6 Connectivity and Transport on the Brahmaputra

6.1 Introduction and Background

1. The Brahmaputra river rises in the Chema yung dung and Kubi glaciers of Western Tibet, near Mount Kailash and Mansarovar Lake, and flows through Tibet, North-East India and Bangladesh before falling into the Bay of Bengal. It has a total length of 2,900 kilometres of which 720 km runs through the Assam Valley and a shorter distance in Arunachal Pradesh. Known as the Tsangpo in Tibet, the river changes its name as it flows into India at Arunachal Pradesh, where it is known as the Siang. Later it becomes the Brahmaputra as it enters Assam and is joined by the Dibang and Lohit. Further downstream in Bangladesh, it is called the Jamuna and then the Padma, after it merges with the Ganges, until it flows into the Bay of Bengal. As many as 40 tributaries fall into it from the northern bank in Assam and another 20 rivers in the southern bank which makes the river a moving sea.

2. It is a majestic waterway and one of the most powerful on earth, influencing the lives and livelihoods of tens on millions of people in the three countries through which it flows. Yet, its influence extends beyond these three nations for the Brahmaputra forms part of a great natural river basin, along with the Ganga and the Barak rivers, which covers an area no less than 174 million hectares in four countries, Tibet, Nepal, Bhutan and Bangladesh and India. In India, it covers a region of 109.84 million hectares or one third of the size of the country.

3. Although the river was used extensively since ancient times for transport, commerce, settlement and conquest, it has fallen into disuse as a major navigational and transport system, especially over the past 50 years. It was designated as National Waterway No 2 to give recognition to its importance as a transport artery.

4. However, little progress has been made on this front despite several reports and studies on the subject. The road network and the railways continue to get much of Central Government support and funding in this regard. A Planning Commission study estimated that by the year 2000, the Indian Railways would carry more than half a billion tons of goods. Yet, in comparison, Inland Water Transport (IWT), which is the cheapest form of surface transport, was expected to carry only a fraction of the railway traffic.

5. In 1872, Sir Henry Cotton remarked that India's greatest need was for water transport for the railways could not carry the quantities expected of them. "Steam boat canals would not have cost more than one eighth that of the railways; would carry any quantities at normal prices and at any speed; would require no support from the Treasury and be combined with irrigation."

6. Nearly half a century before Sir Cotton's remarks, the British navigator and administrator Josh McCosh who discovered the route till Sadiya, one of the further navigable points on the river at the time (it still remains the last major port on the upstream route under a new name, Kundilghat) from Kolkata via Sirajgunj (currently in Bangladesh), said it took him all of 80 days or over 13 weeks to complete the journey.

7. These days, air connectivity is on the increase and there are better road and railway links. Yet, because of the neglect of the waterways and the river transport system as well as delays caused by customs checks at the international border with Bangladesh, travel by the river still takes the same length of time as it did in McCosh's time. This is because, in addition to other factors, night navigation is still a dream and, for the sake of safety, cargo and passenger boats must dock by sunset.

8. The Brahmaputra is a highly braided river, that is, one which is broad and meandering, developing many channels especially in the dry months of winter. The river is a silent witness to the history of the region. For centuries, the Brahmaputra acted as one of the most effective natural barriers to potential conquerors from the mainland. In the 17th century, it was a crucial ally for the Tai-Ahoms, who had migrated there from South East Burma in the 13th century, and enabled them to inflict a humiliating defeat on the Mughals in a fierce battle on the waterfront. The site of the battle is near the city of Guwahati, which is the largest commercial hub of the North-Eastern Region.

9. As noted earlier, the Brahmaputra has been a route that has connected communities and nations over long distances for centuries. In the 19th century, the British, having discovered tea in Upper Assam, decided to develop it as a commercial crop with extensive plantations in the valley. Ships were used to carry labourers who were first transported from the Chota Nagpur area and areas of, what is now, Jharkhand to various parts of Assam to clear the forests and settle the land for tea. Heavy machinery for manufacturing tea also went up by the shipload. The smaller local boats were found inadequate to carry loads as well as travellers and, in 1863, the British began regular steamer services between Kolkata and Assam.

10. It is of significance that virtually the same fleet of steamers had plied profitably between Allahabad and Kolkata but became loss-making ventures after the advent of railways.

