1 Introduction

1.1 Background

The history of inland waterways in India is chequered one. Initially it was the primary mode of transportation in the country. The popularity of inland waterways started declining with the emergence of modern means of transportation such as the railways, the use of automobiles and eventually, air transportation. Indeed due to the accelerated growth of road and railways, with respect to the movement of passengers and goods, the potential of inland waterways to provide low cost, environment friendly transportation has been neglected and remains under- utilised to a great extent.. By the late 1940s, inland waterways remained important only in the eastern states of the country. Then the partition of Bengal in 1947 dividing the Ganga-Brahmaputra waterway into two delt a stunning blow to the use of waterways in the region. The Indo-Pakistan conflict in 1965 almost struck the death knell and ever since the inland waterways system has been completely disrupted.

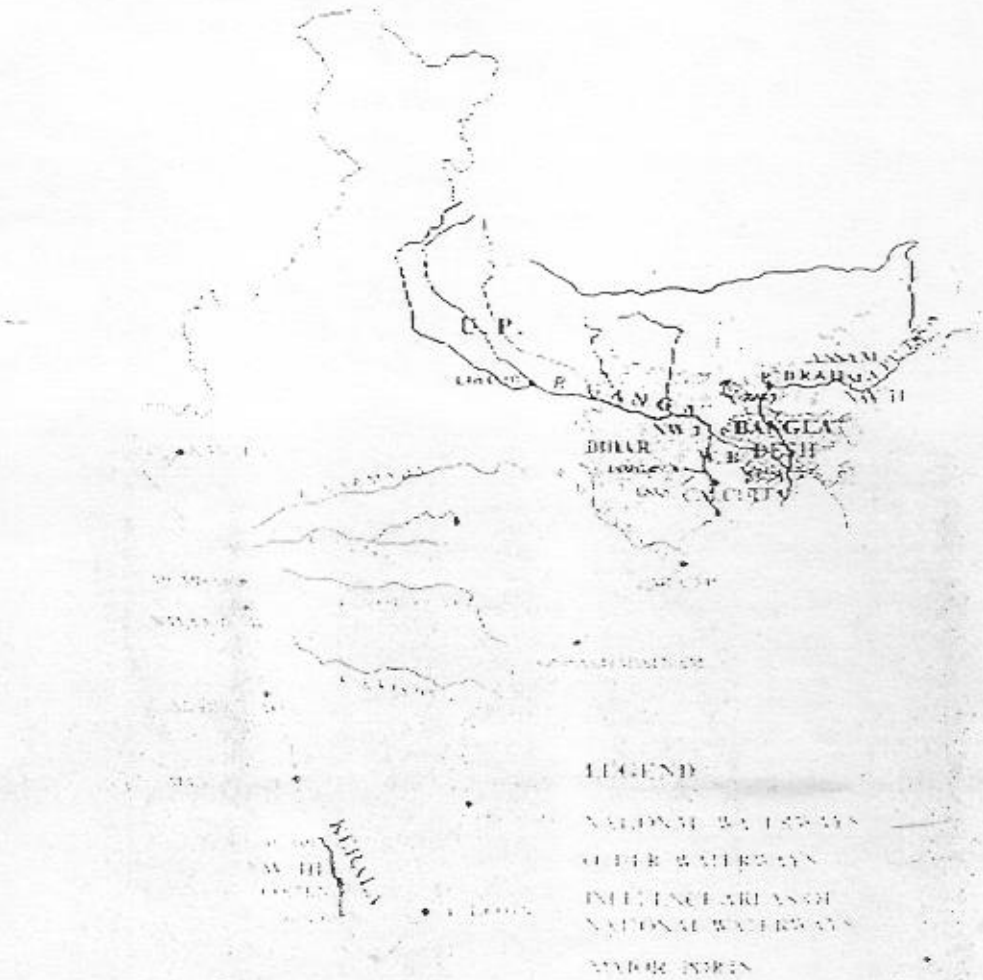

Figure 1.1- Indian Riverine System

However, since the emergence of Bangladesh, the situation is progressively undergoing a major change, brightening prospects for the co-ordinated development of inland navigation through the Ganga-Brahmaputra system of rivers in India and Bangladesh. A number of initiatives taken by the two countries have raised hopes for promotion of water transportation on the Ganga and Brahmaputra riverine systems.

