



GOVERNMENT OF KARNATAKA

INFRASTRUCTURE
DEVELOPMENT
DEPARTMENT



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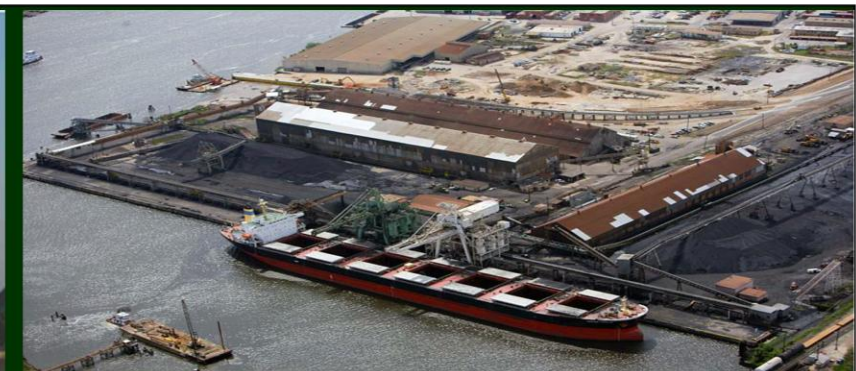
Pre-feasibility Report

Captive Port at Padubidri

Submitted by:

**Feedback Infrastructure
Services Pvt. Ltd., India**

May 2012



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1 Executive Summary

Background

Government of Karnataka (GoK) envisages development of infrastructure through Public Private Partnership (PPP) and intends to attract investments in various sectors in Karnataka.

The current report details the prefeasibility study undertaken for 'Development of a Captive Port at Padubidri'. The site was proposed in consultation with the Infrastructure Development Department (IDD), during the workshop held on February 14, 2012.

The main idea of the project is to assess the feasibility of developing a captive port at Padubidri that would cater to a particular company for import of its raw materials and/or export of its products.

Sector Profile

Karnataka has a 300 km long coastline and 11 ports with a combined capacity of ~52 MTPA. It has one major port (New Mangalore-NMPT) and ten minor ports. Total capacity of NMPT is 41.8 MTPA while that of minor ports is 10.7 MTPA. Of the ten minor ports, only three are operational while others are in various stages of development. The ten minor ports include Karwar, Belekeri, Tadri, Honnavar, Bhatkal, Kundapur, Hangarkatta, Malpe, Padubidri and Old Mangalore.

However, these minor ports have seen very little private investment in recent years. Port development comes under the purview of Ports & Inland water transport department. The state is developing Karwar, Tadadi and Haldipur as multi-user ports on PPP basis.

Captive port development on PPP basis is another area that the state wants to explore, as various companies have been evincing interest in such facilities.

As captive port development is closely related to the industry using it for dedicated use, it is important to know the industrial profile of Karnataka. Large public sector undertakings and privately owned sugar, textile and steel industries operate in the state. In addition, Karnataka has mining reserves for iron ore, limestone, manganese and bauxite, which has led to the growth of many mineral-processing industries in the state.

Project

Padubidri is a new port ~40 km north of New Mangalore Port. The port has good road connectivity via NH 66, while NH 13 passes nearby. It is well connected to hinterland by rail via Hassan-Mangalore and Konkan railway routes.

The port is situated at the northern bank of the river Mulki, where it meets the Arabian Sea. It is a new port and only the waterfront portion is notified. The state will have to acquire land for developing the port at this site to provide space for facilities to handle ships and load and unload commodities for import and export.

Industries located around Padubidri either already have arrangements with New Mangalore port or their operations are not of the scale that can justify investment in developing a port.

The Consultants expect more industries to locate their facilities in Padubidri in future. In order to assess the financial attractiveness of establishing a captive port at Padubidri, the Consultants have analyzed the savings of a potential investor who has an option between Padubidri and another port (where it uses an alternative multi-user port) for setting up its unit. Two such alternative multi-user ports are considered for this analysis-New Mangalore and Mormugao.

The Padubidri port is a virgin area and no surveys have been conducted to ascertain dredging and breakwater requirements. The private investor will also have to invest in creating a channel for entry of vessels. While the Consultants have used estimates for projecting dredging and breakwater requirements, the state will need to undertake technical studies to accurately gauge the volume of dredging and length of breakwaters needed.

Policy Enabler for Captive Ports on PPP basis

It is important to outline a Captive Ports Policy for awarding captive ports projects to private investors in a transparent way. In this regard, the Consultants have submitted a draft policy to GoK. The key features of this draft policy are adapted from the “Draft Policy for Award of Ports Waterfront and Associated Land on Captive User Basis, 2011”, Ministry of Shipping.

The policy, among other things, outlines the eligibility criteria for applying for captive ports, the process to be followed for awarding the port on PPP basis, evaluation criteria for selection of developer and concession period. Main features of the policy are as follows:

1. Bidding to happen on the basis of quoted Minimum Guaranteed Throughput (MGT) every year
2. The bidder with highest NPV of revenue from wharfage emanating out of the quoted MGT will be awarded the project for developing the captive port on PPP basis for a concession period of 30 years
3. In case of a single bidder, award of the port on PPP basis will be contingent on the bidder bringing in a specified minimum investment in the state
4. The traffic handled at the captive port project shall be monitored by GoK to ensure compliance of MGT. In case actual traffic handled is less than 90% of the MGT offered in the bid continuously for three financial years, GoK shall be entitled to terminate the concession without any compensation being admissible to concessionaire.

Market assessment

Companies that depend heavily on ports for raw materials and shipping of finished goods prefer to make sizeable capital investments and set up their own captive port for ease of operations. On analyzing industries that have set up captive ports in the states of Tamil Nadu and Gujarat, it was seen that coal and cement are the major commodities for which captive ports are preferred. Gujarat has several captive facilities for crude oil and LNG.

Assessment of Industrial Units in the vicinity of Padubidri:

- Lanco's Udupi Power Plant Ltd: Located i ~ 12 km from the Padubidri port, it currently imports 2.2 MTPA of coal for its 600 MW capacity. It has plans to increase the capacity to 1200 MW when the coal requirement is expected to be in the range of 3.7-4 MTPA. However, the port already has a captive berth at New Mangalore Port and has invested in the berth and a private 40 km rail siding to the plant. It already has an arrangement with New Mangalore Port Trust, where it is exempted from paying wharfage, which, after transportation costs, is a major component of total landed cost per tonne of coal.
- Synefra Engineering and Construction Ltd.: The unit is also located within 10-15 km of the Padubidri port. It deals with manufacturing of windmill parts. But, the size of operations is not large enough to invest in developing a port from a scratch including bearing the cost of berths, breakwaters and capital dredging. Interactions with the company indicate that the company is ready to take up a captive berth at Padubidri, if it is developed as a multi-user port.

Thus, currently, there are very few industries in the vicinity of Padubidri that will be able to invest in developing a captive port.

Advantages of a Captive Port:

Having a captive port would enable a company cut down significantly on a variety of charges, as compared to the situation when it uses another multi-user port. They are

- Wharfage :
 Most state governments give discount of wharfage to captive port operators

- **Handling and other port charges:**
In captive ports, the port concessionaire does not need to pay handling and other port charges. Rather these are costs incurred by the concessionaire, which are much lower than the charges paid to other ports.
- **Cost savings due to reduced distance from the port:**
Hinterland movement of goods forms one of the largest components of the total transportation cost. This cost can be saved if the unit is based near the port. The advantages of the captive port can be truly realized if the complementary industry is located near the port.

Project Financials

The Consultants have analysed the Padubidri port project to arrive at an ideal MGT and wharfage at which the project becomes financially viable for the investor. The financial analysis is done for 30 year period and the construction period is taken to be 3 years.

The project is not expected to earn revenues in the form of actual cashflows. The income is assumed to be the savings in the port and transportation charges if the potential investor selects Padubidri and develops a captive port alongside, instead of choosing an alternate location and using New Mangalore or Mormugao ports. The distance of alternate location from the port is assumed at 500 km.

Wharfage specified by the GoK's Schedule of Rates for Padubidri port for all commodities is just INR 10 per tonne. However, the rates at minor ports in other states are in the range of INR 30- INR 40 per tonne. The Consultants have assumed various scenarios of desirable wharfage rates for ideal quoted MGT that Karnataka can expect. The MGT that yields break-even project IRR for the investor at a specified level of wharfage is the minimum that the state should expect.

To estimate returns arising due to savings from locating at Padubidri vis-à-vis an alternative location, following two scenarios are considered:

1. The unit at alternative location would have used New Mangalore Port (NMPT) and is 500 km from the port:

Parameter	Thermal Power Plant Importing Coal	Cement Plant Exporting Cement
Distance from NMPT (Km)	500	500
Project IRR (%)	12.40%	12.00%
Wharfage Rate (INR per tonne)	30	30
Wharfage NPV (INR cr)	40.73	39.1
Capex (INR Cr)	471.2	463.4
MGT (MTPA)	1.25	1.2

From above table it can be concluded that a Minimum Gross Tonnage of at least 1.2 MTPA at a wharfage rate of INR 30 per tonne can be expected by the Karnataka Government, if a thermal power plant using imported coal or a cement plant exporting cement decides to set up a captive port at Padubidri.

2. The unit at alternative location would have used Mormugao and is 500 km from the port

Parameter	Thermal Power Plant Importing Coal	Cement Plant Exporting Cement
Distance from Mormugao (Km)	500	500
Project IRR (%)	12.10%	12.40%
Wharfage Rate (INR per tonne)	30	30
Wharfage NPV (INR cr)	39.1	39.1
Capex (INR Cr)	470.8	463.4
MGT (MTPA)	1.2	1.2

From above table it can be concluded that a Minimum Gross Tonnage of at least 1.2 MTPA at a wharfage rate of INR 30 per tonne can be expected by the Karnataka Government, if a thermal plant importing coal or cement plant exporting cement decides to set up a captive port at Padubidri.

