

## Potential & challenges of national waterway 3. Potencialidades y desafíos de la vía acuática 3.

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### ABSTRACT

Kerala has a rich source of inland waterways, which can be used for the betterment of the state and country. One side of Kerala has a stretch of coastal line of the Arabian Sea and when it comes to the inland areas, the National Waterway 3 lies parallel to the Arabian Sea from Kollam to Kozhikode. This study deals with the actual potential of National waterway 3 which plays a prominent role in the commutation of goods and people. The inland waterways are the healthiest option in contrast to roads and railways, however it's actual potential remains invisible for most people. The possibility of national waterway 3 is much higher if we deal with it in a better way. This study deals with the facilities, potential, relevance and challenges faced by the national waterway 3 and is presented from the information based on secondary data and information has been sourced from various books, trade journals, government publications newspapers and observations.

Keywords— National waterway, Inland, Coastal

### RESUMEN

Kerala tiene una rica fuente de vías navegables interiores, que se pueden utilizar para el mejoramiento del estado y el país. Un lado de Kerala tiene un tramo de línea costera del Mar Árabe y cuando se trata de las áreas del interior, el Canal Nacional 3 se encuentra paralelo al Mar Árabe desde Kollam hasta Kozhikode. Este estudio trata sobre el potencial real de la vía fluvial nacional 3, que desempeña un papel destacado en la conmutación de bienes y personas. Las vías navegables interiores son la opción más saludable en contraste con las carreteras y los ferrocarriles, sin embargo, su potencial real permanece invisible para la mayoría de las personas. La posibilidad de la vía fluvial nacional 3 es mucho mayor si la abordamos de mejor manera. Este estudio aborda las instalaciones, el potencial, la relevancia y los desafíos que enfrenta la vía fluvial nacional 3 y se presenta a partir de la información basada en datos secundarios y la información se ha obtenido de varios libros, revistas especializadas, publicaciones gubernamentales, periódicos y observaciones.

Palabras clave: vía fluvial nacional, interior, costera

## INTRODUCTION

The water transport is one of the oldest means of transport in India and our country is gifted with a variety of navigable waterways comprising river systems, canals, back waters, creeks, and tidal inlets. Around 61% of the total cargo is carried by road, 30% by rail, 4% by airways, 1% by waterways and 4% by pipe line.

Generally, in maritime navigation fuel costs are low and pollution rate is lower compared to other modes of transit. Unlike other modes of transport, we do not have to construct water ways as they are provided by nature, even though it has to be trained, maintained and upgraded. Water transportation is very effective when the source and destination are waterfront location, also plays an inevitable role in international trade. During natural calamities like heavy rain and flood the rescue operations are undertaken by water transport where rail and road transport are not acquirable. Waterways are of two types

- a. Inland waterways
- b. Seaways or Ocean ways.

## NATIONAL WATERWAY 3

India has about 14,500 km of navigable waterways of which about 5200km of river and 4000km of canals can be used by mechanised crafts. Inland water potential of a country is determined by the total length of waterways and its navigable route length, our country has a considerable network of inland waterways in the form of rivers, canals, backwater and creek. For the development and nourishment of the India's inland waterways the Indian government has appointed the Inland Water Authority of India [IWAI]. This organisation was implemented in 1986, as to facilitate the commercial and non-commercial use of the navigable waterways. IWAI has its main head offices in the important places of the country such as Noida with its regional offices at Patna, Kolkata, Guwahati and Kochi and sub-offices at Allahabad, Varanasi, Bhagalpur, Farakka and Kollam. Fig1 shows a terminal of Inland Water Authority in Allepey town. For the increased and developed transportation of cargoes and passengers and so as to mature the Inland Water Transport (IWT) in the country, five waterways have been declared as national waterways by this authority so far are given below in Table1.

Table 1. National Waterways.

National Waterway	Stretch	Length
1	River Ganga Haldia to Allahabad	1620Km It is navigable up to Patna by mechanized boats and by ordinary boats up to Haridwar.
2	River Brahmaputra From Dhubri to Sadiya	891Km It is navigable by steamers up to Dibrugarh and is shared by India and Bangladesh
3	West Coast Canal from Kottapuram to Kollam with Udyogamandal and Champakara canal	205Km
4	Kakkanada-Puducherry stretch of canals with river Godavari and river Krishna	1078 Km
5	East Coast Canal with river Brahmani and river Mahanadi's delta	588Km

