

# Issues, Challenges and Risks in Investing Public Water Transportation System of Kochi

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**Abstract:** - This paper attempts to assess the problems ailing in the water transportation sector around Kochi. The major waterways in the location have been designated as National Waterways and State Navigational Canals (State Waterways). The main arterial waterway in the city is Champakara Canal, Udyogamandal Canal, National Waterway and waterways connecting between the city and its various environs islands. Kochi is abundantly blessed with waterways of over 1,100 kms. However, only forty kilometres out of these are considered navigable for motor boats, according to the Kerala State Inland Navigation regulation states a minimum 14m width, minimum depth of 1.5m and minimum 5m overboard clearance is mandatory for their operations. Inland Canals plays an important role in the economy of the state water transport department and interconnects the islands on the Kochi environs. It relies upon extensive review of data, people’s observations about the water transport system recorded through primary surveys, and perception studies to suggest feasible measures towards addressing those problems... Conclusively, the outlook of inland navigation in Kochi region looks promising, in which issues on infrastructural gaps and institutional support are addressed suitably.

**Keywords:** - problems, Champakara, Navigation, Conclusively, outlook

## I. INTRODUCTION

The city of Kochi is located 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 also boasts of good road, rail and air connectivity with other Indian metropolises such as Mumbai, Chennai and Bengaluru. The development of Kochi has been mainly on account of the political, administrative and commercial importance it has enjoyed over the centuries. The discovery of the ancient port of Muziris has confirmed the importance of ancient Kochi as a major link on the maritime circuit for trade and business. There are many evidences of trade links between Kochi and China and ancient Rome in the form of Chinese fishing nets and seals found at several locations. Ernakulam was developed only in the nineteenth century on account of overcrowding in Fort Kochi and Mattancherry areas which were now municipalities. The arrival of the railways in 1905 AD enhanced the trade in the region.

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The present day Willington Island was formed as a result of the dredging of the sea channel in order to enable larger ships to enter the port from the industrial revolution driven European countries. This gave a further fillip to the status of Kochi as a major port city. Kochi Municipal Corporation was formed in 1967 by merging the municipalities of Fort Kochi, Mattancherry, Ernakulam and the Island. The Historical evolution is shown in Fig 1.1

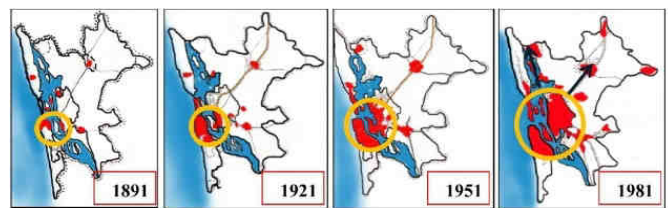


Fig 1.1 Evolution of Kochi

## II. PLEST ANALYSIS

A PLEST analytical framework has been used as a tool to further evaluate the plans in terms of political, legal, economic, social and technological constraints. This is summarized as follows and shown in table 2.1.

**Political Issues:** As discussed previously, political changes in Government conceivably could trigger a change in transport policy and priorities, which could potentially impact on the proposed investments, either positively or negatively.

Table 2.1 PLEST Analysis				
Political	Legal	Economic	Social	Technological
Change in government removes support for initiative	Sea lane restrictions	Temporary displacement of businesses during project construction	Resettlement and rehabilitation complaints	New system
Poor perceptions of Governments ability to deliver	Resettlement complaints	Livelihood impacts on the existing ferry and vessels operators	Livelihood impacts of the peoples on the regions	More complex operations and maintenance.
Route adoptions	Regulations	Short term impacts on rate of returns	Employment impacts on new system	Innovative

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The perception that Government has only been marginally successful in developing major projects which could potentially weaken overall support for the initiative; successful implementation of it therefore can only improve this situation. There could also conceivably be a situation where there is political interference in the selection and development (cherry-picking) of routes, although this is extremely unlikely as the routes have already been formally selected.

**Legal Issues:** There is potential that two legal issues might emerge in the future, (a) legal and regulatory restrictions on the sea lanes being utilized, and (b) resettlement complaints due to redevelopment of the terminals. Regarding the sea lanes, although there is major port and shipping investments ongoing in Kochi, it is considered unlikely that in the medium term, these could impact on the ferry operations from a legislative or regulatory perspective. Regarding resettlement issues, the only resettlement proposed at present is temporary resettlement in order to undertake the redevelopment of the ferry terminals, and the relocation of several small retail vendors occupying the terminals. These impacts, including any compensation, should be mitigated through standard resettlement protocol and procedures.

