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Inland water transport: Problems and prospects

Lekha Borah
Department of Geography, Gauhati University, Assam, India

Abstract
Inland waterways play an important part of transport system in India since early times. However with the expansion of road and railway its importance have been reduced. But now there has been a growing consciousness that inland waterways can form an integral and alternative means of transport network, since it is one of the most convenient, cheapest and environment friendly means. Assam situated in North-eastern part of India has immense possibilities of developing a compatible network of Inland waterways. The Brahmaputra river system forms an integral part of this network. And the area of Guwahati city due to its economic and administrative experiences high traffic of passenger and cargo in the inland water ways. This study is an attempt to study the present efficiency of inland water transport system, problems faced in different aspects and also about the future prospects and will try to suggest some measures to make it most efficient in catering to the needs of people. Both primary and secondary data have been considered for the purpose.

Keywords: inland waterways, problems, prospects, suggestion

Introduction
Water based transport is effective as generally speaking, operating costs of fuel are low and environmental pollution is lower than for corresponding volumes of movement by road, rail or air. A major advantage is that the main infrastructure – the waterway – is often naturally available, which then has to be "trained", maintained and upgraded. Transport over waterways is especially effective when the source and/or destination are waterfront locations. (Rangaraj & Raghuram)
Undoubtedly rivers and other inland waterways have played an important part in the cultural development of large bodies of land with limited, or little articulated, coasts, throughout long past periods. The rise of China to early power and cultural progress depended in part upon her rivers, and they still form a most important element in her transportation system. Russia has ever depended upon her great rivers and her Black and Baltic Sea connections for her major means of transport. In the settlement and development of both North and South America, their great rivers have played a dominant role, and in North America the chain of Great Lakes has been of incalculable value. Australia and Africa have lagged the latter because of the limited navigability, the former because of the absence, of large rivers. The inland waterways of Europe have ever formed valuable arteries of travel and commerce. Since the rapid construction of her railway net, the streams and canals have continued to occupy an important, though sup plementary, place in her transport and travel system. The successful use of the inland waterways of Europe has augured well for an equally successful utilization of American streams; but in North America the great reserves of available and readily accessible coal and petroleum have given the railways such an advantage that the waterways seem destined for many centuries in the future to play a minor part. (Clark university, 1931)
Assam situated in North-eastern part of India has immense possibilities of developing an compatible network of Inland waterways. The Brahmaputra river system forms an integral part of this network. And the area of Guwahati city due to its economic and administrative experiences high traffic of passenger and cargo in the inland water ways which makes in significant for study purpose. Flowing across the state of Assam, the mighty river Brahmaputra offers immense opportunity for inland water transport system in the state. Almost the entire stretch of 720 kms of the river is navigable and having a great potential of development of a very efficient inland water transport network. The present study is concerned with the study of inland water transport in and around Guwahati which basically covers areas from Amingaon to Kurua. The study area include the inland water transport in Kamrup and parts of Darrang districts upto kurua (Darrang) District.
The Brahmaputra river flowing through Guwahati divides it into north and south Guwahati and inland water transport system serves as a great means of transport communication between the two sides of the river. It is one of the important and alternative modes of transport in the areas under study. Altogether of 16 ferry ghats serves this area and a total of 16 government vessels along with good number of private shallow and steel boats cater to the needs of the people in the areas. This ghats serves a daily population of several thousand passengers and tones of cargoes. Today with the growing number of passenger and cargoes commuting by this mode of transportation it has become very important means of transportation. The ferry ghats operating in both the sides of the river helps in smooth functioning of the inland water transport system in the areas.
This study will include such aspects like the present condition of the inland water transport in the areas under study, its pitfalls and drawbacks, and also about the future development prospects in this areas. This study will take into consideration of the present efficiency of inland water transport system, problems faced in different aspects and also about the future prospects and will try to suggest some measures to make it most efficient in catering to the needs of people.