11. During this period and until Independence, the steamers carried foodgrains, salt, tea, forest products (especially timber), coal and rocks as well as limited amounts of petroleum products between Kolkata and Assam. The main ports of call were Dhubri, Pandu (Guwahati), Tezpur, Neamati Ghat (near Jorhat), Dibrugarh and Sadiya.

12. The Brahmaputra was, in those days, a deeper river, capable of carrying large transport vessels. The river was navigable from Kolkata to Sadiya. The earthquake of 1950 led to changes in the river's hydrography as well as its silt load capacity. The once-easily navigable river became shallower, especially in the dry months of winter, and reduced the journeys of large ships. In their place, smaller, low-draft local boats, country boats and government ferries began to ply, carrying consumer goods such as milk, vegetables, fruits, meat, fish, cooking fuel, livestock, grain and groceries, including hardware, wood and even vehicles.

6.2 Methodology and Structure

13. After discussions with Advisor (NE), senior officials of the Planning Commission and Development Commissioner (Assam), it was decided to limit the study to two research sites, given the limitation of funds and time. It was also decided that the focus of the study – since it would not be a standalone study but a chapter to be incorporated into the Development Plan crafted by the Indira Gandhi Institute of Development Research, Mumbai – should be non-academic and aimed at developing a check list of actionable proposals.

14. The study has evolved out of field work and interviews with local people, including villagers by the waterfront, ferry owners and users, ship crew members, travellers on the river, engineers on site, water specialists, government officials, geographers, local scholars and others. Research was conducted at three field sites: Neamati Ghat, near Jorhat town; Dibrugarh ghat near Dibrugarh town and Disangmukh ghat, about 30 kilometers north of Jorhat.

15. At Neamati Ghat, researchers handed over a questionnaire to travellers on the local ferries to Majuli Island, one of the largest fresh water islands in the world in the Assamese language, asking basic questions about the occupation of the traveller, his/her background, frequency of travel by boat and purpose for travel and suggestions he/she may have for improving conditions at the ghat as well as establishing better connectivity. A copy of the questionnaire is appended to the Report.

16. In addition, the study team met with district officials at Jorhat and Dibrugarh as well as with NGOs, transporters and entrepreneurs, tea planters and tea company representatives, representatives of the Brahmaputra Board, Flood Control Department, the Inland Water Transport Authority and the state Inland Water Transport (Assam), in addition to river specialists and senior government officials (including the Chief Secretary) at Guwahati and Dispur.

17. In New Delhi, the team interviewed officials from the Ministry of Surface Transport, Ministry of Railways, Inland Water Transport Authority, Ministry of Tourism, specialists in the Asian Transport Centre, Ministry of Water Resources and the Planning Commission.

18. The researcher also visited Kolkata and Haldia for site visits to the Kolkata Port Trust as well as to the Central Inland Water Transport Corporation where he met with officials, specialists and entrepreneurs.

6.3 Rationale

19. The Brahmaputra and its tributaries are still used extensively by local communities for local transport, irrigation and agriculture. Yet, its potential as a major inland waterway remains untapped because successive governments, at Central and state levels, have given funds and priority to roads and railways, seeing these as more effective tools of infrastructure support and overall development. IMT remained then and still remains a poor stepsister to its richer relatives, roads and railways.

20. In addition, the river's annual flooding, caused by heavy rainfall in the hill catchment areas, has also led to its neglect. Instead of spending money on using the river, successive state and Central governments have been devising plans, spending money and putting people to work to protect communities and settlements from the river. Thus, Assam today has perhaps the largest length of embankments of any part of the country: over 4,500 kilometres of them. Yet, only 1.5 million hectares of nearly 32 million hectares of flood-prone areas are protected.

21. Annual property damage caused by flooding is vast, running into thousands of crore of rupees. In addition, millions of people are displaced by the high water for months, living in wretched conditions of impoverishment. The loss of crops, cattle and livestock, homesteads and human life adds to the devastation, ensuring that economic development does not take off.

22. This makes the job of using the river to generate funds and development works that will benefit the large community that much more important. It could, to a degree, also reduce government

expenditure on flood protection by using some of the funds generated by river communications and transport for such purposes.