**Economic Issues:** Two economic constraints have been identified. The first relates to the temporary displacement of businesses due to terminal facility construction, in that they may suffer a loss of revenues during facility construction, which would affect them directly and the surrounding economy indirectly. These impacts are however considered to be relatively minor, and must to appropriately mitigate through compensation mechanisms as part of investment. The second issue relates to potential livelihood impacts on the existing private sector ferry operators and their employees due to the transition to the new system. Under the new water transportation system, the existing ferry operations will no longer be required. The termination of

which will be designed to coincide with the commissioning of the new water transport systems. The existing private sector operators are contracted annually, and therefore their existing contracts will terminate prior to commissioning of the new water services and operations subsequent contracts can be designed to terminate concurrently with new system commissioning. Nevertheless, follow on feasibility assessment should assess further the circumstances of these private sector operators and their employees to ensure that they do not endure negative impacts due to the planned initiative. This is particularly relevant for the employees of these entities.

**Social Issues:** Two social issues have been identified, (a) the temporary displacement of businesses and potential temporary and permanent loss of employment due to terminal facility construction, and (b) impacts to employees of the existing ferry services, which will no longer be required once the new system is commissioned. These issues are discussed above

**Technological Issues:** The water transport system will include the provision of specially designed, high speed catamarans, which are more sophisticated to operate and maintain than the existing system. As this will require higher skill levels to operate and maintain, there is a concern that this skill level is not available locally. As discussed elsewhere however, it is proposed that the vessel construction contract will include in-country O&M training by the specialist contractor to the local operators. This should therefore mitigate these impacts.

### III. SWOT ANALYSIS

A SWOT analysis has been used to evaluate the strengths, weaknesses, opportunities and threats of the inland water transportation network in Kochi. The results of the analysis are summarized as follows and shown on Table3.1

Strengths	Weakness	Opportunities	Threats
Relatively simple, straightforward project	Popular perception that Government is unable to deliver	Demonstrates that the Corporation can deliver infrastructure projects	Change in Government and transport policies and priorities
Meets a priority need of Kochi's island communities	Potential disjoint in intermodal operations such as ticketing	Pioneering project with substantial expansion and replication potential in Kochi	"Grandfather rights issues"
Supports Kochi's transport sector strategy	Perception that this first phase investment is too large	Innovative PPP project for national replication	Increasingly congested sea lanes
Widespread Government and stakeholder support	Local capacity constraints to manage and operate system	Opens up a range of opportunities for island communities	Weather
Supports intermodal transport development	Apprehension to accept new technologies	Supports the tourism sector	Marine ecosystems disturbances
Improved Environment	Sustain regulations	River front infrastructure developments	Increased migrants

**Strengths:** A key attribute of the investment program is that, unlike many land-based transport systems which require complex land acquisition, rights-of-way, resettlement and other issues, the water transport system is relatively a straightforward initiative. Utilizing the uncongested and under-utilized waterways of Kochi for the

water services, and the existing Government-owned water terminals, it 'steers clear' of many legal, regulatory, social and environmental issues which normally affect other transport projects. This is considered a major strength, especially as the Corporation wishes to prioritize simpler projects which are straightforward to develop and implement. Another major strength is that the project

responds directly to the crucial need of providing, fast, safe, economical and efficient mobility to Kochi's island communities, many of which are seriously constrained. The investments also fully align with Kochi's strategic direction for the transport sector by prioritizing public transport and reducing the dependence on private vehicle use. The investments also promote intermodal transport development by enhancing connectivity with the bus transport mode and by reducing carbon emissions and providing purer environment. It is also emphasized that one of the most significant strengths of the investment is its widespread, universal support by Government agencies and the civil society in Kochi, as indicated by their efforts.

**Weaknesses:** One primary weakness relates to the general perception that the Corporation has been only marginally successful in developing major projects in Kochi. Reportedly, there is also a widespread perception that the private sector is reluctant to work and associate with the Corporation and other Government agencies.

Implementation of this relatively straightforward project should therefore provide a counter to this perception, and strengthen the overall reputation of the Corporation in project delivery and in PPP implementation. Operationally, although the water transport services are specifically designed to interconnect with the bus network and improve modal integration, constraints will still exist such as in the multiple ticketing between the various modes. This will need to be addressed fully prior to project implementation. There could also be a perception that this initial investment package, which includes various routes, is too large and should be reduced to reflect its pilot-type nature. Although the proposed investment of the routes is currently optimal, it would be a straightforward process during subsequent feasibility assessment to phase these investments over a longer time period, and reduce the first-phase investment level if this is considered necessary. Also, there may be concerns regarding local capacity constraints to manage and operate the system, especially relating to the high-speed ferries and vessels; however, it is most likely that an experienced international group will initiate the water transport services operations, and providing technical and skills transfer to a local operator.