Several studies have been conducted in this river system which signifies its importance, some works related to the area of research was published in the book "Rivers and riverine landscape of north east India" which dealt with steamer ghats (ferry ghats) of Brahmaputra river: impact on region economy and environment. It mainly dealt with all the ferry ghats and inland water transport system of the Brahmaputra river in Assam. In the paper The spatial characteristics of inland transport hubs: evidence from southern India, the spatial characteristics of inland water transport hubs with evidence from the users choice of dry ports in cargo exportation in southern India was emphasized. Another paper Long term perspectives on inland water transport in India discussed about present condition of this mode of transportation, cited reasons for why this mode of transport is used, future prospects for development of the inland water transportation in India and government role in its operation. Chayanika Sharma in her PhD dealt with types of transport used in Guwahati, past and present status, Problems of traffic congestion and future prospects of road transport in the city.

Methodology

The study is based on both primary data collected from the field and secondary data from different sources. Though emphasis has been given on quantitive data, qualititative data have also been collected following standard geographical techniques. Obse- rvation, interviews, schedule cum questioner were followed in the field to generate desired mass of data. Depending on the nature of data the techniques were used either independently or in collaboration.

Primary data are collected from the field by using different techniques. For the purpose of primary data collection survey of different ferry ghats were made and required data was collected by various means by interacting with the passengers and staff of the inland water transport, with the help of questioner cum schedule and various other methods.

Secondary data has been collected from various organizations, journel, books, internet etc. Director of inland water transportation, authorities of ferry ghats etc. provided with necessary data for the study.

Inland water transport in and around Guwahati: present condition

The inland water transport system operating under the areas around Guwahati is served by a number of ferry ghats which helps in smooth operation of this mode of transportation. At present the Director of Inland Water transport department, Assam is in charge of operation and handling of the Inland water transport as a whole. The various ferry ghats in operation in these areas along with the streamer vessels in operation comes under the preview of this department. The department of Inland water transport under the government of Assam operates the big streamers vessels and medium sized steel boats whereas the small shallow boats are in operation under lessee by private operators. And the operation is done by paying an amount by every passenger using the boats.

At present between Amingaon and Kurua on both the sides of the river an altogether of 16 ferry ghats are in operation from different areas. And a total of 22 large vessels with 2 medium vessels are in working condition in operation from these ghats. Most of the ferry ghats in south Guwahati are located in areas between fancy bazaar and Uzan bazaar in a clustered way. But in the North bank the ferry ghats are scattered and located at a distance from one another. The ferry ghats working in these areas are:

Table showing the different ghats

1. Guwahati – rajaduar ferry ghat.
2. Guwahati – madhyam khanda ferry ghat.
3. Guwahati – North Guwahati ferry ghat.
4. Guwahati – Kurua ferry ghat.
5. River cruise – ghat ferry ghat.
6. Guwahati – Umananda ferry ghat.
7. Guwahati – kachomari ferry ghat.
8. Guwahati – Kirakara ferry ghat.

From these ghats the various vessels, steel boats operate catering to the people. Inland water forms a good alternative means of transportation in these facts as it can be very well represented by the fact these ghats handles almost 12000 passengers on daily basis and several quintals of cargo. There are many reasons of such a huge number of people using this means of transportation. It is the most convenient means of transportation in terms of time consumption and it is by far the fastest means to communicate between both the sides as the land transportation takes a long duration of time for communication due its longer road distance. Therefore people tend to use this means for their daily transportation. It is also the cheapest mode compared to other means. The starting time of operation and closing of the inland water transport services is mostly same in most cases morning trips starts between 8:30 am to 9:00 am and in the evening the services stops in operation by 8:00 pm in almost all the ghats. Among the various ghats in operation in these areas many of them are daily working ghats in operation continuously at very short interval duration. In the ferry ghats where passenger traffic is more the interval between two consecutive trips is very less, it is mostly 15 minutes interval in many ghats. And accordingly on the basis of the passenger traffic the interval of consecutive trips depends, in some ghats there is only one trip from north bank in the morning and return trip in the evening from south bank. But in some peak seasons when passenger traffic is increased the number of trips are increased accordingly. Not all the ferry ghats are in operation daily the River cruise ghat which organizes river cruises operates according to customer demand and timing having even some long distance trips upto Kaziranga. But these ghats are only for tourism and occasional purposes whereas the other ghats operates on daily basis on different timings.