India's Inland transport network spans about 14,544-km, out of which three waterways have been declared as National Waterways and span 2679 km. Figure 1.1 shows the Indian Riverine system.

In spite of being an energy efficient, economic and environment friendly mode of transport, Inland Water Transport (IWT) mode forms a very small part of the total transport network of the country. The primary reason is its spatial limitation since it is confined to specific regions and is effective only when origin and destination of both production and consumption centres is located on the waterfront. The withdrawal / diversion of water for irrigation purposes is another major concern. Overall, areas of concern include navigational hazards like shallow waters or inadequate depth, siltation, bank erosion etc. To ensure safe and reliable navigation, waterways and terminals must be maintained with navigational aids to desired standards, and suitable infrastructure and industrial location policies pursued by the state and central Governments as suggested by the National Transport Policy Committee (NTPC). However, the problem of IWT operation is also compounded due to the low priority accorded by the National Water Resources Committee to reliable water depth along the waterway.

Realising the need to develop an institutional set up for development of IWT, the Ganga-Brahmaputra Water Transport Board was set up in 1952 and the Inland Water Transport Directorate, in the Ministry of Shipping and Transport, in 1965. In order to ensure proper functioning of the IWT system, the Ganga-Brahmaputra was merged with the IWT Directorate. This provided an impetus to set up the Central Inland Water Transport Corporation Limited (CIWTC) with its head office at Kolkata. Since then, CIWTC is at the helm of IWT operations. The NTPC recommended the setting up the Inland Waterways Authority of India (IWAI). This was set up by an Act of Parliament. The Inland Waterways Authority of India Act, 1985 empowers the Government to declare waterways with potential for development of shipping and navigation as National Waterways, and to develop such waterways for efficient shipping and navigation. Three waterways that have been declared as National Waterways — are namely the Ganga, the Brahmaputra and the West Coast Canal — are being developed for shipping and navigation with necessary infrastructure such as fairways, terminals, navigational aids and fleets by the government.

Major emphasis was placed in the Ninth Plan - Thrust Areas and Strategies linking waterways and ports with coastal shipping, rather than opening up the horizon of linking several river systems with each other.

The Ganga–Brahmaputra–Suderbans river system has the potential to be integrated with Haldia and Kolkata ports, the Brahmmani–Mahandi river system with Paradeep port, Krishna-Godavari-Buckingham canal with Chennai Port and the Mandevi-Zuari-Cumbergua waterways with Mormugao port. The development and connectivity of these waterways with the ports will not only ensure development of the entire hinterland but will also help in relieving the pressure on rail and road-based modes of transportation, experiencing increasing levels of traffic congestion

Countries such as the United States, China, Germany and Russia have made remarkable progress in the development of commercial use of IWT due to lower operating costs and higher capacities of waterways. The European continent has a navigable network of inland waterways of the order of 11,000 km. Russia and Chinese waterways together constitutes the world largest waterway network and USA offers the best infrastructure in world resulting in the movement of 65 per cent of the total tonnage on its waterways. Due to the vast potential of inland water transport in South East Asian countries, countries like Bangladesh, Indonesia, Lao People's Democratic Republic, Myanmar, Thailand and Vietnam are increasingly paying importance to rejuvenating waterways by undertaking various IWT project works.

The IWT system in India has suffered from under-investment and financial constraints not only in absolute terms but also in comparison to other modes of transportation. Considerable investment is required for the systematic development of fairways, fleets, terminals and navigational aids. Road transportation providing to door-to-door service has also played an important role in replacing IWT since location-specific multimodal transfers to access waterways adds to IWT cost. Users reluctance to experiment with new modes of transport is another impediment.

Various measures and strategies are required to overcome these teething problems. Mechanisms are to be built through realistic policies and strategies that would ensure committed traffic, cargo assurance, captive users as project participants, joint ventures by government, shippers and carriers etc. Such steps would also minimise the financial risk and may be considered as a policy objective. Within this policy framework, an attempt should be made to remove all the impediments to the fullest exploitation of existing waterways by tackling the fairway, terminal and vessel related issues and providing the initial support for significant private participation, as a part of the short term objective. In addition to these, new waterways, up-grading vessels and cargo handling technologies to modernise the total IWT system and integrate it with the other modes of transport as a part of a national effort are needed.