#### THE WEST COAST CANAL (NATIONAL WATERWAY NO:3)

The West Coast Canal or National Waterway No 3 is a 168-km stretch of this inland navigational route located in Kerala. National Waterway 3 is the longest waterway in Kerala and the smallest of the three main national waterways in India and is parallel to the Arabian sea which makes the international cargo transportation and other facilities more viable. The NW3 runs from Trivandrum to Kasaragod which was declared as National Waterway in 1993 and has been extended to Kozhikode as per National Waterways Act, 2016. Champakara and Udyogmandal canals are navigable and it connects the industrial centres of Kochi-to-Kochi port by the Inland Waterways. The backwaters which connect Kuttanad regions of Kottayam and Alappuzha districts, has developed a lifestyle that involves multiple use of the waters. A system of gates from both the north (Thanneermukkom) and the south (Trikkunapuzha) controls the extent of salt water that

is maintained in the Vembanad lake (of which a large channel is designated as the national waterway) and the waters are used both for prawn cultivation and fishing as well as for agriculture

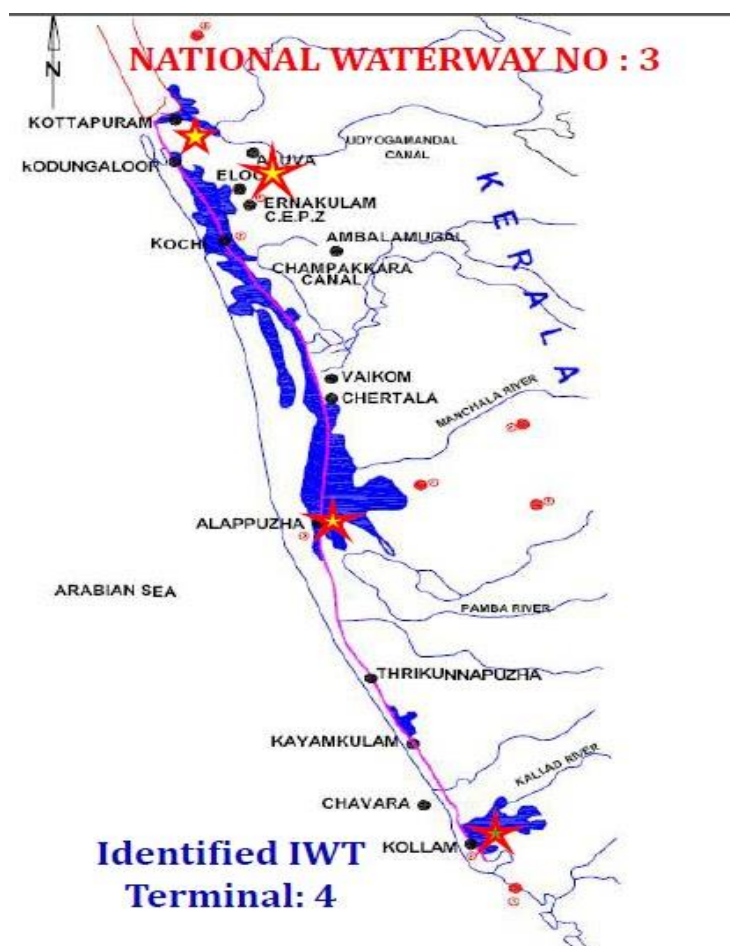


Fig. 4: National Waterway3 [Rangaraj and Raghuram]

#### POTENTIALS

The actual potential of NW3 is not utilised as it is one of the major and longest waterways in Kerala. It has abundant resources and natural way of transportation of goods and people. It is the first National waterway in the country with 24-hour navigation facilities along the entire stretch. Now 52 services are operated by Kerala state water transport department (KSWTD) and barge system is used for transportation of cargoes, more services are there on way-out (Praveen et.al ,2015). Apart from KSWTD the other important player in the field of water transportation in Kochi was Kerala State Inland Navigation Corporation (KSINC) which mainly concentrates on cargo, ship fuelling and drinking water supply to remote islands. The cargo operations of KSINC have also started dropping because of competing private operators, commissioning of bridges and

operational losses suffered by the company. Cochin port to Udyogamandal and Binanipuram is the main source of cargo movement in Kochi waterways. Kochi port is connected to Kerala's hinterland by inland waterways which run parallel to the Arabian sea and it links major trading centres. With the improvements in external and internal factors, the future potentiality of business gets improved. International Container Trans-shipment Terminal (ICTT) at Vallarpadam at Cochin Coast is such an external factor which will create a lot of future potential for IWAI in Kerala. The cargo containers from this Vallarpadam terminals are transported through lorries by road, it is proposed to transport the containers in vessels passing through the National Waterway.

