

Integrating Plan for Backwaters Transportation with Tourism Development: A Case Study of Kochi City Region

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Abstract: Kerala is one of the fastest growing urbanising states in India and half of the population residing in urban areas. The Kochi city region is having a population of 2.119 million (Census, 2011) and it is situated on the western coast of India in Ernakulam district of Kerala. Kochi is abundantly blessed with waterways with over 1,100 kms. However, only forty kilometers out of these are considered navigable for motor boats (IWAI). The aim of study is to evaluate whether and how Inland Water Transport can provide a valuable input to reimagining Kochi City Region through tourism development. The objective of the study is to assess existing Inland water transportation with tourism development and integrating plan for Backwaters Transportation with Tourism Development.

This paper identifies a conceptual framework within which the effect of Backwater transportation with tourism development. The study is mainly based on secondary sources of data including availability of infrastructure facilities at ferry station and tourist spots etc. Visual survey was conducted in ferry stations, tourist spots and tourist circuits and about 70 structured interview questionnaires were used to elicit the information from tourist, private boat operators and stakeholders in Kochi City Region through Opinion Survey. This paper attempts to analyze the efficiency of Backwaters transport with tourism development and explore sustainable development of tourism through integrating inland water transport for reimagining the Kochi City Region.

Keywords: Backwaters Transportation, Inland Water Transport, Sustainable Tourism Development and City – region.

1. Introduction

Inland waterways make a valuable contribution to people's quality of life in Kerala and it provides a diverse benefits including transport, recreational opportunities, drainage services, regeneration benefits and non-use values. The Inland Water Transport (IWT) System is a form of transportation caters to the movement of passengers and freight traffic, even though it's slow in turn-around. The Canals and Waterways is an integral part of metropolitan areas, the development plan must be focused on restored and rejuvenated (Sobhanlal Bonnerjee, 2013). A waterway provides to development of economic and recreational activities, tourism industry, enhance the socio-economic life of local community and provide sustainable mobility (Sulaiman M. et al., 2010). Besides this,

the IWT system is widely regarded as economic, environment friendly and energy efficient mode of transportation. Subsequently it is necessary to revitalize this system, not only, for inland Navigation, but also to harness the enormous potentials in other sectors of our economy. Various attempts has been made to understand the various issues involved in the government playing a more proactive role in the promotion of IWT mode with a view of providing long term guidelines to policy making and implementation (Sriraman S.,2010).

The Backwaters in Kerala consists of Allapuzha, Kottayam, Trivandrum, Kollam, Kuttanad, Kozhikode, Kazaragod, Cochin and Kumarakum backwaters. A network of lakes, rivers and canals fringe the coast of Kerala. Of the 29 major lakes on the backwaters, seven drains into the sea. Stretched over a total expanse of 1500 kms, the backwaters have a network of 44 rivers, lagoons and lakes from north to south. The various studies have made attempt to find out the effect of backwater tourism on the environment and the use of Kettuvallom by tourists arriving at backwaters of Kerala were made there was ample evidence to conclude that there is an adverse effect of backwater tourism on environment, and house boats (Kettuvallom) are the integral part of backwater tourism (Siby Zacharias et al. 2008).

Kerala is one of the fastest urbanising states in India and half of the population residing in urban areas. The Kochi city region is having a population of 1.22 million (Census, 2011) and it is situated on the western coast of India in Ernakulam district of Kerala. It is bound by Thrissur on the north, Idukki on the east and Kottayam and Alappuzha to the south. It has historically been the ancient trade gateway to the hills of Kerala which were revered by the traders for the spices it produced. It is, by all accounts, the commercial and industrial capital of Kerala. Blessed with natural beauty and good climate, the city is well connected other Indian metropolises such as Mumbai, Chennai and Bengaluru by road, rail and airways (Centre for Public Policy Research, 2012).

2. Demography and Land use of Kochi City Region

Kochi City Region consists of Corporation of Kochi, Five

Municipality and Eleven Panchayaths. Total area constituted is about 369.72 Sq. Km and total Population of the region is 1.22 million (as per census 2011) details are shown in the table 1.

