport and is about 4 million people's main source of income and supporting 10 million dependents (Czuczman 2004).

Table 19: River dependent people in three basins

Basins	Population			Total Firm Holding	Fisherman
	Male	Female	Total		
Padma	2406322	2471469	4877791	711476	43685
Jamuna	1330520	1393759	2724279	454480	22163
Meghna	906425	935440	1841855	189589	18364
Total	4643267	4800668	9443925	1355545	84212

Source: Compiled by authors based on data from Statistical Year Book 2014

Local communities living on boats along the river port at Chandpur, Bangladesh
PC: Unnayan Shamannay

This review focuses on the population neighbouring three basins of Padma, Jamuna and Meghna rivers. It is shown in Table 19 that there are about 94 lakh people adjoining rivers. Out of theses there are 4.6 million male members and about 4.8 million female counterpart that are directly dependent on these basins. The most significant aspect is that total firms are holding 1.4 million people and about 84 thousand fishermen whose livelihoods are directly dependent on these three rivers' lower riparian. These number of river adjacent people have a great impact on their livelihoods for these basins. Their everyday earnings come from the source of rivers. Therefore, these rivers contribute greatly to the livelihoods of these people.

Box 2: Future is uncertain for small fishermen like Kashem
Md. Kashem Mollah (54 years) is a son of a day laborer, who now lives one kilometer away from the Chandpur port area. Being raised in an extreme poor family, Kashem faced a lot of hardship and could not go to school at all. Now he has a family of his own- his wife, five sons and a daughter. But his situation has not improved much. Like his father Kashem cannot afford education for his children. He had to marry off his eldest daughter after she completed her primary school education.

Box 2: Future is uncertain for small fishermen like Kashem

While his father used to catch fish occasionally for some additional income, Kashem is a full-time fisherman. His average monthly income is around six thousand Taka only. This not enough to maintain a family of seven members. But Kashem remembers his situation to be much better only six or seven years ago. He used to catch a lot of fish during those days and was earning ten to twelve thousand Taka per month on an average. Fish availability has decreased significantly during the last six or seven years. Kashem blames the inadequate flow in the two rivers- Padma and Meghna for decrease in fish population. He has a small boat which is not suitable for going into deep waters, yet he often takes the risk of going in to deep waters just to catch a few more fish. Most recently his fishing net got confiscated by the authorities (he was using what is locally known as 'current nets' which are illegal). He now has a huge debt burden as is really worried about the future of his family.

The possibility of increased trade via inland waterways does not encourage Kashem a lot. He rather believes that things might get even more difficult for small fishermen like himself. This is because he believes that there will be more restrictions on small boats operation once trade via inland waterways increases.

The low flows of water during dry seasons caused serious challenge for fishing community, boatmen and mechanised trawler group. They have to switch to some other profession during the dry season. People believed that increased number of vessels and cargo movement could be liable for low production of fish in the rivers, but people of other communities considered that fish production will not drop if the minimum depth of rivers is maintained on a regular basis.

Box 3: Employment of the local people must be prioritized

Earning a living through working as a porter at a river port is very difficult. No porter wants his children to become porters when they grow up. Siraj Sardar (58 years old) is not different. He himself had to start working as a porter when he was just boy as his family was very poor. Now almost five decades later he is now supervising 250 porters at the Ashuganj port. He is sending all four of his children to schools and is committed to supporting them till the complete at least their secondary schools.

Siraj believes that government and non-government service providers can do a lot to improve the conditions of the porters working at Ashuganj. Unlike the farmers, they usually cannot access credit facilities provided by MFIs or Banks. As a result

Box 3: Employment of the local people must be prioritized
whenever a porter needs a lot of money he has to take loans from informal money lenders at unusual interest rates. There are also no special safety net programs for the porters. If such support interventions (by govt. and/or non-govt. entities) were there, lives of the porters could have been much easier. According to Siraj, Ashuganj port will become even more important if trans-boundary trade via inland waterways increases further. But interest of the local people must be prioritized- said Siraj. He pointed out that if companies do not hire local porters to load/un-load the ships then the increased trade will be of no good to the local people.

Increased inter-country trade along with the waterways can foster the economic benefit of generating livelihoods for people. Local people can be engaged in various other allied livelihoods. For example, they can work in port services, labour managements, loading-unloading works, port adjacent mini-business amenities etc.

Environmental Aspects

Increased traffic in the rivers will seriously hamper the eco-system and whole circumstances of rivers (from water pollution to fish damages). Besides that, international movement of vessels and cargoes will promote local economy for river-based industrialisation, which causes environmental consequences for local development, but environmental cost minimisation by proper environmental management can be beneficial for local as well as national economy. River erosion will be increased due to the waves' creation from the lighter or larger cargoes. Hilsa sanctuary in the confluence of Meghna and Padma rivers situated at Chandpur will be in a threat due to the increased number of cargo movements along this PIWTT protocol routes. Proper management of fish production calendar time for regional trade under PIWTT routes can be solution.