There are number of big streamer vessels operating in these areas like S. B Datang, M.V Chandardinga, R.P.L Namber, S.B Charaibhanga in Guwahati –Rajaduar ghat. M. V Melvin Jones, R.P.L Digaru, S. B Satdola, M.V Kaziranga operating between Guwahati madhyamkhanda. Similarly between Guwahati North guwahati R.P. Brahmaputra, M.V Puspabhadra, M.B Kameshwari, M.B Mahalakshmi and SDB Rupkuwar communicates. And between Guwahati – Kurua S.B Naharbil,S.B Tipkai, S.B Dhaola operates.Other than these vessels a number of river cruises are also in working condition which mostly operates from V.I.P Ghat or River cruise Ghat. From these cruises some like R.P.L Usaban, S.B Boganodi, S. B Ranganadi are under Inland water department, other cruise like Mahabahu in operation to

Kaziranga is under Assam Tourism department and Saraidau is under Jungle Travels. Besides these shallow boats also operates from these areas. In other ghats smaller ferry ghat big vessels do not operate as passenger traffic is low,only steel boats and shallow boats are helping in communication. These big streamers has a capacity of around 500 passengers while small vessel can carry about 200 passengers along with few light vehicles. The shallow boat can carry about 35-40 passenger with few light vehicles.

Most of the ferry ghats only handles passenger communication only, except Guwahati North Guwahati, Guwahati Kurua, Guwahati Kachomari and Guwahati Kirakara Ghat which handles cargo traffic. Most of the communication between Kirakara and Kachomari ghat is for cargo transfer purpose. The Umananda ghat is only used for tourism purpose and steel boats of capacity 50-60 persons operate daily with a few trips at considerable interval depending on, but during holidays and weekends when passenger traffic is more frequent trips are organized between the two ghats tariff rates for passenger and cargo of inland water department is very low compared to other means and is even lower in shallow boats. In case of river cruises like Mahabahu and Saraidai which are two storied both and has all the facilities of a luxury service charge are extremely high for the purpose. These are mostly availed by tourist coming to the state.

Most recent services of the inland water transport includes an ambulance services which help in the easy and fast accessibility of medical help of the north bank people with the south bank which has a better facilities.

Numbers of Passngers Using Different Ghats Daily (in thousands)

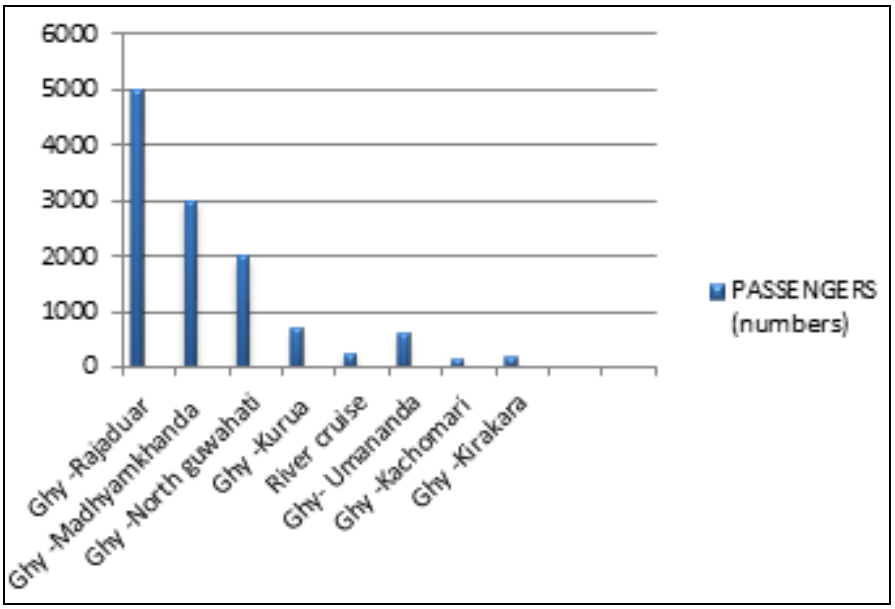

Fig 1

Cargo Traffic in Different Ghats on Daily Basis (in quintal)