There are a number of industrial plants on the banks of Udyogamandal canal, where the public sector FACT and Travancore Cochin Chemicals (TCC) are located. To attract more international cargo movement through India and to decrease the freight cost of India's international trade is the major expectations from ICTT. LO-LO (Lift on, Lift off) and RO-RO (Roll on, Roll off) are the two special terminals constructed on Nw3, near Kochi port to support the interchange of containers (Praveen et.al, 2015).

The bank for agriculture and Rural Development had approved a proposal for the development of the canal in the Mahe-Vadakara stretch. The canal would have a bottom width of 32 meters, in opinion of IND Engineers. The major obstacle and missing link to the inland navigation potential of the region is the valapattanam-Mahe stretch. The main reason for using inland waterways as a mode of transport is the fact that it reduces the total cost, when used as part of the end-to-end logistical requirement of cargo movement and with a regular movement through the waters.

#### ECONOMIC ASPECTS

Water transport is the most cost effective and fuel-efficient mode of transport. One litre of fuel can move 24 tonne km of freight by road, 85 by rail and 105 by IWT. Fuel consumption per tonne of freight shipped by water is only 15% of that of road and around 54% of that used by railways.

Inland waterways make a strong case for transportation of bulky and heavy materials like steel, iron ore, coal, cement, and fertilizers etc. which occupy large volume and are very heavy. These materials are usually transported in large quantities and require high shipment capacity. FACT in Kerala has been a steady customer for most of its input raw materials. FACT accounts for the large part of this traffic, with two factories on two canals off the main waterway, but which are also considered part of the National Waterway 3, namely the Champakara canal and the Udyogamandal canal. Raw materials for these fertilizer plants (sulphur, rock phosphate, phosphoric acid and furnace oil) forms the major part of barge movements on NW-3. The other occasional user is Binani for moving zinc. The current rates for these movements (Cochin port to Udyogamandal and Ambalamugal)

are Rs 55/Ton, which are just enough to cover operating costs of the barges [Praveen et.al, 2015]. The movement is possible because FACT has invested in barge handling facilities at both ends, a long time ago.

Earlier days, ammonia gas used to be transported by tanker barges, which is now discontinued. Interestingly in the past, finished goods from FACT were also transported by barge from the factories to distribution points in Kerala, especially in Kottayam, Alappuzha, Ernakulam and Kollam districts. The barge loading facility is still there, and chute loading is possible at Udyogamandal. These were carried by contractors in 30-40 T country boats up to about 1993. This can be viewed as a viable size of shipment that are possible even now (compared to 10 Ton trucks), but these operators are no longer present. Carrying sand or converting to houseboats is an option for these vessels. Champakara, Allepey, Chingavanam, Kottayam, Kayankulam, Changanassery, Aluva and Kaladi are possible locations even today. Tanker barges were carrying petroleum products from Cochin port to Kollam, but for reasons of labour management and also problems of the waterway on the southern side, this movement has also stopped. Value of revenue potential is calculated by considering the volume occupancy of the material and whether the vessel can carry the required volume. The revenue potential is also subject to the charges for loading and unloading, which has to be borne by the user. The movement for FACT in Kerala is marginally competitive.

The biggest example for the transportation of cargo is the iron ore export requirement from mines in north and south Goa, which access the Mandovi and Zuari rivers. This movement is expected to continue, along with movement of ore from Karnataka, after blending, for the next five to seven years at least. Oil refineries in the Haldia and Barauni, Dibrugarh and north east: Numaligarh. Thermal power plants, for bringing in coal and carrying away fly-ash at locations like Barh and Bandel are economical activities in National Waters. The NW3 is also economically viable and healthy so it can also be used for cargo transportations as in other National Waterways.

Small customers with regular demand are a good way for uprising the economy. This is based on agriculture or manufacture of commodities and meant for consumption/processing within the country, or for export. This segment is slowly increasing, from the estimates of CIWTC (Central Inland Water Transportation corporation)2004a.

Traditional industries such as coir, cashew, brick-making and fishing. Any attempt to develop the inland waterways will favourably impact the well-being of these people. This can be trained and nourished in Kerala along the regions of nw3 as there is many such activities are being possible. Any attempt to develop the inland waterways will favourably impact the well-being of these people.

In urban areas inland waterways plays a vital role in the integrated passenger transport planning. A study in the Cochin metro area suggests that IWT will be an option that is impossible to ignore in the future growth of the city and calls for integrated investments to increase complementarity with other modes, faster vessels, unified pricing, ticketing and targeted subsidies in the area. Mumbai has experimented with faster modes of water transport such as hovercrafts (apart from continuing ferry systems) .