23. In addition, there are numerous agencies of government, both at the Central and state levels, which make the need for a common strategy using the best resources and expertise available all the more obvious. At the moment, the different government organisations managing for the Brahmaputra are like the Brahmaputra Board, which is mandated to research the entire rain catchment/river drainage area of the river and its tributaries and make specific proposals for tapping the energy levels and reducing the floods.

24. There is the Inland Water Transport Authority located in NOIDA, which looks at policy and technical expertise. Then there are the Assam State Inland Water Transport Corporation in Assam, the Kolkata Port Trust, the Container Corporation of India and the Central Inland Water Transport Corporation. All of them fulfil different roles but there is no single policy to ensure that they work in tandem and not in conflict with each other.

25. There is an international factor with regard to transport on the Brahmaputra: relations with Bangladesh. Earlier, Inland Water Transport (IWT) services were blocked between 1965 and 1972 because of hostilities between India and Pakistan. This eased with the signing of an Indo-Bangladesh Protocol on inland water transit and trade. Yet this route is used very lightly for a number of reasons, including different procedures adopted for evaluation of goods by customs staff from either country, delays in freight remittances, lack of availability of night navigation and limited number of ports of calls/customs stations.

26. Traffic has been steadily dropping: the inter-country level has gone down from 100,000 tons per year in 1995-96 was barely 20,000 tons in 1999-2000. In addition, of the 230 listed vessels in Pandu (Guwahati), only 50 are in working condition. These factors have to be reviewed, for the Brahmaputra is a natural, 365-day highway which needs far less maintenance expenses and running costs than either the road or the rail sectors.

    For transporting food grain, it costs
    Rs. 1.50 per ton/per km carried on the railways,
    Rs. 1.20 per ton/per km carried on the roads,
    Rs. 0.90 per ton/km carried on the waterways.

    In addition, IWT is extremely energy friendly:

27. A 10-ton truck needs 550-600 litres of diesel to drive from Kolkata to Jorhat. Compare this to a 1,500 ton barge which can carry the equivalent of 150 such trucks and consumes 35 litres of

diesel for every kilometre (70,000 litres of diesel for the same distance). If 150 trucks were to travel this distance, they would consume the equivalent of 90,000 litres of diesel. This is a substantial saving and IWT should be promoted just for this one reason.

6.4 Present Status

6.4.1 Channel:

28. The navigational channel from Dhubri, on the border with Bangladesh, to Sadiya to the North is 891 km long. This channel is functional and stable over a period of eight to ten months especially between the months of May and October, when the water levels rise. This rise in level is caused initially by a melting of snows upstream and then the heavy annual rains, both on its upper course and all along its route. During these months, this main channel has an estimated width of about 500 metres to 1.5 km and a depth ranging from 10 to 40 metres.

29. The Inland Water Transport Authority, the pre-eminent national-level authority for waterways does the navigation route marked on maps, which uses a survey vessel for the purpose. However, the state-level counterpart of the IWTA does not have adequate vessels or equipment to conduct similar or at least supportive studies.

30. The stretch especially in Upper Assam is without buoys, bundeling and night navigation facilities, despite official announcements of having provided such navigational facilities along the entire route. As a consequence, the operation of vessels is restricted to daylight hours (10-12 hours) and has led to an increase in operational costs and delayed delivery schedules. The average round voyage from Kolkata to Pandu and back is 60 days. This could be easily halved if the night navigation facility was there.

31. During the floods, the banks are overtopped. This makes selection of terminals and selection of locations for permanent assets such as perennial ports a difficult task. Indeed, when the banks are topped, maximum velocity, according to one report, has been estimated at 4 m/sec. It is difficult to handle vessels, if velocity exceeds 3m/sec.

32. Route maps are not available with most vessels, whether they are playing either over long or short distances.

6.4.2 Government and Private Vessels: capacity and actual carriage

33. Central Inland Water Transport Corporation (CIWTC) vessels from Kolkata, on lease to the Assam state Government, as well as ships belonging to the Assam Inland Water Transport Corporation and private vessels within the state are operational on Waterway No. 2.

34. The CIWTC fleet in Assam has a current strength of 19 tugs, each with a towing capacity of 750 tons; there are 58 barges of 750-ton capacity each and 15 other carriers of 500-ton capacity each. This gives a total transport capacity of 1,062,800 tons for the CIWTC alone.