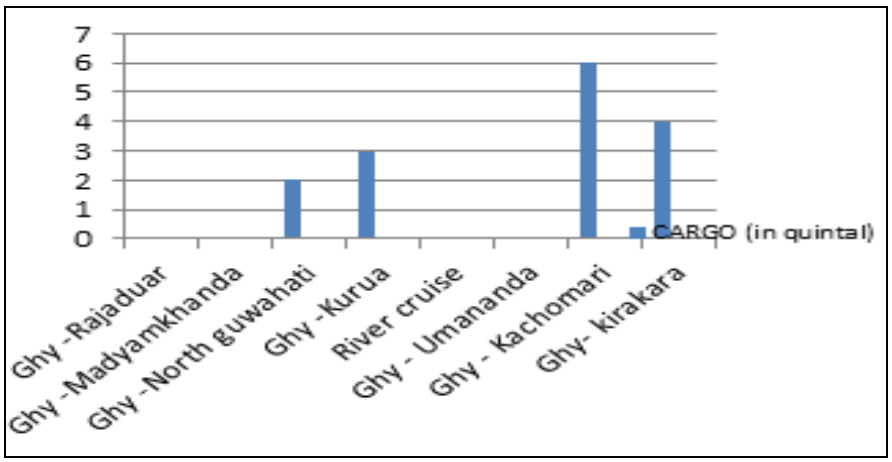

Fig 2

Problems faced by the transport system

The Inland Water transport system operating in the state and specially in and around Guwahati is working under many constraints and problems. The constraints hinder the overall performance of this transport system and lays obstacles in the optimum utilization and availing full benefit of this means of

communication by the people using it. The problems faced comprises of a host of phenomenon which effects the overall transport mechanism. These are from various sources like natural, or technological with or within which the inland water transport system is bounded and has to work accordingly. However many of the problems faced can be improved to greater extent with certain innovational modification.

Among the problems the main and the chief problem lies with the water system itself. Especially during the rainy season or the monsoon season the problem is aggravated to such a extent that the entire inland water transport systems comes to a halt. The Brahmaputra is a huge river system with large number of tributaries itself with large volume of water discharge. Moreover the area falls in the region of heavy rainfall, so during rainy season when the water level of the river increases and remains high during most of that time the inland water services has to be stopped due to safety reasons and as such the overall utility is hampered. Besides this during this period the ghats needs to be shifted many a times from its place for flood problem and shifting of channel in many areas and very often it is done without prior notice to the passengers, increasing their inconvenience. Sometimes the trips are cancelled without prior information to the passengers adding to discomfort of them.

Moreover even in dry season also the inland water transport has to face several obstacles for operation due to the river system. The Brahmaputra carries huge sediment load and during dry period when the volume and capacity lessens of the system to carry the load siltation of the river occurs to a large extent. And this poses problems in operation of big vessels which gets trapped in the sand bottom due to less volume of water during this time and causes even greater problem to rescue a vessel from such a situation. So many a time big ferry operation are stopped to escape this problem hindering the overall system. And there is increase in time and fuel consumption to cover per trips.

Besides these the daily weather condition also affects the working of the means of Transport system. Various condition like fog, excessive rains, windy season etc is very much unfavorable for the services of the transport system and hinders the actual working process of the system of transport. Depending to the weather condition many time the ferry service gets cancelled or delayed which hampers the working capability of the system.