Table 1
 Population and area of Local bodies in Kochi city region

S. No.	Name of Local body	Area (Sq.Km)	Population (2011)
1	Corporation of Kochi	94.88	610398
2	Thripunithura(M)	18.69	69390
3	Kalamassery(M)	27.00	71038
4	Maradu(M)	12.35	44704
5	Thiruvankulam	10.49	23160
6	Thrikkakkara(M)	27.46	77319
7	Cheraneloor	10.59	30594
8	Eloor(M)	14.21	36722
9	Varapuzha	7.74	26750
10	Kadamakkudy	12.92	16295
11	Mulavukadu	19.27	21833
12	Elamkunnappuzha	14.47	50714
13	Njarackal	8.60	23760
14	Kumbalam	20.79	29193
15	Kumbalangi	15.77	28248
16	Chellanam	17.60	37399
17	Vadavukade-Puthenkuru	36.89	24911
Total		369.72	12,22, 428

Source: Master plan of Kochi City Region and Census of India, 2011

Spatial Growth and land use of Kochi City Region shows that, about 43.43% predominately in residential use and followed by 18.96% is water bodies, which makes more potential for development of backwaters Inland Water Transport by integrating tourism places in Kochi City Region as per the Development plan for Kochi City Region, 2031 shown in the Table 2.

A. Kochi City region growth rate, density

Urbanisation trend in Kerala is at an alarming rate. Kerala is one of the fastest growing urbanising states in India and half of the population residing in urban areas. It is noticed that urban population in Kerala was 25.97% in 2001 census has increased to 47.72% as per 2011 census. Similarly, in Ernakulam district the urban population was 47.56% has increased to 68.10% in 2011 and districts stands the highest rate of urbanisation in the

Table 3
 Urbanization trends in India, Kerala and Ernakulam

Year	Population(in lakhs)								
	India			Kerala			Ernakulam		
	Total	Urban	% Urban	Total	Urban	% Urban	Total	Urban	% Urban
1971	5481.60	1091.14	19.91	213.47	34.66	16.24	23.83	6.36	26.69
1981	6833.30	1594.63	23.34	254.54	47.71	18.74	25.35	10.03	39.56
1991	8463.03	2176.11	25.71	290.99	76.80	26.39	28.17	13.73	48.74
2001	10270.20	2853.55	27.78	318.39	82.67	25.97	31.06	14.77	47.56
2011	12101.90	3770.96	31.16	333.87	159.32	47.72	32.82	22.35	68.10

Source: Census of India 1971-2011

Table 4
 Tourist arrivals statistics of Kerala and Ernakulam district

Year	Kerala		Ernakulam		Percentage of tourist reaching Ernakulam
	Foreign	Domestic	Foreign	Domestic	
2017	1091870	14673520	453973	3285088	23.72
2015	977479	12465571	383643	2897819	24.41
2014	923366	11695411	372997	2724718	24.55
2013	858143	10857881	352314	2545573	24.73

Source: Kerala Tourism Statistics, 2013-2017

Table 2
 Land use classification for Kochi city region-2009

S. No.	Land Use-2009	Area (Ha)	Percentage to gross area
1	Residential	16057.9	43.43
2	Commercial	367.1	0.99
3	Public and Semipublic	1538.37	4.16
4	Industrial	2123.18	5.74
5	Transportation	1486.35	4.02
6	Park and Open spaces	113.79	0.31
7	Hazardous	23.66	0.06
8	Other (SEZ and Unclassified area)	397.3	1.07
9	Paddy land	6817.55	18.44
10	Dry Agriculture	754.06	2.04
11	Water bodies	7011.43	18.96
12	Port land (Puthuvyppe)	281.12	0.76
Total		36971.81	100.00

Source: Master Plan of Kochi city region

State, the details are shown in the table 3.

The overall density of Kochi City Region is 33.06 persons per hectare. It is noticed that Kochi corporation limit is having maximum population density of 64.33 persons per hectare.

