

CHAPTER 5 PRESENT CONDITIONS OF THE TRANSPORT SYSTEM BETWEEN THE DHAKA AREA AND THE SEAPORTS OF CHITTAGONG AND MONGLA

5.1 General Outline

The present transport network between Chittagong Port and the Dhaka/Narayanganj area is composed of three modes of transport: inland waterways, railways and roads. Container transport on this route has been made by rail, but there is no container transport by inland waterways and roads at present. Accordingly, future investment in the container transport system on this route should be distributed among these three transport modes.

The present transport network between Mongla Port and the Dhaka/Narayanganj area is composed of two modes of transport: inland waterways and roads. The railways in this country are divided into the east and west zones by the Jamuna River. Therefore, there is no connection between Mongla Port and the Dhaka/Narayanganj area, as well as no possibility of direct connection by rail between these two points in the near future. At present, there is no container transport on this route. But, according to the future investment plan, the transport system for carrying containers in this route will be distributed between inland waterways and roads.

5.2 Water-borne Transportation

5.2.1 Seaports

(1) Chittagong Port

Chittagong Port is situated on the right bank of the River Karnafuli, the port's jetties are located about 17 km from the confluence of the Karnafuli River and the Bay of Bengal. The CPA has thirteen continuous jetties (Nos.1-13), that can accommodate ocean-going vessels. They are marginal-type jetties along the riverside. Behind the jetties and inside the protected area, there are 13 transit sheds and 14 warehouses. Six sheds are used for C.F.S., five for imports and one for exports. The water depth along the jetties is 9.14 m. below the Chart Datum (C.D.). This defines the

maximum permissible draft of vessels calling at the port and water depths of navigational channel from the confluence to the port are maintained by dredging to receive the vessels of the size considering tidal fluctuation. In the channel, there are three bars: the Outer Bar, the Inner Bar and the Upta Bar. They need to be dredged from time to time. Details of port facilities within the protected port area are detailed as follows (see Fig. 5.2.1-(a)):

Jetties: Nos. 1-13, marginal type

Nos.14-15, detached type

2 Nos., Pontoon type

Controlled Water Depth: 9.14 m. below C.D.

Transit Sheds: 15, total of 116,375 sq. m.

Warehouses: 14, total of 61,429 sq. m.

Open Stockyard: R.C.C. pavement 170,537 sq. m.

Brick pavement 3,374 sq. m.

Container Yard 71,161 sq. m.

Break Bulk Handling

Heavy Cranes: 2, 30 ton-40 ton each

Cranes: 14, 3 ton-20 ton each

Forklift Trucks: 68, 2 ton-5 ton each

Tractors: 16, 6 ton-25 ton each

Trailers: 87, 6 ton-25 ton each

Container Handling

Forklift Trucks: 11, 16 ton-42 ton each

Tractors: 12, 40-foot capacity each

Trailers: 32 Nos., 20-40 foot capacity each

In addition to the thirteen jetties, a new multi-purpose terminal used mainly for handling containers is now under construction beside Jetty No.13. Berths at the multi-purpose terminal have already been completed and opened. The terminal's backyard is still under construction and is scheduled to be completed by the end of 1991. The new terminal is expected to be fully operational in 1992. Details of the terminal are as follows (see Fig. 5.2.1-(b)):

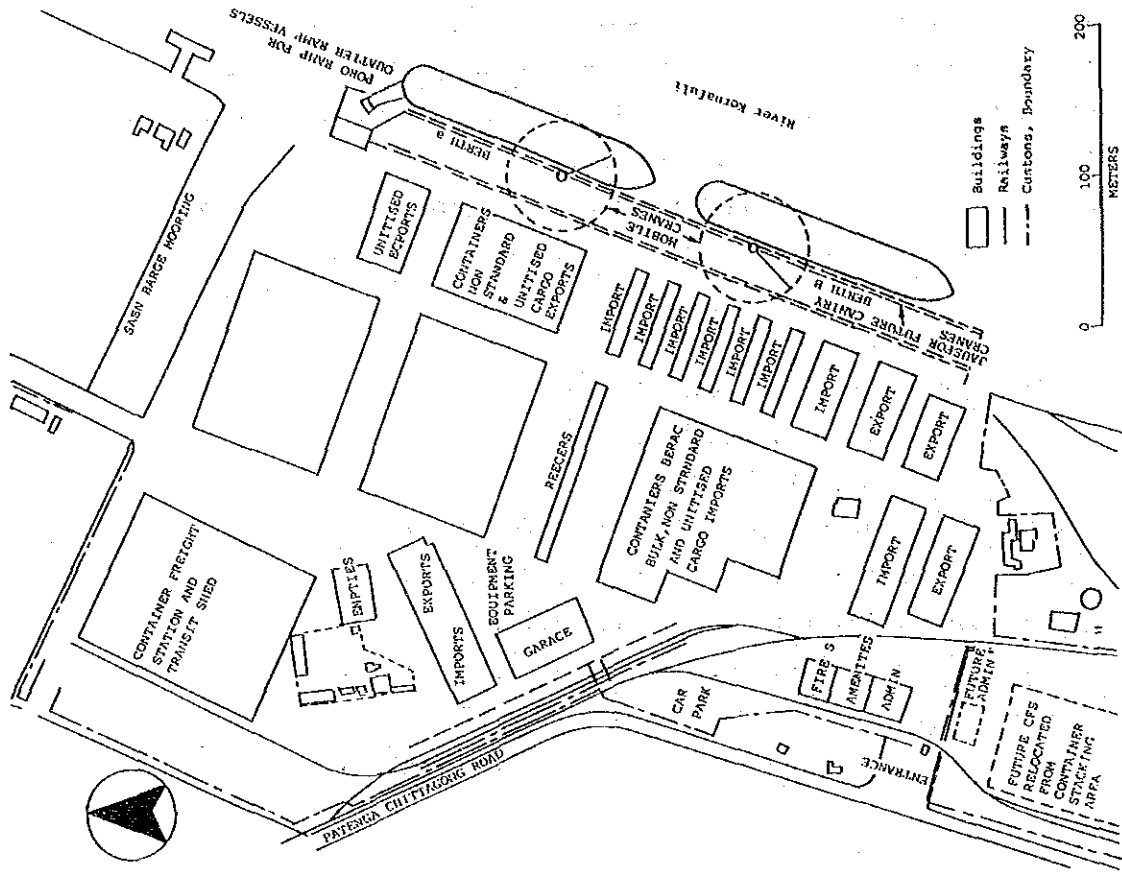
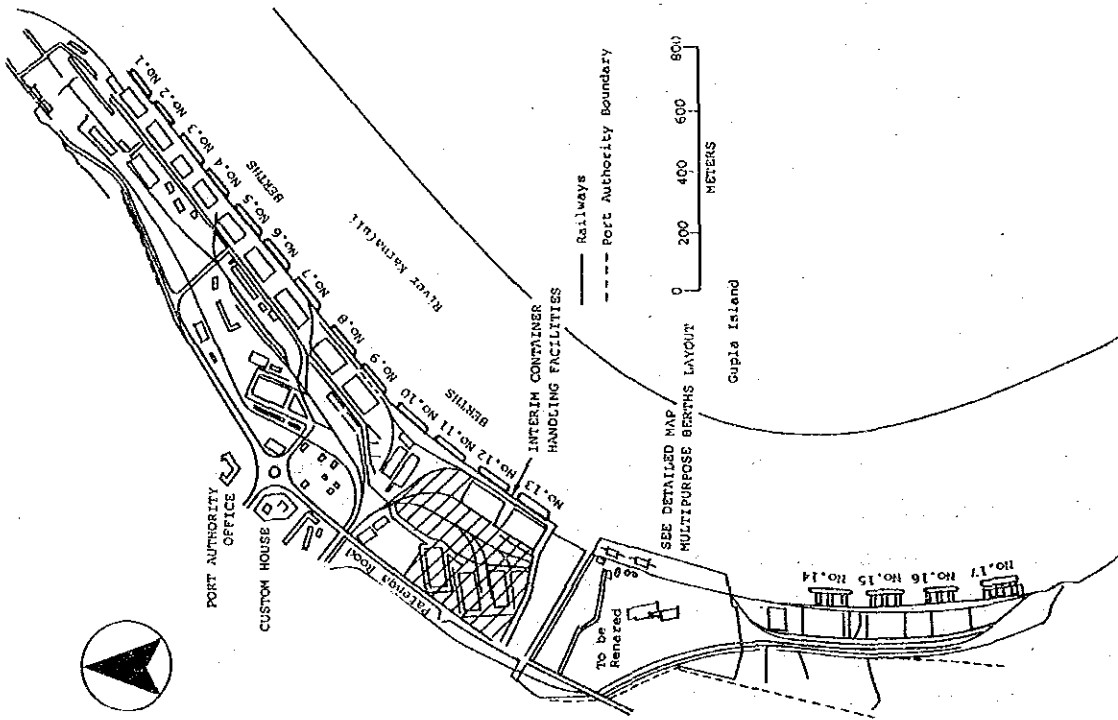


Fig. 5.2.1-(a) Existing Facilities of Chittagong Port Fig. 5.2.1-(b) Facility Layout of Multi-purpose Terminal

Berth Length: 450 m.

Water Depth along Berth: 9.5 m. below C.D.

Backyard Area: 18 ha.

Container Gantry Crane: Rails for container gantry cranes were already constructed on the apron with pile foundations. There is a plan to install cranes in the near future.

Container Freight Station: Plinth area will be about 13,650 sq. m.

Siding Tracks: Backside

In 1988/89, 403 vessels called at Chittagong Port to discharge and load around 78,000 TEUs containers. Small fully cellular container ships provide feeder service between the port and Singapore or Colombo. Their container carrying capacities are around 400 TEUs on average. Their maximum drafts are less than 8 meters. Partial container ships of sizes ranging between 1,000 D.W.T. and 15,000 D.W.T. are also used. Their container-carrying capacities are under 600 TEUs and on average around 400 TEUs. Conventional general cargo vessels are also used for container transportation (see Table 5.2.1-(a)). Besides Singapore and Colombo, these vessels call at other ports in India such as Calcutta, Madras and Cochin. Consequently, the number of containers discharged and loaded at Chittagong Port is less than the carrying capacities of full container ships or partial container ships at roughly 50% on average (see Table 5.2.1-(b)).

(2) Mongla Port

Mongla Port is situated on the left bank of the Pussur River. The port is one of the two seaports accommodating ocean-going vessels in Bangladesh and handles around one-fourth of the total amount of cargo loaded and unloaded at the seaports in this country. Compared with Chittagong Port, Mongla Port is characterized by the export of jute and jute goods, of which the volume exported through Mongla Port in 1988/89 accounted for 86% of the total. Except for jute and jute goods, non-bulk cargoes handled at Mongla Port are far less than that at Chittagong Port, accounting for less than 5% of the total non-bulk cargoes, excluding jute and jute goods, in 1988/89. Most cargoes handled at Mongla Port are bulk cargoes such as food grains, cement and fertilizer.

Table 5.2.1(a) Details of Vessels Carrying Containers Calling at Chittagong Port

Type	Vessel Size		Carrying Capacity (TEU)	Principal Dimensions			Speed (Knots)
	(G.T.)	(D.W.T.)		L.O.A. (m.)	Breadth (m.)	Max. Draft (m.)	
Full Container	3,599	5,623	300	104.5	16.0	6.5	13.0
	4,119	6,340	358	117.4	18.6	6.4	16.2
	4,248	6,340	358	117.4	18.6	6.4	16.2
	6,819	7,960	440	122.1	20.2	7.9	14.5
Part Container							
(General Cargo)	1,167	1,200	60	67.4	11.4	3.5	10.5
(General Cargo)	3,979	5,932	155	107.5	16.4	6.7	15.0
(General Cargo)	3,981	7,113	192	94.5	17.0	7.9	
(General Cargo)	6,121	8,129	213	121.8	17.6	7.7	15.0
(Bulk Carrier)	7,958	11,243	594	135.3	21.1	7.7	15.8
(General Cargo)	8,940	13,389	396	152.0	23.0	9.5	15.8
(General Cargo)	8,940	13,389	404	152.0	23.0	9.5	15.8
(General Cargo)	8,943	13,412	396	152.0	22.9	9.5	15.5
(General Cargo)	9,840	15,552	401	144.0	21.5	9.0	14.5
(General Cargo)	9,840	15,552	401	144.0	21.5	9.0	14.5
General Cargo							
	4,757	7,004		115.1	17.2	7.0	15.0
	5,174	7,596		118.1	17.7	7.3	14.0
	6,401	7,700		136.8	17.8	7.5	16.3
	6,401	7,700		136.8	17.8	7.5	16.3

Source: CPA & Lloyd's Ship Registration

Table 5.2.1(b) Details of Vessels Handling at Chittagong Port

Type	Vessel Size		Carrying Capacity (TEU)	Handled Containers			Total/Capac. (%)
	(G.T.)	(D.W.T.)		Discharge (TEU)	Loaded (TEU)	Total (TEU)	
Full Container	3,599	5,623	300	160	150	310	51.7
Part Con. (G.C.)	3,979	5,932	155	90	72	162	52.3
Part Con. (B.C.)	7,958	11,243	594	288	0	288	24.2
Part Con. (G.C.)	6,121	8,129	213	97	162	259	60.8
Part Con. (G.C.)	9,840	15,552	401	0	176	176	21.9
Full Container	6,819	7,960	440	155	317	472	53.6
Part Con. (G.C.)	3,981	7,113	192	194	0	194	50.5

Source: CPA & Lloyd's Ship Registration

The Mongla Port Authority has five continuous jetties, namely Nos.5-9, whose total length is 914 m.. The water depths at the jetty front are maintained by dredging. The present water depths at the jetty front are in the range of 7 m.-8 m. below the C.D.. Truck-mounted shore cranes are installed on the apron. Behind the jetties, there is a spacious backyard

enclosed by fences. Details of the port facilities are as follows:

Berth Length: 914 m. (Jetties Nos.5-9 are each 183 m. long)

Controlled Water Depth: 8 m. below the C.D.

Transit Sheds: 4 of 4,905 sq. m. each

Warehouses: 2 of 9,810 sq. m. each

Open Stockyard: 23,039 sq. m.

12,077 sq. m. under construction

Truck-mounted Cranes: 14 with lifting capacities between 3 tons and 40 tons

Mobile Crane: 1 of 100 tons

Dockside Cranes: 11 between 3 tons and 8 tons

Forklift Trucks: 18 between 5 tons and 30 tons

Straddle carriers: 2 of 32 tons each

In addition to the above-mentioned existing facilities, a new multi-purpose terminal is now under construction beside Jetty No. 5. The terminal will have two jetties, namely Nos. 3 and 4, each 183 m. long, totaling 366 m.. Construction work for pile foundations with sufficient bearing capacity for future installation of shore cranes for heavy loads, mainly containers, is almost finished.

As for the access channel from the mouth of the Pussur River to Mongla Port, there are shallow parts such as the sandbar at the river mouth, the Sabur Beacon, the Southern Anchorage and the confluence downstream from the port. These shallow parts vary from around 4 m. to 6 m. below C.D. at present, defining the maximum permissible drafts of vessels passing through the channel. Although tidal fluctuation raises the maximum permissible drafts to 7 m.-8 m. at high tide, the MPA has a plan to dredge the shallow parts up to 9 m. below C.D. to improve navigational conditions through the channel by reducing waiting times. Part of the dredging project is about to get under way.

In 1988/1989, 148 vessels called at Mongla Port to discharge and load about 14,000 TEUs containers. The details of the vessels are shown in Table 5.2.1-(c).

Table 5.2.1(c) Details of Vessels Carrying Containers Calling at Mongla Port (1989)

Type	Vessel Size		Carrying Capacity (TEU)	Principal Dimensions			Speed (Knot)	Handled Containers		Total Total/Capac. (%)
	(G.T.)	(D.W.T.)		L.O.A. (m.)	Breadth (m.)	Max. Draft (m.)		Discharged (TEU)	Loaded (TEU)	
Part Con.(G.C.)	6,121	8,129	213	121.8	17.6	7.7	55	103	168	39.4
Part Con.(G.C.)	9,840	15,552	401	144.0	21.5	9.0	0	176	176	21.9
Part Con.(G.C.)	9,840	15,552	401	144.0	21.5	9.0	0	245	245	30.5
Part Con.(G.C.)	12,573	16,764	275	154.8	22.4	9.3	48	0	48	8.7
Part Con.(G.C.)	9,858	13,934	211	145.9	20.0	8.9	28	0	28	6.6
Part Con.(G.C.)	7,077	9,190	58	130.8	19.3	8.4	0	1	1	0.9
Part Con.(G.C.)	12,193	15,883	252	154.2	22.2	9.0	77	37	114	22.6
Part Con.(G.C.)	12,573	16,764	275	154.8	22.4	9.3	122	0	122	22.2
Part Con.(G.C.)	13,125	16,771	408	159.0	22.9	9.0	74	238	312	38.2

Source: CPA & Lloyd's Ship Register

5.2.2 Navigational Waterways

Navigational waterways in Bangladesh comprise inland waterways, mainly formed by rivers and coastal waterways in the Bay of Bengal. These waterways are classified into the following three categories:

-Class I: Controlled water depths are guaranteed for vessel navigation throughout the year by maintenance dredging carried out by the BIWTA. The controlled depths are mostly 3.7 m. (12 feet). The Chart Datum and the average Lowest Low Water during the last 2-3 years are adopted as the datum level in and around the sea and in upland waterways, respectively.

-Class II: The necessary navigational aids are provided and navigable water depths are notified, if required. Dredging may be conducted incidentally. The depths are in the range of 2.1 m.-2.4 m..

-Class III: The BIWTA carries out simple channel markings as required.

Navigational waterways relevant to this study are the routes between Dhaka and Narayanganj ports and the two seaports, Chittagong and Mongla. Classification and navigational distances of the main routes are as follows (see Fig. 5.2.2):

Route	Class	Water Depth	Distance
- Chittagong - Dhaka:	I	3.7 m. (12 feet)	307 km (191 miles)
- Mongla - Dhaka:	I	3.7 m. (12 feet)	304 km (189 miles)
- Chittagong - Mongla:	I	3.7 m. (12 feet)	369 km (230 miles)
- Dhaka - Narayanganj:	I	3.7 m. (12 feet)	34 km (21 miles)
- Mongla - Khulna:	I	3.7 m. (12 feet)	47 km (30 miles)
- Dhaka - Chandpur:	I	3.7 m. (12 feet)	68 km (42 miles)
- Dhaka - Barisal:	I	3.7 m. (12 feet)	168 km (104 miles)
- Mongla - Barisal:	I	3.7 m. (12 feet)	136 km (85 miles)

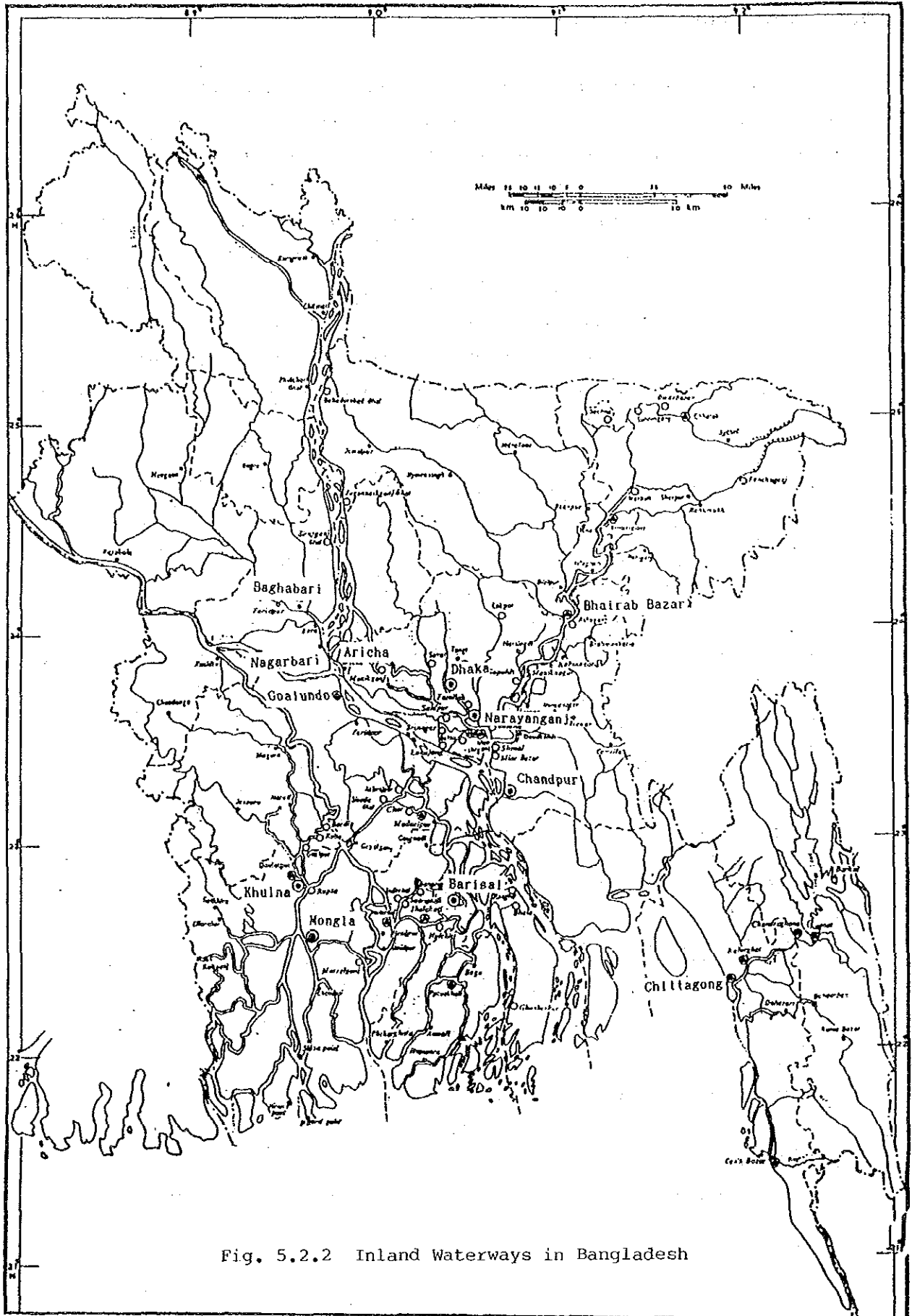


Fig. 5.2.2 Inland Waterways in Bangladesh

As for the coastal waterways, there are sandbars in front of the river mouths formed by materials deposited by the rivers and sand drift caused by sea waves hitting the coast. On the route between the ports of Chittagong and Dhaka, there is a coastal channel across such sandbars from Sandwip to South Hatia. According to the sounding record in 1986 by the BIWTA, the water depths vary from 2.1 m. to 3 m. (7 feet-10 feet) below C.D. through approximately 30 km. long, being maintained naturally without maintenance dredging. As the channel empties into the open sea, tidal fluctuation is much greater than in upland waterways. At Sandwip, the mean water levels fluctuate seasonally, because of the varying river flow, but the range of the fluctuation is small. According to the tide table of 1990 published by the BIWTA, the minimum mean water level is in February and the level is about 2.6 m. above the C.D.. Thus, at high tide above the mean water level, the water depth of the shallowest part in the channel is deeper than the following depth from the water surface:

2.1 m. below C.D.(sea bed) + 2.6 m. above C.D.(the mean water) = 4.7 m.

The duration of the high tide is around 6 hours, including ebb and flow. When vessels go to or come from the Lower Meghna River, flow and ebb are chosen accordingly. The duration of each ebb and flow period seems to be sufficient to allow them to pass through the channel.

After passing through the coastal channel, the inland waterway run through the Meghna River deep and wide enough for existing coasters. From the confluence of the Dhaleswari River with the Meghna River to the confluences of the Sitalakhya and Buriganga rivers with the Dhaleswari River, there are some shallows which need to be dredged seasonally. Towards the upstream, the Buriganga and Sitalakhya rivers are stable and so suitable for river ports.

On the other hand, the route between the ports of Mongla and Dhaka runs through only inland waterways formed mainly by natural rivers and partly through canals such as the Mongla Ghasiakhali and the Ghabkhan canals. The inland navigational waterway from Mongla connects with the Meghna River at Ilsaghat. Though the waterway between Mongla and Ilsaghat is meandering, coasters and inland cargo vessels can navigate at night owing to navigational aids installed by the BIWTA. At the mouths of the

canals and the confluence of the Gareshupura and the Meghna rivers near Ilsaghat, there are some shallows which need to be dredged from time to time. From Ilsaghat, the navigational route bound for the ports of Dhaka and Narayanganj is the same as the route from Chittagong Port.

The total volume of the maintenance dredging on the two main routes doesn't exceed 400,000 cub. m. per annum. The dredging is conducted by BIWTA's cutter suction dredgers.

Apart from the above main routes, the following waterways lead to other principal river ports:

Route	Class	Water Depth	Distance
- Aricha-Nagarbari:	II	: 1.8 m. (6 feet):	19 km (12 miles)
- Nagarbari-Baghabari:	II	: 1.8 m. (6 feet):	24 km (15 miles)
- Dhaka-Bhairab Bazar:	II	: 2.7 m. (9 feet):	111 km (69 miles)

5.2.3. Present Situation of Inland Ships

Bangladesh is a riverine country with over 5,240 miles (8,384 km) of navigable channels. Because of its geographical and topographical conditions, water transport has developed as the main mode of communication. A Number of rivers and numerous channels criss-cross the country so as to resemble the mesh of a net.

In the dry season, the length of navigable channels shrinks from 5,240 miles to 3,245 miles.

All aspects of marine and inland water transport in Bangladesh are controlled by the Ministry of Port, Shipping and Inland Water Transport (IWT).