Apart from these the other problems that the inland water transport system has to face is related to the low level of technological innovation in the system. Even today the system operates in broad daylight only. There is no provision of a fixed electricity connection in the ghats which makes it difficult for the transport system to operate during night time. Mostly the inland water transport system operates during day time only. The services stops operating by 7:30 pm and after that the people cannot avail the services which makes it very inconvenient for daily commuters who needs the ferry services thus forcing them to use any other mode of transportation which is not as convenient in terms of time consumption as the inland waterway.

The overall timing of the ferry services is not very convenient for passengers. The services start late in the morning and ends early in the evening. By 9 am the services start and by 7:30 pm it ends so the passengers who need to travel before and after that timing has to face serious inconvenience. And the situation aggravates during winter when due to absence of proper daylight there is further delay in the starting of the services and has to stop working much earlier in the evening from its normal schedule.

Besides this absence of basic technological inclusion like facilities of night lighting of the river, channel marking of the river during both excessive dry and rainy season, it makes extremely difficult for the department to cop up to the passenger's needs. Lack of such facilities brings to a halt the inland water transport in night time where it becomes impossible to operate in such a large water body due to safety reason. And even during dry season absence of proper vigilance and analysis of the water body and absence of channel marking often cause hindrance and halts the operation of services many a times.

Moreover the present status and working condition is not as per its full potential of the inland water ways. Still today the system operates with old vessels and apparatus. Much innovation in terms of vessels used for transportation, mechanism are in very old condition. Absence of fast moving engines and advanced modern streamer causes a great obstacles in the path of full utilization of benefit from the inland water transport in the area.

Other additional problems include insufficient passenger demand and supply of services of inland water transport. There is still shortage of streamers and shallow boats in according to the population percentage using it and with the growing demand of the inland water transport the present capacity of it is not sufficient for catering to needs of the passengers. Because of which the streamers and shallow boat run with much higher capacity and load against its prescribed government capacity up to which it can carry maximum as a result of which the system operates with a risk of the life of the passengers Moreover there is acute shortage of vessels in some ferry ghats where the present capacity is very less and still some othe ghats like Kirakara ferry ghat there is no streamer vessels available and has to function with the private shallow boats. Government run streamer vessels is still to operate from these ghats for greater convenience of the people.

The inland water transport system also face some basic infrastructural and organizational or functional problems. Prominent among them is the present strength of workforce is much less than the required workforce needed for various purposes as in office work of ghats, on board of vessels, for various infrastructural works such as shifting of ghats in flood season, making new arrangements for working of ghats etc.

There are also problems regarding maintenance of the vessels and ferry. At present time many of the big streamers vessels lie in a bad worn-out condition in the different areas of banks. This happened due to lack of proper maintenance. The defects and problems were not repaired in proper times as a result of which these vessels have completely stopped working and lying abandoned. And also the pace of restoration is very slow in case of many others.

Some minor infrastructural problems include the poor condition of the roads linking the ferry ghats. During monsoon season the condition worsens causing much inconvenience for people. The roads are in very bad condition and in many areas there is no such road available

upto the ghat. And infact in many areas of north bank proper fixed place for the ghats and has to be shifted according to the flow of the river.

Future plans of development of the system

With the increasing demand by passengers using this mode of transport the Department of Inland Water Transport has been trying considerably to improve its efficiency for providing better and improved services. There has been several attempts in various spheres to improve its services for convenience of the people. Efforts are being proposed to increase the functionality and credibility of the inland water transport system and to harness the full potential of the inland water transport in the area. The prospects of development of the inland water is very good in the area as the river Brahmaputra itself serve as a good means for development of inland waterways. Moreover the navigability of the river in this part serves as a boon for development and the inland waterways. If proper development and innovations are done and improved technology are introduced this can become a very good alternative of road transport and also the pressure of road transport will decrease along with its associated problems. People can very well have a very efficient transport system which will increase the overall convenience of transportation. There are many examples in the world and infact in India very well developed and integrated inland water transport system existing and the same can be done in this region also with certain innovations.