B. Tourism Significance

Being the commercial and industrial capital of southernmost state of India, Kochi is home for a variety of modern and traditional activities. Kochi is popularly known as ‘Queen of the Arabian Sea’ by virtue of its location and the existence of a major harbour. The tourist’s arrivals statistics in Ernakulam district and Kerala shown in table 4.

It is noticed that on an average about 25% of the tourist arriving in Kerala is visiting to the Ernakulam district; there is a potential for development of backwater inland water transport by integrating tourism places in Kochi City Region.

3. Existing inland water transportation system in Kochi city region

There are about 1,100km of waterways in Kochi city region alone. Out of this about 40 km of rivers and canals are navigable

by motorized crafts. National water ways No- 3 connecting Kollam and Kottappuram passes through the region, the navigable routes in Kochi city region is shown in Table 5.

Table 5

Inland water ways canals navigable in Kochi city region

S. No.	Name of Water body	Length (Km)
1	Edapally Canal	10.00
2	Thevara Perandoor Thodu	7.50
3	Chilavannur Canal	4.40
4	Thevara Canal	1.50
5	Market Canal	1.00
6	Mullassery Canal	1.50
7	Manthara Canal	3.50
8	Rameswaram Canal	2.00
9	Pandarachira Canal	3.50
10	PashniThodu	1.50
11	PallichalThodu	4.00
Total		40.40

Source: Traffic and Transportation System for Cochin. City, NATPAC 2008

A. Existing inland water transportation routes in Kochi

The entire development in the low lying coastal areas has been dependent on canal systems integrated by backwaters, lagoons and estuary and was instrumental for trade and commercial activities (Kochi Development Plan for 2031). The canal network in Kochi is very much intervened with rivers and backwaters. Most of the traditional areas and heritage zones are connected by such canal system. Water transport in Kochi city region is on the decline due to the construction of bridges connecting islands on the western part of the city (Prageeja K.,2011). There are very limited passenger boat services operating from Ernakulam jetty. The main routes served by the water transport are shown in the table 6.

Table 6

Existing ferry services to various routes

S. No	Route	No. of Ferry
1	Vytalla-Kakkanad	1
2	Ernakulam-Varapuzha	2
3	Ernakulam-Vypin	2
4	Ernakulam-Mattancheri	4
Total Schedule Service		9

Source: Kerala State Water Transportation Department (KSWTD), 2015

Table 7

Number of trips to various routes from 2005 to 2015

Sl.No	Route	Number of Trips		
		2015	2010	2005
1	Vytalla-Kakkanad	8	NA	NA
2	Ernakulam-Varapuzha	26	15	NA
3	Ernakulam-Vypeen	26	17	25
4	Ernakulam-Mattancheri	24	25	49
5	Ernakulam-Fort Kochi	41	48	21
Total		125	105	95

Source: Kerala State Water Transportation Department (KSWTD), 2015

As of 2015, 125 services are operated by the Kerala State Water Transport Department (KSWTD) from Ernakulam to Fort Kochi, Vypeen, Mattancherry and Varapuzha shown in table 7.

B. Inland water transport routes connected with tourist spots

Kochi city region has most important tourist spots connected to Inland Water Transport. The major tourist destinations in the Kochi city regions are Fort Kochi beach, Chinese fish net, Mattanchery Palace, Jewishish Synagogue and Wellington Island etc. Fort Cochin is counted among the major tourist attractions of present day Kochi in Kerala, but it was earlier a fishing village of no significance during the pre-colonial Kerala. It was christened as Fort Kochi after this territory was given to the Portuguese in the year 1503 by the Raja of Kochi. The Willingdon Island is an artificial manmade island created from the sand dug out while deepening Kochi port. It has been named after Lord Willingdon, the former Madras governor, who was instrumental in implementing this island project. It was the Portuguese who, after grabbing Cochin from the Dutch, had initially built the Mattanchery Palace in 1557. They, then, gifted it to the Raja Veera Kerala Varma of Cochin, as compensation for a temple they had destroyed, and also as a bribe to gain favors from the ruling dynasty. The Jewish Synagogue is the oldest synagogue in all the Commonwealth of Nations. The synagogue was built on a land gifted to the MalabariYehuden community by Raja Varma, the then, Raja of Kochi and shares a common wall with the famous Mattanchery Palace temple. Figure 2 Shows the water transportation routes that can be linked with tourist spots in Kochi City region.