In the context of the IWT, water transport sectors have been divided into organized and unorganized sectors.

Two organizations, the BIWTA and the BIWTC, both under the overall supervision of the Ministry, are of particular interest.

The BIWTA does not have commercial IWT ships. The BIWTC fleets and registered private fleets are taken in the organized, and traditional country boats are in the unorganized sector. Both of the organized fleets are competing for the same trade.

(1) Vessels

The IWT vessels in Bangladesh are divided into the undermentioned three classes:

- (i) Tanker (Bay crossing)
Carrying petroleum oil, liquid cargo, etc.
- (ii) Self-propelled vessel (Bay crossing)
Such as coasters and cargo vessels. (Must be allocated with load lines to prevent overloading.)
- (iii) Non-propelled dumb craft
Such as bay crossing flats, bay crossing barges, inland barges, inland flats and jute boats.

Bay crossing vessels are able to make the short sea crossing voyage between Chittagong and the mouth of the lower Megna River.

For IWT of containers, either from Chittagong or Mongla to Dhaka, only cargo carrying vessels are considered and in the case of dumb craft, the

assistance of towing vessels is required.

The general description of each type of the vessel is presented as follows:

Type of Vessel	No. of vessel	L.O.A..	Bredth	Depth	DWT	Draft
Coaster	20	208'01"	40'03"	15'03"	500 -1000	12'00"
Cargo Vessel	8	164'00"	-	8'06"	250 -400	6'00"
Bay-crossion flat	4	200'00"	30'00''	12'06''	500	7'00''
Bay-crossing barge	35	147'07" 196'03"	28'04" 29'06"	9'03" 11'06"	300 -750	7'00" 8'02"
Inland flat	-	220'00"	-	-	900	-
Inland barge	114	130'00"	29'09"	8'06"	250 -300	6'00"

No. of vessels : Owned by the BIWTC

Coaster : conventional-type vessel, machinery and accommodation aft, fitted with central holds and raised forecastles. The more modern vessels are equipped with steel hatch covers while the older ones follow the tradition of having hatch beams, wooden hatch boards and tarpaulins. Vessels of this type are authorized to make the coastal voyage between Rangoon and Kakinada, India, within a distance of 12 miles from the coast through the year. Coasters operating between Chittagong and Mongla can travel only 20 miles from the coast.

Cargo vessel : For Bangladesh, a relatively new type of inland waterway vessel, being a smaller version of the coaster usually equipped with two holds but not having a raised forecastle. Vessels of this type are authorized to make the coastal voyage between Chittagong and Mongla only during good weather season from Nov. 15 to Feb. 28.

Bay crossing flat : a non-propelled ship-shaped barge with up to five holds equipped with winches and cargo handling

derricks.

Bay crossing barge : a non-propelled craft, originally much smaller than the flat.

Inland flat : a large non-propelled ship-shaped craft with a large number of holds, port and starboard, covered with a shedlike structure to permit traditional manual cargo handling to continue uninterrupted in the wet season.

Inland barge : a small non propelled ship-shaped craft with a number of separate holds.

Towing vessel : the fleet of towing is intended to assist the bay crossing and inland flats and barges, and now consists of seagoing type of up to 1,000 BHP, pusher types of similar horsepower and smaller inland tugs of 500 BHP.

The BIWTC operates five 1st-class bay-crossing tugs and 19 inland tugs.

There is actually a wider variety of vessels. About 200,000 unregistered country boats are found in all sizes up to the bay-crossing type, being divided into following three groups.

- (i) Small : up to 50 maunds
- (ii) Medium : 50 to 200 maunds
- (iii) Large : over 200 maunds

(1 maund : 37.195 kg)

The country boats call at Dhaka Port and provide the daily necessities for consumption at the capital such as fresh vegetables, fish and goods for industry.

5.2.4 Present Management and Operating System of Shipping in Bangladesh

(1) Outline of the Present System

1) Regulations and Registration

The regulations regarding operation and registration of vessels and crew of both ocean-going and inland/coastal shipping are controlled by the Ministry of Shipping (and its subordinate organizations), and they are prescribed by the ordinances given in Table 5.2.4 (1).

Table 5.2.4(1) Ordinances Concerning Shipping in Bangladesh

Items	Inland/Coatal Shipping	Ocean Going Shipping
Registration of vessels and crew	The Inland Shipping Ordinance, 1976 (ISO)	The Marchant Shipping Ordinance, 1983
Employment Conditions of crew	The Inland Water Transport (Regulation of Employment) Act, 1965	
Scales of Pay (Public Sector)	The Services (Public Bodies and Nationalised Enterprises) (Pay and Allowances) Order, 1985	
Navigation Rules	ISO The Pilotage Ordinances, 1969 The Ports Act, 1908 The Port Rules, 1966, ETC.	
Route, Time and Fare	The Inland Water Transport (Time and Fare Table Approval) Rules, 1970 ISO	

2) Privatization

The government's policy is to provide more incentives to the private sector to increase its participation and to streamline the public-sector organization through improved operating and management efficiency. International shipping is carried out by the Bangladesh Shipping Corporation (BSC), the only public-sector corporation involved in this field and some private sector enterprises. The Mid-Term Review of the Third Five Year Plan 1985-90 reported that the share of the private sector in terms of DWT was only about 25%. On the other hand, the Bangladesh Inland Water Transport Corporation (BIWTC) is the only public-sector agency that provides inland water transportation. The share of the public sector in terms of the volume of dry cargo transportation, which has been decreasing year by year, was 36% in 1983.

3) Promotion of Their Country's Shipping Companies

In order to promote the business of their country's shipping companies, the government regulates the share of cargo transportation. As per UNCTAD codes (UNCTAD: United Nations Conference on Trade and Development), Bangladesh vessels are entitled to carry 40% of the cargo leaving and entering the country.

Foreign countries' vessels can directly transport cargo into the inland river ports from foreign ports and vice versa by using Bangladesh's rivers with permission from the government or according to bilateral agreements.

4) Field of Activities of Ocean-going and Inland/Coastal Shipping

The activities of the BSC and BIWTC are strictly separated by the ordinances. They are prohibited from infringing on each other's activities. On the other hand, private shipping companies can operate both international and inland/coastal trade.

5) Subsidies and Loans from the Government

The BIWTC gets subsidies and loans for operations and building vessels from the government. The BSC gets loans for building vessels from the government. There is no such system for private shipping companies.

(2) Regulation

The registration of all Bangladesh ships are regulated under the two following ordinances:

(i) The Bangladesh Merchant Shipping Ordinance, 1983

Applies to all sea-going Bangladesh ships exceeding 15 tons net and fitted with mechanical means of propulsion, but shall not apply to ships registered and defined in the following ordinance as inland ships.

(ii) The Inland Shipping Ordinance, 1976 and
The Inland Shipping (amended) Ordinance, 1983

Applies to every Bangladesh inland ship other than inland ship owned by the Defense Service. "Inland ship" means every description of vessel ordinary plying on inland waters and propelled wholly or in part by steam, liquid fuel, electricity or any other mechanical powers and includes sail boat, dumb barge and other craft which is not propelled but is towed or pushed by a vessel so propelled.

The Director General of Shipping is the regulatory authority for all Bangladeshi vessels. He also fulfills the role of Registrar General of Ships and therefore heads the Department of Shipping, the Mercantile Marine Office and Ship Registration and Survey Office.

Owners of Bangladeshi vessels are legally liable to register their vessels and to keep all certifications of equipment, machinery and hull structures up to date.

In the case of sea-going vessels and coastal vessels, inspection, certification and registration are carried out by the Principal Officer, Mercantile Marine Office (or Department) in Chittagong. For inland vessels, their duties are undertaken by the Senior Engine and Ship Surveyor and the Registrar of Inland Shipping in Dhaka.

The following items are inspected:

(i) The hull, boilers, engines and other machinery of the ship, which should be kept in good condition consistent with the voyage or service intended.

(ii) The equipment of the ship and the certificates of the master, engineer or engine-driver in order to comply with the requirements of the Ordinances.

(iii) The free board marking, which should be marked in the prescribed manner on the body of the ship.

Certificates and licenses required by the Bangladesh vessels are shown in Table 5.2.4(2).

The certificates of competence for the crew of inland vessels are graded as follows:

First class master

Second class master

Third class master

Inland engineer

First class engine-driver

Second class engine-driver

Third class engine-driver

The required certificates for inland vessels is shown in Table 5.2.4(3).

No inland ship can proceed on any voyage or be used for any service on inland water unless it has a certificate of survey and a certificate of registry granted under the ordinances which are in force and applicable to the voyage or service.

Table 5.2.4(2) Required Certificate and Licence for Bangladesh Vessels

Vessels	Certificate and Licence	Issurer	Available Period
Sea-going	Certificate of Registry	Mercantile Marine Dept.	Permanent
	Safety Equipment Certificate	-do.-	1 year
	Safety Radio Telegraphy	-do.-	1 year
	International Loadline Certificate	Classification Society	5 years with amendatory annual inspection
	Safety Construction Certificate	-do.-	5 years
	I.O.P.P. Mobile/Station Licence	Telegraph and Telephon Board	1 year
Coaster Cargo Vessel	Certificate of Registry	Mercantile Marine Dept.	Permanent
	Safety Equipment Certificate	-do.-	1 year
	Safety Radio Telephone	-do.-	1 year
	Safety Construction Certificate	Classification Society	5 year
	International Loadline Certificate	-do.-	5 years
Flat bay-crossing	Same as the above except Safety Construction Certificate	Same as Coaster	Same as Coaster
Barge bay-crossing	Certificate of Survey	Director General Dept. of Shipping	4 years
Inland Flat	Certificate of Registry	Engineer & Ship Surveyor of Inland Vessel & Registrar of Inland Vessel	Permanent
Inland Barge	Certificate of Survey	Director General Dept. of Shipping	4 years

Table 5.2.4(3) Required Licences for Inland Ships as detailed in The Inland Shipping Ordinance

Section	Horse Power	Required Licence
1	600 BHP or upward (Overall length up to 300 feet)	1st class master
2	250 to less than 600 BHP	Not below 2nd class master
3	Less than 250 BHP	Not below 3rd master
4	Above 1000 BHP	Not below Inland engineer (2nd class engineer)
5	600 to less than 1000 BHP	Not below 1st class engine-driver (2nd class engineer)
6	250 & upward but less than 600 BHP	Not below 2nd class engine-driver
7	Less than 250 BHP	Engine-driver of any grade
8	Inboard engine up to 50 BHP	Master of any grade
9	Outboard engine	Nil (in case of carrying passengers for mercantile purposes, a master of any grade is required)

(), granted under the Merchant Shipping Act, 1923

5.2.5 Voyage times

(1) Dhaka - Chittagong

The main commodities transported by IWT vessels between Dhaka Port and Chittagong Port are cement, fertilizer, foodgrains and steel/ iron.

The voyage time between Dhaka Port and Chittagong Port is on average 17 - 18 hours one way, but the loading/unloading time and the waiting time at Dhaka Port are so long that on average 12 - 13 days are needed for one round trip, which results about 2.3 round trips, per month, as shown in Table 5.2.5(1).

Table 5.2.5 (1) Average Voyage and Port Times (round trip)

Interviewee	Loading at Chittagong Port	Voyage	Unloading at Dhaka Port	Waiting at Dhaka Port	Total	No. of Round trips per month
Ship owner (A)	1-2 days	(17-18)x2 hours	4 days	6 days	12-13 days	2.0
Coaster Owners Association	3 days	2 days	3 days	4 days	12 days	2.5

(2) Dhaka - Mongla

The voyage time between Dhaka Port and Mongla Port is on average 22-24 hours one way. As the coasters with about 400 D/W smaller than the vessels in the Dhaka-Chittagong line ply this route, the cargo handling time becomes 5-6 days. The round trip takes an average of 7-8 days.

5.2.6 Freight rates

The BIWTA fixes maximum and minimum fares and freight rates for inland water transport on behalf of the Government.

Maximum and minimum freight rates are fixed by the BIWTA according to the commodity, as presented in Table 5.2.6 with the maximum rates.

The first 4 days are allowed for the loading/unloading of cargo as free-time. On expiry of this free-time, demurrage is charged at the rate of Tk. 1.00 per day per ton on actual weight of consignment loaded/unloaded.

Table 5.2.6 Maximum Freight Rates of Inland Water Transport

(Unit: Tk.)

Commodity	Rate/ton/km	Dhaka-Chittagong (307.4 km)	Dhaka-Mongla (304.2 km)
Foodgrain	0.777	239	236
Fertilizer	0.808	248	246
Jute	0.777	239	236
Gunny (Jute goods)	0.932	286	284
Carpet bucking	1.243	382	378
Coal	0.777	239	236
POL	0.441	136	134
Others	0.777	239	236

[Source] BIWTA

5.2.7 Future projects

(1) Chittagong Port

The CPA (Chittagong Port Authority) has made progress the Multi-purpose Terminal with a berthing facility 450 m in length, which as stated before, will be fully completed by December 1991 and begin full operation in 1992. In this berthing facility, two container feeder vessels with 180m long can berth simultaneously and the increasing amount of containerized cargoes will be handled in this terminal.

After the completion of the Multi-purpose Terminal, replacement of jetties Nos. 14-17 will start.

(2) Mongla Port

The major projects proposed by the MPA (Mongla Port Authority) for the Fourth Five Year Plan are presented in Table 5.2.7(1).

Mongla Port has been facing problems because of the siltation caused by floods and cyclones. Thus the new projects have laid stress on the dredging work.

"Dredging work in the Pussur Channel" (No. 5) aims to ensuring the safe passage of 8 m draught ships all along the Pussur Channel (104 km) by the capital dredging of 2,300,000 m³.

"Procurement of trailing suction dredger with self-propelled & self-discharging barges" (No. 6) proposes the procurement of a trailing suction dredger with two separate hopper barges of 2,000 tons capacity each to carry out the routine dredging at the jetty front and in the shallow parts of the Pussur Channel.

Table 5.2.7(1) Proposed List of Major Projects of Mongla Port
for the Fourth Five Year Plan

(Tk. in thousands)

Name of project	Estimated cost	Targeted completion
A. Spill over from the Third Five Year Plan		
1. Development of interim container handling facilities at Mongla Port.	126,233	1991-92
2. Construction of residential building at Mongla.	57,200	
B. Technical assistance projects		
3. Future development of Mongla - Khulna Port Complex including container handling facilities.	12,128	1989-90
4. Mathematical model study of Pussur-Sibsa River system and Karnafuli River Entrance.	64,697	
C. New projects		
5. Dredging works in the Pussur Channel	235,750	June, 1990
6. Procurement of trailing suction dredger with self-propelled & self-discharging barges.	830,256	June, 1992
7. Interim sweet water supply at Mongla Port.	54,000	
8. Establishment of modern telephone system at Mongla Port.	28,703	
9. Construction of open tin shed godown at Benapole Dry Port.	22,600	
10. Complementary project of permanent port on Pussur River.	148,600	
11. Procurement of 16 lighted buoys with chain, shackle & swivel.	45,000	1990-91
12. Procurement of computer and data base.	5,000	
Total	1,630,167	

[Source] MPA

(3) Inland waterways

The main objective of the Fourth Five Year Plan is to combat poverty by developing resources and creating employment opportunities. In order to realize this objective, the IWT sector will promote economic development by increasing the efficiency of the country's transportation system.

The BIWTA has estimated that the cargo volume handled by IWT will increase from 1986-87's 6,380,000 tons to 12,450,000 tons in 1994-95 and that the number of passengers traveling by IWT from 1986-87's 69,780,000 to 99,230,000 in 1994-95.

In order to deal with these demands, the BIWTA has proposed a new investment plan for inclusion in the FFYP, amounting to Tk. 8,346,517 thousands.

Table 5.2.7(2) presents only the new investment projects ranked as first priority, which includes the construction of a container depot, the inland river ports, the launch landing stations, the ferryghats and the placement of navigational aids.

Table 5.2.7(2) Proposed New Investment Projects of BIWTA
for the Fourth Five Year Plan

(Tk. in thousands)

No.	Name of project	Estimated cost
1.	Construction of 75 launch ghats at the remote area of Bangladesh.	220,000
2.	Re-establishment of navigability of different excavated rivers under development project.	200,000
3.	Development of cargo handling facilities at Dhaka Port, down stream of the Buriganga Bridge.	398,579
4.	Development of different ferry ghat at the bank of the Padma-Jamuna.	50,000
5.	Establishment of electronic position system.	208,700
6.	Ancillary vessel of existing dredger fleet of BIWTA.	310,000
7.	Procurement of craft for hydrographic survey.	750,000
8.	Aids to navigation equipment and spare parts.	253,274
9.	2 inspection vessels & 3 work boats for conservancy works.	165,000
10.	Shifting of Deca chain monitoring centre from Gulshan to Chandpur.	22,900
11.	Construction of office building, residential building and other facilities for shifting of BIWTA Head Quarter from Dhaka to Barisal.	609,478
12.	Development of 200 launch ghats at rural areas in Bangladesh.	676,000
13.	Fifty S.S.B set and its spare parts.	41,225
14.	Construction of container depot at Dhaka(Pagla) Port.	540,000
15.	2 dredgers for BIWTA.	1,100,000
16.	Hydrographic survey & charting of coastal water of Bangladesh.	400,000
17.	Redetermination of mean sea level.	60,000
18.	One salvage unit with 150 ton capacity.	687,570
19.	Development, rehabilitation & godown construction of inland port at Khulna and Barisal.	49,700
Total		6,742,426

[Source] BIWTA

5.3 Railways

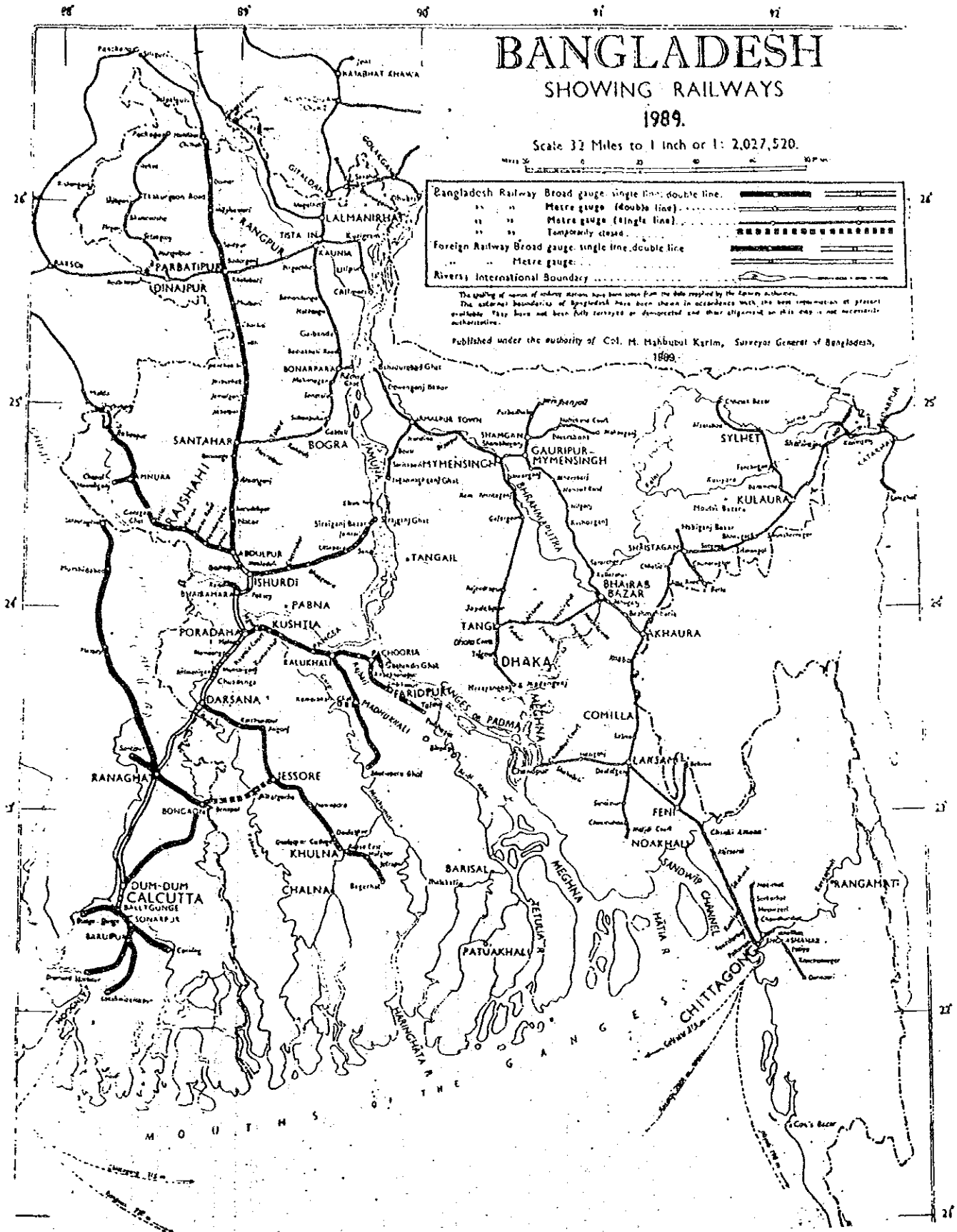
5.3.1 General Outline of Bangladesh Railway

(1) History

Bangladesh Railway (BR) is a Government-owned and Government-managed organization under the jurisdiction of the Ministry of Communications. The first section of 53.11 km of broad-gauge track between Darsana and Jagati was opened to traffic on 15th November, 1862. With the liberation of Bangladesh on 16th December, 1971, the Bangladesh Railway was established under the management of Railway Board.

At present the Bangladesh Railway is divided into two zones: - the East Zone and the West Zone. The East Zone lies to the east of the Jamuna River and comprises tracks with a one-metre gauge (1,000 mm). The West Zone lies to the west of the Jamuna River and comprises both broad (1,676 mm) and one metre gauge tracks.

At the end of 1987, the Bangladesh Railway had a total of 1,001 stations, with 255 in the East Zone and 746 in the West Zone comprising 2,745.65 route-kilometers of 923.53 km of broad gauge and 1,822.12 km of 1 metre gauge. It owned a fleet of 291 locomotives, 1,791 loading vehicles and 16,247 units of freight wagons. In 1987-88, it carried 53,003,000 passengers and 2,518,000 tons freights, amounting to 5,025,182,000 passenger-kilometers and 678,267,000 ton-kilometers.



[Source] Bangladesh Railway: Information Book 1988

Fig. 5.3.1 Route Map of Bangladesh Railway

Table 5.3.1 Summary of Bangladesh Railway (1987-88)

	Broad Gauge (1676 mm)		Meter Gauge (1000 mm)			Total System		
	West Zone	East Zone	West Zone	East Zone	Total	West Zone	East Zone	Total
Railway stations	162	255	84	339	339	246	255	501
Route-kilometers (km)	923.53	1,279.09	543.03	1,822.12	1,822.12	1,466.56	1,279.09	2,745.65
Locomotives (Diesel)	75	-	-	216	216	-	-	291
Coaching vehicles	390	-	-	1,404	1,404	-	-	1,794
Freight wagon (units)	4,073	-	-	12,174	12,174	-	-	16,247
Number of passenger carried (thousands)	15,310	32,900	5,448	37,965	37,965	20,648	32,900	53,003
Passenger-kilometers (thousands)	1,141,157	3,522,123	388,907	3,911,030	3,911,030	1,530,059	3,522,123	5,052,182
Freight tons carried (thousands)	1,021	1,478	541	1,604	1,604	1,437	1,478	2,515
Net ton-kilometers (thousands)	214,711	406,752	56,805	463,556	463,556	271,515	406,751	678,267

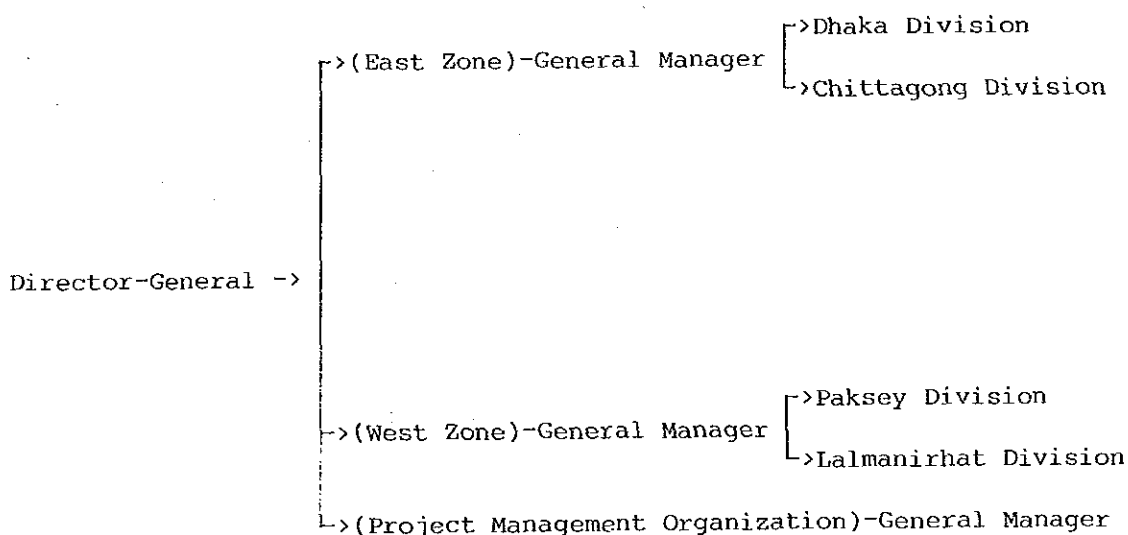
1) A passenger passing over two Zones of the Railway is counted in both the Zones, while the same is counted once only in the total figures for the system.