It is concluded from the above analysis that the Karnataka Government can expect an MGT of at least 1.2 MTPA at a wharfage of INR 30 per tonne. A minimum wharfage income with an NPV of INR ~39 crore should be expected. If higher MGT is quoted, then discounts can be given in the wharfage rates, provided that the NPV of the wharfage income that the government receives is at least INR 39 crore.

The Consultants also examined various scenarios for distances of the potential alternative locations from either of the ports. As per the analysis of these scenarios, it is concluded that the state can expect MGT of 2.8-1.2 MTPA at wharfage of INR 23-30 per tonne. This would yield a higher wharfage income with an NPV in the range of INR 70 crore-INR 39 crore. For this, those investors that have an option to set up a unit in 150-500 km radius of NMPT/Mormugao should be targeted for investment in Padubidri. Further, the industries being targeted should be of the size that can generate this level of traffic. For instance, a power plant of at least 400 MW, meeting its entire requirement via imported coal, would be required for an MGT of 1.2 MTPA.

Proposed Project Structure

The project structure will be governed by the finalized Draft Captive Ports Policy. A tentative structure is outlined below:

Component	Description
Structure	<ul style="list-style-type: none"> • BOOT model with 30 year concession period • Company bidding for highest promised MGT and equivalent NPV of wharfage • If the company does not meet the 90% of the quoted MGT for 3 consecutive years, the government will have the right to terminate the contract
License Period	<ul style="list-style-type: none"> • 30 years
Payment to Concession Authority	<ul style="list-style-type: none"> • Wharfage • Lease Rental for land
Role of Concession Authority	<ul style="list-style-type: none"> • Provision of unencumbered land for port development
Role of Private Partner	<ul style="list-style-type: none"> • Development of the port infrastructure • Ensuring that the quoted MGT is met • Payment of wharfage as per the quoted MGT

Indicative Environmental & Social Impact

Environmental Impact

As the proposed development lie close to the sea, the project will be regulated by various CRZ Regulations and Environmental Regulations in the country. Any development at the port and near the shore area can impact the natural environment at sea and also flora and fauna in the sea. As a result, the project proponent will need to ensure that it gets relevant clearances and undertakes necessary mitigation measures if suggested by the concerned authorities.

Clearances required

1. If the port is handling less than 5 MTPA, the breakwater and the dredging operations that need to be done at the port come under 'Category B' of the EIA 2006 notification. As per the notification's provisions, the concessionaire would have to obtain EIA clearance from the State Level EIA Authority (SEIAA), duly constituted by the Central Government for Category 'B' activities, before any construction work, or preparation of land is done.
2. If the port is handling cargo more than 5 MTPA, it requires environmental clearance from the Union Ministry of Environment and Forests after an appraisal from an Expert Appraisal Committee (EAC) constituted by the Central Government for this purpose.

Further, the concessionaire would also have to submit compliance reports every six months in respect of the terms and conditions stipulated for granting environmental clearance in hard and soft copies to the concerned regulatory authority. In addition to this, the concessionaire would have to renew CRZ and EIA clearances every five years.

Social Impact

Captive port generally feeds an industry and results in an overall industrial development of the neighbouring areas. This will result in boost to the local economy in form of substantial employment generation. However, as the project requires land acquisition, it may lead to resistance from the local communities.

Way Forward

1. Carry out detailed technical studies for assessing the dredging and breakwater requirements for developing a port.
2. The state should finalize the captive ports policy to ensure that the ports are awarded on PPP basis through a transparent process.
3. Once the policy is finalized, based on technical feasibility and land availability, the state can go ahead with the procurement process.

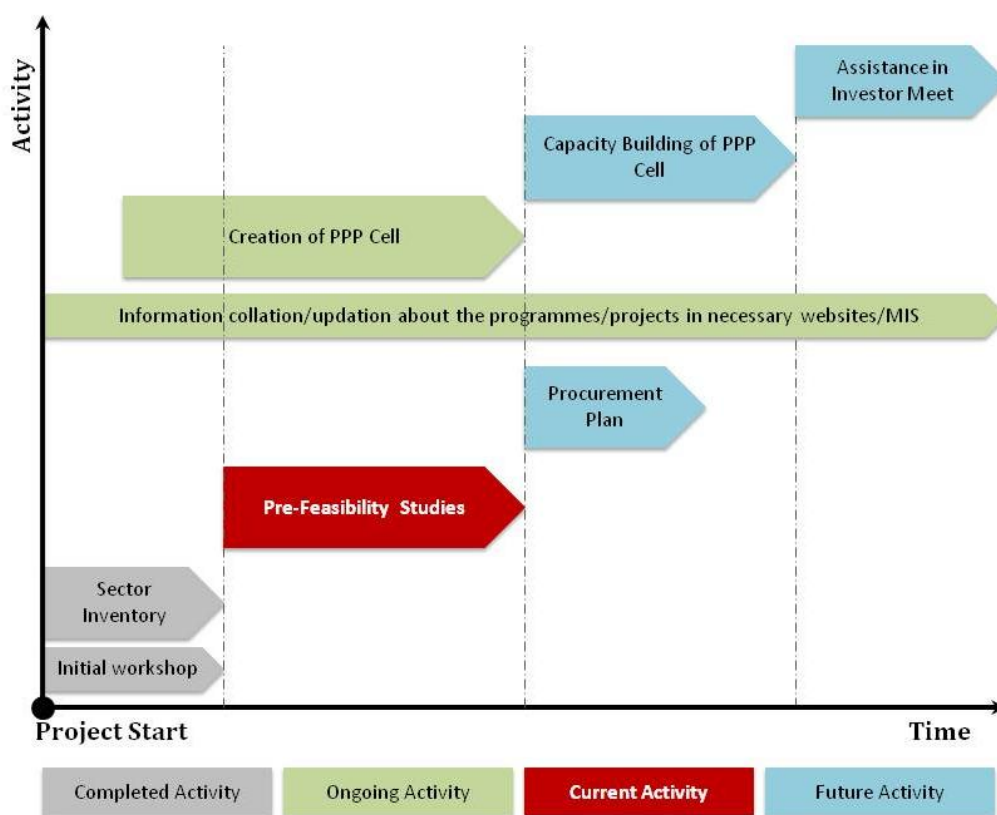
2 Introduction

Government of Karnataka (GoK) envisages development of infrastructure through Public Private Partnership (PPP) and intends to attract investments in various sectors in Karnataka.

For this, Infrastructure Development Department (IDD) has selected consultants for Sector Specific Inventory & Institutional Strengthening for mainstreaming of PPP for various departments related to infrastructure development in the state. Feedback Infrastructure Services Private Limited (FISPL) was selected to assist Infrastructure Development Department (IDD) to fulfill the above objective.

For the same, the Inception Report, comprising of the preliminary information on the various sectors covered under Infrastructure Development Department (IDD) and the inventory of the projects finalized in consultation with IDD, was submitted by the Consultants on February 22, 2012. The figure below summarizes the progress of the assignment, in reference to the defined objectives.

Figure 1: Project Status



The current report details out the prefeasibility study done for 'Development of Captive Port at Padubidiri', the site having been finalized in consultation with IDD department in the Workshop held under the Chairmanship of the Principal Secretary, IDD on 14th February 2012.

2.1 Structure of the Report

This project report has been structured along the following in a chapter-wise format.

Chapter 2: Introduction

The chapter includes the background of the project and introduction about the study that is undertaken for the pre feasibility.

Chapter 3: Sector Profile

The chapter includes an overview of the ports in Karnataka, especially with regard to developmental activities in the minor ports. It also gives brief description of Karnataka's industrial profile with focus on the mining sector.

Chapter 4: Project

The chapter includes the details and description of the project and project components. A site description of Padubidri is also included here.

Chapter 5: Policy Enabler for Captive Ports on PPP basis

This chapter compares the policies regarding captive ports or jetties adopted by three states in India- Gujarat, Maharashtra and Tamil Nadu. Based on the three policies, the consultants have proposed a captive port policy for Karnataka.

Chapter 6: Market Assessment

Chapter 6 includes the market assessment for the project. The chapter gives the details of industries that have set up captive ports in other states and looks at the proposed investments in the state in those sectors. The cost advantages for a company operating a captive port vis-à-vis a company using multi-user ports are also discussed here.

Chapter 7: Project Financials

Based on the market assessment and project details, project financials are calculated. The chapter includes the cost & revenue assessment for the project facilities. Thus project viability has been prepared to assess the funding requirement for the project.

Chapter 8: Statutory & Legal Framework

Based on the above analysis a legal & regulatory framework has been developed for the project.

Chapter 9: Indicative Environmental & Social Impacts

The chapter includes an indicative environmental & social impact assessment and the mitigation measures for the project.

Chapter 10: Operating Framework

The Chapter includes the risk assessment for the project & mitigation measures for the project. An indicative project structure has been prepared for the development of the project.