35. In 1999-2000, the CIWTC carried a total of 3,031 tons of iron and steel as well as food (yellow peas). From Assam, the only product to be sent to West Bengal by river was jute: a bare 600 tons.

36. The CIWTC does not serve ports in Upper Assam such as Tezpur, Silghat, Neamati and Dibrugarh. This has caused congestion of vessels in the main port of Pandu (Guwahati). As a result, potential traffic has remained untapped in Upper Assam -- tea, coal, heavy equipment for oil drilling and exploration, timber etc that would travel far easier by water than road or rail.

37. The Assam State Water Transport Corporation (ASWTC) has the largest number government vessels, with an official listing of 329. A substantial proportion of these vessels are in poor condition. These include 42 boats used for relief work such as rescuing villagers during the time of floods.

38. It should be noted that most of the Assam vessels are used for short-haul operations and the number of those doing long-haul operations is very small. In most cases, ASWTC operations are characterized by vessels that merely cross the river from point to point instead of travelling for any length of time or distance either upstream or downstream.

39. The extent of IWT traffic in Assam is going down. Indeed, the CIWTC haulage plummeted from 48,200 tons in 1992-93 to 27,0671 in 1994-95 and 3,651 tons in 1999-2000. This is because of the attractions of rail and road transport, which are much better organised and quicker, although not cheaper.

40. Passenger traffic is largely in the hands of private vessel owners and operators, who pay a lessee fee to the state government for operating in specific sectors. There has been no organised study of private boat transportation, which enables a ready assessment of the scale of

transportation. We do not have a specific number for private boats and ferries, their capacity, condition and the number of passengers carried every year, the revenues generated (accounted for and unaccounted for), ships added or lost during the year.

41. All this will have to be seen in the context of existing road and rail networks, which have very strong political and economic lobbies. Unfortunately, these lobbies have marginalized IWT.

42. The current road network in Assam is about 70,000 km while the railway has a total of about 2,500 km under both broad gauge and medium gauge lines.

6.4.3 Micro-studies at Neamati Ghat and Dibrugarh

43. We have observed that to provide connectivity to Neamati Ghat, a short distance from Jorhat town, located in the heart of tea growing country, it is important to focus on two aspects: the road and rail links to the town and beyond to the rest of the Valley (National Highway No. 37) (The estimates below were provided to us by local officials, contractors and activists). Until 1967, Neamati was connected to the railhead but this was abandoned after the closure of a private shipping company. Neamati ghat is important in the economy of the river because it is the nodal point for crossing to Majuli, one of the largest fresh water islands in the world, and can connect travellers to the Northern Bank as well.

44. Until 1967, the port was used to transport commodities such as tea to the Kolkata Auction Centre. The silting of the river and sharp erosion of the shore forced the closure of this trade. Indeed, until this time, an oil company maintained a depot at the ghat and a coal depot also was located here. A storehouse also kept large quantities of tea from nearby plantations for onward transport downstream.

45. From Neamati, the state Inland Water Transport system operates seven vessels (ferries). Another 22 private vessels are also operating from here. Official estimates say that 141,995 passengers and 53.7 metric tons of goods were transported through Neamati in 1997-98. But these are official figures; it is believed that the actual figures are far higher but have not been entered into any "books."

46. Market forces drive trade. Given the size of the population in Majuli and Jorhat (a total of 12 lakh), it is estimated that the total value of goods sold and bought in the area is about Rs 50 crore annually.

47. Dibru ghat is near Dibrugarh town and 500 km upstream of Guwahati. Until 1967, the ghat was connected by rail to the town. Until this time, a company named River Steam Navigation Company operated steamer services from Kolkata to Dibrugarh. The shipping company also shut down its operations, saying that its vessels could not traverse the channels because of heavy silting. The rail line was abandoned and there are local ferry services which ply from one side of the river to the other (Sonari ghat). In addition, there is a long distance ferry (IWT of Assam) that takes passengers and goods between Dibrugarh and Oriamghat, near Pasighat in Arunachal Pradesh, a 130-kilometre-journey which takes nine hours to travel upstream.