#### OTHER ADVANTAGES

**Commercial feasibility:** The commercial feasibility of the inland water transport depends mainly on the evident advantages that the waterways has on distinct modes accessible to the users. There are apparent advantages of making benefits of the waterways within Kochi city areas considering the fact that there is a natural grid iron form of waterways. Due to the geographical restrictions of the roads, the preferred way of traveling is by waterways since it is found out to be easier for an ordinary user, fig.6 shows a provisional store found in Alleppey water frontage which delivers groceries, vegetables etc to the people residing in other banks.

The inland water transport contributes much motives such as it paves develop small scale cottage industries in rural areas, as its route connects the villages, it also serves the backward regions by providing required employment, connectivity, enlargement of fish culture, improved irrigation and enhancement of tourism in the city, the inland waterways play a significant role in the economic development of rural areas.

The beauty of natural waterways has a great influence in tourism. In Kerala State, tourism is an upcoming field. Fig 7 shows wide range of Kerala tourism, stay and entertainment especially in houseboat voyages with tasty Kerala's traditional food and site seeing. The 5-10 capacity freight barges in house boats are now modified into vessels for carrying tourists. The major places in Kerala which is famous for its water activities is Alappuzha, and to a small extent Kozhikode, mostly for houseboats. Economic security broadens with such activities. Long distance river voyages are available accordingly as per schedule as well as group requirements though they keep a unique flavour (Outlook Publishing, 2004). The finishing point of Nehru Trophy Boat Race, prehistoric Temples, Churches, Tourist resorts, Village & Hamlets on either side of the River, Honoured writer & poet Kavalam Narayana Panikkar's house etc are other famous tourist sites in NW3

**Water Sports:** Kerala water sports are many including sports like Canoeing, Catamaran Sailing, Kayaking, Para Sailing, Scuba Diving, Snorkelling and Wind Surfing, Angling.

#### CHALLENGES

- Deficient depth of water channel: Without sufficient water in the rivers, large vessels cannot traverse. Also, the seasonal dependence of rivers remains as a great challenge in the functioning of many ports. Water in a minimum depth of 2m available throughout the year is the fundamental requirement of inland water transportation. Based on tidal currents, there must be suitable technology to make sure that the channel is correctly dredged so that the minimal available depth is affordable all the times.
- Storage Infrastructure: The main intention of warehouses is the storage of grain or other commodities. Most of the warehouse other than some government run warehouses are fewer in number and smaller in size. The poor racking system, insufficient security system and most crucial of all these, the shortage of cold storage means in majority of the ports are facing big problems.
- Inadequacies of Air Draft: The passage of large inland water transport vessels on waterways No.3 are restricted by multiple bridges with lower vertical consent. These water ways should be certified that there is enough quite height for vessels to go under the bridges whenever the bridges are built over water bodies.
- Insufficient IWT Vessels: The lack of IWT vessels is big problem for the development of the inland transportation. If this problem is solved constant transportation of goods and passengers through NW3 becomes possible.
- Poor technology development and lack of skills: - lack of automation in operations and low multi technical skills influence systematic implementation of ports.
- Immoderate Siltation: Erosion and deforestation activities in the river banks results in siltation.
- In Kochi the traversable canals are now being adopted for dumping waste from households, markets and shops. Several houses, businesses and factories have invaded on these canals and thus the canals are narrowed. Low-level bridges like Kaloor are obstructing the safe traverse of boats. This calls for mutual attention by agencies such as the Inland Waterways Authority of India, Irrigation and Fisheries departments and the KSINC.
- Direct state investment would not be possible in view of the constitutional position and the exclusive control exercised by the centre under the major port trust act, 1963,

If investments are made by government or other private sectors in succeeding development of the national waterway;

- NW-3: Developed transportation facilities and waterway maintenance & advanced ports, Tourism related funding.

Competing modes: The competing modes of navigation for IWT are roads and rails and mixture of these (with IWT itself occasionally). In general road provides faster movement,



small load services, door to door services, but in a higher rate. Rail provides huge batch economies, fast movement, small scale door-to-door service, at average rates. IWT provides moderate batch size possibilities, slow movement, bounded door-to-door opportunities at cheap rates. In Kerala, there are examples where mode of transportation has changed from IWT to other modes in the last one decade.

### CONCLUSIONS

The NW3 which plays a prominent role in commutation of goods and passengers for the past 23 years have only experienced a little growth. Its chance of flourishing is high if we deal with it in a better way. The environmental pollution, fuel consumption & cost are very low when comparing inland water transportation with other modes of commutation. So, based on my study many problems can be minimized, if we make use of the potential by upgrading National Waterway 3.

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