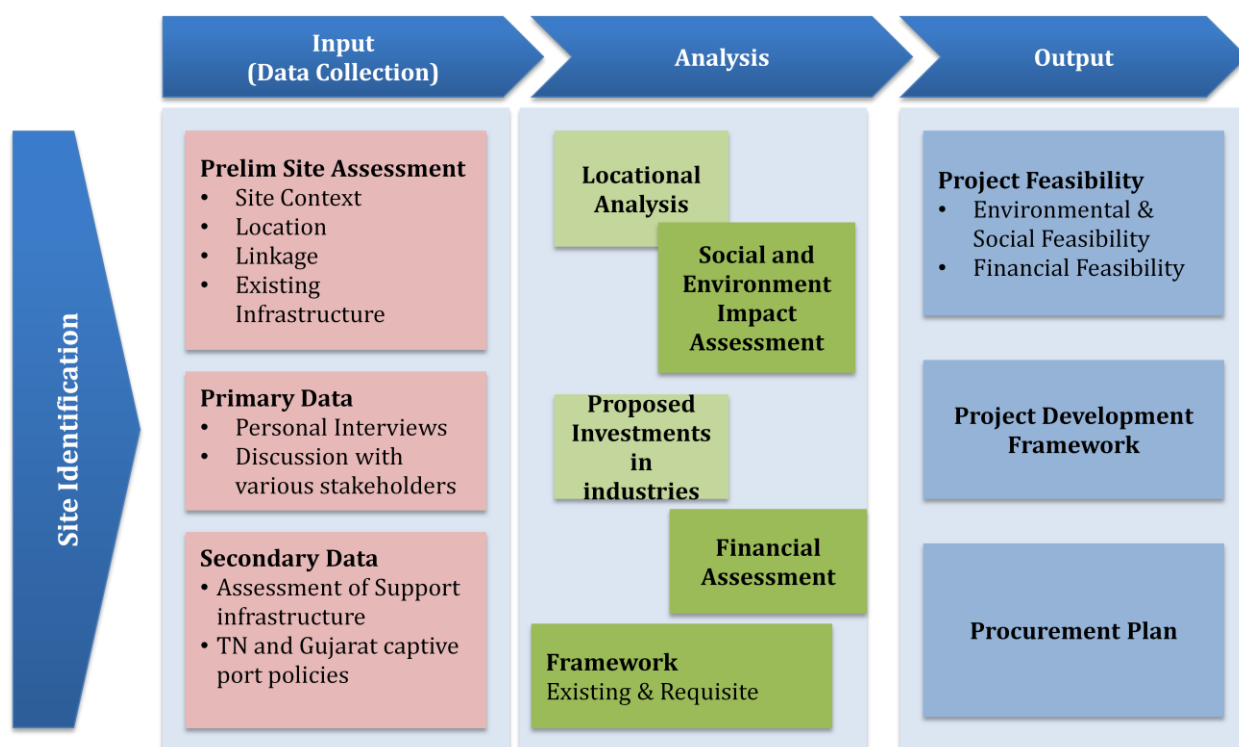
Chapter 11: Way Ahead

The chapter includes the way forward for further development of the project.

2.2 Approach & Methodology

The approach and methodology adopted for the study is as outlined in the figure below.

Figure 2: Methodology for the study



Stage I: Input

The first stage will involve the study of the project site to understand its suitability for the defined activity. Various factors influencing the site’s potential like accessibility, linkages, physical features, economic activities and developments in proximity, etc will be analyzed. This study will eventually help us to carry out the environmental and social impact assessment of the project.

Simultaneously, this stage will also involve collection of data, both primary and secondary, to carry out the requisite traffic assessment at later stages.

Stage II: Analysis

This stage involves the review and analysis of data, collected in previous stages, in order to determine the feasibility of the project, both in terms of financials as well as environmental & social impacts. The financial analysis will encompass various aspects as detailed below:

- Costs & Revenue Estimation
- Viability Assessment (NPV, Project IRR, Equity IRR)

- Project Funding
- Scenario Analysis, etc.

This stage will also involve a study of the legal and statutory framework along with identification of issues and mitigation measures.

Stage III: Output

Based upon the results of the analysis, the final stage will define the framework and the procurement plan for further development of the project.

3 Sector Profile

3.1 Introduction

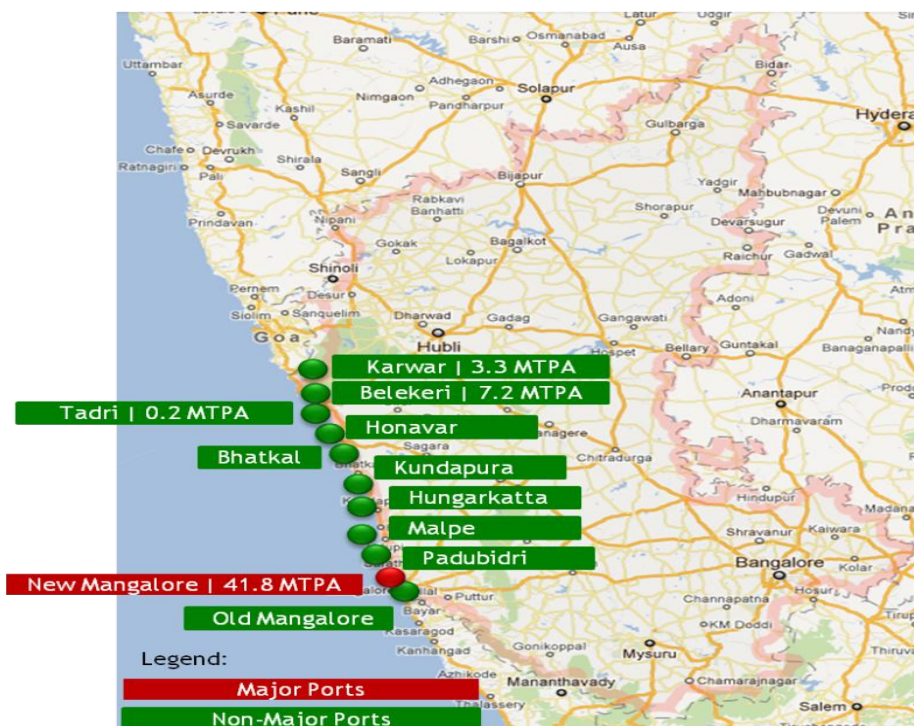
Ports play an important role in the economics of the coast and provide trade points between land and sea transport. The seaports of India have played a historical role in the development of maritime trade and economy in India. India has around 7,500 km of natural peninsular coastline strategically located on the crucial East-West trade route, which links Europe and Far East. The coastline has 12 major ports and about 187 minor and intermediate ports. While major ports are developed through government or private funding by the centre, states like Gujarat are active in developing their minor ports on PPP basis.

Government of Karnataka intends to develop its coastline and minor ports with the help of private sector participation. The detailed profile of the state is presented in the following section.

3.2 Regional profile of Karnataka

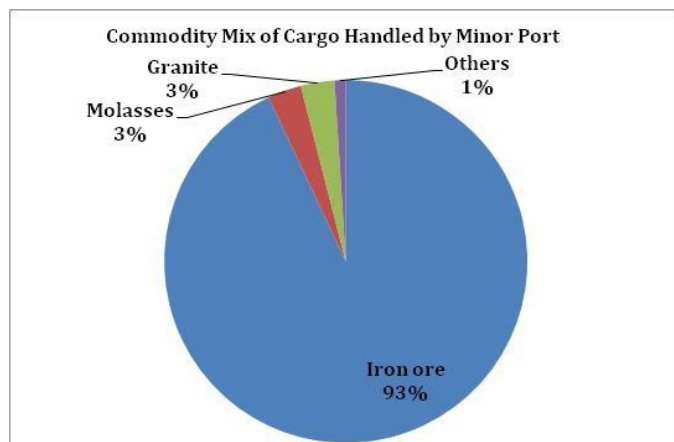
Karnataka has 300 Km of Coast line and 11 ports with combined capacity of ~52 MTPA. It has one major port (New Mangalore) and ten minor ports. Total capacity of the major port is 41.8 MTPA while that of minor ports is 10.7 MTPA. Out of the ten minor ports, only three are operational while others are in various stages of development. The ten minor ports include Karwar , Belekeri, Tadri, Honnavar, Bhatkal, Kundapur, Hangarkatta, Malpe, Padubidri and Old Mangalore.

Figure 3: Location of Minor Ports of Karnataka



Total traffic handled by these ten minor ports was 3 MT in the year 2009-10. The major commodities handled by these ports are Iron ore, Granite, Molasses, Salt, POL & Products and Edible Oil.

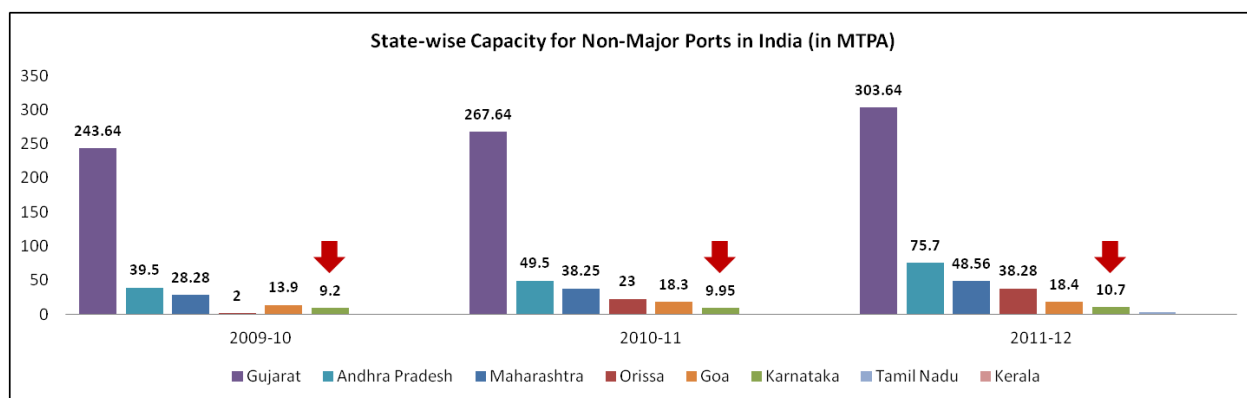
Figure 4: Commodity mix of cargo handled by Minor Port s



Source: Report on Development of Karnataka, 2011

Karnataka is ranked 6th in capacity as compared to the minor ports of other states of India. However, these ports have seen very little growth in recent years. The graph below compares the total capacity of the minor ports of various states in the country.