48. The ghat is under the administration of the Assam State Inland Water Transport Corporation, Dibrugarh division. It runs four routes from Dibru ghat and has three steel ferries and one wooden ferry which are operational. In addition, 36 private boats operate out of Dibru ghat, carrying goods and passengers. In 1998-to-99, the total number of passengers registered as boarding at Dibru ghat was 451,347. The total amount of goods transported was estimated at 167.35 metric tonnes. Based on the population of the area and the volume of the local business and trade, the estimated value of trade out of Dibru ghat has been placed at about 100 crore rupees annually.

6.5 Recommendations:

49. In order to develop communications on the Brahmaputra and generate capacity for transport and economic growth, we propose a 'check list' of recommendations.

50. We especially strongly advocate the development of short-distance travel and freight, in addition to long-term and long-distance transport. The former is cost-effective and benefits would accrue to local communities. These would be visible almost immediately (See recommendations on Neamati ghat and Dibrugarh, page 13 and 14).

51. The study therefore recommends the following to the Government of India and the State of Assam:

    a. Setting up of a Brahmaputra Development Authority (BDA) that would bring under one umbrella organization all the different authorities having responsibility in the waterways sector. Such an authority should be headquartered in Assam – at Guwahati, Jorhat or Dibrugarh -- with a branch office in New Delhi.

    b. The Brahmaputra Board should be the nodal authority for the proposed BDA which should be a publicly held company, with 51 per cent stock held by the BB and the balance with other

Central Government departments, the State Government and private transporters and promoters. Other Central Government Departments which should be involved are the Department of North-East Region, North-Eastern Council, Inland Water Transport Authority, the Surface Transport Ministry, and Ministry of Defence. A model for such an Authority can be developed by a specialist agency.

c. Improvement and modernization of vessels with installation of basic equipment required for safe travel, such as better engines and better designed craft, sonar, wireless communications, life jackets and life insurance for crew members. It is not within the competence of this group to make exact technical assessments but we have come to some basic conclusions based on discussions in the area, in Kolkata and New Delhi as well as documents from different parts of the world.

d. The setting up of basic facilities on shore. This study has focussed on two ports and their environment and makes specific proposals for Neamati and Dibrugarh, although these can be replicated elsewhere. These essential requirements are a toilet complex, a rest house and hygienic eateries as well as a telephone-calling centre.

e. Access to roads and railways, where they exist, that is, inter-nodal transport, should be strengthened. Details for the micro-studies are given in the segments relevant to them. In the future, as a 1996 report of the Ministry of Railways says, the integration of the "rail, road and inland waterway movement, setting up of inland container depots, at the dispersal points served by rail, road and water, is essential. Alongside for bulk commodities, setting up of commodity dumps is necessary. Development of nodal points to feed the rural network in the hinterland is fundamental to the rail/inland waterways/road integration."

f. While huge sums of monies are required for the overall projects, the investments in the local projects are much smaller and executable within a reasonable time frame with local men, designs and materials. Funds can be provided under various schemes including DRDA, Jawahar Rozgar Yojana, MP development fund, MLA development fund and panchayat funds. Local business houses and industries, such as tea, which are interested in investing in these projects, should be given tax benefits.

g. It is to be noted here that neighbouring Bangladesh uses its rivers extensively as a highway network, relying less on roads and virtually not at all on rail. This is not possible in Assam because of the existing road and rail infrastructure and proposed plans to increase their capacity and accessibility. However, better boats and ferries should be used in local crossings over shallow and small rivers, streams and rivulets where other vehicles cannot go

and building of bridges and roads is prohibitively expensive. Planning at the Central and state levels needs to take this into account, that is, to play to the natural advantages of a particular geographical area, by using the resources and skills available locally, instead of trying to push "development" that leads nowhere and benefits only a small group of people.

6.6 Dredging

52. Dredgers need to be acquired i.e. purchased -- not leased as the Assam Government is doing currently -- and used in the low draft season (November-April) continuously to maintain, deepen and widen existing channels. It is suggested that, to start with, two dredgers be acquired and bilateral/multilateral agencies be requested to fund these acquisitions as part of their grants-in-aid projects.

6.7 Bulk Carriage

53. The Government of India should consider special subsidies to encourage private corporations and government departments to transport bulk goods, in containers or otherwise, on the IWT.