2) A ton passing over two Zones of the Railway is counted in both the Zones, while the same is counted once only in the total figures for the system.

[Source] Bangladesh Railway : Information Book 1988

(2) Organization

Presently, the Director-General, who holds concurrently the post of Secretary, Railway Division, Ministry of Communications, supervises the management and development of the Bangladesh Railway. Under the Director-General, two General Managers control each of the two zones - East and West. In addition, a General Manager is appointed for implementation of the major development projects of the Railways, especially projects involving foreign aid.



[Source] Bangladesh Railway: Information Book 1988

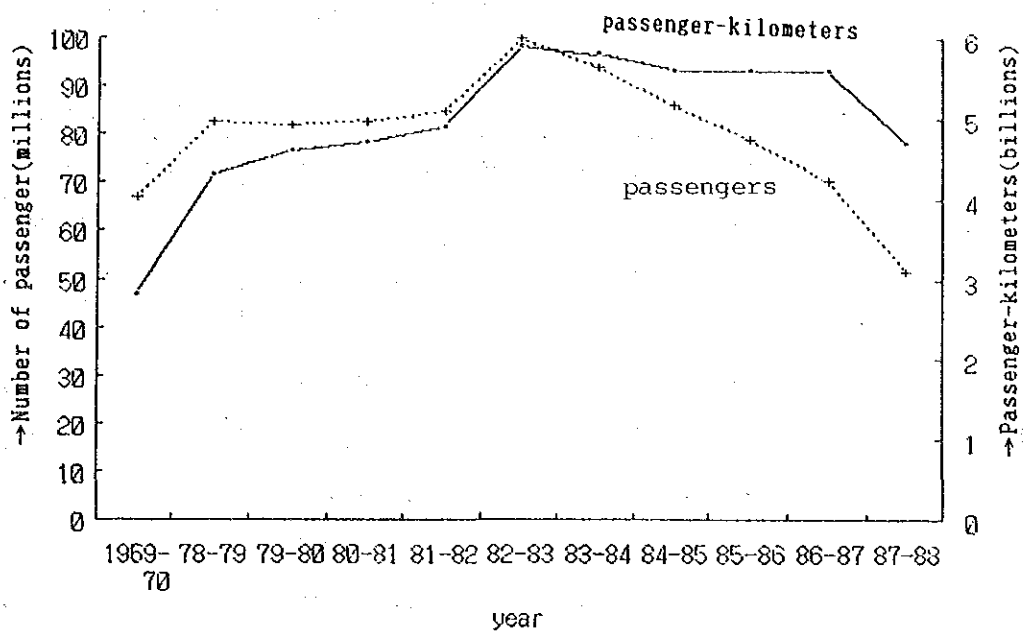
Fig. 5.3.2 Organization Chart of Bangladesh Railway

(3) Present Situation

Figs. 5.3.3 and 5.3.4 show the trends of passenger and freight handled by the Bangladesh Railway. In each successive year after 1982-83, the number of passengers declined steadily, while the passenger-kilometers declined a little more slowly. The freight tons and net ton-kilometers had also a tendency to decline after 1978-79.

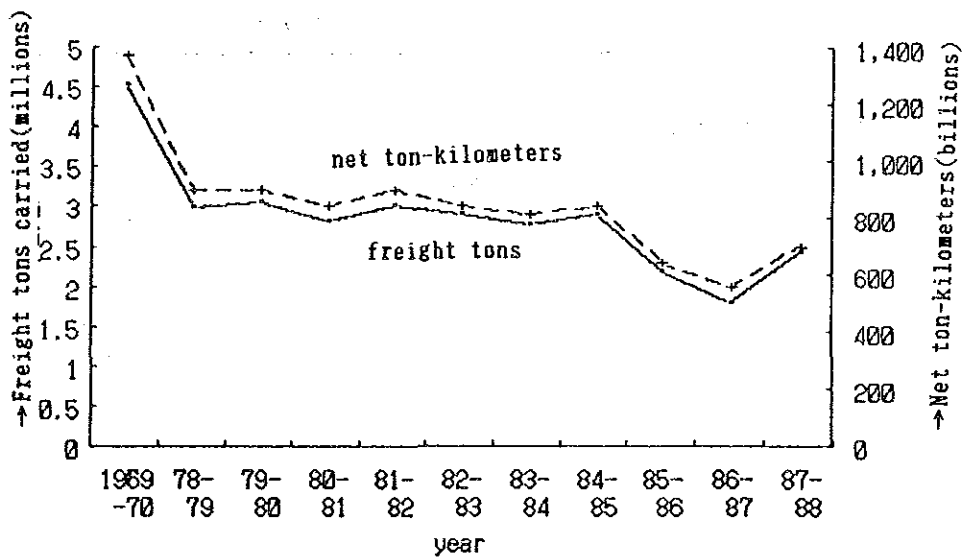
From the financial viewpoint, the net operating income showed a constant deficiency, as outlined in Table 5.3.2. This deficiency has been increasing recent years.

In the Third Five Year Plan, 1985-90, the Bangladesh Government points out the unsound financial performance by the Bangladesh Railway and proposes strategies for the development of the Railway, laying more emphasis on improvement of the quality of service rather than expansion. The Mid-term Review of the Third Five Year Plan, 1985-90, published by the Planning Commission in February 1989, also points out the necessity of reducing costs through improvement of efficiency, better utilization of productive assets and reduction in operating costs.



[Source] Bangladesh Railway: Information Book 1988

Fig. 5.3.3 Trend of Passenger Traffic



[Source] Bangladesh Railway: Information Book 1988

Fig. 5.3.4 Freight Trends

Table 5.3.2 Financial Performance of Bangladesh Railway

(Tk. in thousands)

Year	Total operating revenue	Total operating expenses	Net operating income
1969-70	303,039	252,751	+50,288
-----	-----	-----	-----
1978-79	828,633	800,348	+28,285
1979-80	922,610	963,792	-41,182
1980-81	1,040,784	1,227,171	-186,387
1981-82	1,290,204	1,317,087	-26,883
1982-83	1,494,607	1,502,918	-8,311
1983-84	1,446,050	1,782,173	-336,123
1984-85	1,686,317	2,003,229	-316,912
1985-86	1,592,922	2,510,242	-917,320
1986-87	1,601,058	2,504,013	-902,955
1) 1987-88	1,712,017	2,915,243	-1,203,226

1) Provisional figures.

[Source] Bangladesh Railway : Information Book 1988

5.3.2 Dhaka - Chittagong Rail Route

There is no direct rail connection between Mongla Port and Dhaka, because of the Jamuna River and the Rupsa Ferry. On the other hand, container cargo transport by railway between Chittagong Port and Dhaka has been into operation since 1987. In this section, therefore, the present state of the Dhaka-Chittagong rail route will be examined.

(1) Facilities

1) Gauge: Metre gauge (1,000 mm)

2) Length

Table 5.3.3 Section Length of Dhaka-Chittagong Rail Route

	Section	Length(km)
Double line	Dhaka - Tongi	23.00
	Akhaura block hut-Ashuganj	30.00
	Chittagong-Chinki Astana	69.00
	Subtotal	122.00
Single line	The rest	198.79
Total	Dhaka - Chittagong	320.79

[Source] Bangladesh Railway

3) Track

Rail: 75 lb A rail (i.e. 75 lb/yard)

Sleeper: N + 5 density on straight

N + 6 density on curve

Hard wood and prestressed mono block concrete sleeper with elastic fastening both long welded and short welded track on 10" ballast cushion for concrete sleeper and 8" for wooden sleeper on this route.

Ballast: Crushed stone

4) Normal rail length: 42 ft. (12.81 m)

5) Permissible speed: 76 km/hour

6) Design axle load: 12 tons

7) Locomotive

Table 5.3.4 Metre Gauge Main Line Diesel Electric Locomotive (East Zone)

Type	No.	Locomotive horsepower
DE 1 & 2	34	1125
GMU - 10	26	875
GEU - 14	7	1245
MLU - 14	19	1245
MLU - 14	11	1245
JDE - 14	18	1245
GMU - 15	12	1500
Total	127	-

[Source] Bangladesh Railway

(2) Operation

1) Number of scheduled trains per day

Table 5.3.5(1) Number of Scheduled Trains per Day
on the Dhaka-Chittagong Rail Route

Train	Journey time
4 pairs of Intercity trains	5 hours 30 minutes - 6 hours 15 minutes
2 pairs of Mail and Express trains	7 hours 55 minutes - 8 hours 45 minutes
2 pairs of Freight trains Express	11 hours 10 minutes - 11 hours 40 minutes
Ordinary	21 hours 35 minutes - 26 hours 15 minutes
1 pair Parcel-cum-container cargo trains	
Dhaka-Chittagong Chittagong-Dhaka	16 hours 30 minutes 17 hours 50 minutes

N.B. : Besides 11 pairs of Intercity, 11 pairs of Mail and Express, 9 pairs of Passenger trains and 8 pairs of Freight trains run over a portion of the section for different destinations.

[Source] Bangladesh Railway

2) Freight rates

Prevailing freight rates are from Tk. 370 to Tk. 770 per ton according to the freight class.

(3) Container transport

The Kamalapur ICD (Inland Container Depot) was opened in 1987 by the Bangladesh Railway as the first Inland Container Depot in Bangladesh. It connects Chittagong Port and Dhaka directly by railway. Since 1987, this ICD has grown gradually, handling 3,043 TEU of containers in 1989. As the first ICD in this country, the result of Kamalapur ICD must be appraised. This project is still seen as the most promising businesses for the Bangladesh Railway.

1) Journey time

The daily container service runs with a journey time of 16 hours 30 minutes from Dhaka to Chittagong and 17 hours 50 minutes from Chittagong to Dhaka, as follows.

(1) Daily container service with parcel express No.802

Dhaka 19:25 → Chittagong 11:55, journey time 16:30

(2) Daily container service with parcel express No.801

Chittagong 18:00 → Dhaka 11:50, journey time 17:50

According to the Bangladesh Railway, it is obliged to transport containers between Chittagong Port and the Kamalapur ICD within 24 hours.

On the other hand, some shippers and consignees said during the interview by the Study Team that they did not carry containers through the Railway, because it took from 2 to 7 days to transport them from Chittagong Port to the Kamalapur ICD while one day by roads. It is supposed that there are some problems concerning the management and operation.

Table 5.3.5(2) presents the actual records of the arrival and departure time of the parcel express trains-cum-container cargoes at the Kamalapur ICD. These records began in December 1989.

The number of the delayed arrival days was 20 to 28 of the total running days in December 1989 (the delay rate 71.4%), 20 to 29 in January 1990 (69.0%) and 18 to 26 in February 1990 (69.2%). The delay rate did not

decrease, but the average delay hours of arrival decreased largely from 5 hours 52 minutes in December 1989 to 2 hours 10 minutes in February 1990.

The number of the delayed departure days was 17 to 28 of the total running days in December 1989 (the delay rate 60.7%), 14 to 31 in January 1990 (45.2%), 9 to 27 in February 1990 (33.3%). The delay rate decreased to half and the average delay hours of departure decreased largely from 2 hours 29 minutes to 1 hour 42 minutes.

The shippers and the consignees seem to have replied considering the previous state of container transport by the Railway. The container transport by the Railway has been rapidly improved.

Table 5.3.5(2) Arrival and Departure Time of Parcel Express Train at Kamalapur ICD

		Arrival (No. 801)			Departure (No. 802)		
		December 1989	January 1990	February 1990	December 1989	January 1990	February 1990
Running days	On schedule	8 day	9 day	8 day	11 day	17 day	18 day
	Delay	20	20	18	17	14	9
	Subtotal	28	29	26	28	31	27
Not running days		3	2	2	3	0	1
Total		31	31	28	31	31	28
Delay hours	Maximum	17hr 10min	11hr 10min	8hr 55min	8hr 40min	5hr 45min	3hr 45min
	Average	5hr 52min	4hr 10min	2hr 32min	2hr 29min	2hr 06min	1hr 42min

[Source] Bangladesh Railway

2) Freight rates

Table 5.3.6 Freight Rates of Container Transport between Chittagong Port and Kamalapur ICD

	Freight rates(Tk.)
a. Chittagong Port to Kamalapur ICD up to 15 tons net beyond 15 tons to 22 tons net	5,000 7,000
b. Kamalapur ICD to Chittagong Port up to 15 tons net beyond 15 tons to 22 tons net	2,500 3,500
c. Kamalapur ICD to Chittagong Port empty	1,000

[Source] Chittagong Port Authority

5.3.3 Future Expansion Plan

(1) Dhaka - Chittagong rail route

The propose list of projects on the Dhaka-Chittagong rail route for inclusion in the Fourth Five Year Plan, 1990-95 is presented by the Bangladesh Railway, as shown in Table 5.3.8.

In this table, there is a programme of constructing a double line from Tongi to Bhairab Bazar (64 km) during 1994-95 (No.2), excluding 3 major bridges. But these projects are not yet finalized.

(2) Kamalapur ICD

Existing Kamalapur ICD with a terminal area of 27,750 m² was constructed at a cost of Tk. 16,840,000 and is under the expansion works at present with the budget of Tk. 66,000,000, which will be completed during 1990. The expansion work consists of pavement work, extension of a godown for LCL container, construction of a floodlight tower, construction of sub-station with stand-by generator, etc.. At the same time, the conversion of the existing four-wheeler wagons is going on. With the completion of these doings, it will have the capacity to handle 12,000 TEU containers a year.

As a long-term plan, there is the Kamalapur Project proposed by the ADB in 1988, as shown in Table 5.3.7.

Table 5.3.7 Kamalapur Project Proposed by ADB

(A) Planned Container Throughput (Unit: TEU)

	1995	1996	2006
Container throughput	33,800	38,700	76,800

(B) Summary Financial Capital Costs (Tk.in thousands) * Base year 1986

	1990 to 96	1997 to 01	2002 to 06	Grand Total
Total costs	488,812	58,251	150,101	697,164

[Source] ADB, 'Rail Container Transport Study Bangladesh, Final Report', February 1988.

Table 5.3.8 Proposed List on the Dhala-Chittagong Rail Route for
the Fourth Five Year Plan

(Tk. in thousands)

No.	Name of Project	Estimated cost	Expenditure up to June, 1990	Fund required in FFYP	Expected year of completion
1.	Remodelling of Chittagong Station, Phase I.	53,764	1,560	52,204	1991-92
2.	Line capacity works and traffic facilities between Tongi - Bairab Bazar and other important sections of Dhaka - Chittagong main line.	730,805	5,000	725,805	1994-95
3.	Setting up of a ICD at Dhaka.	50,000	-	50,000	1992-93
4.	Procurement to 80 nos. container wagons (for 40 ft container)	262,000	-	262,000	1994-95
5.	Replacement of wooden sleeper with pre-stressed concrete sleeper on Dhaka - Chittagong section.	250,000	-	250,000	1994-95
6.	Procurement of track maintenance equipment for track laid with concrete sleeper.	150,000	-	150,000	1992-93
7.	Remodelling of Chittagong Station, Phase II.	100,000	-	100,000	1994-95

[Source] Bangladesh Railway

5.4 Roads

5.4.1 General Outline of Roads in Bangladesh

(1) Road Network

The Roads and Highways Department (RHD), Ministry of Communications, and local government bodies are the two principal organizations responsible for the construction and maintenance of the road network in Bangladesh. The road network is classified into five categories: national highways, regional highways, feeder roads, upazila connecting roads and rural roads. RHD is responsible for the construction and maintenance of national highways, regional highways, upazila connecting roads and most of feeder roads, while the local government bodies are responsible for rural roads and parts of feeder roads.

The lengths of roads by road category under RHD is shown in Table 5.4.1.

Table 5.4.1 Road Network under RHD in mid-1988

Category of Roads	Length(in km)			
	Paved road	Partly paved or brick paved road	Earthen road	Total
1. National Highways	2,710	63	58	2,831
2. Regional highways	1,256	126	22	1,407
3. Feeder Roads	1,681	513	871	3,065
4. Upazila Connecting Roads	1,604	1,353	2,094	5,051
Total	7,251	2,058	3,045	12,354

[Source] RHD

(2) Design Standard

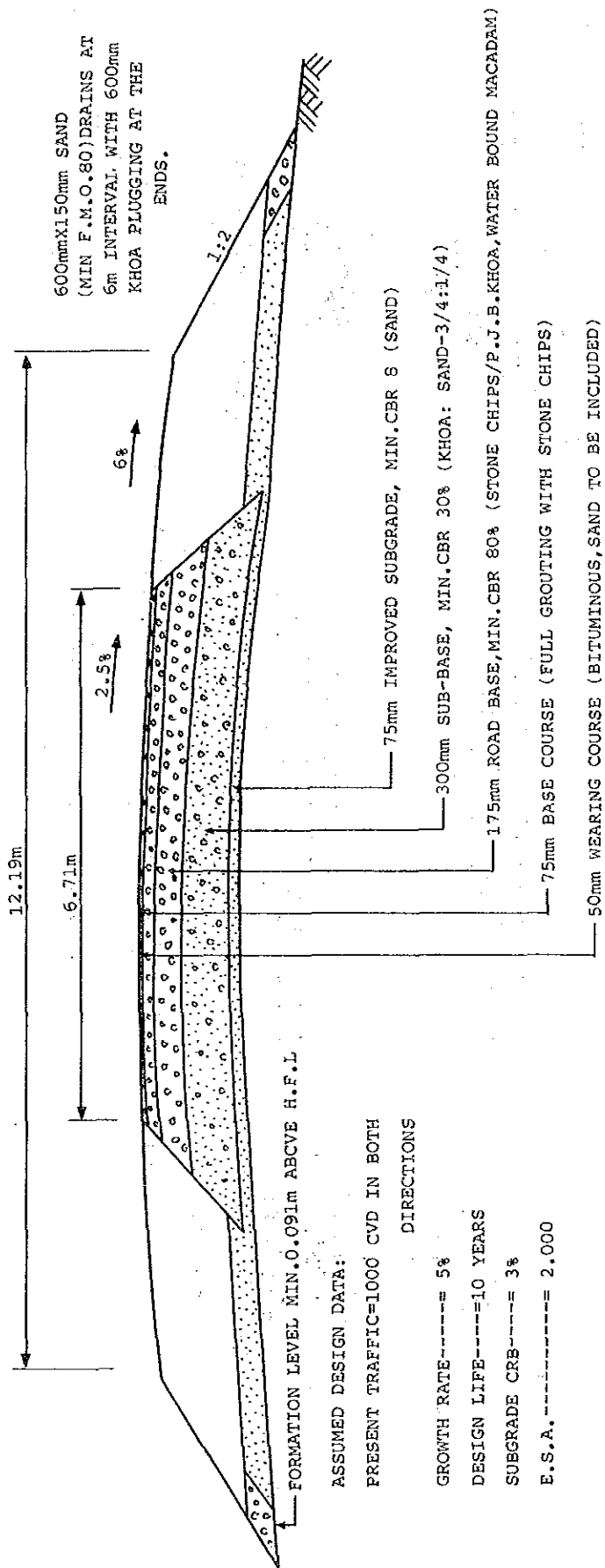
The typical road section for national highways with pavement layers is shown in Fig. 5.4.1, which is used in preparing the schemes.

While designing road bridges and culverts in Bangladesh, it appears that the IRC (International Road Congress) standards were applied until 1960, that is, they would be designed to bear a 10 ton vehicle. Even now, Sitakunde Surveillance Station on the Chittagong-Dhaka route takes care all trucks using the route do not exceed 10 tons in their GVW (gross vehicle weight).

After 1960, AASHO (American Association of State Highway Officials) standards were gradually introduced. The highway live loadings H15 and H20 came into application. This means that two-axled trucks weighing 13.5 tons and 18 tons should be allowed for when designing road bridges and culverts. The present standard of live loadings is AASHTO (American Association of State Highway and Transportation Officials) HS20-44(MS 18), which consists of a tractor truck with semi-trailer weighing 32.4 tons in GVW and a maximum axle load of 14.4 tons.

These highway live loadings are illustrated in Fig. 5.4.2.

New bridges are under construction according to HS 20-44 (M18), but many bridges and culverts remain under the old standard with a restriction of 10 tons in GVW.



ASSUMED DESIGN DATA:

PRESENT TRAFFIC=1000 CVD IN BOTH DIRECTIONS

GROWTH RATE-----= 5%

DESIGN LIFE-----=10 YEARS

SUBGRADE CRB-----= 3%

E.S.A.-----= 2.000

NOTE:

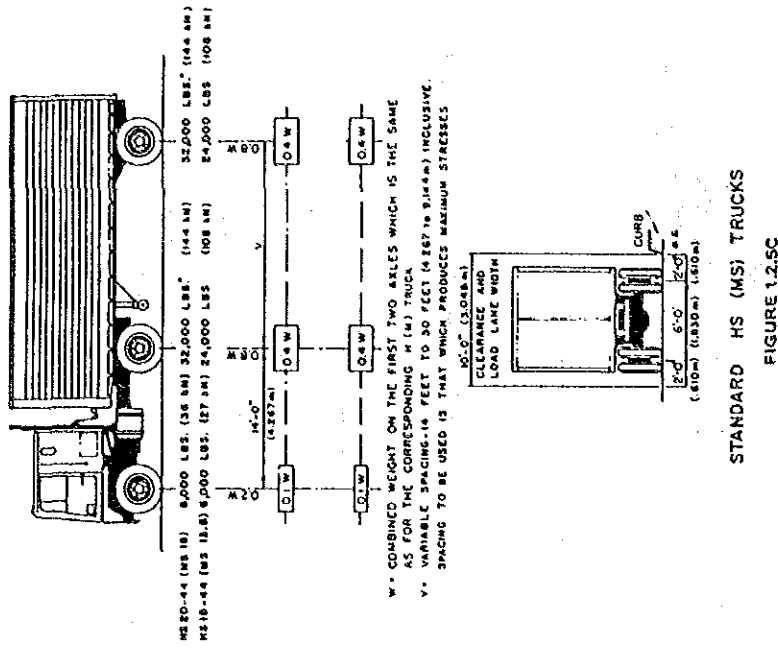
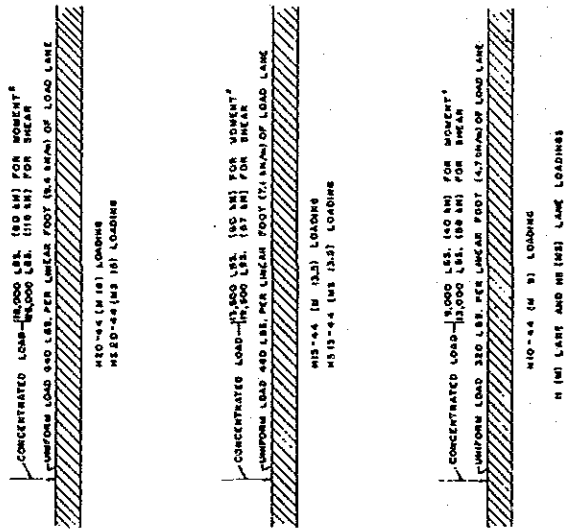
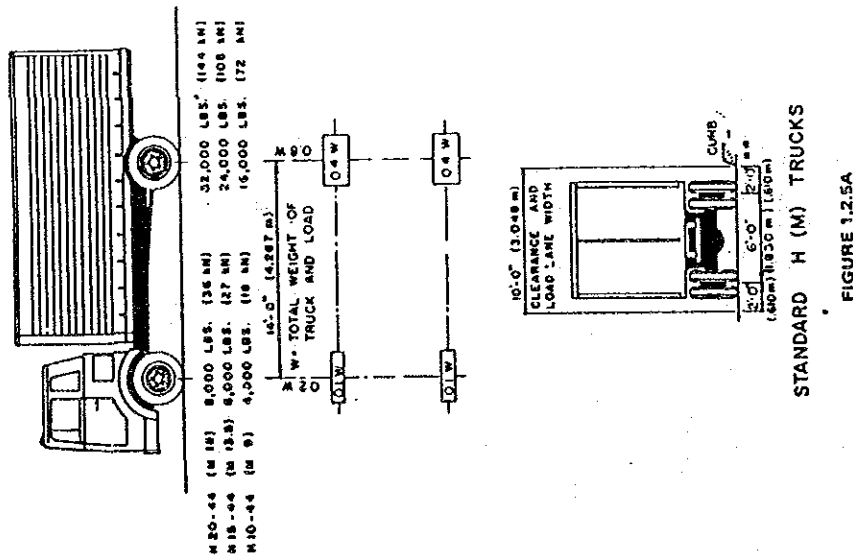
THE PAVEMENT DESIGN IS FOR THE PURPOSE OF PREPARATION OF SCHEMES

ONLY. PAVEMENT DESIGN SHOULD BE PROPERLY MADE ON DESIGN DATA

COLLECTED FOR INDIVIDUAL ROADS BEFORE CONSTRUCTION.

[Source] RHD

Fig. 5.4.1 Typical Section with Pavement Layers for National Highway



[Source] AASHTO : Standard Specifications for Highway Bridges, 1977

Fig. 5.4.2 Highway Live Loadings

(3) Vehicles

The numbers of trucks, tractors and trailers in 1988 in Bangladesh are 33,800, 2,950 and 1,150 respectively, as presented in Table 5.4.2.

According to the Bangladesh Road Transport Authority (BRTA), trucks with GVW of less than 10 tons account for 90% of all trucks. However, in the Study Team's observation, most trucks have GVWs of 11 to 12 tons.

In 1988, there are 2,950 tractors and 1,150 trailers. But there are almost no transportation of containers by tractors and trailers.