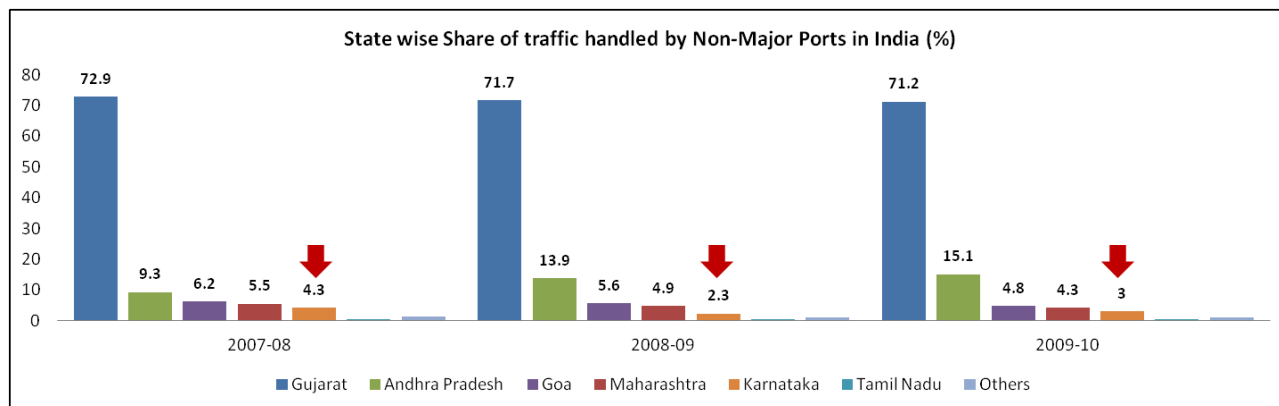
Figure 5: State-wise capacity of Non major Ports in India



Source: IPA

Karnataka is ranked fifth in the country in terms of total traffic handled by its minor ports. The following figure shows the state wise traffic share of traffic handled by non-major ports in India.

Figure 6: State wise share of traffic handled by Non Major ports in India



Source: IPA

3.2.1 PPP Activities in the sector

Karnataka ports have seen very little private investment in recent years. Port development comes under the Ports & Inland Water Transport Department. Some of the initiatives that have been taken up for the development of minor ports on PPP basis in Karnataka include the following

- Karwar port is being developed as a modern all-weather deep sea port. The project is to be undertaken under BOOST model. The project cost is estimated to be INR 788 Cr. The entire funding for the project will be borne by the concessionaire. GoK will hand over the available port land and water front area required.
- It is being planned to develop Tadri (Tadadi) Port on BOT basis with a total cost INR 2,900 Cr. The Karnataka government has set up a special purpose vehicle, the Tadadi Port Limited (TPL) which will act as a subsidiary of the Karnataka State Industrial & Infrastructure Development Corporation Limited (KSIIDC), the nodal agency for the project. Once completed, Tadadi port will have a capacity of 62.36 million tonne per annum with eight berths, of which four berths are earmarked for iron ore and coal, three berths for the general cargo and one berth for the LNG for KPCL.

The proposed port at Tadadi has an effective hinterland comprising the central and northern parts of Karnataka and some parts of Andhra Pradesh, which are rich in large deposits of minerals, forests, agricultural and marine wealth. National Highway 63, National Highway 206 and also the proposed Hubli-Ankola Railway line will provide good hinterland connectivity.

3.2.2 Industrial Profile

As captive port development is closely related to the industry using it as a dedicated facility, it is important to know the industrial profile of Karnataka. Karnataka is considered as one of the attractive industrial locations in the country. Karnataka has various large public sector industrial undertakings, large privately owned industries like steel, sugar, textiles etc. In recent times, Karnataka has emerged as the leader in knowledge based industrial sector, making rapid strides

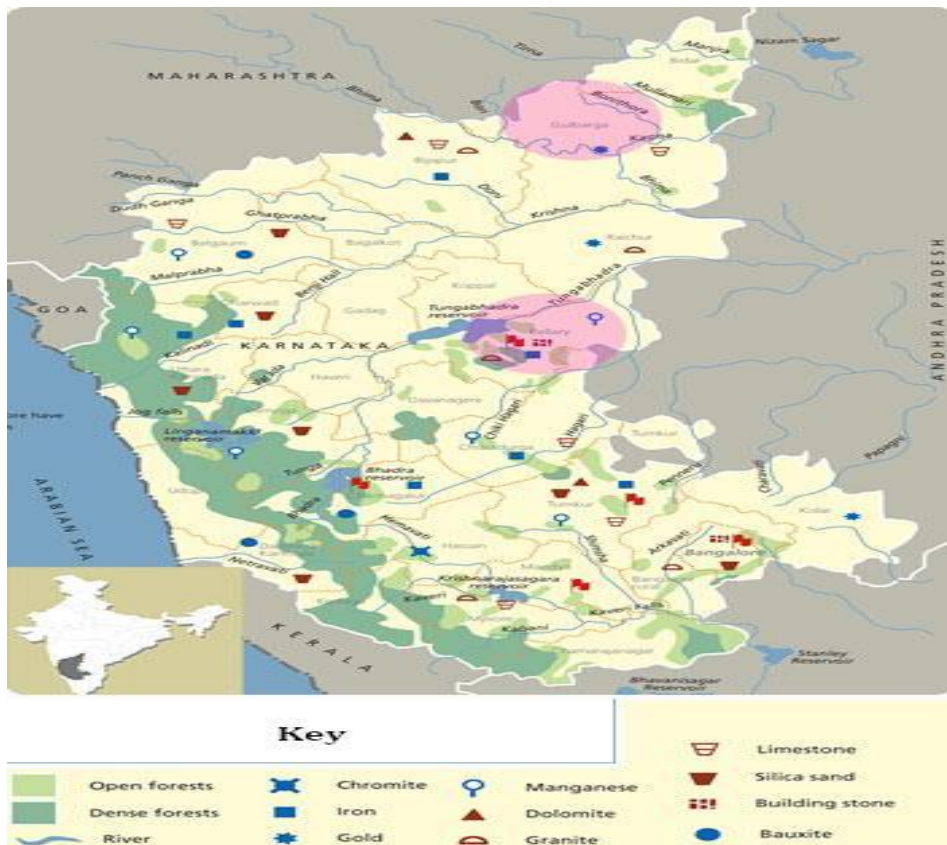
in IT & computer related industries and biotechnology with a strong research and development base. There are various other industries like cement, iron ore, coal, automobile and auto components which add to its total production. In addition, Karnataka has mining reserves for iron ore, limestone, manganese and bauxite, which has led to the growth of a lot of mineral-processing industries in the state. Major mines of manganese and iron ore are located at Sandur in Bellary district. Visweswaraiah Iron and Steel Ltd. at Bhadravathi and Jindal Vijayanagar Steel Ltd. at Toranagal are engaged in the production of iron and steel. Indian Aluminium Company Ltd (Hindalco) has an aluminium plant near Belgaum.

Among all the minerals, iron ore mining and processing industries are of immense significance to the state's economy. Karnataka has the largest iron ore reserves in India, accounting for 41% of the country's total reserves. A major portion of these reserves are in Bellary district. Bagalkot, Bijapur, Chickmagalur, Chitradurga, Dharwad, Uttar and Dakshin Kannada, Shimoga, Tumkur, and Hassan districts too have rich deposits of iron ore. According to Karnataka Udyog Mitra, Iron ore reserves in the state are estimated at 3,447 million tons.

Limestone is another key mineral, mainly needed for the production of cement. According to Cement Manufacturers Association (CMA), Karnataka ranks seventh in terms of production of cement in the country. There are 16 Cement plants in Karnataka producing around 11 million tons per annum of cement.

Gulbarga district is India's limestone hotspot. The region has three large limestone mines operated by Wadi Cement Works, Rajashree Cement and Vasavadatta Cement and several small quarries and crushing units dot the landscape.

A mining map of the state is given below.



3.3 Key Issues

Karnataka’s port development is constrained due to two reasons:

1. Lack of major industrial activity in the central region
2. Difficult terrain resulting in issues for creating rail linkages to the hinterland

4 Project

4.1 Description of the Project

Karnataka has 10 minor ports but has seen very little development through private investment. In comparison, other coastal states like Gujarat, Maharashtra and Andhra have made substantial strides in developing ports through private investment. The state is in advanced stages of developing three of its ports- Karwar , Tadadi and Haldipur as multi-user ports on PPP basis.

For other ports, some players have evinced interest in developing captive ports in Karnataka. But the Consultants believe that as the state's waterfront is a scarce resource, it should be awarded to private player through competitive route on the basis of clearly defined principles, to avoid any misuse of the rights of development given by the state.

The first step towards this is outlining a policy which clearly defines the underlining principles for awarding captive ports on PPP basis to a private player. The consultants have suggested a draft policy that will act as a key enabler for awarding captive ports in Karnataka on PPP basis. The policy suggests that bidding for captive port should be undertaken on quoted Minimum Gross Tonnage (MGT) at a specified wharfage. If the policy is accepted, Karnataka will be the first such state to have an exclusive policy for awarding captive ports on PPP basis.

While the policy defined will govern award of captive port at any location in Karnataka, for the purpose of this study, the consultants selected Padubidri port for pre-feasibility study for development of a captive port, in consultation with officials of Infrastructure Development Department during the workshop held in February 2012.