**Opportunities:** As discussed above, implementation of the investments provides a valuable opportunity for the Corporation to demonstrate its capability to deliver high-priority infrastructure projects on time, and to involve the private sector in a sustainable way. Operationally, not only does the investment provide an opportunity for water transport system expansion within Kochi, it also provides a valuable pilot project which can be replicated regionally and nationally. Locally, it opens up a wide range of opportunities for the island communities it serves, dramatically improving their mobility and access to employment and social services on the mainland. It also opens up further tourism opportunities, by providing improved transport services to Kochi's many tourism destinations within the region and surrounding waterways and canals.

**Threats:** As with other significant, long-term infrastructure investments, a major threat relates to future changes in political and Government structures, which can result in changes in transport policies and priorities, possibly to the detriment of existing services. It is likely that the significant vision and support for the investment for the water transport

system shown by the existing administration will be continued by the next administration, which takes office in the near future. There are also threats due to climate change, including flooding and damage to infrastructure; and there could be sea lane constraints as the waterways become more congested. Also, there could conceivably be threats relating to the transition of the existing ferry services to the new services in terms of the existing Government and private sector employees currently employed on the routes. This will also require careful mitigation. If the movement of hazardous cargo on the waterways does not comply with the regulatory norms, it will invite catastrophes.

#### IV. RISK

A number of potential risks have been identified in the region, which relate directly to the development and implementation of the water transportation. These risks are summarized as follows, and require further analysis.

##### 1.1 General Risks

Five fundamental areas of risk have been identified in relation to the inland navigation network in Kochi. These are summarized as follows,

**Institutional and Political:** As has been highlighted earlier, the political landscape has numerous weaknesses in relation to the ability to implement projects in a timely and consultative manner. These shortcomings are a reflection of the broad political background in Kerala and have been moulded by a combination of union influence and a general lack of analytical capability to address matters on a proactive and scientific basis. For successful implementation of this initiative, it is essential that these aspects be sorted out and should be implemented. In particular, the practice of decisions being challenged and placed before the court needs to be mitigated for all but critically important issues. In addition, the external influence, which has the effect of hindering the operations of the system on unsustainable grounds, is likely. Measures should be put in place to manage this process in a more proactive and strategic manner.

**Public Compliance and Enforcement:** There is a history of non-compliance with established regulation. This is as much an issue of poor design and maintenance processes as an inability to adequately enforce regulations. For the water transport sector, this has led to the perception of unsafe vessels and the public perception of inadequate governance generally. From the enforcement perspective, this inadequacy results from a combination of capacity of the Agency (technically), and the ability of an offender to "settle" the issue to avoid further legal actions. As a result, there is a general acknowledgement within both the private and public sector that public compliance and enforcement is a fluid situation and is available to substantial variations in "interpretation". It will be therefore be important for this issue to be addressed and corrected so that the public trust in the water transport sector can be reinstated and the market for travel be re-established and maintained. Regarding service performance, the compliance of maintenance of both vessel and terminal infrastructure will be an essential component of increasing public confidence in the sector and that of Government in being able to deliver services in the public interest. A failure to correct the problem of enforcement and compliance with adequate regulations may have a serious effect on the success of the initiative. It will be important for the relevant agencies to develop operation



and maintenance manuals for the ongoing compliance and enforcement regimes. This will assist in bringing much needed transparency to the process.

**Public Confidence and Support:** Many of the elements which have sapped public confidence and support are related to the political process and the practice of “settling” disagreements and non compliance issues without the need for litigation. This will need to be addressed and has been commented upon above. In addition to this aspect, much of the cause of the erosion of public confidence is as a result of the practice of agencies failing to engage the community in a proactive manner and encouraging widespread involvement in project planning, design and delivery.

This aspect can be addressed relatively easily through a simple realignment of staff attitudes and practices so that as a first priority, the affected community is consulted early rather than later in the process. In addition, where issues potentially affect the project, genuine and proactive procedures need to be developed as a basis for project delivery. With the community being included as part of the solution, rather than (as is often the current view) being part of the problem, project risks will lessen, both in number and in intensity. Without this support, there could be a risk to the system.

**Agency Capability:** There is a direct relationship between the technical capability of an agency and the ability of that agency to articulate in a clear and logical manner, the benefits of projects and programs. In the context of this system, the ability of the Corporation to market it to both investment partners and the public will be intimately associated with the technical ability of the agency and the staff involved. Unless the Corporation improves its current level of technical capability to plan, design, procure and manage procurement contracts, there may be a significant risk to the project. This risk may manifest itself in funding shortfalls and reduced revenue streams through reduced public support.