Box 4: Kajoli is afraid of eviction
River erosion is very common in Bangladesh. Like most other areas adjacent to river, in Chandpur- many extreme poor families start living in government owned land (Khas land) once they lose their living places to river erosion. Kajoli Khatun (65 years old) also started living on such land near Dakatia rier at Chandpur when the river devoured their home. This was when she was just a girl. She now has her own family. Two of her five children are married. Her husband is a fisherman, who also works as a day laborer for some extra income. Kajoli herself also catches fish with

Box 4: Kajoli is afraid of eviction
hand-held fishing nets. Along doing the households chores (including raising the children), she goes out at least twice a week to catch fish. On an average she catches 1 to 1.5 kg fish per day and earns 150 to 200 Taka selling those at the nearby market. Lack of employment in the area worries her the most. She believes that local people are very hard working and they have survived so many years struggling with unfriendly climate conditions. But if adequate employment opportunities cannot be created situation will get much worse. She is afraid that her children may choose to live the area looking for jobs elsewhere. Kajoli welcomes the idea of expanding inland waterways based trade. She believes increased trade will create new opportunities for the local people. But she is also afraid that government may need more land to properly facilitate trade (for building new infrastructure). In that case authorities may opt to evict families like Kajoli's from the Khas land. She demands that any development initiative must consider rehabilitation of the people effectively and efficiently.

Gender Aspects

Better facilities for women in waterways facilitate the women counterpart for easy accessibility to labour market, which creates opportunity for women to employed in the formal sectors. International uses of inland waterways can create jobs for the women counterpart but there should be provision for the women to be part of the employment of IWT sector. Recently, the Government. included a breast-feeding chamber for mother of new-born in the newly designed watercraft and a waiting room for women separately. Such gender inclusive changes can be used for future infrastructural changes in other sectors as well.

Box 5: Will there be place for Hajia in the new river port?
There are very few women who work at the river ports in Bangladesh. In case of the port at Ashuganj, Brahmanbaria the number is just three. Hajia Begum (45 years) is one of these three women. She has a relatively unique occupation. She is maintaining a family of six members (2 male and 4 female) just by collecting rice, wheat and other grain that are spilled over during loading and unloading ships at the docks. On an average she collects 12 to 15 kg spilled over grains per day and she sells for 120 to 150 Taka. But she does not get to work every day of the week, because there are not that many ships that get loaded/unloaded in this port.

Hajia's father and his husband, both used to work as porters at the Ashuganj port. Her father died and her husband is now too old to work as a porter or as a day laborer. She is now the only income earning member in her household. She is not educated, yet she is determined to sending her children to school. She believes without education her children will have little scope of surviving and getting out of the abject conditions they now live in. Hajia does not think that her son or daughters will get suitable jobs here at Ashuganj, and hence believes that someday they will have to migrate to Dhaka or some other big city to get jobs in the formal sector.

Hajia begum believes that if trade via inland waterways increases there will be more jobs for the local people, and the local economy as a whole will become more vibrant. The port will be improved also. But she is afraid that her family may not benefit much from such development. According to her, if trade increases then there will be increased demand for support services (e.g. food stalls). But she and many others like her does not have the access to finance to tap such opportunities.

FGDs with fishermen and community members at Ashuganj, Bangladesh
PC: Unnayan Shamannay

Trade and Connectivity Aspects

In trade aspects, the bilateral exchange is increasing in the recent years due to economic benefits for both parties India and Bangladesh. However, the PIWTT Agreement was first signed in 1972, but the trade was very limited. After signing the Agreement again in June 2015, the Protocol routes turned out to be important

waterways for India as they enhanced easy connectivity with other eastern States through waterways. Furthermore, use of vessels and cargoes of Bangladesh are increasing, which will also help to generate livelihoods in cargo making industries.

Table 20: Trade and connectivity aspects in Bangladesh and India

Year (July to June)	Quantity of Goods (Million Tonne)		Number of Trips under Protocol	Ratio of Goods Carried by Bangladeshi and Indian Vessels
	Carried by Bangladeshi Vessels	Carried by Indian Vessels		
2011-12	1.42	0.055	2069	96:04
2012-13	1.50	0.046	2009	97:03
2013-14	1.91	0.021	2363	99:01
2014-15	1.94	0.012	2355	99.3:0.07
2015-16	2.25	0.008	2651	99.6:0.38

Source: (BIWTA 2017)

The PIWTT is extremely important document for bilateral trade between India and Bangladesh. Under this Agreement, four routes have been identified. But, currently only one route is utilised for bilateral trade between India and Bangladesh. Though other routes are functional but are not being used for transit or trade purposes.