Padubidri is a new port ~40 km north from the New Mangalore Port. The port has a good connectivity with road via NH 66, while NH 13 passes nearby. It is well connected to hinterland by rail via Hassan- Mangalore and Konkan railway routes.

Following map illustrates the location of the port and its connectivity via rail and road. The port is connected to Goa/Mumbai via NH66. Further rail connectivity is via Konkan Railway and Mangalore Hassan line.

Figure 7: Location of Padubudri Port



Udupi Power Corporation Ltd, a subsidiary of Lanco has a 600 MW power plant in Padubidri’s vicinity. Other major industry is the windmill manufacturer, Synefra Engineering and Construction Company (earlier called Suzlon).

4.2 Components of the Project

Envisaged facilities at the port include the following:

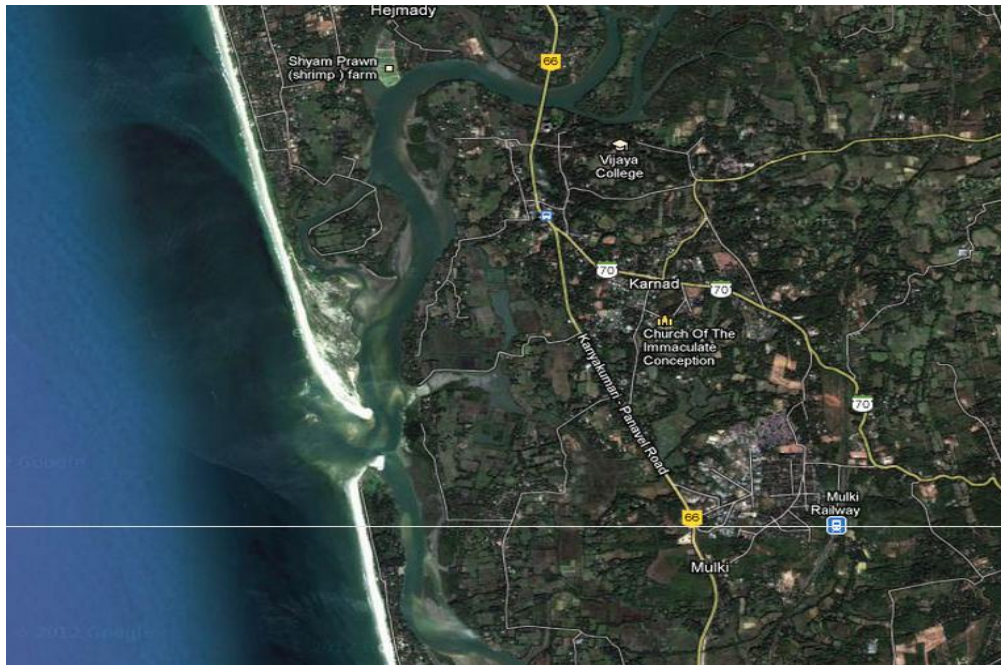
- Captive Berth
- Breakwaters
- Storage Area
- Equipment like conveyor belts, cranes etc for cargo loading/unloading
- Channel to enable entry of vessels

4.3 Description of the Site

Padubidri port is situated in the northern bank of Mulki River, where it meets the Arabian Sea. It is a new port and only the waterfront portion is notified. The state will have to acquire land for developing the port at this site to create facilities to handle ships, loading and unloading of commodities and storage.

The port is a virgin area and no surveys have been conducted to ascertain dredging and breakwater requirements. The private investor will need to invest in creating a channel for entry of vessels. While the Consultants have used estimates for projecting dredging and breakwater requirements, the state will need to undertake technical studies to accurately gauge the volume of dredging and length of breakwaters needed.

Figure 8: Site description-Padubidri



The approach road is narrow and may require widening if the industry feeding from the captive port is at some distance from the port.

5 Policy Enabler for Captive Ports on PPP basis

One of the major pre-conditions for setting up captive ports on PPP basis is a well-defined policy direction. Other states like Gujarat, Tamil Nadu and Maharashtra that have successfully developed captive ports on PPP basis have policy directions defined in their respective port policy. Before suggesting a captive port policy for Karnataka, the Consultants have studied the captive port policies in these states.

As the state's waterfront is its sovereign right and is a scarce resource, it is important that this resource is allocated in a well-defined and transparent way. For this, a Captive Port Policy that outlines the conditions under which a captive port can be developed by a private party becomes a necessity.

The captive port policy will not only define the conditions under which a private party is awarded the port project on the basis of competitive bidding but will also lay down adequate safeguards so that private party does not misuse port assets (including port land) that are being handed over to it. Further, the policy will also prescribe enough checks and balances to ensure that if there is a need for a multi-user port at a location where a captive port exists, the state will have the right to develop it on its own or on PPP basis.

Thus, a policy is necessary to have upfront conditions for private investors and to safeguard interests of the state.

5.1 Case study: Captive Port Policies for awarding ports on PPP basis in Gujarat, Tamil Nadu and Maharashtra

Gujarat: Model for Development of Captive Jetties-Build Own Operate Maintain and Transfer (BOMT)

The 26 captive jetties in the state have been developed and maintained by port based industries. Though the state does not have a specific Captive Port Policy, it has an overall port policy allowing for captive jetties. The main features of the policy are given below:

- Permissions for captive jetties would be given only in exceptional cases, depending on the quantum of investment and the need for specialized facilities. All industrial units would be encouraged to make use of new port facilities being set up.
- The policy provides for full operational freedom for the captive jetties and a concession in port charges (~15% concession on wharfage given) for captive cargo handled by industries in Gujarat. Further, there is also a set-off of 80% on wharfage against the capital cost including interest during construction period.
- The policy also allows the captive jetties to handle other cargo. This is to utilize spare capacity available at the captive jetties. However GMB collects full wharfage charges on non-captive cargo handled and captive cargo of industries located outside Gujarat.

- A minimum guaranteed throughput is given and government decides on the basis of highest NPV of revenues through MGT (Minimum Guaranteed Tonnage). Not achieving MGT for 3 consecutive years can lead to termination of contract.
- Lender’s protection clause will be applicable for the project on PPP basis.

The overall policy is summarized in the table given below.

Table 1: –Project Structure for Captive Jetty on PPP basis in Gujarat

Project Structure	BOMT (Build Operate Maintain Transfer)
Operational Freedom	Full
Lenders Protection	Yes
Lease Period	25-30 years

Tamil Nadu: Captive Port Policy

Like Gujarat, it does not have a specific Captive Port Policy. But its overall port policy allows for licensing of ports on captive basis. The policy mentions that captive ports will be allowed to handle commercial cargo with prior permission of the state government to accommodate increasing traffic and facilitate optimum usage of port facilities.

The policy allows for captive ports on three models detailed below.

- BOO (Build Own Operate) - For ports handling only captive cargo. The dues on captive cargo will be as per the Schedule of Rates fixed from time to time.
- BOOS (Build Own Operate and Share) - For ports handling captive cargo and commercial cargo. Charges on captive cargo will be on the basis of Schedule of Rates and that of commercial cargo on revenue share basis.
- BOOST (Build Own Operate Share and Transfer) - For ports handling captive cargo and commercial cargo, but ceasing to handle captive cargo after some time.

The land and site for port and facilities will be leased out for 30 years.

Maharashtra: Captive Jetty policy

Key features of the policy guidelines for captive jetties in Maharashtra include

- Leasing out of land and site for jetty for 30 years.
- Development of Project on a Build- Own- Operate Transfer Basis.
- No levy of berthing dues.
- Notification of wharfage charges by the State Government.

Key points in all policies of all three states

- Concession period is generally for 30 years
- The private players developing captive jetties/ports get concessions on wharfage
- Bidding in states like Gujarat is on the basis of MGT and NPV of the equivalent revenue from the wharfage
- There are safeguards for full utilization of port capacity, by including termination clause in case MGT is not met for specified number of consecutive years
- Most of the states have kept the flexibility to convert captive port to multi-user port in their policies

5.2 Suggested Captive port policy for Karnataka

The comparison of the policies for establishment of captive ports or jetties in the three states as described above illustrates the need for a well-defined captive port policy that GoK must spell out in order to replicate the success of ports in Gujarat. In this regard, the Consultants have submitted a draft policy to GoK. This draft policy for the state of Karnataka is adapted from the “Draft Policy for Award of Ports waterfront and associated land on captive user basis, 2011”, Ministry of Shipping and is outlined below.

5.2.1 Objective

Promote industrial development through improved port linkage infrastructure in the state.

5.2.2 Scope

Handing over of water front and associated land or other port facilities like existing berths, offshore anchorages, transshipment jetties etc. on captive basis for development of new port related facilities for transporting of cargoes from/ to a port based industry for a pre-determined period (“Concession Period”) on payment of prescribed charges and other terms and conditions as per the concession agreement signed with the developer (“the Concessionaire”) of the captive port facility (“the Project”).

5.2.3 Eligibility Criteria:

- a. Port based industry which is basically dependent on port facilities for handling its raw material/other inputs/products. Such industries shall submit approvals, wherever required, from the concerned Ministry/Department for establishment of industry.
- b. It is, however, clarified that port based logistic parks, consortia of two or more port based industries of specific cargo, any intermediary organisations handling cargo on behalf of various end users, etc. are not eligible for consideration. Such industries, if they need port facilities at a new location, may apply for a multi-user non-captive port facility.