**Contingent Liability Risk:** There is strong potential for the water transport system, or at least some routes, being implemented under a PPP model. While the Corporation is familiar with this delivery model, there remains a reluctance to engage the private sector in such public projects. With the limitations outlined above, there are financial risks in developing and implementing PPP based infrastructure projects. The financial commitment required of the Corporation for the system has a fiscal cost. Even if there are no immediate expenditures, the prospect of providing an operating subsidy creates a drain on the annual budget. The guarantees if required from the Corporation also create obligations to make payments. As the ultimate of PPP, the Corporation may be faced with assuming the full financial responsibility for the project in the event that the private sector partner withdraws for financial reasons.

### 1.2 Private Sector Risk

The following are risks which are particularly relevant to any Private partnership model contemplated. A brief assessment of strategies to address the issues is presented for consideration.

**Business Structure Risk:** For this risk, the issue is what options are available for the private sector group if a partner (including a Government partner) fails to honour its commitments during the concession period. To address this risk, there needs to be a basis for Government as the party with the ultimate responsibility for the project to assume this

role. In this case, a State based SPV with sufficient financial (Ministry of Finance) and operational capability can be a party to the original agreement in addition to any Government party at the Municipality level.

**Payment Risk:** From assessments, it is clear that contract payments can be a long and arduous process in Kochi. For the private sector to be willing to invest there must be a process where payments are agreed on a predetermined basis and according to a fixed schedule. There are at least two options available. The first is the establishment of a project pool budget where adequate funds are placed from the outset and are used exclusively for the project. Funds are released by an independent third party on the basis of an agreed schedule of deliverables. Provisions for liquidated damages may be included to compensate either party for delays to any component of the project caused by non compliance, delays in approvals etc. Alternatively, a third party guarantee could be secured to provide in the event of local defaults.

**Legal Issues:** The adequacy of the Indian legal system to provide for the Kochi Corporation (or any other Government instrument) to enter into an arrangement with the private sector for the purpose of design-build-operate (DBO) schemes or other commercial arrangements over a lengthy concession period will be an issue for the relevant legal experts to address. Given the complexity of the issues and the range of regulatory participants involved, it will be infinitely more complicated than the Corporation’s simple PPP model used for the upgrading of bus shelters. This must be addressed by suitably qualified personnel to ensure all legal responsibilities and risks are mitigated.

**Financing:** The issue here is the ability of the private sector to leverage private sector finance for investments which are in partnership with the Corporation. Considering the Corporation’s past performance in the financing and delivery of projects (particularly where land acquisition is involved), will there be sufficient interest from the private sector? This will need to be tested in the market once detailed feasibility evaluation has been undertaken for the investment.

**Procurement:** What is the ability of the Corporation to properly and fairly proceed through procurement processes to arrive at a partnership arrangement with the private sector? Given the apparent sensitivity of the private sector to procurement delays, what is the appropriate role Government can play and what is the appropriate role the private sector can play? These are some of the key questions in Kochi regarding procurement.

**Overall Political and Legal Risks:** Given elections are for five year terms, the issue of political risk always arises for major infrastructure investments and long term concessions, which span one or several election cycles. Will there be adequate protection of each party’s interests (both financial and non financial) to provide the confidence to enter into the arrangements initially? For this, it may require a Government guarantee. This matter requires more detailed consideration and will be dependent on the investment and the identity of the parties

## V. CONCLUSION

It is indeed a matter of grave concern that despite the presence of such a vast network of waterways in the city, we have been unable to make use of it by positively integrating it into our city mobility plans. This is as serious

transgression as the fact that despite copious rains, several parts of Kerala are still subjected to severe water crisis, especially during the period just before the monsoons arrival. While cities across the globe are competing with each other on how to make best use of the natural advantages available to them, thanks to lack of foresight and planning, Kochi has found refuge in merely aping the west or the oriental. The severe crisis in transportation sector witnessed by our city today is an opportunity to set a few wrongs right and head in the direction of a sustainable and environment friendly model of transportation. On these counts, inland water transportation scores heavily against other available modes. In accordance with the established provisions of the National Urban Transport Policy, 2006 and Inland Waterways Transportation Policy, 2001 we must address the concerns of the poorest of the poor who are most dependent on public transportation and set up this highly efficient and inexpensive mode of transportation in a financially-sound business model and technically feasible manner as early as possible.

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