54. For this to happen, if one is to discount the Bangladesh corridor to Kolkata/Haldia, then Farakka in West Bengal must be developed as a major inland port, goods and materials be transferred to road and rail from here till Dhubri and then dispatched to all major points upstream by IWT. This can be a good example of inter-modular transport. In addition, the Dhubri railway and road links will require considerable upgrading.

55. The following non-essential bulk goods may be considered for the subsidy in addition to those which are already covered: cars and vehicles, construction materials (including wire, iron rods, granite and marble as well as timber); grain and cooking oil, LPG (both tankers as well as cylinders), POL, fertilizers, capital goods for the nearby Numaligarh refinery.

56. In addition, movement of military and paramilitary forces as well as of heavy weapons and vehicles may be transported by IWT.

6.8 Defence

57. The rivers and waterways of the North-East, not just of Assam, and the rest of the country have been neglected from the security point of view. They form another line of defence and security for the country. The waterways constitute a highway for the effective movement of troops and goods, as base for the development of a fast, fresh water, counter-insurgent strike force.

58. Apart from sophisticated weaponry, such a force would also need high-quality, fibre-glass boats equipped with the latest communications systems. The Coast Guard and the BSF Bay Wing at Dhubri may be consulted in terms of costs.

59. This proposed force may be called the Inland River Defence Fleet (Inland RDF) and can comprise the River Wing of the Army, which is already in existence, as the core group, and elements from the local police and paramilitary forces. The Navy and Coast Guard must also be involved in such a process. A new cadre can eventually be developed which can later call for direct recruitment.

60. Heavy military equipment, trucks and other vehicles can be transported by IWT at a concessional rate.

61. The huge stocks of food grain, cooking oil and other consumer items that the security forces consume should be sent by IWT and then offloaded onto trucks and other transport. This would drastically reduce the fuel bills for the army and paramilitary forces incurred in transporting these goods over long distances.

6.9 Tourism

62. Long- and short-distance luxury and semi-luxury boats, with furnished cabins, can be built on the pattern of Bangladesh. There are companies in Bangladesh which outfit such tours and ships and it would be useful to establish contacts with them. Packaged well and with high quality ships, cuisine and accommodation as well as efficient crews and good safety records, such tours could draw upper middle class Indians as well as foreign tourists who want to "get away from it all". Such tours could involve, for example, a visit from Guwahati to Majuli, the island famous for its Vaishnavite culture and monasteries as well as migratory species of birds, and then to the Kaziranga National Park before driving to Jorhat and then flying out of tea country to the nearest other connection in other parts of India.

63. Given the condition of the state's roads, many ordinary passengers may not mind travelling by ship instead of bus or train. With the implementation of night navigation, travel time would be halved and the river ports along the routes would grow and bustle, as their road counterparts have done over these past decades.

6.10 Scientific survey

64. A scientific survey needs to be conducted at the huge inland delta comprising the Dibang and Lohit as well as their meeting point with the Dihang in Arunachal Pradesh. This is the geographical region where the Brahmaputra develops the characteristics for which it is known later in its course. At this point, according to one senior geographer in Assam, 400 million tons of silt are deposited and transported ever year. This is a staggering figure and only a well-equipped, top-level scientific study can consider how the problem of silting can be tackled. In this effort, Government may need to consider associating international experts especially from South East Asia and continental North and Latin America (experts who have studied the Mekong, the Mississippi and the Amazon, all powerful rivers).

6.11 Modernization

65. Upgradation of vessels and navigation may also need international expertise. For this, government may consider inviting specialists from Bangladesh, which has developed a unique culture and system of using its waterways as highways, both small and large. Theirs is the best example of the use of waterways, harnessing it as a natural advantage, given their disadvantages in other areas.

66. Inter-modular hubs involving rail, road and IWT to be developed along the course especially at Dibrugarh, Neamati, Dhubri and Jogigopa. One such port exists but only at Pandu, which as has been noted highly congested.

67. Should the Bangladesh route be used effectively in the future, these hubs could be upgraded to taken international traffic of goods and passengers.

6.12 Financial Implications:

68. The financial implications of developing a transport and communications network throughout the Brahmaputra Valley needs wider study and more time as well as resources, both in terms of manpower and resources. We are able to develop some general projections at the macro level and specific projections at the micro level for the two studies.