Table 5.4.2 Total Number of Registered Vehicles in Bangladesh from 1984 to 1988

Type of Vehicles	Year				
	1984	1985	1986	1987	1988
1. Bus/Minibus	20,000	21,000	22,050	23,150	24,250
2. Truck	30,000	30,900	31,830	32,780	33,800
3. Jeep	16,000	16,800	17,640	18,520	19,650
4. Car	47,000	49,350	51,820	54,480	58,000
5. Taxi	1,500	1,525	1,590	1,640	1,850
6. Auto-rickshaw	18,000	19,800	21,780	23,958	26,460
7. Motor-cycle	70,000	77,000	84,700	93,170	100,750
8. Tractor	2,000	2,575	2,650	2,730	2,950
9. Trailer	1,000	1,030	1,060	1,092	1,150
10. Others	1,800	1,854	1,910	1,910	2,000
Total	207,300	221,854	237,030	253,430	270,860

[Source] Bangladesh Road Transport Authority (BRTA)

(4) Motor Vehicle Law

Road transport in Bangladesh is done in accordance with "the Motor Vehicle Ordinance, 1983". Under the provisions of the Ordinance, motor vehicle rules are provided and prescribed in detail.

"The Motor Vehicle Rules, 1984" are consisted of 4 chapters, which are Chapter I, Preliminary; Chapter II, Licensing of drivers of motor vehicles; Chapter III, Licensing of conductors of stage carriages or contract carriages; and Chapter IV, Registration of motor vehicles. But the "Bengal Motor Vehicles Rules, 1940" are still valid concerning construction, equipment and maintenance of motor vehicles.

Table 5.4.3 shows the restrictions made by the Motor Vehicle Ordinance, 1983, and the Motor Vehicle Rules, 1940, relevant to the container transport by road.

According to Table 5.4.3, the restrictions with the maximum overall height and the overall weight may cause some difficulties in terms of container transportation by road.

Table 5.4.3 Restrictions by Motor Vehicle Laws

No.	Item	Description	Source	Remarks
1.	Maximum speed	a. Medium or heavy goods motor vehicles 30 mile/hour (48 km/hour) b. Articulated vehicles 25 mile/hour (40 km/hour) c. Heavy motor vehicles drawing one trailer 25 mile/hour (40 km/hour)	The Motor Vehicle Ordinance, 1983, No. 85	No problems for container vehicles.
2.	Maximum overall width	Transport vehicles 8 ft 1 in (2.465 m)	Bengal Motor Vehicle Rules, 1940, No. 128	As the container width is 8 ft, the container vehicle will comply with this restriction.
		Transport vehicles 8 ft 1 in (2.465 m)	Draft, 1990	
3.	Maximum overall length	a. Two-axled vehicle 35 ft(10.675 m) b. Rigid framed vehicles with more than two axles 35 ft(10.675 m) c. Articulated vehicle (no restriction)	Bengal Motor Vehicle Rules, 1940, No. 129 (amended)	At present, there is no restriction with the overall length in case of the articulated vehicle. With the Draft, 50 - 60 ft length is sufficient for 40 ft container.

No.	Item	Description	Source	Remarks
		a. Two-axled vehicles 35 ft(10.675 m) b. Rigid-framed vehicles with more than two axles 35 ft(10.675 m) c. Articulated vehicle 50 - 60 ft (15.25 - 18.30 m)	Draft, 1990	
4.	Maximum overall height	a. Normal vehicles 11 ft(3.355 m) b. Double decked vehicles 15 ft 6 in (4.725 m)	Bengal Motor Vehicle Rules, 1940, No. 130	The floor height of a truck is about 3.4 ft (1.03 m) and the height of container is 8 ft, so that it is difficult to clear the height restriction for container vehicles.
		a. Normal vehicles 11 ft(3.355 m) b. Double-decked vehicles 15 ft 6 in (4.725 m)	Draft, 1990	
5.	Maximum rear overhang	a. Tractors 6 ft (1.830 m) b. Normal vehicles 61% of wheel base	Bengal Motor Vehicle Rules, 1940, No. 130	Most container vehicles will comply with this restriction.
		a. Tractor 6 ft (1.830 m) b. Normal vehicles 61% of wheel base	Draft, 1990	

No.	Item	Description	Source	Remarks
6.	Maximum side overhang	<p>6 in (0.15 m)</p> <p>6 in (0.15 m)</p>	<p>Bengal Motor Vehicle Rules, 1940, No.130</p> <p>Draft, 1990</p>	<p>Most container vehicles will comply with this restriction.</p>
7.	Maximum side overhang	<p>a. Any axle 18,000 lb (8.2 ton)</p> <p>b. Front axle 9,000 lb (4.1 ton)</p>	Order of RHD	The articulated container vehicle will comply with this restriction by multi-axies.
8.	Overall weight	<p>a. Two-axled vehicles 24,000 lb (10.9 ton)</p> <p>b. Multi-axled vehicles 20 ton</p> <p>(No restriction)</p>	<p>Bengal Motor Vehicle Rules, 1940 (amended)</p> <p>Draft, 1990</p>	<p>Under the present rules, most container vehicles will be able to comply with this restriction, but some 40 ft containers with heavy commodities may not comply.</p>

5.4.2 Dhaka - Chittagong Highway

(1) Summary

The Dhaka-Chittagong Highway, with a length of 248.3 km, is the most important arterial road in this country connecting two major cities. Through the Second Five Year Plan, 1980-85 and the Third Five Year Plan, 1985-90, the upgrading this highway was one of the major road projects. As a result of investment and improvement work, three bypasses, - Chandina Bypass (2 km), Feni Bypass (18 km), Comilla Bypass (14 km) -have been constructed, which brought about the highest traffic volume ever recorded in this country, amounting to 15,253 AADT on the Chittagong - Sitakunde Highway, in 1987-88.

(2) Present State

Inventories and the general conditions of Dhaka-Chittagong Highway are presented in Table 5.4.4, based on the transport survey reports and the Study Team's on-site investigation from January 6 to 10, 1990.

The present states of this Highway are as follows:

- 1) There are two ferries in this route, the Meghna Ferry and the Daudkandi Ferry. The Meghna Ferry will be replaced with Meghna Bridge when the bridge opens in June, 1990. The Daudkandi Ferry will remain, but this will not end road transport. As the entrance of trucks into Dhaka City is prohibited 6:30-10:30 a.m. and 3:30-7:30 p.m., most trucks must wait at the roadside, more or less.
- 2) Many small bridges and culverts are under reconstruction. During the on-site investigation, 8 of them were under construction.
- 3) Between Sitakunde and Chittagong, there are two narrow bridges with only one lane each.
- 4) During the on-site investigation, the Study Team encountered a traffic accident involving two trucks and saw two buses damaged due to the traffic accidents.

Table 5.4.4 Summary of Dhaka-Chittagong Highway

Place		Section length (km)	Cumulative distance (km)		Width of pavement (m)	Condition of pavement	Number of bridges	Number of culverts	Number of railway crossings	AADT (PCE) in 1987-88	General conditions during on-site investigation
From	To		From Dhaka	From Chittagong							
Dhaka	Jatrabari Junction	3.5	3.5	248.3	11.0 (4 lanes)	good	1	1	1		Road conditions are good, but there is traffic congestion because of many rick-shaws.
Jatrabari Junction	West end of Katchpur Bridge	10.3	13.8	244.8	5.5 (2 lanes)	good	4	5	0		High traffic volume with many trucks and buses.
Katchpur Bridge		0.5	14.3	234.5	13.4 (4 lanes)	good	1	-	0		On the road side at the west side of Katchpur Bridge, about 70 trucks were waiting for entrance into Dhaka City.
East end of Katchpur Bridge	West side of Meghna Ferry	15.1	29.4	234.0	5.5 (2 lanes)	good	12	7	1		One truck broke down on the roadside.
Meghna Ferry		0.6	30.0	218.9	-	-	-	-	-		3 ghats and 8 vessels are in use. Ferry crossing time about 30 minutes. Queue of about 70 trucks.
West side of Meghna		12.2	42.2	218.3	5.8 - 6.1 (2 lanes)	good	9	11	0		Easy to run because of the straight alignment.
Daudkandi Ferry		0.3	42.5	206.1	-	-	-	-	-		3 ghats and 8 vessels are in use. Ferry crossing time about 20 minutes. Queue of about 20 trucks.
East side of Daudkandi Ferry	Chandina	31.7	74.2	205.8	5.5 (2 lanes)	poor	6	6	0		Hardly 2 lanes. 3 bridges under repair. 2 buses were in accidents.

Place		Section length (km)	Cumulative distance (km)		Width of pavement (m)	Condition of pavement	Number of bridges	Number of culverts	Number of railway crossings	AADT (PCE) in 1987-88	General conditions during on-site investigation
From	To		From Dhaka	From Chittagong							
Chandina	Comilla	20.4	94.6	174.1	5.5 (2 lanes)	good	1	8	0	11,189	Chandina Bypass 2km, Comilla Bypass 14km.
Comilla	Chaudaagram	31.2	125.8	153.7	6.1 (2 lanes)	Fair	8	29	0		Pavement with cracks and small potholes. 1 bus had had an accident.
Chaudaagram	Feni	27.3	153.1	122.5	6.1 (2 lanes)	Fair	3	28	1	11,757	Pavement is in fairly poor condition.
Feni	Sitakunde	58.2	211.3	95.2	6.7 (2 lanes)	fairly good	20	47	0		Feni Bypass 18km. Run through the busy Mirsarai. 1 bridge under repair. 2 trucks broke down. 2 accidents.
Sitakunde	Chittagong	37.0	248.3	37.0	6.7 (2 lanes)	good	8	36	0	15,253	Run through the village. 2 small bridges with 1 lane each.

[Notes]

- Inventory is based on "Bangladesh Transport Survey, Draft report April 1974, part 3.1, Inventory of Roads" and is amended by the Study Team's on-site investigation.
- The condition of pavement has been recorded in five grades, as follows:
 Good - smooth and even surface with occasional sealed cracks and filled holes, felt by the driver; well-repaired surface,
 Fairly good - generally even surface with occasional sealed cracks and filled holes, felt by the driver; well-repaired surface, slightly undulating but allowing safe speed of about 40 mph.
 Fair - uneven, undulating surface, rough in places with cracks and or small potholes, worn surfacing, drive uncomfortable, speed about 30 mph.
 Poor - very rough and bumpy surface, numerous potholes, visibly damaged edges, speed reduced to about 20 mph.
 Very poor - deep ruts, disintegrated surface, dangerous in places for passenger cars, safe speed below 10 mph.
- AADT(PCE) in 1987-88 is derived from RHD: Annual Traffic Survey Report from 1985-86 to 1987-88.

5) This route runs through busy towns or villages at some points.

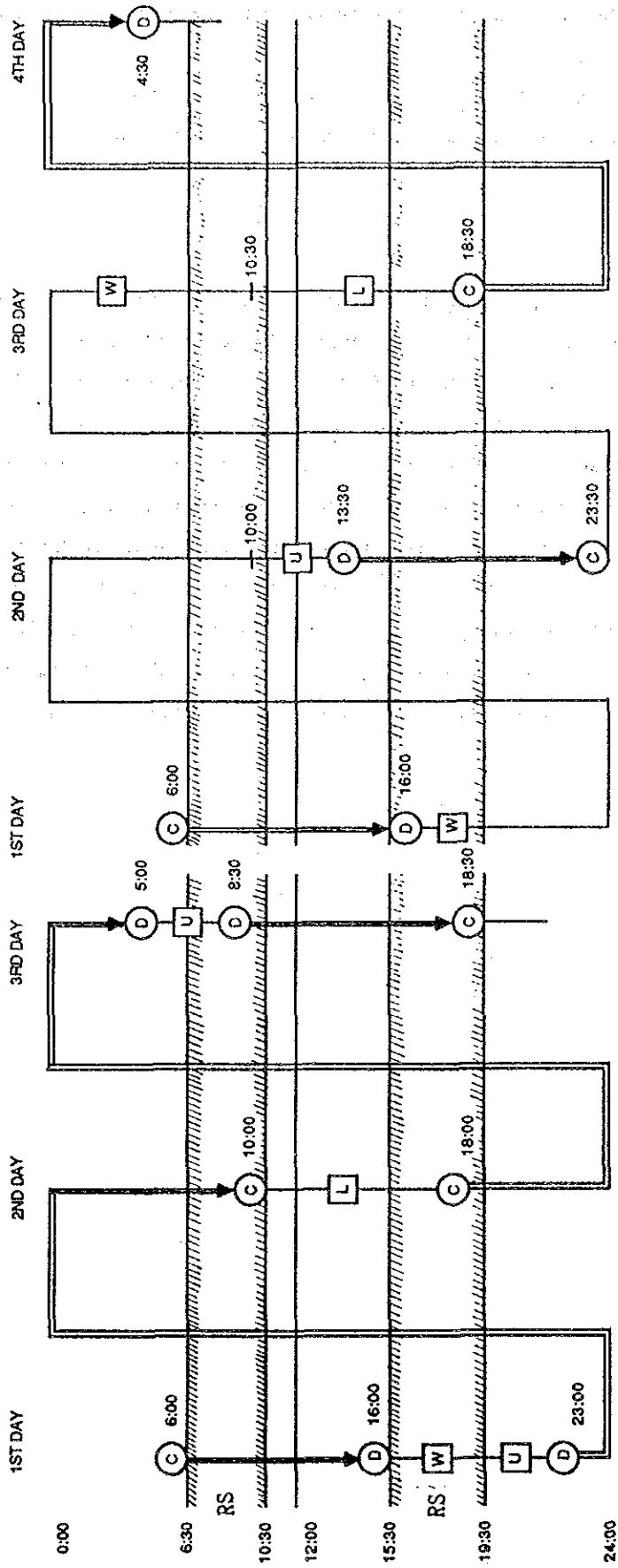
6) Throughout the on-site investigation, only one container cargo on a trailer was seen on the way between Chandaagram and Comilla.

(3) Journey Time

On interviewing the representatives of the Truck Drivers' Association, the typical road transport pattern by trucks between Chittagong and Dhaka is presented in Fig. 5.4.3. Pattern A shows the case of the individual consignees where unloading is done at night as well as in the morning. Pattern B shows the case of the governmental or corporate consignees where unloading is done during their business hours from 10:00 a.m. to 5:00 p.m.. The trucks are fully loaded from Chittagong to Dhaka and empty from Dhaka to Chittagong mostly. The traveling time is averagely 10 hours in the daytime and 11 hours at night, including the waiting time for ferries and the driver's rest time. It takes one day for loading at Chittagong, mainly because of formalities required. The round trip rotates an average of 3 days.

[PATTERN A]

[PATTERN B]



[Source] Truck Drivers' Association

- C: Chittagong
- D: Dhaka
- W: Waiting
- U: Unloading
- L: Loading
- RS: Restricted hours for entry

Fig. 5.4.3 Road Transport Pattern between Chittagong and Dhaka

(4) Freight Rates

Table 5.4.5 shows the freight rates by truck between Dhaka and Chittagong obtained from interviewing the consignees. Usually, trucks with 5 to 7 ton payloads are used on this route. Imbalance in the round trip cargo volume brings about the difference in freight rates vis-à-vis the return journey.

Table 5.4.5 Freight Rates by Truck between Dhaka and Chittagong

Interviewee	Freight rates (Tk./truck)	
	Chittagong to Dhaka	Dhaka to Chittagong
Garment factory A	6,000	3,000
Garment factory B	4,000 - 4,500	2,000 - 2,500
Garment factory C	4,000	1,700 - 3,000
Garment factory D	5,000	3,200
Film distributor	4,000 - 6,000	-
Ship agent	4,000	-
Average	4,708	2,700

(5) Future Projects

1) Road improvement project financed by ADB

The Road improvement projects on the Dhaka-Chittagong Highway financed by the ADB (Asian Development Bank) are on-going. They are summarized in Table 5.4.6. This project comprises the improvement, the rehabilitation and the sealing of the existing roads and does not comprise the widening or the construction of the new bypass, nor the construction of Daudkandi Bridge.

The details of this project are as follows:

design life:	20 years
design speed:	80 km/hour
pavement width:	7.3 m
hard shoulder:	1.2 m + 1.25 m
earthen shoulder:	1.25 m + 1.25 m
total crest width:	12.2 m
culvert (\leq 10 m) width:	12.2 m
bridge ($>$ 10 m) width:	11.6 m

Although this project is expected to be completed by October 1992, completion may take longer.

Table 5.4.6 Summary of Road Improvement Projects on the Dhaka-Chittagong Highway financed by the ADB

Section	Category	Length (km)	Cost * (thousands Taka)	Targeted completion
Dhaka-Daudkandi	Rehabilitation and Resealing	10.9	75,000	October 1992
Daudkandi-Feni	Improvement	75.9	1,033,000	October 1992
Feni-Chittagong	Rehabilitation and Resealing	22.6	159,000	October 1992
Total	-	109.4	1,267,000	-

[Source] RHD

[Note] * as of December 1986.

2) Meghna-Gumti Bridge

The Meghna-Gumti Bridge, which has a length of 1,480 m, on the Dhaka-Chittagong Highway, is expected to be constructed in the vicinity of Daudkandi Ferry by March 1996 at an estimated cost of Tk. 2,500 million with Japanese assistance. The completion of the Meghna-Gumti Bridge will eliminate the ferry problem on the Dhaka-Chittagong Highway.

5.4.3 Dhaka - Mongla Roads

(1) Summary

Bangladesh is divided by the Jamuna River into eastern and western parts. The hinterland of Mongla Port is the western part. Because of these facts, road transport between Dhaka and Mongla is still underdeveloped compared with that on the Dhaka - Chittagong Highway. At present a long detour through Aricha Ferry and Jhenida is necessary to go to Mongla Port from Dhaka by road.

(2) Present state

Inventories and the general conditions of the roads between Dhaka and Mongla are presented in Table 5.4.7, based on the transport survey reports and the Study Team's on-site investigation from January 30 to February 2, 1990.

The present conditions of these roads are as follows:

- 1) The traffic volume on this route is lower compared with that of the Dhaka - Chittagong Highway, as shown in Table 5.4.7. The AADT at Mongla is one-tenth of that at Chittagong.
- 2) There are three ferries: Aricha, Kamarkhali and Rupsa ferries.

The Aricha Sector of the BIWTC manages two ferry routes with 14 vessels and 4 ghats. Aricha - Nagarbari Ferry connects Aricha and Rajshahi Division. The Aricha - Daulatdia Ferry connects Aricha and Khulna Division. It takes 1 hour from Aricha to Daulatdia and 1¹/₂ hours from Daulatdia to

Table 5.4.7 Summary of Dhaka - Mongla Roads

Place		Section length (km)	Cumulative distance (km)		Width of pavement (m)	Condition of pavement	Number of bridges	Number of culverts	Number of railway crossings	AADT (PCE) in 1987-88	General conditions during on-site investigation
From	To		From Dhaka	From Mongla							
Dhaka	Mirpur Bridge	5.3	5.3	338.3	17.1 (6 lanes)	good	0	1	0		High traffic volume with buses, trucks and rick-shaws.
	Mirpur Bridge	0.3	5.6	333.0	11.0 (6 lanes)	good	1	0	0	11,163	Mirpur Bridge has 6 lanes carriageway, 2 lanes rick-shaw way and sidewalk.
Mirpur Bridge	Manikganj	52.0	57.6	322.7	5.5 (2 lanes)	fairly good	40	8	0		2 narrow bridges with 1 lane. On going improvement work. 1 bus had had an accident. 1 truck had had an accident.
Manikganj	Aricha	24.8	82.4	280.7	5.5 (2 lanes)	good	26	0	0		1 truck had had an accident.
	Aricha Ferry	-	-	-	-	-	-	-	-		During on-site investigation, waiting time was 3 hours 35 minutes for outgoing trips and 1 hour and 20 minutes for return trips.
Daulatdia	Fariðpur	24.7	107.1	255.9	3.7 - 5.5 (1-2 lanes)	fairly good	7	10	4		4 railway crossings with about 4 m wide obstruct the traffic.
Fariðpur	East side of Kamarkhali Ferry	36.4	143.5	231.2	3.7 (1 lane)	fair	10	32	1		A bridge with 1 lane.
	Kamarkhali Ferry	0.2	143.7	194.8	-	-	-	-	-		4 small ferries.
West site of Kamarkhali Ferry	Magura	12.9	156.6	194.6	3.7 - 4.6 (1 lane)	fairly good	1	15	0		4 narrow bridges with 1 lane each. Runs through the busy town of Magura. The Corai Bridge is under construction.

Place		Section length (km)	Cumulative distance (km)		Width of pavement (m)	Condition of pavement	Number of bridges	Number of culverts	Number of railway crossings	AADT (PCE) in 1987-88	General conditions during on-site investigation
From	To		From Dhaka	From Chittagong							
Magura	Jhenida	30.1	186.7	181.7	6.1 (2 lanes)	fair	10	51	0	6,800	18 narrow bridges with 1 lane each.
Jhenida	Jessore	46.0	232.7	151.6	5.5 (2 lanes)	fairly good	3	41	0	6,523	Low traffic volume. 1 truck had had an accident.
Jessore	Khulna	60.4	293.1	105.6	5.5 - 6.7 (2 lanes)	fairly good	0	38	6	5,141	Many railway crossings.
Khulna	Northern side of Rupsa Ferry	5.0	298.1	45.2	6.7 (2 lanes)	good	0	-	0	-	Runs through the busy town of Khulna.
Rupsa Ferry		0.2	298.3	40.2	-	-	-	-	-	1,399 - 1,429	Ferry crossing time is about 5 minutes.
Southern side of Rupsa Ferry.	Mongla	40.0	338.3	40.0	6.7 (2 lanes)	good	7	0	0	1,214 - 1,984	Good highway without any obstacles.

[Notes]

- 1) Inventory is based on "Bangladesh Transport Survey, Draft report April 1974, part 3.1, Inventory of Roads" and is amended by the Study Team's on-site investigation.
- 2) The condition of the pavement was recorded in five grades, as follows:
 Good - smooth and even surface with proper crossfalls.
 Fairly good - generally even surface with occasional sealed cracks and filled holes, felt by the driver; well-repaired surface, slightly undulating but allowing safe speed of about 40 mph.
 Fair - uneven, undulating surface, rough in places with cracks and/or small potholes, worn surfacing, drive uncomfortable, speed of about 30 mph.
 Poor - very rough and bumpy surface, numerous potholes, visibly damaged edges, speed reduced to about 20 mph.
 Very poor - deep ruts, disintegrated surface, dangerous in places for passenger cars, safe speed below 10 mph.
- 3) AADT(PCE) in 1987-88 is derived from RHD: Annual Traffic Survey Report from 1985-86 to 1987-88.
- 4) The length of the Aricha Ferry trip is excluded from the cumulative distance.

Aricha. It makes about 35 round trips a day between Aricha and Daulatdia. There is no plan to construct a bridge across the Jamuna River at Aricha.

The Gorai Bridge is now under construction, will be completed by June 1991, and will replace the Kamarkhali Ferry.

In the case of the Rupsa Ferry, there is no plan to construct a bridge.

3) The Khulna - Mongla Road was constructed during the Second Five Year Plan, 1980-85, as one of the major road projects. It connects Khulna and Mongla Port straightly.

4) There are many obstacles along this route, such as narrow bridges and the railway crossings. This route also runs through some busy towns and villages. Throughout the on-site investigation, the Study Team could find no container cargo on the roads.

(3) Journey time

According to the BRTA, the journey time on the Dhaka - Mongla Road by truck depends on the waiting time for the Aricha Ferry. Normally, it takes 12-15 hours, but in adverse situations this becomes 1-2 days.

(4) Freight rates

The freight rates of the BRTC (Bangladesh Road Transport Corporation) are given in Table 5.4.8:

Table 5.4.8 Freight Rates of BRTC Truck at Dhaka-Khulna
Route

Route	Distance (km)	Freight rates per trip(Tk.)	
		8 ton capacity trucks	9 ton capacity trucks
Dhaka to Khulna	325	4,290	4,826
Khulna to Dhaka	325	3,934	4,425
Total for round trip	-	8,224	9,251

[Source] BRTC

(5) Future projects

1) Road improvement project financed by the ADB

A summary of the road improvement projects on the Dhaka-Mongla road route is presented in Table 5.4.9:

The details of this project are as follows:

design life:	20 years
design speed:	80 km/hr.
pavement width:	7.3 m
hard shoulder:	1.2 m + 1.2 m
earthen shoulder:	1.25 m + 1.25 m
total crest width:	12.2 m
culvert (≤ 10 m) width:	12.2 m
bridge (> 10 m) width:	11.6 m
No. of bridges & culverts:	170

Table 5.4.9 Summary of Road Improvement Projects on the Dhaka-Mongla Road Route financed by the ADB

Section	Category	Length (km)	Cost (thousands Taka)	Targeted Completion
Daulatdia-Faridpur	Improvement	28.69	324,900	October 1992
Faridpur-Kamarkhali	Improvement	32.03	364,700	October 1992
Kamarkhali-Jhenida	Improvement	39.23	402,000	October 1992
Total	-	99.95	1,091,600	-

[Source] RHD

2) Gorai Bridge

The Gorai Bridge, with a length of 630 m, is under construction in the vicinity of Kamarkhali Ferry with UK assistance. Construction costs are Tk. 320 million, which will make the ferry redundant on the bridge's completion in June 1991.

3) Dhaka-Khulna Highway

A feasibility study on the Dhaka - Khulna Highway, which would connect Dhaka and Khulna directly through Mawa and Bhanga, is now taking place under the RHD. The objective of this study is to determine an alternative alignment.

CHAPTER 6 PRESENT MANAGEMENT AND OPERATING SYSTEMS OF PORTS IN BANGLADESH

6.1 Objectives and Scope of the Analysis

In order to plan the optimum management and operating systems for an inland container terminal at Dhaka-Narayanganj Port, we have studied the present management and operating systems at not only inland river ports but also at the two seaports at Chittagong and Mongla and the inland container depot at Kamalapur, in which containers are presently handled. In this study, we have analyzed the present situation from eight aspects: 1) institutional framework, 2) management organization, 3) navigation control, 4) berth assignment, 5) cargo operations, 6) training system, 7) information processing and 8) finance.