Though the present inland water transport system is facing many problems and is not at all utilized to optimum level. Efforts are being made to do so. The department of inland water transport has many plans to do so. Many plans are being undertaken in different areas for its betterment. Some of them includes provision of fixed uninterrupted ASEB electricity connection in the ghats so that it can work even in darkness. Besides this solar panels are being installed in ghats for light provision and also provision of night lighting in the river is one of the important proposal sought to be taken to enhance the functionality so that the timings can be extended from the present period to provide better connectivity even during night of the north and the south bank.

Other plans include many new ventures in the field like increasing the number and capacity of vessels and for this purpose many new streamers are being ordered. Also many new medium capacity steel boats are being planned to be included in the system. Efforts are been made to fulfill the demands of the growing users of the mode of transport.

The department also has plans for future development of inland waterways even for tourism purpose. Looking at the growing tourism sector 4 new vessels with all modern amenities especially for tourism sector development is planned to be introduced for more development of the system.

With the kind of plans made and efforts put by the department for future development the inland water transport system is sure to make progress in the transport sector.

Suggestion for development

The inland water transport system has much potential for development in these areas. Inland water transport system has a great impact on regions economic, social and environmental aspects. It has a positive impact on region's development. Even though building of many new bridges over the river today helps in better connection of both the sides but still inland water transport system occupies a important role in transportation of the area. And seeing the present position of its usage and utility of potential it can be very well said that the inland water transport system has vast potential of developing into a fully fledged strong transport network as in case of roads and other means of communication. The inland water transport system functions actively catering to the people's need up to great extent. But it has got some basic infrastructural problems which can be overcome by some innovational modification and changes in a positive direction for betterment of the system. And for this purpose some suggestion can be given regarding its functional and infrastructural development or its improvement of efficiency. Some important modification changes that needs to be done in order to make it more convenient mode of communication. Firstly the capacity of the inland water transport system has to be increased in order to serve greater proportion of people. More vessels like streamer boats and shallow boats should be brought in operation to cater to the needs of the growing demand of the people. The present vessels capacity and number is not sufficient to the increasing proportion of population using this transport system in recent times.

The vessels used by the transport system are old enough. These are not equipped with fast moving engines. So new advanced machines needs to be ordered for use in these vessels in order to make it more efficient and less time consuming. Improved fast moving medium and small sized should also be included in areas of less passenger traffic or for use in time period which is not having more congestion.

The timings of ferry services should be extended for the convenience of people. The services starts to operate only from office hours before that people having to use it for purposes like schools and colleges cannot avail its facilities as it starts much later hours from their timings. So efforts needs to be done to start the services from early morning extending the timing from present schedule. And also to extend its services even if not for whole night but for some hours more than its present schedule. And also more trips at short interval needs to be done in areas of high population pressure.

More areas needs to be linked by the inland water transport. The chars and chaparis which are populated and not yet being linked by the services should be included. These needs to be done in order to bring more connectivity and accessibility.

Provision for facilities such as night lighting should be done so that ferry services can operate without any difficulty even after darkness. Other facilities like channel marking can be done in the river for showing path to the vessels to operate even during excessive dry or flood season. This would further help in uninterrupted working of inland water transport system. Even though it is impossible to operate during excessive flood season in the mighty river Brahmaputra due to safety reasons but still such facilities can be helpful in normal and moderate flood condition.

And apart from various infrastructural suggestions the most important among them lies with the safety of the passengers using this mode of transportation. More and adequate

measures and facilities should be provided in the vessels and Shallow boat for safety purpose including timely checks of defects of vessels and providing of safety equipment in adequate numbers for its passengers.

Conclusion

The overall scenario of inland water transport in operation in and Guwahati gives us an idea about the present working condition, the basic problems faced by the mode of transportation and the future plans and prospects of development of the system in the area where it has become a very good alternative to other means of communication for various reasons. Even though the some problems hinders its development progress and posses a obstacles in its path but by various innovational and technological up gradation it can be overcome to a great extent. Thereby increasing the future importance and clearing the path of a bright prospect of development of this mode of communication in the area.

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