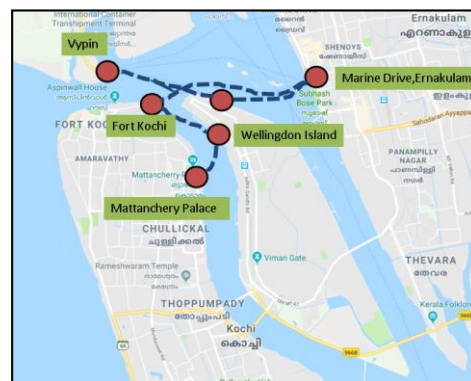


Fig. 1. Inland water transport connecting to tourist spots in Kochi city region

A comparative analysis has been made to water ways and road ways with respect to distance, travel time and fares for selected tourist locations in Kochi City Region. It is observed

Table 8

Comparative analysis of waterways and road ways in selected tourist spots

Route	Water ways			Road ways		
	Distace (Km)	Travel time	Fare(Rs)	Distace(Km)	Travel time	Bus Fare(Rs)
EKM-W.ISLAND	2.8	10 MIN	3	10.4	27 MIN	10
EKM-FORT KOCHI	3.2	20 MIN	4	13.6	32 MIN	14
EKM -MATTANCHERI	4.4	35MIN	7	11	28 MIN	10
EKM-VYPIN	3.3	20MIN	5	7	15 MIN	8

Source: Primary survey, 2015

that, water ways are cheaper and faster as compared with the road ways. The details are shown in table 8.

4. Opinion Survey Findings

A. Methodology and sample size of opinion survey

The structured questionnaires were used to elicit the information and sample size was selected based on the random sampling method. About 30 stakeholders, 65 tourists in selected tourist places and 40 passengers in the ferry was surveyed. The data is analysed by using SPSS windows 16.0.

B. Survey findings

It is noticed that nearly 20-25% of the travellers in ferry passengers are tourist and remaining were localities travelling for their daily needs. An overwhelming 80% of the stake holders had an opinion that majority of the travel problems among the tourist can be solved by developing a well-connected network of water transportation system. About 50% of the respondents had the opinion that water transportation can be developed as alternate means to reduce pressure on road and rest 50% opined that developing metrorail, monorail and Bus Rapid Transit System (BRTS) can address this issue. As shown in chart 1 majority of respondent had an opinion that the staff strength is inadequate in water transportation department and more fund is needed to be invested in this sector for development.

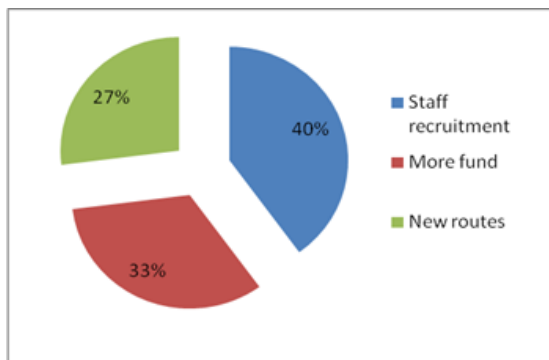


Fig. 2. Chart 1: Stakeholders perception about water transportation

About 60% of the respondents had the opinion that it is necessary to strengthen the existing water transportation system in the Kochi city region. Out of which 40% had the opinion that there is necessity of further staff and ferries, 33% had the opinion that more funds should be allotted for developing the water transportation system and remaining had the opinion that ferry services should be started to new routes in Kochi city region.