6.2 Outline of Systems of Port Management and Operations in Bangladesh

Ports in Bangladesh are divided into two categories: inland river ports and seaports. Inland river ports (such as Dhaka, Narayanganj, etc.) and seaports are administered by the Bangladesh Inland Water Transport Authority (BIWTA) and specific port authorities, respectively. These are governmental organizations established by law. Chittagong and Mongla are the country's two seaports. The BIWTA and the two port authorities are under the jurisdiction of the Ministry of Shipping, as shown in Fig.6.2.1.

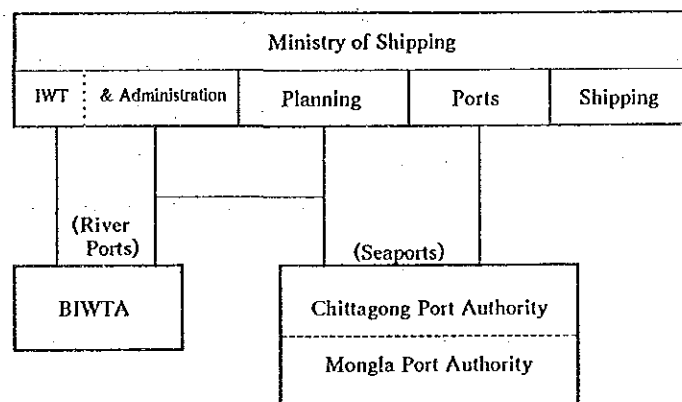


Fig. 6.2.1 Organizational Structure of Port Management in Bangladesh

The main functions of the BIWTA are river conservancy work, inland river navigation control and development and management of inland river ports. The main functions of the Port Authorities are seaport development and management. When the BIWTA and the Port Authorities plan and develop their ports, the approval of the Planning Commission, the Ministry of Finance and the ERD as well as the Ministry of Shipping are required, as shown in Fig.6.2.2.

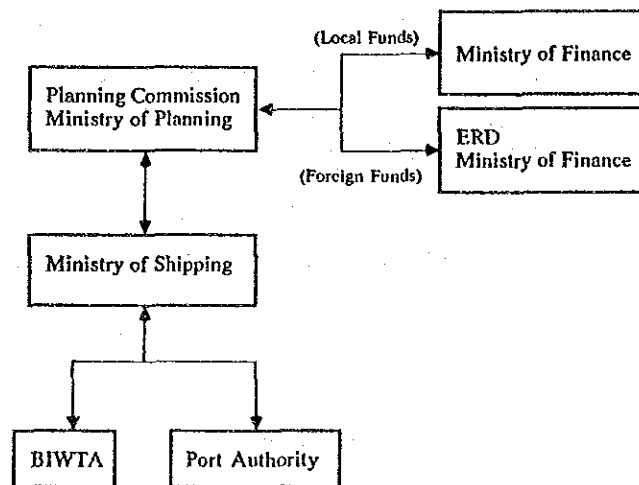


Fig. 6.2.2 Flow of Port Development Planning in Bangladesh

Cargo handling at inland river ports is carried out entirely by private stevedoring and longshoring companies. The BIWTA does not have laborers handling cargo. On the other hand, cargo handling, such as that involving cranes and forklifts at seaports, is carried out by port authorities' employees. However, unskilled laborers handling cargo at seaports are employed by private companies, the same as at inland river ports.

The BIWTA owns no commercial vessels such as passenger steamer and cargo vessels.

Within the port limits of both inland river ports and seaports, there are not only public jetties constructed and managed by the BIWTA and the Port Authorities but also many private jetties constructed and managed by private companies, such as jute and fertilizer factories. Owners of private

jetties are prohibited from handling cargo other than their own. The BIWTA and the Port Authorities have the power to permit erection of private jetties.

6.3 Management and Operations of Inland River Ports in Bangladesh

6.3.1 Functions and Organization of the BIWTA

The BIWTA was constituted in 1959 according to the East Pakistan Inland Water Transport Authority Ordinance, 1958 ("Bangladesh" was subsequently substituted for "East Pakistan"). The BIWTA is a semi-governmental body directly under the control of the Ministry of Shipping.

The main functions of the BIWTA are as follows:

- (1) to carry out river conservancy work
- (2) to disseminate navigational and meteorological information
- (3) to maintain pilotage and hydrographic information
- (4) to draw up programs of dredging
- (5) to develop, maintain and operate inland river ports, landing ghats and terminal facilities
- (6) to carry out removal of wrecks and obstruction in inland navigable waterways
- (7) to conduct traffic surveys to establish passenger and cargo requirements
- (8) to develop the most economical facilities for passenger traffic
- (9) to fix maximum and minimum fares and freight rates for inland water transport
- (10) to approve time-tables for passenger services
- (11) to develop rural water transport by progressing with schemes for modernizing and mechanizing country craft
- (12) to ensure co-ordination of inland water transport with other forms of transport, with major seaports, and with trade and agricultural interests
- (13) to conduct research in matters relating to inland water transport including development of craft design, towage technique, landing and terminal facilities and port installations
- (14) to arrange programs of technical training for inland water transport

- personnel within and outside Bangladesh
- (15) to maintain liaison with the shipyard and ship repair industry of the inland water transport fleet
 - (16) to facilitate import of repair materials for inland water transport industry.
 - (17) to prepare plans or schemes for carrying out any of the above functions
 - (18) any other functions which the government may from time to time prescribe

Every scheme prepared by the BIWTA needs the approval of the government, as mentioned in 6.2.2. In order to carry out the above mentioned functions within the inland river ports, the Ports Act, 1908 and the Port Rules, 1966, have been enacted. The port limits to which these laws are applied are prescribed by the official government gazette.

The present organizational chart and number of employees by department of the BIWTA are attached as Appendix 6.3.1. There are 11 departments, one workshop and one training center. The number of employees is approximately 4000.

The BIWTA consists of a Chairman and such Members as the government may from time to time determine. The Chairman and the Members are appointed by the government. The Chairman and the two Members dealing in finance and engineering are full time officers and the other Members are part-time officers.

6.3.2 Management and Control of Vessels' Navigation

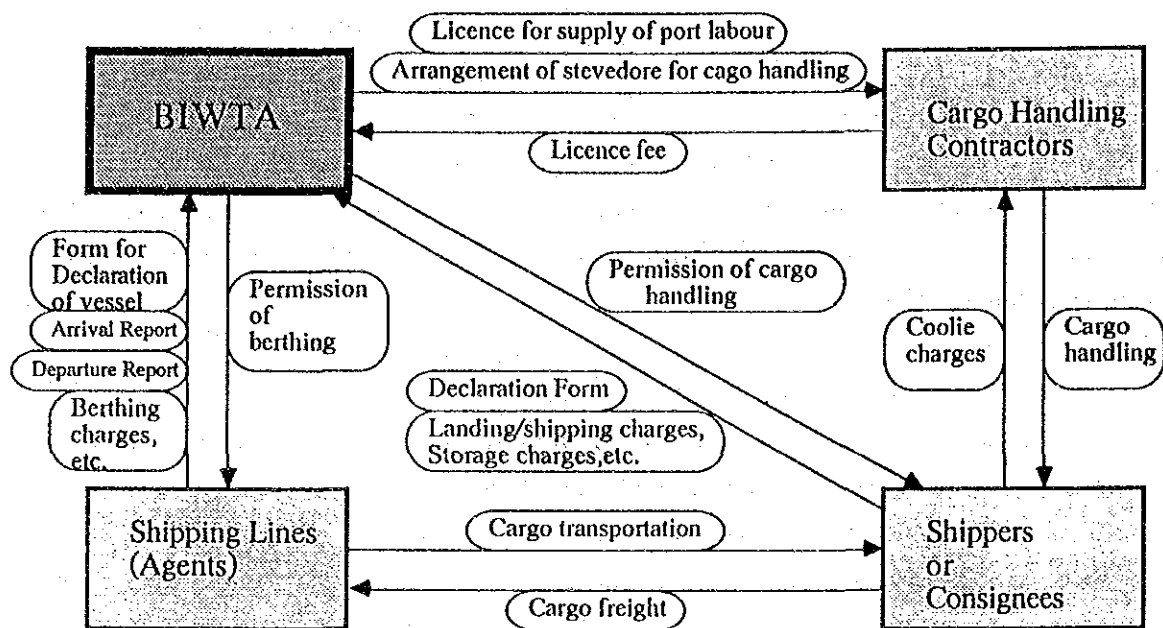
The Conservancy and Pilotage Department of the BIWTA regulates and directs the navigation of vessels in inland rivers and within inland river ports according to the BIWTA Ordinance, the Ports Acts, the Port Rules, the Inland Shipping Ordinance and the Pilotage Ordinance.

Nighttime navigation is provided on major routes such as Dhaka-Chittagong and Dhaka-Mongla. Daytime navigation is provided on secondary routes. Due to insufficient navigational aids, nighttime navigation is

permitted only for vessels with navigation lights. Vessels must keep to the right, with the exception of some cases, according to the navigation rules. Some pilot stations and all port offices are equipped with a Single Side Band communication system, the power of which is sufficient to cover the inland river transport area. But there are few vessels of the BIWTA with SSB. Private vessels in inland river transportation are not equipped with the SSB system.

The pilotage system of the BIWTA is provided by the Pilotage Ordinance. According to the Ordinance, vessels not registered in Bangladesh and vessels registered in Bangladesh and having hulls of one hundred tons or above must not travel without pilots on board on any inland waterway between the following ports: 1) Chittagong--Ilsha ghat/Chowkighara, 2) Ilsha ghat/Chowkighara--Chandpur, 3) Chandpur--Dhaka/Narayanganj, 4) Dhaka--Narayanganj, 5) Ilsha ghat/Chowkighara--Barisal, 6) Barisal--Mongla, 7) Mongla--Khulna.

The procedures for vessels' entering and leaving inland river ports are described in the Ports Act and the Port Rules. The master (agent) of the vessel voyaging from a port outside Bangladesh must declare the vessel not less than 24 hours before its arrival according to section 8 of the Port Rules. This provision is also correspondingly applied to big inland cargo vessels, such as coasters. According to section 39 of the Ports Act, within 24 hours after arrival at any inland river port, the master (agent) of the vessel must report its arrival to the Port Offices of the BIWTA. According to section 11 of the Port Rules, excepting vessels with fixed departure times and country boats, the master (agent) of a vessel leaving a berth provided by the BIWTA has to report her impending departure to the BIWTA prior to departure of the vessel. These procedures are summarized in Fig. 6.3.1. It is reported that these procedures are often carried out not in writing but orally.



(Source: the BIWTA)

Fig. 6.3.1 Present Flow of Information & Charges at River Ports in Bangladesh

6.3.3 Berth Assignment

The Port Offices of the BIWTA assign berths provided by the BIWTA to vessels. Berth allocation in any inland river port is made on a public use principle, that is "first-come, first-served" basis, but exclusive-use jetties are provided for vessels transporting foodgrains and fertilizer at almost all inland river ports. Even if there is no vacant berth at these jetties, the BIWTA gives priority to vessels loading foodgrains, followed by those loading fertilizer and next cement at other jetties. There is one foodgrains jetty at Dhaka and Narayanganj ports, respectively, and 2 fertilizer jetties at Narayanganj Port. It is reported that the pre-berthing time occasionally reaches 3 to 4 days due to congestion at berths. The procedures for berthing are shown in Fig. 6.3.1.

6.3.4 Cargo Operations

As mentioned above, the BIWTA does not carry out cargo handling. All

cargo is handled by private stevedores and handling contractors. But when necessary, the BIWTA leases cargo handling equipment to them (handling contractors have no cargo handling equipment). To ensure proper and efficient use of port facilities provided by the BIWTA, it issues licenses that authorize stevedores and handling contractors and their employees approved by the BIWTA to enter his premises and engage in their lawful business of stevedoring and handling goods and equipment on behalf of any employee or user of labour. Cargo handling is performed by a single stevedore or handling contractor on each ghat. Cargo handling contracts for a period of one year are given to them following an annual public auction. The highest bidder is awarded the contract.

The Port Offices of the BIWTA remain open round the clock, except on weekly and national holidays, when they are closed. Cargo operations are carried out throughout the year, except on national holidays and in bad weather conditions. Normal working hours are 09:00 to 17:00. When necessary, night or holiday operations can be carried out on an overtime basis.

Almost all cargo handling is carried out not by equipment but by head loading. Direct delivery/receipt of cargo between vessels and consignees/shippers is common in the ports due to a shortage of storage areas. Goods landed or stacked on any jetty or wharf have to be removed by the owner within 4 hours from landing except where otherwise permitted by the BIWTA. And goods landed or stored in a warehouse provided by the BIWTA must be removed by the owner within 7 days. If the goods remain uncleared for 30 days from the date of storage, the BIWTA can sell the goods by public auction. Before the owner of cargo makes adequate arrangements and pays charges to the BIWTA, he cannot handle or remove his cargo. No export/import cargo can be loaded or unloaded without producing a clearance certificate from the Customs Authorities, whenever applicable. These provisions are prescribed by section 88 to 93 of the Port Rules, but section 93, that is the provision of sale by public auction, is not strictly applied in such cases.

The procedures for cargo operations are shown in Fig. 6.3.1.

6.3.5 Training System of the BIWTA

The BIWTA has a Deck Personnel Training Center at Narayanganj. The BIWTA has no facility for training staff except that for deck personnel. Consequently, the deck hands of the BIWTA take their training at the Marine Academy, Seamen's Training Institute at Chittagong managed by the Chittagong Port Authority. As far as the small number of selected officers are concerned, one month's training at each port, training at other governmental agencies, etc., are prepared for them.

6.3.6 Computer System of the BIWTA

There is no computer system installed at the BIWTA.

6.3.7 Finances of the BIWTA

(1) Principles of Finance

The principles of finance of the BIWTA are prescribed by section 19 of the BIWTA Ordinance. The funds for carrying out their functions consist of:

- 1) grants and loans from the government;
- 2) tolls, taxes or fees;
- 3) sale-proceeds of bonds issued by the government;
- 4) loans and grants obtained by the BIWTA with the sanction of the government;
- 5) foreign aid and loans with the sanction of the government;
- 6) all other sums received by the BIWTA

The budget of the BIWTA is divided into revenue and development budgets. The grants from the government are furnished not only to the development budget but also to the revenue budget. The grants from the government are distributed to the BIWTA each quarter. All foreign aid and loans except those from the World Bank are distributed to the BIWTA through the government. Only the World Bank can directly fund the BIWTA with the approval of the ERD. All foreign aid through the government is initially provided to the BIWTA as loans with 11% interest rate from the government.

But since the principal is subsequently reduced by the government, the BIWTA rarely pays the principal to the government. The BIWTA paid 7.5 million taka to the government as principal and interest in 1989.

(2) Tariffs

The port dues, fees and other charges which the BIWTA collects from users of inland river ports are provided by the Ports Act and the Port Rules. They can be classified into three categories: dues or charges on ships, those on cargo and license fees. The dues or charges on ships can be subdivided into conservancy fees, pilotage fees, berthing charges, canal charges, etc. The dues or charges on cargo can be subdivided into landing/shipping charges and storage charges. There are license fees for supply of port labour, ship chandlers, permission to construct private jetties, etc. These dues, fees and charges are summarized in Fig. 6.3.1 and Table 6.3.1. The BIWTA decides the rates of the dues or charges with the sanction of the government.

These dues, fees and other charges are collected by the toll collectors of the BIWTA at the ports.

Table 6.3.1 Main Charges at Inland River Ports

Description	Kinds of objects	Rates(Taka)	Payers	Payees
Conservancy fees	coasters	39 / GRT / Annum.	shipping lines (agents)	BIWTA
	self propelled cargo vessels	14		
	flats/barges	7		
Pilotage fees		125 / boat		
Berthing charges	cargo carrying capa. over 750t to 1000t	111 / day		
	over 1000t to 1500t	140		
Landing shipping charges	dependent on kinds of cargo	0.5-6.0 / head 0.8-12.0 / each 0.08 / cubic feet	shippers or consignees	
Storage charges	godown space	3.5 / square feet / month		
Licence fees	fee for pukka Jetty	8.4 / square feet / year	owners	
Coolie charges	break-bulk cargo with derrick or crane (vessels-wharves)	0.4 / maund 7 / metric ton	shippers or consignees	handling contractors

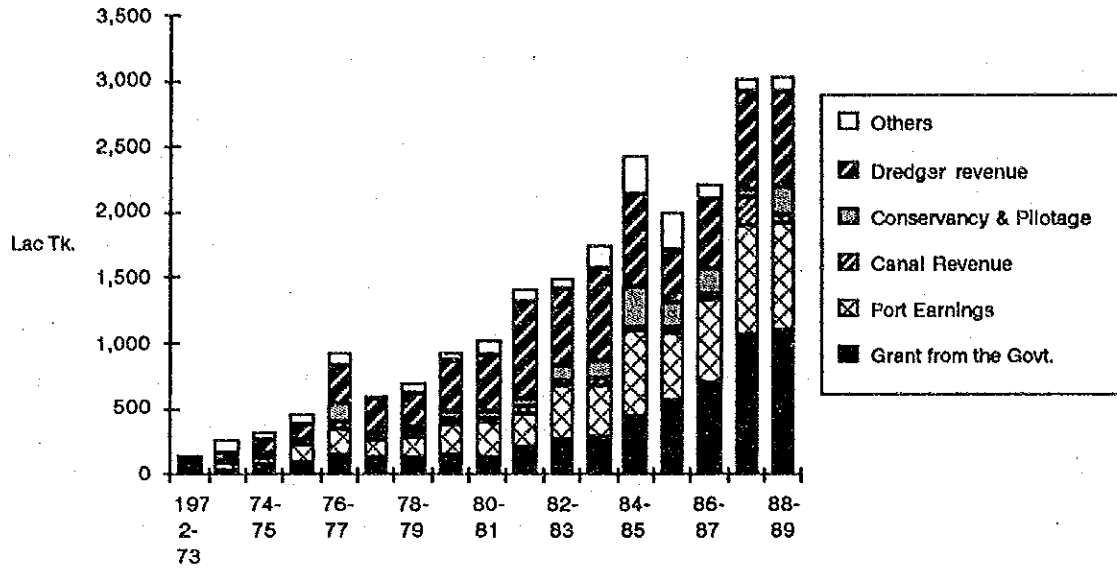
(Source: the BIWTA)

(3) Financial Situations

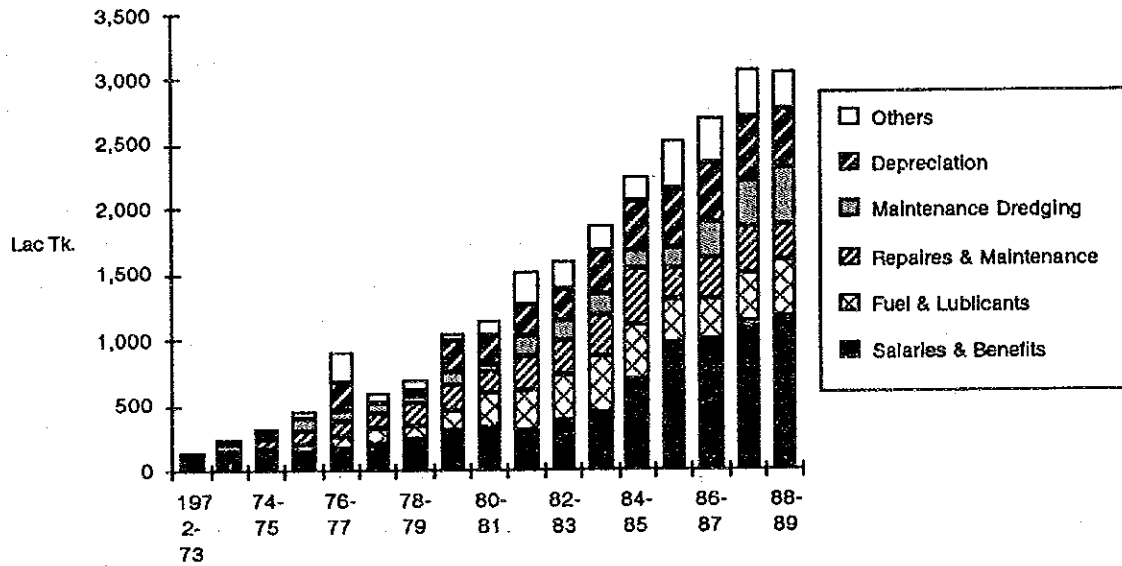
The revenues from the BIWTA's activities share less than 70% of its total revenues, as shown in Fig. 6.3.2 and Appendix 6.3.2. The balance is covered by grants from the government. Both the amount and shares of grants from the government have been increasing year by year. Among the revenues from the BIWTA's activities, earnings from port activities and revenue from dredging occupy large shares.

Over 30% of the BIWTA's expenditures comprises personnel expenses. Public bodies and nationalized enterprises, except local bodies, Bangladesh Biman Corporation, Bangladesh Shipping Corporation and banks, adopt the same scales of pay for the employees.

Revenues of the BIWTA



Expenditures of the BIWTA



(Source:BIWTA Income and Expenditure Statement)

Fig. 6.3.2 Revenues and Expenditures of the BIWTA

6.4 Management and Operations of Container Transportation at Chittagong and Mongla Ports

6.4.1 Functions and Organization of Port Authorities

Containers are handled only at the ports of Chittagong and Mongla in Bangladesh. These two ports are managed and operated by their respective port authorities. The Chittagong Port Authority and the Mongla Port Authority were constituted in 1976 according to specific ordinances. These two ordinances have the same basic structure and content. Consequently the two Port Authorities have the same character and functions. They are under the jurisdiction of the Ministry of Shipping, as shown in Fig. 6.2.1. The port limits which Port Authorities manage and operate are declared by notification in the official gazette. Their functions are as follows:

- (1) to manage, maintain, improve and develop the port
- (2) to provide and maintain adequate and efficient port services and facilities in the port or the approaches to the port
- (3) to regulate and control berthing and movement of vessels and navigation within the port
- (4) to carry out such measures as may be necessary or convenient to be done in connection with, or incidental or conducive to, the performance of its functions under this ordinance.

According to section 46 of each Ordinance, any land required for a public purpose by the Authorities may be requisitioned or acquired for the Authorities by the Deputy Commissioner.

The general direction and management of the Authorities and their affairs is vested in the Board, which consists of a chairman and not more than three other members appointed by the government. The two Port Authorities have similar organizational structures. The organization and number of staff by department of Mongla Port Authority are shown in Appendix 6.4.1. The number of staff members of Chittagong and Mongla ports are approximately 7,760 and 1,940, respectively.

6.4.2 Management and Control of Vessels' Navigation

The two Port Authorities manage and control the navigation of vessels in the ports or the approaches to the ports.

(1) Chittagong Port

The Port Authority publishes anticipated daily safe draughts figures for the port every year. In Chittagong Port, the maximum draught is 8.53 m for the main jetties, i.e., Jetties Nos. 1 to 13 and No. 15. Vessels with lengths up to 185.91 m with the day's permissible draught but not exceeding 9.14 m can be berthed at Multipurpose Berths Nos. 1 and 2.

Nighttime sailing, both inward and outward, is permitted. Night-navigating vessels up to 152.44 m in length with draughts 0.61 m less than the day's permissible draught can berth during the night (6 P.M. to 6 A.M.) at the main jetties, except for part of the jetties. Vessels with midship bridges up to 164.58 m and with aft bridges up to 152.44 m long with 0.3 m less than the day's permissible draught will be allowed to sail out during the night from the main jetties. Vessels with bow bridges and vessels with containers on deck obstructing clear forward view are not handled either on a regular or experimental basis between sunset and sunrise.

Pilotage is compulsory for ocean-going vessels, but pilotage for inland river vessels depends on the judgment of the Port Authority due to a shortage of pilots. The rules of pilotage are prescribed by the Ports Act.

VHF and Single Side Band watch are maintained in the Port Administration Building round the clock. The effective range is about 10 to 15 miles, which is sufficient for safe control of vessels' navigation.

(2) Mongla Port

In Mongla Port, the length of vessels entering the port is restricted to 210 m and may be increased or decreased depending on the seasons and

circumstances of the case. Due to siltation within the harbour area, the vessels' length is now restricted to 185 m. However, vessels up to 200 m in length may call at this port but a berth will be provided at Base Creck only. Normally, only six vessels more than 182 m in length can be accommodated at anyone time.

Nighttime navigation is permitted for vessels up to 135 m in length and 6 m draught up to a speed of 12 knots. As far as the draught is concerned, vessels exceeding 6 m and up to 7 m can sail with the permission of the Port Authority. Vessels of 182 m or more in length are required to have a tug standing by during inward and outward river passage. It is reported that navigational aids such as leading lights are sufficient for safe navigation.

For berthing/unberthing alongside jetties, the services of a tug are required. Requests for a tug must be made at least 24 hours in advance. Ships must present themselves at Fairing Buoy at least three hours before high water at Hiron Point to enter on that day.

Pilotage is compulsory for ocean-going vessels but pilotage for coastal vessels depends on the judgment of pilots. There are nine pilots with experience of serving as a captain or a chief officer of ocean-going vessel in the port. In order to obtain qualification as a pilot, they are required to take a training course lasting six to twelve months and boarding practice, as well as passing an examination of theory and practice in the port.

The Port Control Office is equipped with a 25-watt VHF and SSB system, which can cover the area, including the pilot boarding point.