5. Conclusions and Recommendations

1. Institutional strengthening

Bangladesh Inland Water Transportation Authority (BIWTA) is the institution primarily responsible for overseeing inland waterways transport and connectivity within Bangladesh. Maintenance of the inland waterways in Bangladesh requires sophisticated as well as dynamic (i.e. adaptive to changes) technology as well as human resources. And BIWTA and other relevant institutions lack these resources. It is widely acknowledged (by all stakeholders) that increasing capacity of these institutions (in terms of logistics and in terms of human resources) has to be prioritized to improve the waterways connectivity in a manner that it may compete with other modes of transport.

2. Bridges and River-line Industrialisation

During last few years, many bridges have been constructed across the country for increasing the road connectivity among different areas. The bridges always have somewhat negative impact on the flow and natural shape of the rivers. As more bridges are being constructed it is affecting the whole river system and waterways navigability is deteriorating. Rapid and sometimes unplanned industrialisation is another threat to take into account. In many cases factories are being set up nearer to the rivers as they require easy access to water and consequently the rivers are getting affected. Policy initiatives to address these two challenges is of critical importance to maintain inland waterways navigability.

3. Navigational Hindrance

Alarming rate of sedimentation in the river beds is a major obstacle on the way of making inland waterways in Bangladesh navigable. As a result it has become very difficult (and in many cases impossible) for watercrafts to move, especially during the dry season. River erosion also pose threats. While the government has recently initiated massive country wide dredging initative, there remains concerns about pace of implementation of the projects. Stakeholders have expressed need for improved and sustainable solutions to the navigability problem.

IWT Routes (1) Kolkata-Raimongal-Mongla-Narayanganj-Aricha-Pandu and (2) Kolkata-Raimongal-Mongla-Narayanganj-Bhairab Bazar-Sherpur-Karimganj cannot be used due to the lack of adequate draft, navigational aids and limited number of port of call. Recognising that the IWT has high potential for carrying both transit and inter-country traffic, it is necessary to assess as to how the above two routes could be made more efficient and competitive with other modes.

4. Knowledge-sharing

Advanced technological knowledge is required for being engaged in the broad level dredging efforts, which Bangladesh requires at present. Hence, sharing of the technological knowledge as well as learnings from respective pragmatic project from other developed and developing countries is recommended.

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Annexure 1: Overall Condition of River Routes along with PIWTT Protocol

River Branch	Major Routes	Obstacles		Clearance	
		No. of bridges	No. Electric Lines	Lowest Bridge Clearance (m)	Vessels draft (m)
North-East Delta	Narayanganj-Bhairab (95 km)	1	5	21.76	3.96
	Bhairab-Ajmeriganj (122 km)	0	0		2.28
Middle Delta	Chandpur-Narayanganj (51 km)	0	0		3.96
	Chandpur-Mawa (52 km)	0	0		3.66
	Chandpur-Barisal via Kaliganj (93 km)	0	0		3.96
South Delta	Barisal-Jhalokathi-Patharghata (114 km)	1	1	18.3	3.96
	Barisal-Kawkhali (45 km)	3	6	12.2	3.96
West Delta	Khulna-Mongla-Kawkhali (128 km)	0	0		3.65
Aricha	Mawa-Paturia (70 km)	0	0		3.04
	Paturia-Godagari (212 km) -not operational				
North Delta	Kauliya-Sirajganj (48 km)	1	0	13	1.83

Source: (BIWTA 2017)

Expanding Tradable Benefits of Trans-boundary Water: Promoting Navigational Usage of Inland Waterways in Ganga and Brahmaputra Basins

The Himalayan rivers of the Ganga and the Brahmaputra have created extensive systems of inland waterways in the region consisting of Bangladesh, Bhutan, India and Nepal – BBIN region. The current political discourse on trans-boundary cooperation among these countries has set the stage for institutional analysis of policies, laws and regulations governing inland waterways in the BBIN countries. This study aims to contribute to improving institutions (i.e. policies, laws, and regulations) for inland waterways governance with particular emphasis on transport connectivity and livelihood in the BBIN region. More details about the project can be accessed here: http://www.cuts-citee.org/IW/index.htm

CUTS International

Established in 1983, CUTS International (Consumer Unity & Trust Society) is a non-governmental organisation, engaged in consumer sovereignty in the framework of social justice and economic equality and environmental balance, within and across borders. More information about the organisation and its centres can be accessed here: http://www.cuts-international.org.

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