5.2.4 Methodology:

- a. On receipt of a reference from a port based industry (“the Applicant”), the Government of Karnataka (GoK) shall ask the Applicant to submit a feasibility report for the Project.
- b. GoK shall, either in house or by engaging a Consultant/Transaction Advisor/expert (s), evaluate the feasibility report, arrive at an “Estimated Cost” and calculate the optimal capacity of the Project (“Optimal Capacity”).
- c. In order to ascertain whether any more parties are interested in the Project, GoK shall invite Expression of Interest (EoIs), publishing in at least one national daily and on GoK website, indicating that Minimum Guaranteed Throughput (“MGT”) should be at least 70% of the Optimal Capacity of the Project within three years of commercial operation.
- d. In case, one or more than one eligible response is received, bids will be invited from eligible applicants for quoting MGT (in MT) for each year.

5.2.5 Evaluation criteria

- a. In case of bidding, the Quoted MGT (in MT) of each year shall be multiplied with the expected wharfage (after accounting for the rebate) for the corresponding year and discounted at discount rate notified in the bidding document. The Bidder offering maximum NPV shall be given approval for the Project. For avoidance of doubt, the basis for calculating the future wharfage charges would be notified in the bidding documents.
- b. In cases where there is no competition, the Project shall be awarded to the Applicant, provided that awarding such a project results in minimum industrial investment (fixed by GoK) by the Applicant in the state of Karnataka.

5.2.6 Other Conditions

- b. The Concession Period would be up to 30 years initially, which could be extended by further blocks of 5 years, with prior approval of the state. No rebate on wharfage would be given for any extension of Concession Period.
- c. The Concessionaire shall be required to pay wharfage as mentioned in the Schedule of Port Charges prescribed for Captive Ports, as may be revised or amended from time to time.
 - i. Rebates, as approved by the government on case-to-case basis, may be given to the Concessionaire provided that the total rebate (taking into account actual traffic and not MGT) will be capped at the “Project Cost” (actual capital cost incurred or Estimated Cost, whichever is lower). Once the Project Cost is

recovered through the rebates, the Concessionaire would have to pay thereafter, the wharfage charges at normal rates.

- d. Provision of land for development of Project:
 - i. Wherever land for development is already under GoK's possession, it shall be allotted by GoK to the Concessionaire on lease. Lease rentals for the land allotted would be payable as per the scale of rates prevailing from time to time or based on the Guidance Value, whichever is higher. In case there is no published guidance value for the said land parcel, the guidance value of the closest land parcels would be considered.
 - ii. In cases where the land is not under the possession of GoK, GoK would acquire such land, the cost of which shall be borne by the Concessionaire, and allot the same to the Concessionaire. The ownership of the land will remain with GoK. The land cost borne by the Concessionaire will be adjusted against future lease rentals payable by the Concessionaire to GoK.
- e. Rail and road connectivity of the Project to the hinterland shall be the responsibility of the Concessionaire and GoK will not be responsible for providing the same.
- f. The cost of construction, repair & maintenance and management of the Project during the license period shall be borne by the Concessionaire and no liabilities whatsoever shall devolve on GoK at any point of time. Capital dredging and maintenance dredging thereafter alongside the berth should be the responsibility of Concessionaire.
- g. Concessionaire would be allowed to handle only dedicated cargoes at the Project.
- h. The Traffic handled at the Project shall be monitored by GoK to ensure compliance of MGT. In case actual traffic handled is less than 90% of the MGT offered in the bid continuously for three financial years, GoK shall be entitled to terminate the Concession without any compensation being admissible to Concessionaire.
- i. Any time during the concession period, GoK can decide to develop a full-fledged minor port, or open up the current port for new cargo, if the need arises. In case GoK concludes that a larger multi-user minor port can be planned in this location, GoK would:
 - i. Bid out the minor port concession as per the GoK policy for minor ports
 - ii. Give the Concessionaire the right of first refusal for development of this minor port under the Build Own Operate Share and Transfer route by matching the best bid received in the competitive bidding process
 - iii. In case the Concessionaire does not wish to undertake the minor port project, GoK would arrange for the Concessionaire to act as a sub-concessionaire to the selected minor port developer. GoK would ensure that the terms and conditions

of the agreement between GoK and the Concessionaire are honoured in the sub-concessionaire agreement with the new minor port developer and that the interests of the Concessionaire are protected. The broad terms and conditions at which the cost of shared infrastructure will be shared between the Concessionaire and the new developer will be notified by the state in the model Concession Agreement document

iv. In case the Concessionaire desires to exit the Project, GoK or the new minor port developer would provide due compensation to the Concessionaire. The modalities of this compensation would be notified by the state in the model Concession Agreement document.

j. The ownership of the structure and adjoining land will rest with GoK, the waterfront being a sovereign right of GoK. In the event of transfer or takeover of entire port based industrial project to which the Project is attached, the rights can be passed on to the new owner, however the Project cannot be transferred separately or as part of another SPV.

The model concession agreement for captive port facilities shall be based on the model concession agreement of the Planning Commission.

6 Market Assessment

Companies that depend heavily on ports for raw materials and shipping of finished goods would prefer to make sizeable capital investments and set up their own captive port for easy operations. The Consultants have analyzed industries that have set up captive ports in the states of Tamil Nadu and Gujarat.

Table 2: Captive ports and associated industries

Cargo Handled	Number of Captive Ports/Jetties
Cement	7
Fertilizers	3
Sponge Iron	3
Roll-on Roll-off (RoRo) goods	3
Chemicals	1
Liquids other than Crude oil	3
LPG and other gases	4
Ship-building/Ship repair facilities	3
Coal for Thermal power plants	7

Sources: Tamil Nadu Maritime Board and Gujarat Maritime Board

It can be seen that coal and cement are the major commodities for which captive ports are preferred. Gujarat has several captive facilities for crude oil and LNG.

The Consultants for this study have considered coal and cement. The following tables give details on the major projects that have been approved by the state since 2008.

Table 3: Approved cement plants in Karnataka

Company	District	Investment(USD mn)
Sagar Cements	Gulbarga	500
Ittina Properties	Gulbarga	395
Orient Cement	Gulbarga	270
Gulbarga Cement	Gulbarga	229
Dalmia Cement	Gulbarga	218
Nirani Cements	Bagalkot	200

Source: Sector Outlook, Minerals, Ernst and Young Report, 2012

There are many power plants also planned in the state. Following table gives the list of power plants who have approved terms of reference for the Environmental Impact Assessment by the Union Ministry of Environment and Forests:

Table 4: Proposed power plants in the state

Company Name	Village	District	State	Proposed Capacity (MW)
M/s JSW Energy Ltd.	Toranagallu	Bellary	Karnataka	660

M/s Luxor Energy Pvt. Ltd.	Itnal & Umrani	Belgaum	Karnataka	1200
M/s Luxor Energy Pvt. Ltd.	Mulwad	Bijapur	Karnataka	1320
M/s Davangere Sugar Company Ltd.	Kukkuwadda	Kukkuwadda	Karnataka	54
M/s GMR Energy Ltd.	Panambur Taluk,	Mangalore	Karnataka	300
M/s Shree Renuka Energy Ltd.	Vantamuri,	Belgaum	Karnataka	750
M/s KPCL	Tadali	Tadali	Karnataka	2100
M/s HTP (P) Ltd	Hassan	Hassan, karnataka	Karnataka	500
M/s North Karnataka Power Private Ltd	Killenkere, Neelahalli	Gulbarga	Karnataka	1320

It can be seen that there is considerable interest by industry in setting up power plants in the state. Due to shortage of coal in India, many companies are relying on imported coal for which ports are used.

6.1 Assessment of Industrial Units in the Vicinity of Padubidri

- Lanco’s Udupi Power Plant Ltd:** Located within 10- 15 km radius of the Padubidri port, it currently imports 2.2 MTPA for 600 MW. It has plans to increase the capacity to 1200 MW when the coal requirement is expected to be in the range of 3.7-4 MTPA. However, the port already has a captive berth at New Mangalore Port and has invested not only in the berth but also a private 40 km rail siding to the plant. The captive berth receives 3-4 vessels every month.

Even in case of expansion, the company intends to continue with New Mangalore Port, as it has already invested in the logistics infrastructure here. Total cost being incurred by Lanco per tonne of coal is ~ INR 300 per tonne, of which nearly INR 150 per tonne is being spent on rail transportation. The plant has an arrangement with New Mangalore Port Trust, where it is exempted from paying wharfage, which after transportation and handling, is one of the major components of total logistics cost.
- Synefra Engineering and Construction Ltd.:** The unit is also present within 10-15 km radius of Padubidri port. It deals with manufacturing of windmill parts. It imports raw materials in containers (approximately 1,100 containers per annum). Of this, New Mangalore Port accounts for just 600-650 containers per annum. It is clear that for import purpose, the company is not expected to receive more than 2-3 (300-400 TEU capacity) vessels in a year. The company currently has minimal exports, but has outbound traffic in the form of coastal movement. Thus, the size of operations is not large enough to invest in developing a full fledged port. Interactions with the company indicate that the company is ready to take up a captive berth at Padubidri, if it is developed as a multi-user port.

Thus, it can be seen that currently, there are very few industries in the vicinity of Padubidri that will be able to invest in developing a captive port. For the purpose of analyzing the feasibility of setting up a port at Padubidri, the Consultants have examined the savings of a potential new industry investing in Karnataka, if it sets up a unit near Padubidri compared to a situation where it selects a location elsewhere and uses another port.