(3) Procedures for Vessels' Entering and Leaving the Ports

The masters of all vessels must declare via radio the ETA, correct fresh water draught, etc., to the pilot stations before entering the ports. The shipping agents of vessels have to also submit some documents such as manifests to the Port Authorities and the Customs prior to their arrival. In each port, the berthing committee, which consists of representatives of

the Port Authority and shipping agents, meets every day except Fridays and holidays at Chittagong Port and every week at Mongla Port. The function of this committee is to declare the entrance of vessels. The outline of these procedures is summarized in Fig. 6.4.1.

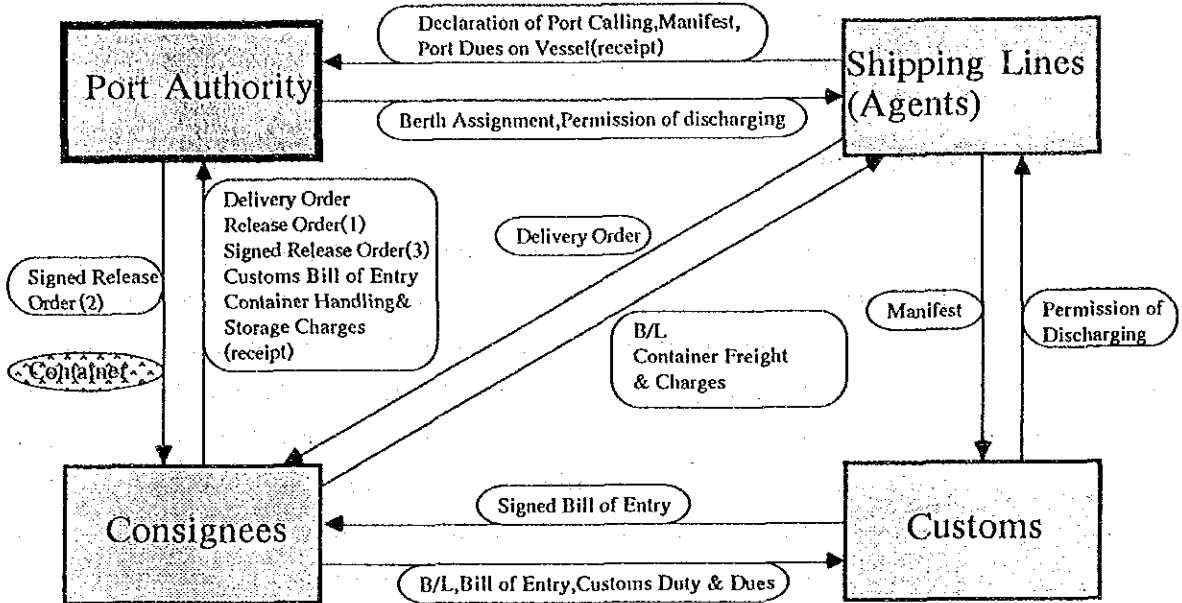
6.4.3 Berth Assignment

Decisions in connection with berthing/unberthing of vessels are usually taken through discussions between the Harbour Master and the Deputy Traffic Manager and in their absence by authorized representatives of Marine and Traffic Department, in the Berth Allotment Committee Meeting, which consists of the representatives of the Port Authorities and the port users. Berth allocation of the jetties, except private jetties, in the ports is made according to a public use system, that is, "first-come, first-served," but both Port Authorities use a preferential use system in order to make good use of the facilities.

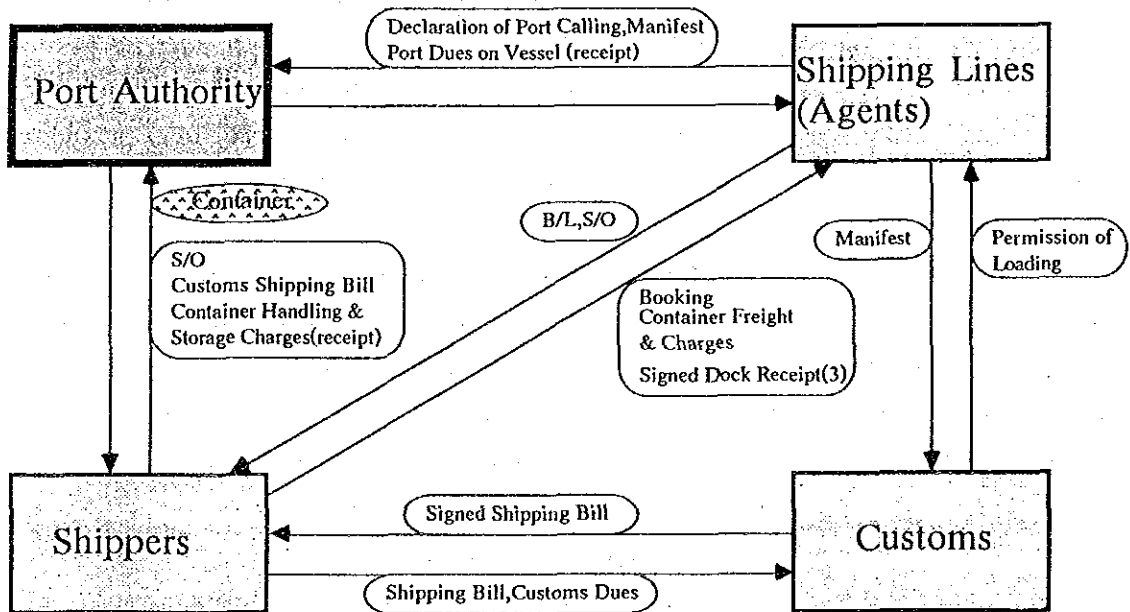
In Chittagong Port, 4 jetties for general cargo, 3 jetties for containers, 4 jetties for food grains, 1 jetty each for cement, fertilizer, perishable cargo, BSC vessel and 24/48 hours/reefer vessel/export loader are appointed as preferential berths. The Authority gives ocean-going vessels priority over inland vessels. Multipurpose jetties 450 m in length are designated for 2 feeder and 1 inland container vessels.

In Mongla Port, the Port Authority gives top priority to vessels loading food grains and containers in berthing. Food grain and container vessels are berthed on a preferential basis at mooring buoys and jetties alongside, respectively. Vessels loading export cargoes are given priority over vessels un-loading import cargoes. In this port, a double banking system alongside is positively recommended to cut costs. More than 8 barges or 4 flats (1 flat being equivalent to 2 barges) are not allowed to lie alongside at a time. In adverse conditions, this number may be further reduced. The average berthing time of container feeder vessels is 18 to 24 hours.

(1) Import



(2) Export



(Source: the CPA)

Fig. 6.4.1 Outline of Present Flow of Procedures for Container Transportation in Chittagong/Mongla Port

6.4.4 Container Cargo Handling

Since no gantry cranes are now installed on the wharves at either port, containers are mainly loaded or discharged to and from vessels by vessels' derrick cranes. In Chittagong Port, a floating crane is being prepared by the Port Authority. Container handling between wharves and stacking yards is carried out by tractor and trailer in Chittagong Port and by two straddle carriers in Mongla Port. Top and side lifting forklifts are provided for handling containers at the stacking yards in both ports. All of these equipment are provided by the Port Authorities. No outside equipment is allowed to be used for yard operations of containers and containerized cargo in the ports.

In both Chittagong and Mongla Ports, loading or discharging containers to and from vessels is carried out on two shifts, day and night. The day shift operates from 07:30 to 17:00, and the night shift operates from 20:00 to 04:00 in Chittagong Port. Container handling from 17:00 to 20:00 and from 04:00 to 07:30 is carried out on an overtime basis. On the other hand, in Mongla Port, stevedoring is carried out around the clock. The day shift operates from 07:00 to 19:00 and the night shift operates from 19:00 to 07:00.

The delivery/receipt of containers to and from consignees/shippers is carried out during the day shift, from 08:00 to 16:00 in both ports. Cargo handling other than in these hours is carried out on an overtime basis.

In Chittagong Port, no loading/discharging and delivery/receipt of containers is carried out on two national holidays throughout the year.

The Port Authorities reserve the right to refuse to receive FCL export containers and export cargo for stuffing if they are presented less than 24 and 36 hours, respectively, before the expected time of berthing of the exporting vessel.

All containers are transported via stacking yards and no containers are transported directly to or from consignees or shippers in the two ports.

In Chittagong Port, 100 per cent of the export FCLs are stuffed at premises outside of the port. Import FCLs are not allowed to be unstuffed at the premises within the port, as a rule, but due to a shortage of premises outside of the port most import FCLs are unstuffed in open spaces within the port. 100 per cent of export and import LCLs are stuffed or unstuffed at the CFS or in open spaces within the port. One CFS is used for export LCLs and the balance is used for import LCLs. In Mongla Port, a CFS within the port is provided for stuffing export cargo and unstuffing import cargo.

The average dwelling time of import containers and containerized cargo stored at the premises within Chittagong Port is very long in both ports, as shown in Fig. 6.4.2.

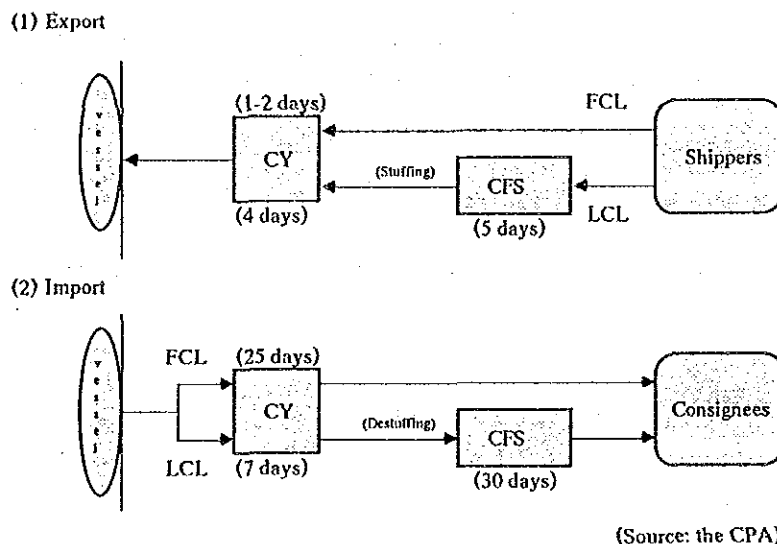


Fig. 6.4.2 Average Dwell Time of Containers at Chittagong Port

According to section 25 of the Chittagong Port Authority Ordinance and the Mongla Port Authority Ordinance, when delivery of goods is not claimed or effected by the owner one month from the date when they were placed in the custody of the Authority, the Authority shall cause a notice to be served upon the owner requiring him to remove the goods. But where the owner is not known or the notice cannot be served upon him or he does not comply with the notice, the Authority may sell goods by public auction 75 days from the date on which such goods were placed in the custody of the Authority. But this provision is not strictly applied in such cases. The Customs Act, 1969, prescribes a similar regulation (maximum storage period;

45 days) in section 82. This provision is also not strictly in such cases. The Port Authority must not auction any goods unless the customs authority notifies the auction and approves the lists of auctioned cargo.

The stacking plans are prepared by the Authorities and the stowage plans are prepared by shipping agents. Containers are stacked by export and import, by FCL, LCL and empty, and by 20' and 40'. In Chittagong Port, containers are stacked two to three high here and there due to limited space in the stacking yard.

Shipping lines (agents) individually arrange with stevedoring companies for discharging or loading containers from or to vessels. The Port Authorities arrange with longshoring companies for handling containers and stuffing/unstuffing LCL containers within the terminals. But longshoring companies for stuffing/unstuffing FCL containers within the ports are contacted by the owners. Laborers hired by longshoring companies arranged by the consignees or shippers are merchant laborers, and other laborers working within the ports are dock workers. They are employed on a daily basis by stevedoring or longshoring companies. But skilled laborers such as operators of cranes, forklifts, etc. are employed on a long-term employment basis by the Port Authorities and stevedoring and longshoring companies. The gang formations, except for employees of the Port Authorities, for container transport in Chittagong and Mongla ports are as follows:

	Chittagong	Mongla
ship gang	8	12-14
shore gang	8	9
CY and CY between CFS	16	
CFS	14-16	11
Overside gang(barge/flat/mechanized vessels)	-	27

The procedures for container transportation are shown in Fig. 6.4.1.

It is reported that the general conditions of the equipment are good and all of them are in operation.

6.4.5 Training System of the Port Authorities

The Chittagong Port Authority established a training institute in 1980. The institute offers in which they have 160 courses on different subjects such as instructors' training course, office procedure and practice, maintenance control system, cargo handling operators' training course, employees' annual performance appraisal, finance and accounting and practice, traffic operation course, industrial relation and motorcycle driving training course, etc. About 2,500 CPA officials have already been trained in different subjects.

Unlike the Chittagong Port Authority, the Mongla Port Authority has no training institute of its own. But each department carries out training employees on an "on-the-job-training" basis.

6.4.6 Computer System of the Port Authorities

The Chittagong Port Authority has installed computers for accounting and financial work. They are planning to extend their computer system to port operations, in particular to the management and operation of container terminal.

6.4.7 Finances of the Port Authorities

(1) Principles of Finance

The principles of finance of the Port Authorities are prescribed by the Chittagong Port Authority Ordinance and the Mongla Port Authority Ordinance. The funds for carrying out their functions consist of the following:

- 1) grants and loans from the government
- 2) grants from local authorities
- 3) proceeds of sales of movable and immovable property and receipts for services rendered
- 4) loans obtained by the Authorities with the sanction of the government
- 5) foreign aid and loans sanctioned by the government
- 6) proceeds of all charges and recoveries made under the Ports Act and these Ordinances

7) all other sums receivable by the Authorities

The Authorities may also borrow money for carrying out the purposes of these Ordinances or for servicing any loan obtained by them with the previous approval of the government.

(2) Tariffs

The dues or charges taken by the Port Authorities are provided by the Ordinances. These dues or charges are divided into two categories: dues or charges to the account of the agents or owners of vessels and to the account of the shippers or consignees. The former consist of storage charges, loading/discharging charges, berthing/unberthing charges, berthing occupancy, mooring occupancy, port dues, pilotage and tug charges. The latter consist of lift on/lift off charges, delivery/receipt charges by equipment, wharf rent, stuffing/destuffing charges and river dues. The details of the tariffs of Chittagong Port are shown in Fig. 6.4.3. The rates of dues or charges of Mongla port are the same as those of Chittagong Port, except port dues, wharf rent, etc., the rates of which are a little less than those of Chittagong Port.

All scales of port charges and dues are submitted to the government and after approval or modification by the government, is published in the official gazette.

All charges and dues, such as port dues, pilotage, tug charges, berth occupancy, loading/discharging charges, etc., are paid into the Port Authorities' account based on the bills issued by the Port Authorities. The charges and dues, except those necessary for delivery of import cargo, are collected after the use of the port facilities and services.

(3) Financial Situations

The financial situations of the two Port Authorities are sound. In the revenue budgets, the incomes from the Port Authorities' activities cover the expenditures incurred in operating and managing the ports. The surplus of income over expenditures is increasing year by year in both ports, as shown in Fig. 6.4.4.

1 Dues & charges to the account of the agents or owners of vessels

Storage Charges			
1 Free Time			
(1) FCL Import	4days		
(2) FCL Export	7days		
(3) LCL Import	till unstuffed		
(4) LCL Export	7days		
2 Storage Charges(US\$ per container)			
(1) Loaded	20'	1.5	40' 3.0
(2) Empty			
First 28days	20'	1.5	40' 3.0
Thereafter	20'	4.5	40' 9.0

Loading / Discharging with CPA equipment (movement between jetty and CY and to and from point of stuffing/destuffing)			
(US\$ per container)			
(1) FCL	20'	43.40	40' 65.10
(2) LCL	20'	130.00	40' 195.00
(3) Empty	20'	22.10	40' 33.20
(Inland river containers to or from inland point : three quarters of normal charges)			

Berthing / Unberthing (compulsory for sea-going vessels over 2000 GRT)	
	US\$ 88.50

Berth Occupancy(US cents)	
1 Jetties except 14 to 16	0.250 per GRT per hour
2 Jetties 14 to 16	0.125 per GRT per Hour

Mooring Occupancy	
1 Sea-going (US\$)	
(1) Fixed Mooring	167.00
(2) Swinging Mooring	100.00
2 Non-seagoing(Tk.)	
(1) Fixed Mooring	1390.00
(2) Swinging Moorong	1000.00

Port Dues	
1 Sea-going	US\$ 0.167 per GRT
2 non-seagoing	Tk. 5.00 per GRT

Pilotage(US\$)	
1 Day navigation US\$ 35.75 per 1000GRT	
2 Night navigation(additional charges, 6 pm to 6 am)	
(1) up to 5000GRT	18.50
(2) over 5000 not exceeding 10000GRT	34.00
(3) over 10000GRT	43.00

Tug Charges(per tug movement ; US\$)	
1 200 to 1000GRT	110.00
2 over 1000 up to 5000 GRT	220.00
3 over 5000GRT	440.00

2 Dues & charges to the account of the shippers or consignees

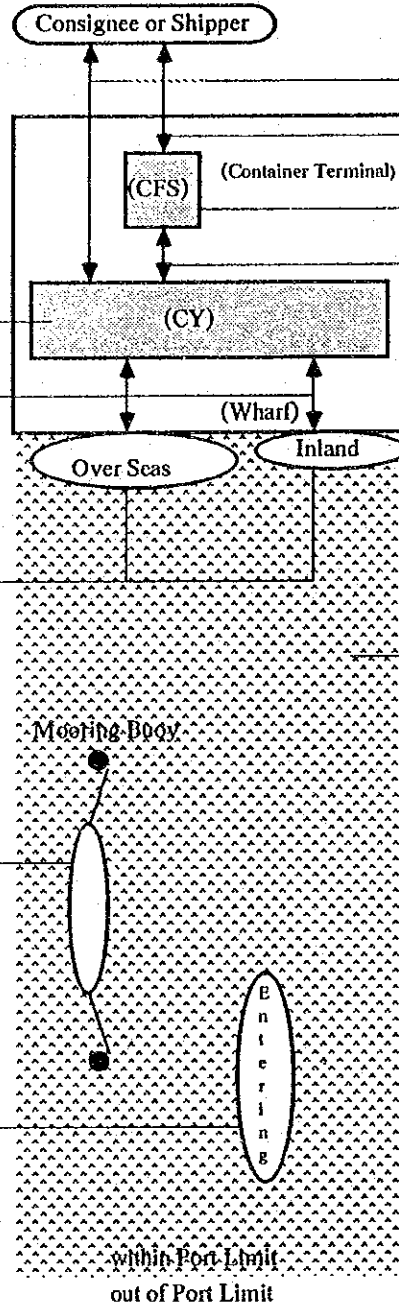
Lift On /Lift Off Charge(Tk. per container)			
1 Loaded	20'	1000	40' 1500
2 Empty	20'	500	40' 750

Delivery / Receipt with CPA equipment (Tk. per 1000kg)	
	56.2

Wharf Rent	
1 Free Time	
(1) Import	96 hours
(2) Export	168 hours
2 Wharf Rent (Tk. per 1000kg)	
(1) Import	2.46 to 6.15
(2) Export	1.23 to 3.1

Stuffing / Destuffing Charges (Tk.per 1000kg)	
	56.2

River Dues (Tk.)			
1 FCL(per container)			
(1) Import	20'	408	40' 816
(2) Export	20'	184	40' 368
2 LCL(per 1000kg)			
(1) Import			34.1
(2) Export			15.3
3 Empty(per container)			
(1) Import	20'	102	40' 204
(2) Export	20'	102	40' 204



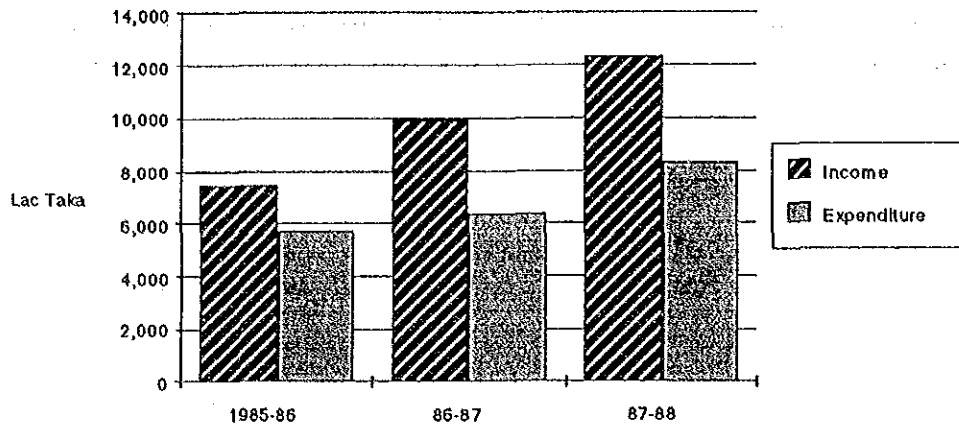
(Port Limit)

(Source: the CPA)

Fig. 6.4.3 Main Dues & Charges of Container Transportation in Chittagong Port

Over 30% of the expenditures in the revenue budgets comprises personnel expenses. The pay scales for the employees of the Port Authorities are the same as those of the BIWTA. The average amount of wages including all allowances is higher than that of the BIWTA.

Income & Expenditure of the Chittagong Port Authority



Income & Expenditure of the Mongla Port Authority

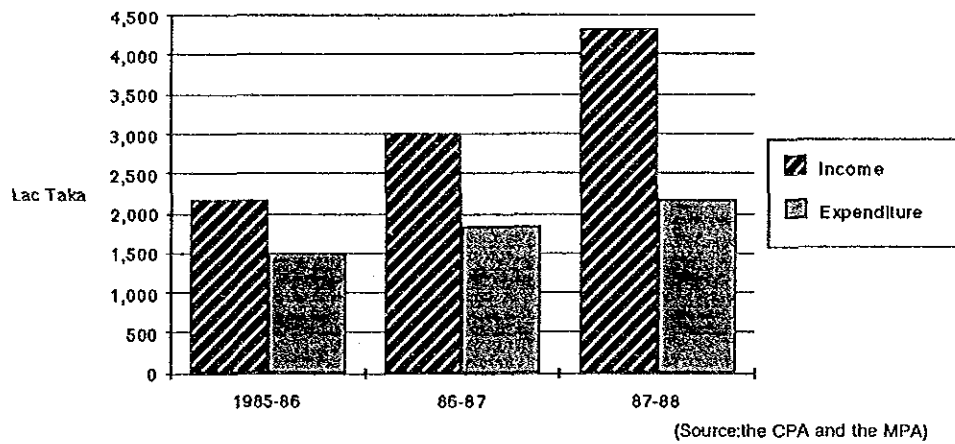


Fig. 6.4.4 Income & Expenditure of the Port Authorities

6.5 Management and Operations of Kamalapur Inland Container Depot

6.5.1 Management of Kamalapur Inland Container Depot

This terminal started its operations on April 11, 1987. A railway connects this terminal and Chittagong Port. The main functions of this terminal are as follows:

- (1) to deliver/receive containers to and from consignees/shippers
- (2) to stuff/unstuff containers
- (3) to load/discharge containers to and from wagons
- (4) to clear cargoes(customs clearance)

This terminal is managed and operated by the Bangladesh Railway and the Chittagong Port Authority. The former provides the facilities, except cargo handling equipment, within the terminal and operates railway commercial services. The latter manages cargo handling equipment and carries out daily operational work such as cargo handling, documentation work, etc.

The terminal staff consists of 45 CPA employees on a long-term employment basis and 70 workers on a daily employment basis. Besides them, the Customs personnel are always stationed at this terminal. There are no permanent employees of the Bangladesh Railway at this terminal.

6.5.2 Cargo Handling

Only 20' containers are handled at this terminal at present due to insufficient length of the wagons, which cannot transport 40' containers. 97.5% of the import containers are FCLs, the balance being LCLs. Less than 1% of the import containers are delivered to consignees without unstuffing at this terminal. 100% of the export cargoes are received in break-bulk and stuffed into containers at this terminal. Over 96% of both the import and export containers are unstuffed/stuffed at open spaces and directly delivered/received to and from the owners without storage at the CFS.

The following equipment is provided for handling cargo by the CPA:

Top lifter	25 tons capacity	1	(for handling containers)
Lowmast forklift	2 to 3 tons capacity	2	(for handling break-bulk cargo)

There is only one shunting engine for this terminal, which is not always available because it is often used for other services at Dhaka Station.

The operations of this terminal are carried out on a day shift. The day shift operates from 07:30 to 17:00 with a one-hour break, and when necessary, cargo handling is carried out from 17:00 to 19:00 on an overtime basis. No operations are carried out on Fridays and national holidays on a normal basis.

The gang formations of cargo handling are shown in Appendix 6.5.1.

The average dwelling time of cargo is as follows:

(1) containers (CY)

FCL	10 days
LCL	5
Empty	15

(2) LCL cargo (CFS)

Import	15 days
Export	1

(These were calculated based on the statistics in 1989.)

The procedures for container transportation are the same as those at Chittagong Port. Consignees' representatives (C & F agents) must submit Customs Bill of Entry and Through B/L to the Customs, and Custom's Outpass Bill of Entry on examination and realization of duties, Delivery Order issued by agents and Release Order issued by the CPA for cargo clearance. The details are shown in Fig. 6.4.1.

6.5.3 Finances

The Bangladesh Railway and the Chittagong Port Authority jointly constructs the facilities of this terminal.

The revenues from cargo handling charges such as stuffing/destuffing charges, hoisting charges on cargo, etc., are accounted to the CPA. On the other hand, 75% of the revenues from charges on the facilities such as storage rent, rent on cargo, lift on/lift off charges, etc., is distributed to the Railway and the balance is distributed to the CPA. The amount of the revenues from Jan. to Dec. 1989 was approximately Taka 5.6 million.