About 27% of the ferry passengers had the opinion that there is no proper connectivity from the ferry station to their respective destination (shown in chart 2). Other 27% of ferry passengers had the complaint that the roads to ferry station were very narrow and also proper direction boards were not there to ferry stations. 16% of the respondents were not satisfied with

the toilet facilities. 14% were having complaint about parking facilities. 6% were complaining about the waiting lobby and remaining 10% about ferry speed and number of services.

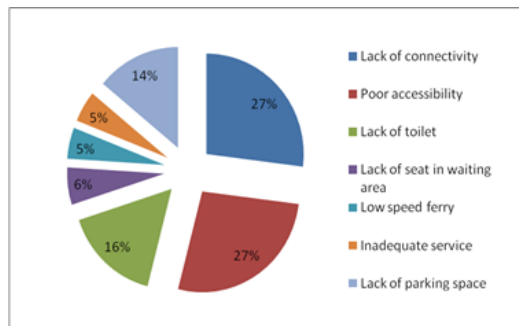


Fig. 3. Chart 2: Ferry passenger's perception about water transportation

Overwhelmingly 46% of the respondents among tourist were having suggestion that government should also enter in to house-boat services and also other tour packages in Backwaters of Kochi in order to avoid the over exploitation of private house-boats in Kochi. About 23% suggested about integrating water transportation to road ways and upcoming metro rail project in Kochi, 15% had the opinion about improving the toilet and waiting lobby and providing locker facilities in ferry station. 11% had opinion of starting speed boats and 5% had the opinion of knowing the ferry service details online on website.

5. Issues and options for integrating tourism and inland water transport for reimagining of the Kochi City region

At Ernakulam ferry station it is noticed that the access road to the ferry station is in dilapidated situation and needed to be repaired. As far as the facilities provided to the general public needed to be improved as there is no locker facility for keeping luggages, inadequate number of chairs in waiting lobby also during peak hours since long queues are seen in front of ticket counters automatic ticket counters also needed to be installed. A subway is also needed from proposed metro station at Maharajas college to ferry station to avoid difficulty in crossing the road. For attracting more tourist to the ferry station the building needed to be reconstructed with multi shopping complex, cinema theatre etc. Also necessary improvement is also needed as far as ferry service is also considered inclusion for separate services for tourist and fast boat and other recreational activities also needed to be started.

Wellington Island, Fortkochi, Mattanchery and Vypin ferry station is considered to be secondary stations and the development at this station needed to be supportive to Ernakulam ferry station. Common improvement required is in providing the water, toilet and restaurant facility, providing parking facility near station. At Wellington Island and fort Kochi feeder bus service from tourist location to ferry station is also suggested.

Other issues identified are regarding the safety provided to tourist at destination. It is noticed that some of these location is

antisocial activities were happening to avoid this police force needed to be at this location in addition to this exploitation of retail and footpath sellers also needed to be avoided. The street vendors at this location needed to be shifted to dedicated spaces nearby tourist spots.

6. Conclusions and Suggestions

It is noticed that backwaters of Kochi city region is having enormous potential for boosting the development of region. The development potential of backwater water transport is properly captured and utilized the growth of tourism sector in Kochi. The visual survey and opinion survey outcomes conclude that there is a magnificent opportunity for reimagining Koch City region by integrating backwater transport by exploring sustainable tourism development.

Kochi city region is well connected through neighbouring districts by backwaters. Hence, the water metro can be an option connecting the backwaters of Kochi to neighbouring station. The speed boat services can be started from Ernakulum to Cochin International Airport will attract more foreign tourist and a separate tour packages need to be started connecting all backwater tourist spots in Kochi city region. In addition to this, tax holidays can be given by for promoting Movies in backwaters and integrating local customs and traditions of Kerala such as watching toddy tapping, snake-boat race, Kathakali and Mohiniattam Performance, duck farming, coir

making etc. It is an additional opportunity to boosting Kochi city region economy to attracting the domestic as well as non-domestic tourists by integrating backwater inland water transport with exploring sustainable tourism development.

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