6.2 Advantages of a Captive Port

Having a captive port would enable a company to cut down significantly on a variety of charges as compared to the situation where it uses another multi-user port. They are

- **Wharfage :**
All port users need to pay wharfage for the use of the wharf or the berth. In many states, discounts are given on wharfage, which provide large savings in comparison with a major port. The following table gives wharfage rates for coal and cement at specific ports:

Table 5: Wharfage Charges (INR per tonne) at NMPT and Mormugao Port

INR per tonne	NMPT	Mormugao
Wharfage		
Coal	18.5	30
Cement	29.6	30

- **Handling charges:**
Handling charges include labour charges for movement of cargo within the port, rental for use of various handling equipment and storage charges (or demurrage for storing above a prescribed number of free hours). Handling charges for bulk cargo on an average vary from INR 100 to INR 120 per tonne, as per interviews with coal importers and traders for bulk commodities. By having a captive port, companies can engage their own employees at much lower rates to load/unload commodities from the ship. Further, the company can use its own equipment. While most companies try to avoid demurrage charges to the maximum possible extent, it sometimes becomes unavoidable due to factors like non-availability of labour etc. When a captive port is established, the company would be free to store goods at the warehouse on the shore as long as required without any demurrage charges.

Other Port Charges: There are several other port charges that are to be paid including port dues, berthing dues and pilotage in a major port. These would be much lower in a captive port. Following table gives other port charges per tonne, which depends on the type of vessel being used.

Table 6: Port Charges at NMPT or Mormugao

Charges (INR per tonne)	NMPT	Mormugao
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	INR	INR
Vessel Related Charge	4.8	4.9
Pilotage	10.7	11.0
Berth Hire	3.4	10.2

*Assuming per day output of 18,000 tonnes per day

Source: Based on TAMP tariff orders

- Cost savings due to reduced distance from the port:
Hinterland movement of goods forms one of the largest components of the total transportation cost. This cost can be saved if the unit is based near the port. The advantages of the captive port can be truly realized if the complementary industry is located near the port. Following table gives the rate per tonne per km for rail transportation incurred for various distances:

Table 7: Rate per tonne per Km for rail transportation

Distance	Rate/tonne/km	
	Coal	Cement
50	3.0	3.0
100	1.5	1.5
150	1.4	1.4
200	1.3	1.3
300	1.2	1.2
500	1.2	1.2
700	1.1	1.1

7 Project Financials

As mentioned earlier, the objective of this pre-feasibility assessment is to arrive at an ideal MGT at a specified wharfage that Karnataka can expect for Padubidri.

The financial analysis is done for a 30 year period and the construction period is taken to be 3 years.

The captive port project is not expected to earn revenues in the form of actual cash-flow. The income is assumed to be the port and transportation charges saved if the potential investor selects Padubidri and develop a captive port alongside, instead of choosing alternative location and using NMPT or Mormugao ports. It is assumed that the alternative location is ~ 500 km from the

alternative port. Returns are estimated for the investor based on its savings from having an industrial facility integrated with a captive port nearby at Padubidri.

7.1 Capital Expenditure Estimation

The major components of the capital cost for the private investor would include construction of a new berth, back-up area paving, wharf dredging, channel dredging, breakwaters and equipment to handle import or export of the particular commodity such as cranes, payloaders, dumpers and conveyor belts. The model further assumes that the entire construction cost is borne by the private investor, with no concession from the Government.

The escalation is assumed at 5 % per annum. The basic assumptions for capital cost estimations are detailed below.

Table 8: Capital Cost Assumptions

Component	Assumptions	Source/ condition
Berth	58,000 (INR/sqm)	
Breakwater	10 (INR lakh per m)	<i>Paradip Business plan (with depth of 12m)</i>
Dredging	250 (INR/cubic m)	<i>Assuming no rocks and non-sandy silt</i>
Back-Up area paving	1000 (INR/sqm)	
Cost of Crane	13 (INR crore/crane)	<i>From Tamp Order</i>
Payloader	36 (INR lakh/unit)	<i>From Tamp Order</i>
Dumper Cost	15 (INR lakh/unit)	
Cost of Conveyor Belt	2 (INR lakh per m)	<i>From Tamp Order</i>
Contingency	5% of the total Cost	

7.1.1 Area statement:

The length, breadth and depth of the berth required have been taken as 150m, 32m and 10m respectively to accommodate a Handymax vessel. The area required for storing these commodities is calculated as per Tariff Authority for Major Ports (TAMP) norms. For this, the storage time is assumed to be 30 days and it is assumed that 1 sqm can accommodate 3 tonnes of coal and 15 tonnes of cement, based on the TAMP guidelines.

In the absence of any detailed technical studies done for this port, the Consultants have assumed 2 breakwaters, each of length 250 m. However, detailed technical studies need to be undertaken to estimate the actual requirement.

7.1.2 Dredging requirements:

There are no hydrographic surveys done for the port as yet. Hence, the Consultants have calculated dredging requirements for wharf assuming a regular cuboid. For channel dredging

requirements, the channel length, breadth and sea-bed terrain are assumed to be same as that of the New Mangalore Port.

The existing average depth is assumed to be 2 m, as per the discussions with Port and IWT Department officials. For handling a Handymax vessel, a depth of 10 m is required. As per the Consultant’s very preliminary estimate, capital dredging of 7.23 mn cubic meter is required. *Exact estimate will have to be based on detailed technical studies.*

7.1.3 Equipments

Assumptions for equipment requirements:

1. Cranes that have been considered for the port are assumed to have a capacity to move 540 tonnes per hour, operating for 330 days in a year and 21 hours per day.
2. Four payloaders are assumed for 3 MTPA of traffic, subject to a minimum of 1 payloaders
3. For a truck or dumper, the time per trip (loading/unloading) is taken as 30 minutes. The capacity of each truck has been assumed as 10 tonnes.
4. A conveyor belt of 5 km is assumed

7.1.4 Financing assumptions

A capital structure of 70% debt and 30% equity has been assumed for this project. The cost of debt and equity have been assumed as 12% and 18% respectively, leading to a Weighted Average Cost of Capital (WACC) of 11.1%, after having taken the corporate tax rate as 32.45%.

7.1.5 Indicative Capital Cost of the Project

The following table gives an idea of the capital costs to be borne by the investor for building a captive port at Padubidri, based on various assumptions detailed above. The following table gives the capital cost for a captive port handling coal imports for various capacities. The cost will vary as per the capacity of the port.

Table 9: Indicative Capital Expenditure

Component	Estimated Capex (INR Crore) for 1 MTPA capacity (Coal)	Estimated Capex (INR Crore) for 0.5 MTPA Capacity (Coal)	Estimated Capex (INR Crore) for 3 MTPA Capacity (Coal)
Berth	29.5	29.5	29.5
Backup area Paving	6.6	3.3	19.7
Capital Dredging	189.7	189.7	189.7
Breakwaters	53	53	53
Equipment	124.3	123.8	126.7

Contingency	20.1	19.9	20.8
IDC	45.7	45.3	47.6
Total	468.9	464.5	487.1

It can be seen from the above table that while the capital cost is ~INR 450 crore, it will vary as per the capacity of the port that the developer will build. However, for developing the basic infrastructure at the port (berth, dredging and breakwaters) alone, the developer will have to invest at least INR ~270 crore.

7.2 Operating Expenses Estimation

The significant components of operational expenses at the port would be maintenance dredging at the channel and the wharf areas, salaries of personnel, fuel consumption for equipment, and the wharfage dues to be paid to GoK. Major assumptions for Operating Expenses are given below:

1. Maintenance dredging costs are taken to be 10% of capital dredging costs, based on the general norms taken for ports. However, an exact figure can be arrived at only after detailed technical studies in the area.
2. Salaries: For estimating the salaries of operators, each day is assumed to consist of three shifts, with one operator per equipment per shift. Further, the salary of the operator is assumed at INR 10,000 per month. Other staff requirements are assumed to be shared with the plant with which the captive port is linked.
3. The assumptions considered for fuel consumption by various equipments are detailed in the following table. These assumptions are based on analysis of various TAMP orders. The cost of fuel has been taken as INR 40 per litre.

Table 10: Assumptions for fuel consumption

Fuel	Assumption
Per hour consumption of Crane	30 liters per hour
Per hour consumption of payloaders	12 liters per hour
Per hour consumption of trucks	4 liters per hour
Cost of Diesel	INR 40 per litre

4. Lease rentals for the captive port have been taken as INR 0.30 per sq. m per month, with escalation at the rate of 5% per annum, as per the notified rates of the state.
5. Wharfage specified by the GoK's Schedule of Rates for Padubidri port for all commodities is just INR 10 per tonne. However, the rates at other minor ports are in the range of INR 30- INR 40 per tonne. The consultants have taken various scenarios of desirable wharfage rates for ideal quoted MGT that Karnataka can expect.

6. Assumptions regarding other operational expenses are given in the following table.

Table 11 : Key Assumptions-Other Operating Expenses

Component	Operating Expense
Repair and Maintenance of Civil Assets	1% of capex on civil assets
Repair and Maintenance of Equipment	7% of capex on equipment
Insurance	1% of total capex
Overheads	5% of rest of the Maintenance Opex

7. An escalation of 5% per annum is also considered for calculating operating expenses till the end of the concession period.

7.3 Revenue Estimation

There would not be any actual revenues to the investor in the form of cash inflows. However, using this captive port would result in saving other charges and dues that the company would need to pay if an alternative port was chosen for import or export of the commodity. These savings are assumed to be the notional income for the captive port project. Thus, there will be no income tax that the potential investor will be liable to pay.

It is important to note that the savings mentioned in this section are not the net savings, as the operational expenses are considered separately.

The gross savings in the case of the company using the captive port at Padubidri will include the following components, as mentioned in Chapter 6.

- Vessel related charges at the major ports.
- Pilotage charges at the major ports.
- Berth hire charges
- Wharfage charges at the major ports
- Handling charges
- Rail haulage charges.