The tariff structure of this terminal is shown in Appendix 6.5.2.

6.6 Customs and Bonded System.

6.6.1 Organization and Rules

Generally speaking, all goods to be imported or exported to/from Bangladesh are subject to customs control and examination regulated under THE CUSTOMS ACT, 1969, and THE SALES TAX ORDINANCE, 1982.

There is the National Board of Revenue (NBR) under the Ministry of Finance, which is responsible for organizing internal and external revenues for the government.

The collector/officer of Customs are appointed by the government on the recommendation of the NBR.

Currently there are six Collectorates in the country namely Dhaka Custom House, Chittagong Customs House, Chalna Custom House and three land Customs and Excise Collectorates at Dhaka, Chittagong and Khulna, Each Collectorate is headed by a Collector. However, Chalna Custom House and Customs and Excise Collectorate Khulna is headed by one Collector. Through the Collectorate imported goods are unloaded, goods for export are loaded, and Customs clearance of goods imported or to be exported by land, by rail, by air or inland waterways is carried out by the Customs Agent.

The Customs Agent is licensed and authorized by the collector of customs, and transacts any business relating to the entrance or clearance of any conveyance or the import or export of goods or baggage at any customs station for the convenience of the owners, importers and exporters of the goods.

The Board declares the places to be warehousing station at which public warehouses are appointed and private warehouse is licensed.

At each warehousing station, the Collector of Customs permits public warehouses wherein dutiable goods are deposited without payment of Customs-duty and licenses private bonded warehouses wherein dutiable goods are deposited.

There are two kind of Customs officers at the field level involved in cargo inspection. One is the Appraiser Officer, and the other is the Preventive Officer.

Inspector/Preventing Officer/Appraiser of Customs are appointed by the collector.

Inspectors work at the airport or the inland Customs offices. Those persons who carry out inspection jobs at the airport or the land Customs points are called inspectors of Customs.

Those persons who carry out inspection jobs on board vessels are called Preventive Officers of Customs.

Those persons with some seniority who do appraisal work are called Appraisers of Customs.

Those Customs officers who supervise the job of inspectors as well as appraiser are called Superintendents and Principal Appraisers of Customs respectively.

The appraiser officer appraises goods and assesses the duty of the goods based on the physical examination/testing of the goods or on the basis of the statements made in the Bill of Entry.

The Appraisers inspects the condition, quantity and quality of the goods o carried by the vessels based on the statements made in the shipping documents. Preventive officers watches the action of vessels' crews during cargo handling to prevent pilferage, smuggling etc.

The organization of the Customs service is shown in Fig. 6.6.1.

6.6.2 Procedure of Customs Clearance.

(1) Customs Formalities for Imports.

The clearance process is similar whether imported goods arrive by sea, air or land. Generally, Bangladesh's Customs practices for items arriving by sea resemble those in most other countries.

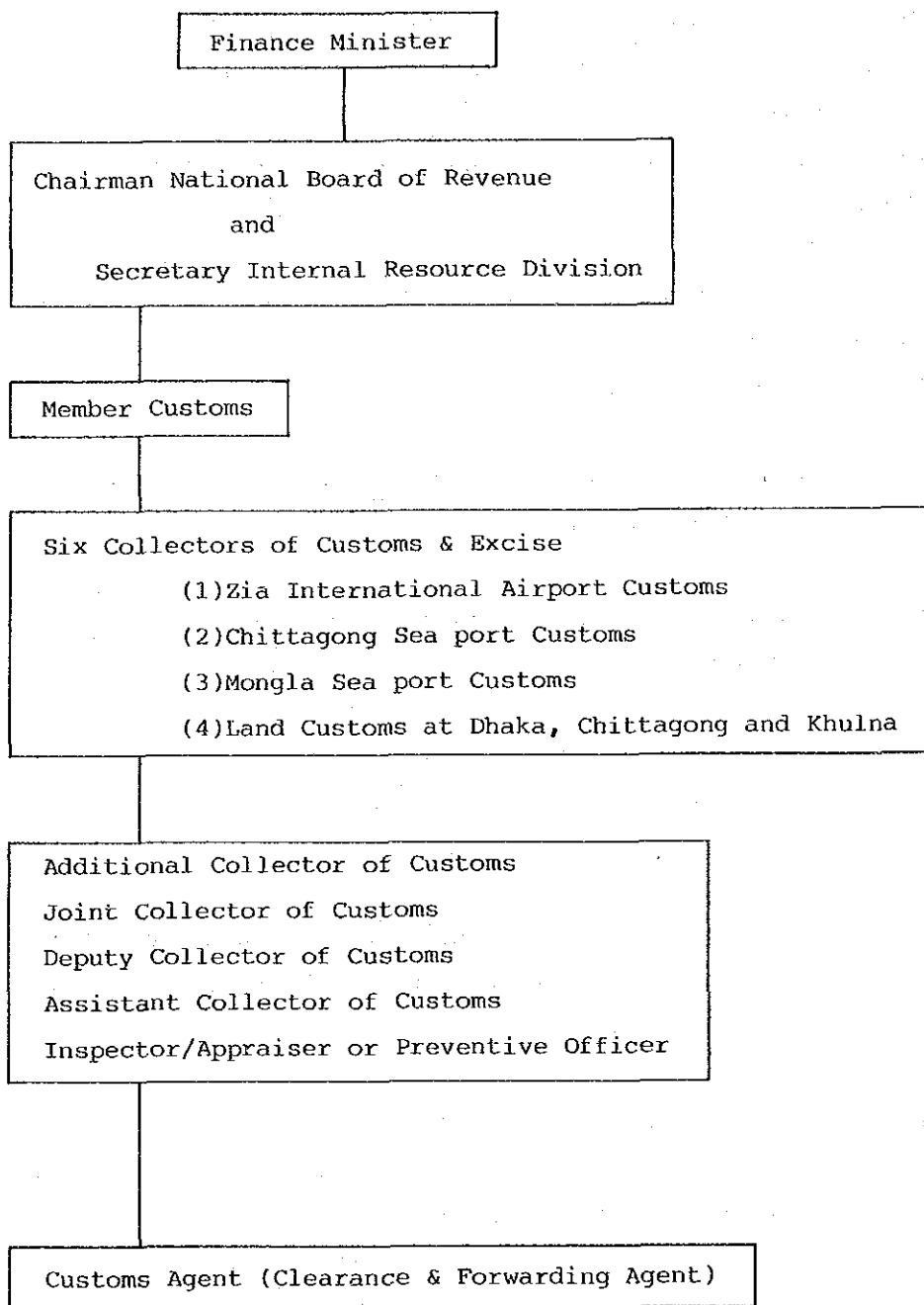


Fig.6.6.1 Organization of the Customs

Any conveyance entering Bangladesh from any place outside is not permitted to call or to land in the first instance at any place other than a Customs-station.

When a shipment of imported cargoes arrives at any Customs port, whether by sea, land and air, the master of the vessel must deliver an import manifest to the pilot, Customs officer or other person duly authorized to receive the document within 24 hours following the vessel's arrival.

The appropriate officer allows an import manifest to be delivered in anticipation of the arrival of a vessel.

Meanwhile, the owner of imported goods must prepare to file a "Bill of Entry for Consumption" with the appropriate officer in order to obtain the release of such goods. The bill of entry, including all necessary information concerning the shipment of imported goods such as the name of the vessel, date of arrival, port of embarkation, name and address of importer, quantity and description of goods, country of origin, L/C No., value of goods, etc., is to be accompanied by appropriate documents such as:

- i) Bill of Lading
- ii) Cargo Invoice
- iii) Packing List
- iv) Letter of Credit
- v) Insurance Policy
- vi) Bill of Exchange
- vii) Certificate of Shipment
- viii) V.B.F. Form
- ix) Certificate in respect of Origin
- x) Catalogue of the equipment/parts
- xi) Freight Memo
- xii) Licence/import permit.

The Bill of Entry for Consumption consists of seven copies, 73cm by 50cm in size, as follows.

Original: To be kept at Customs Office.

White paper and black print for import under cash.
 Blue with black print for import against wage earners.
 Duplicate: Customs copy to be retained at the Jetty Gate.
 White paper and green print.
 Triplicate: To be kept by importer.
 Quadruplicate: Exchange Control copy to be used by Bangladesh Bank.
 Pink paper and black print.
 Quintuplicate: Ministry of Commerce copy to be used by chief
 Controller of Import & Export which issues import
 and export permits and licences.
 White paper and red print.
 6th copy: To be used by the Bureau of Statistics
 White paper and red print.
 7th copy: Valuation copy
 White paper and red print for application of
 home consumption.
 Yellow paper and black print for application of
 bonded warehousing.

After receiving these documents, the customs officer countersigns them and gives the master of the vessel and the owner of goods permission to discharge the goods from the vessel to the bonded Customs warehouse. The goods are not discharged unless so specified in the import manifest and should be unloaded within 15 working days after the entry of the vessel. At the customhouse, the goods are examined/tested by the Customs appraiser without undue delay and duties are then assessed.

Customs duty is assessed on the basis of the rates shown in the Bangladesh Customs Tariff and other notifications issued by the Government. Bangladesh follows the Harmonised System of Nomenclature and each product is identified by a four digit number. Code (a four figure numbering system).

The value of imported goods shall be taken to be the normal price, that is to say, the price which they would fetch on a sale in open market between a buyer and a seller independent of each other.

It is said that invoice value is practically adopted for the determination of the value.

The owner of the goods then proceeds to clear them for home-

consumption or storing them in a private warehouse.

If any goods are not entered and cleared for home-consumption, not warehoused or not transshipped within 45 days (30 days at airport customs) from the date of unloading at a Customs port or a land Customs station, the appropriate officer, after due notice given to the goods owner, allows such goods to be sold under his order.

When the owner of any goods to be entered for home-consumption and to be assessed a duty has paid the import duty and other charges if any, the appropriate officer, if he is satisfied that the import of the goods is not prohibited or in breach of any restrictions or conditions applying to the import goods, makes an order for the clearance and delivery of the goods.

From then on, following payment of the port dues and demurrages, the consignee/agent takes delivery of the goods.

An Insurance survey, if necessary, should be carried out within 30 days of the landing of goods at the airport and 60 days in case of seaports. Otherwise the insurance company will not entertain any claims for losses/damage of the goods.

(2) Customs Formalities for Export

For the most part, Customs formalities for export cargo are similar to those for imports.

The following procedures are followed by the forwarding agent of an owner (shipper of the goods):

- i) Applies for export of goods to the appropriate officer submitting a "Bill of Export" containing the particular of the goods same as in the bill of entry.
- ii) After examination of the document by Customs, obtains clearance from Customs regarding payment of excise Customs duty.
- iii) Applies to the Bangladesh Bank in respect of clearance regarding foreign exchange, outward.

After receiving and checking, Customs issues no objection to the documents for export and makes an order for the clearance, assessing the duty.

The Port Authority checks the Customs documents, whether or not the goods have duly passed and thus have can be exported.

In order to obtain port clearance from the Port Authority and the Customs House, the shipping agent obtains clearance from Customs in respect of the retention cargo clearance certificate.

No goods can be loaded for export until the owner has delivered to the appropriate officer the "Bill of Export" for export goods and has paid the duties payable on such goods. Meanwhile, no vessel, whether laden or in ballast, may depart from any Customs port until port clearance has been granted by the appropriate officer. The application for port clearance is made by the vessel's master at least 24 hours before the intended departure of the vessel.

The master, at the time of application for port clearance, delivers to the officer an export manifest specifying all goods to be exported in the vessel and the bill of export or other documents and answers such questions respecting departure and destination of the vessel as are put to him by the port manager.

When the officer is satisfied that the provisions of the act relating to the departure of vessel have been duly complied with, the officer grants port clearance to the master of the vessel.

(3) Customs Clearance for Containers

1) International agreement

Customs procedure in container transportation involve Customs clearance of containers themselves and of the cargoes stuffed in them. Generally speaking, the customs in many developed countries of containerization adopt the following procedure:

Containers themselves are different from ordinary cargo in light of their special use for transportation, so the Customs clearance of containers must be different from and more simple than that of ordinary cargo. As for cargo stuffed in containers, that is to say, containerized cargo, Customs clearance is almost the same as that of ordinary cargo.

However, it has been recognized that containerized cargo may obtain import/export Customs clearance without a strict actual inspection in the marine container terminal, but random inspection, in order to promote door-to-door transportation.

There is one convention called "CUSTOMS CONVENTION OF CONTAINERS, 1972". The convention, the international agreement aimed at developing and facilitating international carriage by container, was enacted by the Economic Commission for Europe (ECE) at Geneva on May 18, 1956, and amended in 1972.

37 countries had signed the convention as of March 1976.

The convention and its annexed agreement bring the undermentioned benefits to the contracting countries:

(i) The countries shall grant temporary admission to containers, whether loaded or with goods or not.

(The term "temporary admission" means temporary importation, subject to re-exportation, free of import duties/taxes and free of import prohibition and restrictions without the production of Customs documents being required on their importation and re-exportation and without providing a form of security.)

Containers granted temporary admission shall be re-exported within three months from the date of importation.

The countries reserve the right not to grant temporary admission to containers that have been imported from non-contracting countries and have been the subject of purchase, hire-purchase, lease-or a contract of similar nature, concluded by a person resident or established in its territory.

(ii) The countries permit containers granted temporary admission under the terms of the present convention to be used for the carriage of

goods in internal traffic, in which case each contracting country shall be entitled to impose one or more of the following conditions.

(a) The journey shall bring the containers by a reasonably direct route to, or nearer to, the place where export cargo is to be loaded or from where the container is to be exported empty.

(b) The container will be used only once in internal traffic before being re-exported.

The facility provided for in paragraph (ii) shall be granted without prejudice to the regulations in force in the territory of each contracting country regarding vehicles either drawing or carrying containers.

(iii) Containers approved by a contracting country for the transport of goods under customs seal shall be accepted by the other contracting countries for any system of international carriage involving such sealing.

Approval for the international transport of goods under customs seal may be only granted to containers constructed and equipped in such a manner that:

(a) no goods can be removed from or introduced into the sealed part of the container without leaving visible traces of tampering or without breaking the customs seal;

(b) customs seals can be simply and effectively affixed to them;

(c) they contain no concealed spaces where goods may be hidden;

(d) all spaces capable of holding goods are readily accessible for customs inspection.

2) In Bangladesh

The government of Bangladesh has not ratified the above-mentioned convention, and Customs clearance for containers themselves is not provided for in The Customs Act, 1969 or any other regulations.

However, Bangladesh Customs approves loaded containers as receptacle used to transport stuffed cargo. Therefore, these containers are exempted from import duties/taxes.

After unstuffing the cargo, the emptied containers should be

returned to their shipping company as soon as possible.

There is no time limitation of re-exportation for these emptied containers due to the small quantity of export cargo.

In the case of temporary admission of empty containers, the containers are also free from import duties/taxes subject to re-exportation within six months from the date of importation. Of course, being imported for the purpose of home-consumption, the containers are assessed the import duties/taxes, etc., in accordance with the cost of the container.

The above-mentioned treatment of the imported containers is reasonable and favorable for smooth delivery of the cargo stuffed in the containers.

However, for the purpose of further smooth international transportation of containers, the government of Bangladesh is recommended to ratify the foregoing convention (the CCC).

6.6.3 Bonded System

In Bangladesh, the cargoes stuffed in containers and declared to be destined for Dhaka in the Bill of Lading are transported from Chittagong to the Dhaka ICD at Kamalapur Railway Station in bond without being unstuffed for the convenience of the cargo owner.

The ICD is appointed as the Customs station in which the cargoes are kept until inspection of the Customs authorities and until the completion of clearance by the cargo owner.

The purpose of the bonded system is to ensure the correct procedures for Customs clearance of import and export cargo as well as to contribute to convenient and smooth transportation of import cargo and to promote the development of transit and the processing trade. The bonded system may roughly be divided into the system of the bonded area and that of bonded transportation.

Any foreign goods may be transported in bond so long as they are transported among open ports, customs airports, bonded areas and customs offices.

(1) Bonded Warehousing system in Bangladesh

When the owners of dutiable goods want to warehouse the goods in a bonded warehouse appointed or licensed by Customs, he makes the application in writing signed by him in the form prescribed by the NBR, the "Bill of Entry for Bond" (yellow paper). When any such application has made by the goods owner and is accepted by Customs, the goods owner executes a bond, binding himself to a penalty of twice the amount of the assessed duty.

The goods are forwarded in the charge of an officer of customs to the warehouse on completion of the above provisions. A pass is sent with the goods specifying the name of the bonder and the name or number of the importing conveyance, the marks, numbers and the contents of each packages and the warehouse or place in the warehouse. On receipt of the goods, the pass is examined by the warehouse-keeper and returned to the appropriate officer.

If the goods are found to correspond with the pass, the warehouse-keeper certifies to that effect on the pass, and the warehousing of the goods is deemed to have been completed.

However, no goods or containers are admitted into any warehouse unless they bear the marks and numbers specified in, and otherwise corresponding with, the pass for their admission.

Any warehouse goods remain in the warehouses for a total period of two years following the date of the execution of the bond unless decided otherwise.

For clearance of bonded goods for home-consumption, any owner of warehoused goods clear such goods, at any time within the above period of their warehousing, by paying the assessed duty, all warehouse rent, penalties, interest (usually 8% per annum) and other charges payable in respect of such goods.

The application for clearance of the bonded goods should ordinarily be made to the appropriate officer at least 24 hours before it is intended to clear the goods.

(2) Bonded Transportation in Bangladesh

As mentioned above, currently bonded transportation of containerized cargo between Chittagong and the Dhaka ICD is carried out by means of the use of Bangladesh Railway.

However, containerized cargo is not permitted to be classed as bonded transportation if the destination of the cargo declared in the Bill of Lading and the Import General Manifest is other than Dhaka or Dhaka ICD.

The shipping agent draws up a new Internal General Manifest (Separate container list for bonded transportation) and submits it to the collectors of customs at Chittagong.

After the Customs Authority, countersigns the manifest, the containers are loaded on buggy carriers of the Bangladesh Railway and carried from Chittagong to the Dhaka ICD together with the manifest. Prior to loading, the Customs officer checks whether the original seals of the containers are intact or not. If the seal is not intact, the contents of the container are jointly inspected by the Customs, the shipping agents, the port authority and the importer. And then a new seal is attached to the container by the Customs.

On arrival of the containers at the Dhaka ICD, the manifest is given to the Customs officer at the ICD, and Customs inspection is carried out by opening the container in the presence of the consignee's agent.

Abatement of the Customs duty is allowed on damaged or deteriorated goods. Thus, the procedure of Customs clearance is carried out at the ICD.

The following Customs officers are stationed at the Dhaka ICD:

- One joint collector
- One assistant collector
- Three superintendents
- Nine inspectors

An inland container depot serving as the customs clearance depot is an efficient and convenient way for exporters to gain export clearance for their goods, and for importers to obtain Customs permission of import without going to container marine terminals located far from their place of business. Thus, both the importers and exporters are able to save cost and time for Customs clearance using the inland Customs clearance depot.

(3) Bonded Transportation in Asian Countries

In some Asian countries, the system of bonded transportation has been newly introduced and improved by the Customs Departments because of the rapid increase in container cargoes. This system has promoted door-to-door

transportation, which is surely a result of positive government policies.

Table 6.6.1 shows the content of each country's system. It should be noted that the checking of departure and arrival time in Taiwan and the additional seal affixed by the container terminal operator in Malaysia are unique methods.

Though the method whereby Customs officers accompany the cargo during the bonded transportation is the most secure, it is not adopted except partly in Taiwan because of its high cost.

In any case, each country has introduced an original bonded transportation system which is suited to local conditions.

Generally speaking, Customs inspection has been gradually simplified since document inspection is mainly executed instead of strict physical inspection.

(4) Recommended Measures to Introduce Bonded Transportation

It is understood that the Bangladesh Customs should try to establish a reasonable bonded transportation system step by step especially between the Dhaka Container Terminal and the marine terminal at both the ports of Chittagong and Mongla, taking other countries' system as a model.

The Study Team proposes the following measures for bonded transportation by IWT considering conditions in Bangladesh:

(a) First Step

- i) To oblige the container terminal operator and the marine terminal operator to affix an additional seal to a container as well as a Customs Seal.
- ii) To designate reliable IWT companies as authorized transporters between the container terminal and the marine terminals at both the ports of Chittagong and Mongla, and to oblige them to distinctly mark their vessels.
- iii) To designate a transport route between the Dhaka Container Terminal and the marine terminals.

(b) Second Step

After the First Step is properly executed, the following measures are to be adopted:

- i) To check departure and arrival times for every vessel at the Dhaka Container Terminal and the marine terminals.
- ii) To adopt document inspection instead of physical inspection.

Table 6.6.1 Bonded Transportation in Some Asian Countries

Country Item	Malaysia	Sri Lanka	India	Taiwan	Japan
Declaration of Bonded Transportation	Required	Required	Required	Required	Required
Customs Seal	Required (and ICD Operator's Seal)	Required	Required	Required	Not Required
Designated Transport Mode	Road, Railway	Road, Railway	Railway	Road, Railway	Road, Railway
Transport Accompanied by Customs Officer	Not Required	Not Required	Not Required	Partly Required	Not Required
Check of Departure and Arrival Time	Not Required	Not Required	Not Required	Required Required	Not Required
Designation of Bonded Area	Possible	Possible	Possible	Possible	Possible

CHAPTER 7 PRINCIPAL RIVER PORTS

7.1 Introduction

There are seven principal river ports in Bangladesh: Dhaka, Narayanganj, Barisal, Chandpur, Baghabari and Bairab Bazar. The present conditions of these ports have been investigated, focusing on the potential for container traffic through these ports in the future.

7.2 Cargo Movements through Inland Waterways

As to cargo movements through inland waterways in Bangladesh, much of the cargo originates from the seaports, Chittagong and Mongla, and is destined for the inland river ports, mainly Dhaka, Narayanganj and Khulna. In 1984/85, 78% of the total cargoes through the inland waterways originated from the seaports, and 90% of the cargoes were destined for the inland river ports. In the same year, 67% of the total cargoes were unloaded at the ports of Dhaka, Narayanganj and Khulna (see Table 7.1). In the same year, only around 10% of the total cargoes through inland waterway were transported between the river ports. Thus, the remaining 90% of the cargoes can be assumed to have been import and export cargoes delivered and collected through the inland waterways and the river ports.

In terms of foreign trade cargoes handled at Chittagong and Mongla ports, imports accounted for 86% of the total in 1988/89. Imported bulk cargoes are food grains, POL, cement, salt, sugar and coal, accounting for 77% of total imports. Imported non-bulk cargoes accounted for 23% of total imports. On the other hand, exports account for only 14% of total foreign trade cargoes in the same year. Major export cargoes are jute goods and jute, accounting for 50% of the total export cargoes. The volume of those cargoes, however, has decreased gradually in the last decade. Instead, there has been an increase in the volume of exported garments recently, along with the development of a garment industry mainly in and around the Dhaka area, though the volume is still small (see Table 7.2).

Thus, most major imports and exports are also listed as major commodities of cargoes transported through inland waterways. Food grains,

Table 7.1 Cargo Volume of Inland Transport through Principal Ports
(1984/85)

Fig. in Thousand M.Tons

	Port's Name	Unloaded		Loaded		Total	
		Volume	%	Volume	%	Volume	%
River Port	Dhaka	1,349	27.9	58	1.2	1,407	14.5
	Narayanganj	781	16.1	135	2.8	916	9.5
	Khulna	1,108	22.9	137	2.8	1,245	12.9
	Barisal	90	1.9	15	0.3	105	1.1
	Chandpur	83	1.7	13	0.3	96	1.0
	Baghabari	102	2.1	7	0.1	109	1.1
	Bhairab Bazar	38	0.8	2	0.0	40	0.4
	Others	796	16.4	691	14.3	1,487	15.4
	Sub-total	4,347	89.8	1,058	21.9	5,405	55.8
Seaport	Chittagong	133	2.7	2,785	57.6	2,918	30.2
	Mongla	359	7.4	996	20.6	1,355	14.0
	Sub-total	492	10.2	3,781	78.1	4,273	44.2
	Total	4,839	100.0	4,839	100.0	9,678	100.0

Source: BIWTA

Table 7.2 Cargo Volume of Foreign Trade through Seaports (1988/89)

Fig. in Thousand M. Tons

	Commodity	Chittagong		Mongla		Total	
		Volume	%	Volume	%	Volume	%
Import	Food Grains	1,706	21.4	684	27.2	2,390	22.8
	POL	1,922	24.2			1,922	18.3
	Cement	799	10.0	634	25.2	1,433	13.7
	Fertilizer	232	2.9	413	16.4	645	6.2
	Sugar	133	1.7			133	1.3
	Salt	291	3.7	49	1.9	340	3.2
	Coal	22	0.3	30	1.2	52	0.5
	Others	2,018	25.4	71	2.8	2,089	19.9
		Sub-total	7,122	89.5	1,882	74.7	9,004
Export	Jute			271	10.8	271	2.6
	Jute Goods	104	1.3	342	13.6	446	4.3
	Tea	20	0.3			20	0.2
	Naphtha/Bunke	139	1.7			139	1.3
	Fertilizer	336	4.2	13	0.5	349	3.3
	Garments	11	0.1			11	0.1
	Shrimp			8	0.3	8	0.1
	Others	225	2.8	4	0.2	229	2.2
	Sub-total	834	10.5	637	25.3	1,471	14.0
	Total	7,956	100.0	2,519	100.0	10,475	100.0

Source: CPA & MPA

POL, cement, fertilizer salt, jute goods and jute are the major commodities in inland waterway transport. In 1984/85, the cargo volume of the major commodities accounted for 86% of total cargo movement. Stones and sand are transported mainly between river ports in domestic trade (see Table 7.3).