1.2 Need of the Study

Inland Water Transport (IWT) is the cheapest mode for some types of traffic both over long and short distances, provided that either the point of origin and/ or destination are located on the water front or within the area of influence of the waterfront. From the energy point of view, a barge of 1500 tonne capacity is more efficient than diesel traction on rail. As IWT offers immediate navigability given the required depth of water, it has the potential to generate more employment per rupee of investment than any other mode. Such employment would target the weaker section in particular.

Presently, quite a considerable stretch of national waterways 1 and 2 (NW 1 and NW 2) are blessed with adequate water flow and maintain a minimum depth of 2 meter, passing along a number of towns and settlements within the range of 50 km. During 2002-03, the traffic moved on NW 1 and NW 2 amounted to 0.633 million tonne and 0.098 million tonne respectively. Recommendations of several committees, including the NTPC, strongly highlight the need to improve the IWT system including the national waterways. The Government of India, in its policy documents of Inland Water Transport envisages a sizeable increase in the cargo traffic to 20 billion tonne-km within a five-year period from the level of around 1 billion tonne km in 1999-2000.

The policy document of Ninth Five-Year Plan has also reiterated the importance of national waterways with all possible improvements so that a sizeable amount of potential cargo from the road sector is diverted to IWT. This would lead to substantial benefits in terms of reduced congestion, noise and air pollution, lower economic cost of operation of cargo, saving in transportation cost by the producers and consumers besides employment generation due to revival of IWT and socio-economic development of areas within the influence of IWT.

Given this backdrop, it is extremely essential to quantify the quantum of potential cargo on National Waterways to be diverted from roads so as to appreciate the degree of economic gains of IWT on National Waterways. The study is the first of its kind to study these benefits through applied social and economic framework with the help of field data, surveys, primary interviews and secondary data sources. It will also shed valuable light on the economic and financial viability of IWT operations on NW 1 and NW 2 as well as on the present status of IWT with respect to its strengths, weaknesses, opportunities and threats (SWOT).

1.3 Objective of the Study

The key objectives are as follows:

1) Identification of nature and quantum of cargo to be available for transportation on NW 1 and NW 2, keeping in view the different scale of operations.

Assessment of the operator's cost of transportation for the given cargo traffic on NW 1 and NW 2.

3) To carry out a SWOT (strengths, weakness, opportunities and threats) analysis to ascertain the future prospects of IWT mode vis-à-vis road on the basis of data on actual fuel consumption, operation costs and time/inventory costs.

4) Quantification of economic gains of IWT in NW 1 and NW 2 in terms of :
   i) reduction in energy consumption and operational costs vis-à-vis road transport
   ii) saving in road construction, maintenance and congestion costs,
   iii) saving in user cost,
   iv) reduction in environment cost,
   v) improvement of areas due to linkage of IWT when they cannot be linked by other modes of transport.

5) To make specific recommendations on the economic benefits of cargo operations on NW 1 and NW 2.

1.4 Scope of the study

The above objectives will be accomplished by defining the following scope of the study.

1.1 Geographical coverage of the study will be largely confined to areas served by NW 1 (Patna-Haldia) and NW 2 (Dhubri- Guwahati- Sadiya).

1.2 The study will be confined to cargo operations and will not cover transportation of passengers

1.3 For the purpose of comparative modal costs, IWT will be compared to transportation by road.

1.4 To quantify the economic gains of IWT, the current Patna-Haldia cargo service will be taken as a case study. Efforts will be made to obtain hard data on comparable fuel consumption costs, other operation costs and channel/road maintenance costs. Environmental benefits will be assessed on the basis of generally acceptable norms.

1.5 Data on nature and quantum of cargo available for transportation by the IWT mode will be gleaned from earlier studies on the subject and statistics of various organisations. Where necessary, these could be reconfirmed through fresh field surveys.

1.6 Data on cargo movement on comparable road networks will be obtained from the road transport organisations. However, if necessary, fresh road traffic surveys may be carried out at a few selected locations.