69. It has been the experience of government and the public that large projects are bogged down in red tape and inner wrangling, causing endless delays and raising public frustration. Hence it is important that small, seemingly “doable” projects be implemented with speed and commitment so that public needs and concerns are met.

1. Setting up of the Brahmaputra Valley Authority (BVA)

70. With headquarters in Guwahati and a representative/liaison office in Delhi and branch offices at major ports along the river -- Dhubri, Jogigopha, Tezpur, Neamati, Dibrugarh, Sadiya.

71. Rs. 25 crore would be needed to set it up (Capital expenses: office buildings, vessels, communications equipment, recurring expenses: salaries and staff amenities, maintenance etc., continuing research and Initial consultancy).

2. Upgradation and maintenance of main channel:

Dredgers	2 @ Rs. 3 crore each	Rs. 6 crore
Buoys	500 @ Rs. 5 lakh each	Rs. 25 crore
(Cost of making buoys, placing them and bundling)		
Survey Vessel		Rs. 5 crore
(Research expenditure on river studies, maintenance of equipment, buoys, vessels etc.)		Rs. 5 crore
Total (annual)		Rs. 41 crore

3 Modernization of Vessels (100 goods carriers)

(Need to install sonar meter, wireless sets, life saving equipment, cranes, replacement of existing wood vessels by steel double-decker vessels: most of the goods vessels carry 20 tons of goods and passenger vessels can carry a load of 50-to-100 tons, including vehicles and people)

Cost of sonar meter	@ Rs 1.5 lakh per vessel x 100	Rs 1.5 crore
Cost of wireless sets	@ Rs 1.5 lakh per vessel x100	Rs 1.5 crore
Cost of improving carrying capacity		
	@ Rs 20 lakh per vessel	Rs 20 crore
Life saving equipment		
(medical equipment, life jackets, inflatable dingies)		
	@ approximately Rs 2 lakh per vessel	Rs 2 crore
Upgrading of engines,		
(conversion of wood to steel plated boat)		
	@ Rs 50 lakh per boat	Rs 50 crore
Total		Rs 75 crore

4. a. Neamati

The cost of constructing a 12 km railway line (currently in disuse) from Jorhat to Neamati Ghat @ Rs One crore per kilometre	Rs 12 crore
The cost of building an all weather, permanent road to Neamati Ghat via Lahdoigarh in replace the existing broken track @ Rs 75 lakh per kilometre	Rs 11.25 crore
A 10-seat Sulabh toilet complex:	Rs 15 lakh.
Construction of a 50 metre concrete berth at Neamati Ghat with mechanized handling (for one barge and two passenger vessels)	Rs 5 crore
Construction of a container depot/storage hall (50 metre x 50 metre)	Rs 5 crore
150 ton crane (one)	Rs 3 crore
50 ton crane (one)	Rs 1.5 crore
Small movers (five)	Rs 2.5 crore
Total	Rs 40.40 crore

4.b. Dibru ghat

1 Cost of upgrading existing road from city to the port	Rs 3 crore
2 Cost of upgrading existing railway line (BG), 2 km	Rs 2 crore
3. Construction of 50 metre concrete berth at Dibrugarh	Rs 10 crore
4. Construction of container depot (50 metres x 50 metres)	Rs 10 crore
5. 150 ton crane (One)	Rs 3 crore
6. 50 ton crane (one)	Rs 1.5 crore
7. Small movers (One)	Rs 2.5 crore
Total	Rs 32 crore
Grand Total from 1-4:	**Rs 241.8 crore**

Conclusions

72. The development of river communications on the Brahmaputra can mark a turning point for sustainable development in the region. Integrating with other modes of transportation, IWT can

play a vital role in infrastructure building in an under- developed state like Assam. The use of waterways will generate employment, both directly and indirectly. Trade and other economic activities will enhance the economy of the region significantly, especially if incentives are provided for investment in water transport.

73. A detailed study of opportunities for defence, communications and transport on the entire length of the Brahmaputra should be entrusted to the Department of North-Eastern Region. Such a study should be given top priority as part of the Government's effort to reach out to this region, give it a sense of inclusion in the task of ending disparities and, in the process, using its unique heritage and natural advantages to the full.