As for non-bulk cargoes of foreign trade handled by seaports, there was a steady increase in the volume of the cargoes in the last decade, showing an annual growth rate of 3.7% on average. Imported non-bulk cargoes increased considerably, with an annual growth rate of 5.5%. On the other hand, exported non-bulk cargoes remained almost at a constant level, although the composition of commodities of the exported cargoes changed. Along with the increase in the volume of non-bulk foreign trade cargoes, there was a sharp increase in the percentage of containerization in the same period. Presently, one-fourth of the total non-bulk cargoes are already transported in containers by ocean-going vessels.

At present, except for jute and jute goods, most such non-bulk cargoes are transported by trucks as loose cargoes in inland transport whether they are carried in containers by ocean-going vessels or not.

Table 7.3 Commodity-wise Cargo Volume of Inland Transport through Principal Ports

Commodity	Unit: Thousand Tonnes										Total	%
	Dhaka	Narayanganj	Khulna	Barisal	Chandpur	Baghabari	Bhairab	Others	Chittagong	Mongla		
Foodgrains Loaded	5	2	3	7	1	2	1	13	733	563	1329	27.5
Unloaded	339	381	331	36	3			236	2	1	1329	
POL Loaded								87	1139		1226	25.3
Unloaded	295	246	454	29	36	51	20	64	31		1226	
Cement Loaded	9		10					20	453	210	702	14.5
Unloaded	437	15	119	6	5	6	7	63	44		702	
Fertilizer Loaded	3							127	97	155	382	7.9
Unloaded	13	56	132	8	11	39	5	104	14		382	
Jute Loaded	3	97	26		2	5		83		7	223	4.6
Unloaded	15	28	10		2			68		188	223	
Jute Goods Loaded	15	28	72		1			11	10	163	185	3.8
Unloaded	8	1						114			123	2.5
Stones Loaded	36		9	1	8	5		62		2	123	
Unloaded	16	37	6		2			1	66	6	76	1.6
Salt Loaded	4				7			10		2	63	1.3
Iron, Steel Loaded	35	11	5	1				10	1		63	
Gewa Wood Loaded								61			61	1.3
Unloaded	16							61	49	3	52	1.1
Edible Oil Loaded	19	8						36		4	52	0.9
Sugar Loaded	19		5		1			2	37		44	0.8
Sand Loaded	24							13	1	10	44	
Fish Loaded	15			9	4			23			23	0.5
Paper Loaded	15		6					14	2	1	21	0.4
Coal Loaded	16		4					1	4		21	
Ice Loaded	1			7	4				14	1	21	0.4
Limestone Loaded	1	2						5	1		19	0.4
Firewood Loaded	9	1	1		1			19			19	
Sulphur Loaded	4	1	1					14			14	0.3
Timber Loaded	11	6	7	1	4			11	1	4	12	0.2
Others Loaded	11	6	7	1	4			11	11		11	0.2
Total Loaded	58	135	137	15	13	7	2	691	2785	996	4839	100.0
Unloaded	1349	781	1108	90	83	102	38	796	133	359	4839	

Source: BIWTA

Table 7.4 Record of Berthing and Cargo-handling by Vessels Calling at Dhaka Port (Jan.-Feb. 1989)

Commodity	No.	Vessel Type	Vessel Size (D.W.T.)	Cargo Volume (M.Ton)	Berthing (Days)
Foodgrains	1	Coaster	1,100	1,076	6
	2	Cargo	200	199	8
	3	Coaster	711	477	2
	4	Barge	250	250	5
	5	Barge	250	250	7
	6	Cargo	290	285	4
	7	Coaster	711	478	2
	8	Coaster	1,016	681	2
	9	Coaster	711	504	3
		Total		4,200	39
Cement	1	Coaster	1,100	1,100	5
	2	Coaster	914	675	1
	3	Coaster	1,016	768	14
	4	Cargo	400	384	4
	5	Cargo	400	384	10
	6	Coaster	650	672	14
	7	Cargo	400	400	2
	8	Coaster	650	650	5
	9	Coaster	550	505	3
	10	Cargo	350	350	2
	11	Cargo	500	500	11
	12	Cargo	250	290	6
	13	Cargo	400	400	7
	14	Coaster	650	700	7
	15	Cargo	650	425	5
	16	Coaster	650	650	9
	17	Cargo	600	425	5
	18	Cargo	400	375	3
	19	Cargo	400	375	3
	20	Cargo	350	350	2
	21	Coaster	914	675	1
	22	Coaster	1,100	1,100	1
	23	Coaster	700	698	7
	24	Cargo	400	375	9
	25	Coaster	1,100	841	1
	26	Coaster	600	600	5
	27	Cargo	500	500	4
	28	Cargo	400	375	1
	29	Coaster	650	650	5
	30	Coaster	750	722	1
	31	Cargo	400	400	3
	32	Cargo	400	400	2
	33	Cargo	400	400	2
	34	Cargo	233	140	1
	35	Cargo	400	400	2
	36	Cargo	750	725	3
	37	Cargo	650	650	5
	38	Cargo	425	425	2
		Total		20,454	173
Sugar	1	Coaster	711	750	10
	2	Coaster	1,016	650	1
		Total		1,400	11
Iron, Steel	1	Coaster	650	750	1
		Total		750	1
Paper	1	Cargo	267	60	0.5
	2	Cargo	233	131	3
		Total		191	3.5
Grand Total				26,995	

Source: BIWTA

7.3 Dhaka Port

7.3.1 Public Port Facilities

Dhaka Port is located on the banks of the Buriganga River in the southern part of Dhaka City. The BIWTA's public port facilities for cargo handling are mainly at Badamtali on the north bank upstream from Buriganga Bridge, and the major facilities are as follows:

1. Badamtali Old R.C.C. Jetty
 - Length (waterfront): 38.7 m.
 - Width: 12.0 m.
 - Water Depth along Jetty: 2.7 m. below average L.L.W.
 - Major Handled Commodity: Cement, Iron & Steel, Paper
 - Mode of Handling: Head Loading
2. Badamtali New R.C.C. Jetty
 - Length (waterfront): 38.7 m.
 - Width: 12.0 m.
 - Water Depth along Jetty: 4.3 m.
 - Major Handled Commodity: Cement, Iron & Steel, Paper
 - Mode of Handling: Head Loading
3. Mill Barrack R.C.C. Jetty at Postogola
 - Length (waterfront): 38.7 m.
 - Width: 12.0 m.
 - Water Depth along Jetty: 5.3 m.
 - Major Handled Commodity: Food Grains (Wheat, Rice)
 - Mode of Handling: Head Loading
4. Pontoon with Steel Gangway at Badamtali
 - Length (waterfront): 19.5 m.
 - Width: 7.6 m.
 - Water Depth along Berth: 5.5 m.
 - Major Handled Commodity: Cement, Iron & Steel, Paper
 - Mode of Handling: Head Loading
5. Pontoon with Steel Gangway at Wise Ghat
 - Length (waterfront): 30.5 m.
 - Width: 8.2 m.
 - Water Depth along Jetty: 4.5 m.
 - Major Handled Commodity: Cement, Iron & Steel, Paper
 - Mode of Handling: Head Loading

7.3.2 Calling Vessels

Cargo transport vessels calling at Dhaka Port are divided into the six following categories, excluding small country boats:

1. Bay Crossing
 - Coaster
 - Bay Crossing Flat
 - Bay Crossing Barge

2. Inland
 - Cargo Vessel
 - Inland Flat
 - Inland Barge

Table 7.5 shows the berthing and cargo-handling record from January to February of 1989 for Dhaka Port including public terminals at Badamtali and Mill Barracks and excluding some private facilities at Pagla, Fatulla and Darmogonj. According to the record, the vessel size distribution was as follows:

D.W.T.	Coaster	Cargo Vessel	Barge
1,100-1,000	7		
1,000- 900	2		
900- 800			
800- 700	6	1	
700- 600	7	3	
600- 500	1	2	
500- 400		13	
400- 300		2	
300- 200		6	1
Max. Size	1,100	750	250
Min. Size	550	200	

Table 7.5 Record of Berthing and Cargo-handling by Vessels Calling at Narayanganj Port (Jan.-Feb. 1989)

Commodity	No.	Vessel Type	Vessel Size (D.W.T.)	Cargo Volume (M.Ton)	Berthing (Days)
Foodgrains	1	Cargo	213	200	1
	2	Coaster	1,000	1,000	4
	3	Coaster	500	500	9
	4	Cargo	123	120	1
	5	Coaster	700	700	17
	6	Coaster	850	850	2
	7	Coaster	600	600	15
	8	Coaster	560	550	6
	9	Coaster	650	650	4
	10	Coaster	750	700	9
	11	Coaster	750	700	17
	12	Coaster	700	700	2
	13	Cargo	250	250	0.5
	14	Coaster	1,000	1,000	6
	15	Coaster	650	500	4
	16	Coaster	750	750	2
	17	Coaster	700	650	15
	18	Coaster	750	700	10
	19	Coaster	700	550	20
	20	Coaster	3,000	1,600	4
	21	Coaster	700	650	12
		Total		13,920	161
Fertilizer	1	Cargo	185	185	2
	2	Barge	145	145	2
	3	Barge	145	145	1
	4	Barge	150	150	3
	5	Barge	191	191	5
	6	Cargo	273	273	6
	7	Cargo	65	65	1
	8	Cargo	56	56	1
	9	Cargo	55	55	3
	10	Cargo	51	51	0.5
	11	Cargo	359	359	4
	12	Barge	145	145	4
	13	Cargo	750	750	9
	14	Barge	145	145	5
	15	Barge	145	145	2
	16	Barge	145	145	4
	17	Cargo	185	185	2
	18	Cargo	206	206	2
	19	Cargo	137	137	2
	20	Barge	150	150	5
	21	Barge	145	145	2
	22	Cargo	145	145	1
	23	Cargo	371	371	4
	24	Cargo	51	51	1
	25	Barge	160	160	2
	26	Cargo	145	145	1
	27	Barge	145	145	4

Table 7.5 Record of Berthing and Cargo-handling by Vessels Calling at Narayanganj Port (Jan.-Feb. 1989) (Continued)

Commodity	No.	Vessel Type	Vessel Size (D.W.T.)	Cargo Volume (M.Ton)	Berthing (Days)	
Fertilizer	28	Barge	145	145	7	
	29	Barge	145	145	2	
	30	Cargo	150	150	1	
	31	Cargo	182	182	3	
	32	Cargo	514	514	7	
	33	Barge	145	145	2	
	34	Cargo	160	160	1	
	35	Barge	134	134	3	
	36	Cargo	150	150	2	
	37	Cargo	260	260	1	
	38	Barge	145	145	2	
	39	Barge	143	143	5	
	40	Cargo	187	187	1	
	41	Cargo	145	145	1	
	42	Barge	150	150	2	
	43	Cargo	260	260	1	
	44	Barge	145	145	2	
	45	Barge	145	145	0.5	
	46	Cargo	185	185	0.5	
	47	Barge	145	145	0.5	
	48	Cargo	260	260	1	
	49	Cargo	185	185	1	
	50	Cargo	182	182	1	
	51	Cargo	262	250	2	
	52	Cargo	197	197	0.5	
	53	Barge	145	145	2	
	54	Barge	145	145	3	
	55	Cargo	227	227	0.5	
	56	Barge	145	145	2	
	57	Barge	293	293	2	
	58	Barge	145	145	1	
	59	Barge	145	145	1	
	60	Barge	293	293	2	
	61	Barge	150	150	2	
	62	Barge	137	137	2	
	63	Barge	150	150	1	
	64	Cargo	123	36	1	
	65	Cargo	200	200	0.5	
	66	Cargo	238	238	3	
	67	Cargo	350	350	3	
	68	Cargo	176	176	2	
	69	Cargo	243	243	1	
	70	Cargo	175	175	1	
	71	Cargo	185	185	1	
	72	Barge	150	150	1	
	73	Cargo	176	176	1	
	74	Cargo	262	262	0.5	
				Total	13,720	162
				Grand Total	27,640	

Source: BIWTA

7.3.3 Cargo-handling Productivity

Presently, bagged cement and food grains are the main commodities handled at the public wharves at Badamtali and Mill Barrack. According to the record indicated in Table 7.4, the cargo-handling productivity of head loading, including non-operational time, is as follows:

Cement: 107.7 tons / day (Jan.-Feb.)

Food grains: 118.2 tons / day (Jan.-Feb.)

Sugar: 127.3 tons / day (Jan.-Mar.)

Paper: 54.6 tons / day (Jan.-Mar.)

7.4 Narayanganj Port

7.4.1 Public Port Facilities

Narayanganj Port is located on the banks of the Sitalakhya River, about 25 km. from the center of Dhaka. The BIWTA's public port facilities for cargo-handling are mainly on the west bank, and the main facilities are as follows:

1. No.5 R.C.C. Cargo Jetty adjacent to BIWTA Passenger Terminal
 - Length (waterfront): 39.0 m.
 - Width: 12.0 m.
 - Water Depth along Jetty: 4.5 m. (average L.L.W.)
 - Main Commodity Handled: Fertilizer, Food Grains
 - Mode of Handling: Head Loading
2. Khanpur R.C.C. Cargo Jetty
 - Length (waterfront): 87.2 m.
 - Width: 12.0 m.
 - Water Depth along Jetty: 4.2 m.
 - Main Commodity Handled: Fertilizer, Food Grains
 - Mode of Handling: Ship Crane, Head Loading

3. Ekrapur R.C.C. Cargo Jetty on the East Bank

Length (waterfront): 45.2 m.

Width: 15.0 m.

Water Depth along Jetty: 4.2 m.

Main Commodity Handled: Food Grains, Foodstuffs

Mode of Handling: Ship Crane, Head Loading

7.4.2 Calling Vessels

Table 7.5 shows the berthing and cargo-handling record from January to February of 1989 for Narayanganj Port at No.5, Khanpur and Ekrapur jetties. According to the record, the vessel size distribution was as follows:

D.W.T.	Coaster	Cargo Vessel	Barge
3,000	1		
1,000	2		
900- 800	1		
800- 700	9	1	
700- 600	3		
600- 500	2	1	
500- 400			
400- 300		3	
300- 200		13	2
200- 100		21	31
100- 50		5	
Max. Size	3,000	750	293
Min. Size	500	51	134

7.4.3 Cargo-handling Productivity

Presently, bagged fertilizer and food grains are the main commodities handled at the public wharves. According to the record indicated in Table 7.6, the cargo-handling productivity including non-operational time, is as follows:

Food grains: 86.7 tons / day (Jan.-Feb.)

Fertilizer: 84.7 tons / day (Jan.-Feb.)

7.5 Khulna Port

Khulna Port is situated on the banks of the Bhairab and Rupsha rivers and the western part of Khulna City, the third largest city in Bangladesh. Khulna Port is the main distribution point for the southern part of West Bengal in Bangladesh and functions as a feeder port to Mongla Port, which is located about 30 Km. downstream from Khulna Port. The main commodities unloaded at Khulna Port are food grains, cement, fertilizer and POL. The main commodities loaded at the port are jute and jute goods. A great part of these cargoes originates from or is destined for ocean-going vessels at Mongla Port, excluding POL, which is mainly transported from Chittagong Port. The BIWTA's main public facilities for cargo handling are as follows:

1. Mahesharpasha Food Jetty 10 km. upstream from BIWTA Terminal
Length (waterfront): 167.7 m.
Width: 15.2 m.
Main Commodity Handled: Food Grains
2. Sheet Pile Quay Wall adjacent to BIWTA Terminal
Length (waterfront): 570.0 m.
Width (Quay Area): 30.0 m.
Main Commodity Handled: Food Grains, Cement, Fertilizer

7.6 Barisal Port

Barisal Port is situated on the banks of the Kirtonkhola River and is an intermediate point on the main route between Mongla and Dhaka. Cargoes such as food grains, POL, cement and fertilizer are handled at barge-type pontoons with wooden shore connections. The volume of cargoes handled at the port is very small compared with Dhaka, Narayanganj and Khulna ports. Barisal Port is, however, an important distribution point for the Barisal District, where inland waterways are the only means of transportation. There is a pilot station at the port.

7.7 Chandpur Port

Chandpur Port is located on the bank of the Dakatia River, which flows into the Meghna River. The port is located just near the confluence of Dakatia and Meghna rivers. The water depth of the port basin is insufficient to accommodate coasters except for in the high-water season. Only barges and shallow draft vessels have access throughout the year. POL, fertilizer and food grains are major commodities handled at the port. Although the volume of the cargoes handled is small, Chandpur Port is an important distribution point for Chandpur District. The BIWTA has pontoons with wooden connections for cargo handling. The BIWTA has also a pilot station.

7.8 Baghabari Port

Baghabari Port is situated on the north bank of the Baral River. The port has a good connection with a road bound for the northern part of West Bengal which is separated from the rest of Bangladesh by the Jamuna and Ganges rivers. Baghabari Port is a main distribution point for the area. The main commodities handled at the port are POL, fertilizer, food grains, cement and jute. The BIWTA has spacious land of 14.6 ha. at the port more than half of which is reserved for future development. Owing to the geographic advantage of the location and spacious reserved land, Baghabari Port has great potentialities for future development oriented toward water-borne transport. The main BIWTA facilities are as follows:

1. Pontoon with Steel Gangway

Length (waterfront): 36.6 m.

Width: 9.1 m.

Main Commodity Handled: Fertilizer, Cement, Jute

Mode of Handling: Head Loading

2. Pontoon with Steel Gangway

Length (waterfront): 36.6 m.

Width: 9.1 m.

Main Commodity Handled: Food Grains

Mode of Handling: Head Loading

7.9 Bhairab Bazar Port

Bhairab Bazar Port is situated on the banks of the Meghna River. The port is located at a geographically important place connected with trunk routes of all traffic modes. The BIWTA has the following two pontoons, one for passenger boats and the other for cargo vessels:

1. Steel Pontoon with Wooden Shore-connection for Passenger Boats

Length (waterfront): 30.5 m.

2. Steel Pontoon with Wooden Shore-connection for Cargo Vessels

Length (waterfront): 19.5 m.

CHAPTER 8 DEMAND FORECAST

8.1 General Approach

The purpose of this chapter is to forecast the container throughput for the cargo volume and the number of containers.

The forecast consists of three parts: the estimate of the socio-economic indices (in this report, GDP and population) in Bangladesh for the planning period; the estimate of the container throughput at seaports in Bangladesh for the planning period; and the estimates of the container cargo volume and TEU to and from the Dhaka area.

The flow chart illustrating demand forecast is shown in Fig.8.1.

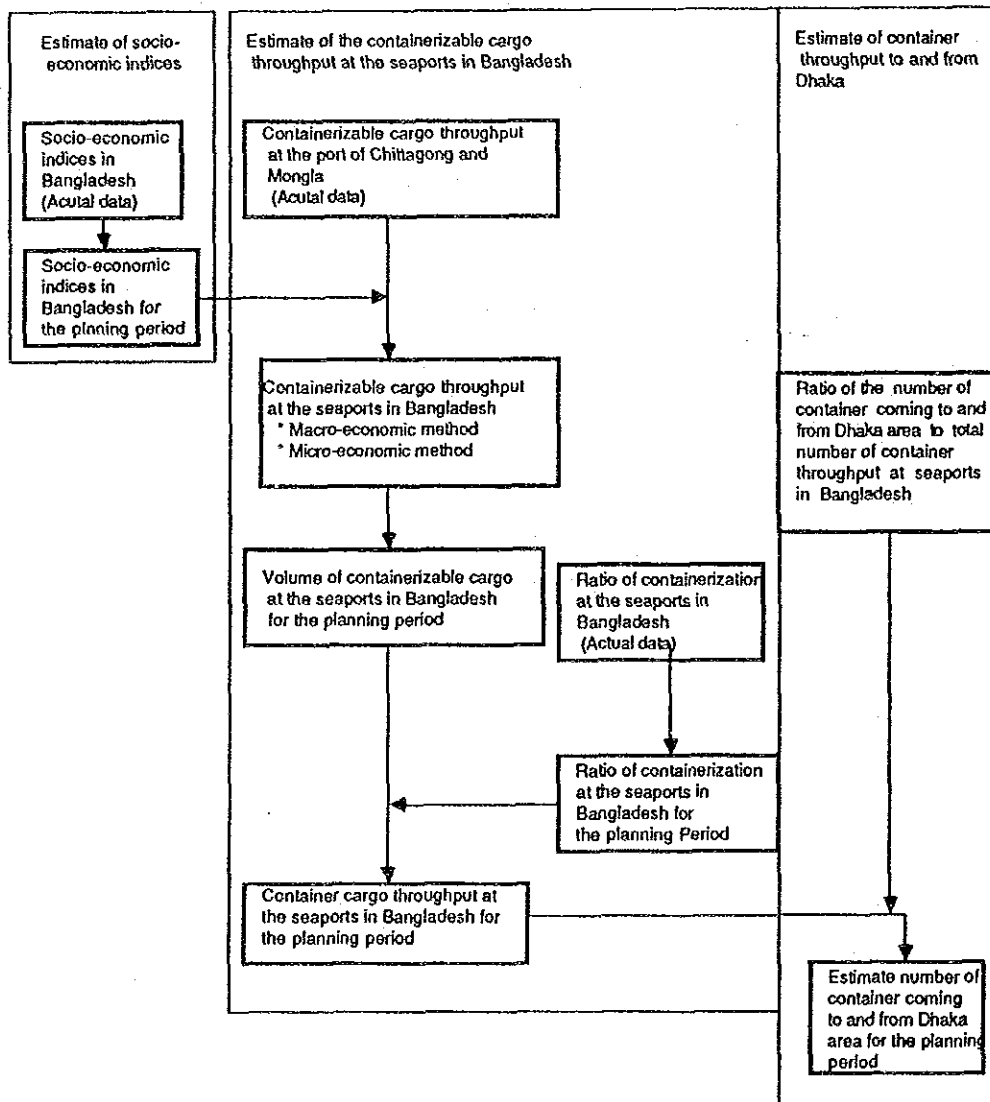


Fig.8.1 Flow Chart of Procedure of the Demand Forecast

8.2 Population and GDP in 1995 and 2005

8.2.1 Population

The future population of Bangladesh has been estimated by the Bangladesh Bureau of Statistics (B.B.S.) and the result of the estimate has been published in the statistical yearbook of Bangladesh.

According to the 1989 statistical yearbook, the population growth rate from 1990 to 1995 will be about 2.25 percent per year and the growth rate from 1995 to 2000 about 2.03 percent per year.

In this report, the growth rate of the population between 1987 and 2000 is the same as that used in the statistical yearbook of Bangladesh. From 2000 to 2005, the annual population growth rate is assumed to be the same rate as the annual growth rate between 1995 and 2000.

Table 8.1 shows the population and its annual growth rate in the planning period.

Table 8.1 Future population in Bangladesh

Year	Population (Thousand)	Growth rate(%)
1990	113,005	
1995	126,341	2.25
2000	139,693	2.03
2005	154,456	2.03

Source in 1990, 1995 and 2000: Statistical Yearbook of Bangladesh.

8.2.2. GDP

For the period up to 1990, the growth rate of the Gross Domestic Product of Bangladesh used in this reports that published in The Third Five Year Plan.

GDP until 2005 has already been forecast in the study of Bangladesh Inland Water Transport Master Plan. These growth rates and GDP values are shown in Tables 8.2 and 8.3.

Table 8.2 Growth Rate of Future GDP

Sector	Annual growth rate (percent)	
	1985-88	1985-90
Agriculture	2.6	4.0
Industry	4.8	10.1
Electricity and Gas	13.3	9.6
Construction	8.3	4.9
Transport & Communication	5.7	6.9
Trade and other services	4.2	6.4
Housing	4.0	3.7
Public Services	5.6	4.6
Total	3.8	5.4

Source:Mid-term of The Third Five Year Plan, 1985-90

Table 8.3 Share of the Future GDP Composition by Sector

Year	(Unit: percent)			
	1990	1995	2000	2005
Agriculture	44.3	41.7	39.5	37.4
Industry	8.5	8.9	9.6	10.5
Utilities	6.5	6.7	6.9	7.0
Services	40.7	42.7	44.0	44.9
Total	100.0	100.0	100.0	99.8
GDP(Billion Taka)	506.5	613.8	743.9	909.0

GDP:Constant(1985/86) market prices

Source:Bangladesh Inland Water Transport Master Plan

In this report, the GDP is forecast using the past trend of the GDP.
(Refer to Table 1.5).

The result of the forecast is similar to that of the GDP in the report
of the Bangladesh Inland Water Transport Master Plan.

The equation of the forecast is as follows:

$$Y=1.038t$$

Where t:GDP in the previous year. (Million TK)

Y:GDP for planning period (Million TK).

The result of the forecast is shown in Table 8.4.

Table 8.4 Future GDP in Bangladesh

(unit: Million Taka)

	Year	Statistical Yearbook of Bangladesh	The Third Five Year Plan	Masterplan of BIWT	This Project
Actual	1976	281,509	-	-	-
	1977	301,005	-	-	-
	1978	315,947	-	-	-
	1979	319,803	-	-	-
	1980	338,401	-	-	-
	1981	343,181	-	-	-
	1982	355,434	-	-	-
	1983	370,603	-	-	-
	1984	385,343	-	-	-
	1985	401,104	-	-	-
	1986	415,966	-	-	-
1987	425,279	-	-	-	
Estimation	1990	-	501,246	461,000	475,626
	1995	-	-	558,661	573,130
	2000	-	-	677,073	690,621
	2005	-	-	827,342	832,197

GDP: Constant price(1984-85).

NOTE: The growth rate of GDP in this project between 1987 and 2005 is forecast at about 3.8%, which is the similar growth rate of GDP in the Master Plan of BIWT.