The following table details the charges paid per ton of commodity for an industry using the captive port. These savings have been calculated based on details given in the previous chapter on ‘Market Assessment’.

Table 12 : Charges per ton of commodity due if an alternate multi-user port is used

Commodity	Charges paid per ton (INR) if the company chooses alternate port
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	New Mangalore Port	Mormugao Port
Coal	137.3	156.1
Cement	148.4	156.1
Rail Freight Per tonne Per Km (for 500 km)	1.2	1.2

Further, a 5% per annum escalation is assumed.

7.4 Project Financials

To estimate returns due to an investor because of the saving from locating at Padubidri vis-à-vis an alternative location, two scenarios are considered:

1. The unit at alternative location would have used New Mangalore Port (NMPT) and is 500 km from the port:

Table 13: MGT & Wharfage for break-even returns to a unit with option to locate at a 500 km distance from NMPT

Parameter	Thermal Power Plant Importing Coal	Cement Plant Exporting Cement
Distance from NMPT (Km)	500	500
Project IRR (%)	12.40%	12.00%
Wharfage Rate (INR per tonne)	30	30
Wharfage NPV (INR cr)	40.73	39.1
Capex (INR Cr)	471.2	463.4
MGT (MTPA)	1.25	1.2

From the above table it can be concluded that a Minimum Gross Throughput of 1.2 MTPA at a wharfage rate of INR 30 per tonne can be expected by the Karnataka Government, if a thermal power plant using imported coal or a cement plant exporting cement decides to set up a captive port at Padubidri. This is the minimum that should be expected. The Consultants also examined scenarios for various distances of the potential alternative locations from NMPT

For Thermal Power Plant Importing Coal					
Distance of the alternative location from NMPT (Km)	50	150	200	300	500
IRR (%)	11.0%	12.60%	12.50%	12.60%	12.40%
Wharfage Rate (INR per tonne)	8	23	27	28	30
Wharfage NPV (INR cr)	26.06	69.94	70.37	54.74	40.73
Capex (INR Cr)	487.1	485.1	481.5	476.2	471.2

MGT (MTPA)	3	2.8	2.4	1.9	1.25
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For Cement Plant Exporting Cement					
Distance of the alternative location from NMPT (Km)	50	150	200	300	500
IRR (%)	12.4%	12.30%	12.30%	12.30%	12.00%
Wharfage Rate (INR per tonne)	8	23	27	28	30
Wharfage NPV (INR cr)	26.1	64.9	66.0	53.2	39.1
Capex (INR Cr)	468.6	467.4	466.3	465	463.4
MGT (MTPA)	3	2.6	2.25	1.75	1.2

It can be seen that at higher distance of the alternative location from the multi-user port, the potential company investing in Karnataka will have a break-even IRR at lower MGT, as at higher distance it will be able to save more on transportation costs. Thus, savings required per tonne on port charges will be much lower, lowering the minimum MGT required to break even.

Ideally investors that have an option to set up a unit in 150-500 km radius of NMPT may be interested in investing in Padubidri port. For these investors, the specified wharfage can be in the range of INR 23-INR 30 per tonne. Further, a quoted MGT of 2.8-1.2 MTPA can be expected from them.

2. The unit at alternative location would have used Mormugao and is 500 km from the port

Table 14: MGT, Wharfage for break-even returns to a unit with option to locate at 500 km distance from Mormugao

Parameter	Thermal Power Plant Importing Coal	Cement Plant Exporting Cement
Distance from Mormugao (Km)	500	500
Project IRR (%)	12.10%	12.40%
Wharfage Rate (INR per tonne)	30	30
Wharfage NPV (INR cr)	39.1	39.1
Capex (INR Cr)	470.8	463.4
MGT (MTPA)	1.2	1.2

From above table it can be concluded that a Minimum Gross Tonnage of 1.2 MTPA at a wharfage rate of INR 30 per tonne can be expected by the Karnataka Government, if a thermal plant importing coal or a cement plant exporting cement decides to set up a captive port at Padubidri. This is the minimum that should be expected.

The Consultants also examined scenarios for various distances of the potential alternative locations from Mormugao.

For a thermal power plant importing coal					
Distance of the alternative location from Mormugao (Km)	50	150	200	300	500
IRR (%)	12.4%	12.30%	12.50%	12.30%	12.10%
Wharfage Rate (INR per tonne)	8	23	27	28	30
Wharfage NPV (INR cr)	26.1	64.9	66.0	53.2	39.1
Capex (INR Cr)	487.1	483.4	480.2	475.8	470.8
MGT (MTPA)	3	2.6	2.25	1.75	1.2

For a Cement Plant exporting cement					
Distance of the alternative location from Mormugao (Km)	50	150	200	300	500
IRR (%)	12.3%	12.00%	12.20%	12.60%	12.40%
Wharfage Rate (INR per tonne)	8	23	27	28	30
Wharfage NPV (INR cr)	25.2	62.4	64.6	53.2	39.1
Capex (INR Cr)	468.3	467.1	466.3	465	463.4
MGT (MTPA)	2.9	2.5	2.2	1.75	1.2

It can be concluded from above tables that ideally, those companies should be targeted that have an option to set up a unit at 150-500 km radius of Mormugao with the specified wharfage of INR 23-INR 30 per tonne and a quoted MGT of 1.2 - 2.6MTPA.

Conclusion of the Financial Analysis: From the above analysis it is evident that the Karnataka Government can expect a MGT of at least 1.2 MTPA at a wharfage rate of INR 30 per tonne. However, a higher MGT of 2.8 MTPA at a lower wharfage of INR 23per tonne translating into a higher NPV of wharfage receivables for the state, can also be expected. For this, those investors that have an option to set up a unit in 150-500 km radius of NMPT/Mormugao should be targeted for investment in Padubidri. Further, the industries being targeted should be of the size that can generate this level of traffic. For instance, a power plant of at least 400 MW, meeting its entire requirement via imported coal, would be required for an MGT of 1.2 MTPA.

7.5 Sensitivity Analysis

The dependence of the key parameters- Project IRR, Project NPV and Equity IRR is studied when capital investment, operating expenses and revenues are changed. To get an idea, an analysis is

done for Thermal Power Plant importing coal which has an option of locating at a distance of 500 km from New Mangalore Port vs locating at Padubidri.

1. **Change in Capital Expenditure:** The project is sensitive to changes in the construction costs. A 15% increase makes the project unviable. Hence, the project proponent will have to ensure that there is no delay in the project that will lead to cost overruns. Changes in Project NPV, Project IRR and Equity IRR corresponding to changes in construction cost are given below:

Table 15: Sensitivity to changes in Capital Expenditure

% Change in Capital Expenditure	Project IRR	Project NPV	Equity IRR
-25%	16.33%	186.70	25.55%
-20%	15.39%	162.01	23.61%
-15%	14.54%	137.08	21.91%
-10%	13.77%	111.89	20.43%
-5%	13.06%	86.46	19.10%
0%	12.41%	60.77	17.92%
5%	11.81%	34.83	16.85%
10%	11.25%	8.62	15.89%
15%	10.73%	(17.84)	15.01%
20%	10.24%	(44.57)	14.20%
25%	9.77%	(71.57)	13.45%

2. **Changes in Operating Expenses:** The project is sensitive to changes in operational expenses. A 15% increase in the operational expenses is expected to make the project unviable. Hence the project proponent will have to keep a tight rein on its project cost. Following table gives the sensitivity of the returns to changes in operational expenses

Table 16: Sensitivity to changes in Operating Expenses

% Change in Operating expenses	Project IRR	Project NPV	Equity IRR
-25%	-25%	14.67%	170.54
-20%	-20%	14.23%	148.59
-15%	-15%	13.79%	126.64
-10%	-10%	13.34%	104.68
-5%	-5%	12.88%	82.73
0%	0%	12.41%	60.77
5%	5%	11.94%	38.82

10%	10%	11.45%	16.86
15%	15%	10.96%	(5.09)
20%	20%	10.45%	(27.05)
25%	25%	9.93%	(49.00)

3. The following table gives an idea of the viability of the project due to changes in the port charges at the alternative port and rail freight rates. A reduction in charges will lead to lower gross savings and hence lower revenues. An increase would in turn lead to higher revenues.

Table 17: Sensitivity to changes in Revenue

% Change in Revenue	Project IRR	Project NPV	Equity IRR
-25%	6.45%	(181.32)	8.47%
-20%	7.81%	(132.90)	10.45%
-15%	9.07%	(84.48)	12.36%
-10%	10.24%	(36.06)	14.22%
-5%	11.35%	12.35	16.07%
0%	12.41%	60.77	17.92%
5%	13.43%	109.19	19.78%
10%	14.42%	157.61	21.65%
15%	15.37%	206.03	23.54%
20%	16.31%	254.45	25.46%
25%	17.28%	303.19	27.53%

7.6 Value for Money Analysis

Value for Money (VFM) analysis is essentially a cost-benefit analysis, where it is examined if the benefits of the project are positive as compared to alternative procurement method. A PPP project is said to achieve value for money if it costs less than the best realistic public sector project alternative which would deliver the same services.

However, in case of this project, captive port is for use of industry. The underlying objective is to bring about overall industrial development of the area surrounding the port by attracting private investment in industry along with the port. Thus, the alternative of public sector investing in a captive port is not applicable in this case.

The objective of this report is to arrive at a minimum level of MGT at a specific level of wharfage that the government can expect. Anything above that will translate into Value for Money for the government.

8 Statutory & Legal Framework

8.1 Legal & Regulatory framework

Minor ports are on the Concurrent List of the Indian Constitution. Indian Ports Act, 1908 brings minor ports under the state jurisdiction. Some of the major provisions of the Act are given in the table below:

Table 18: Major Provisions of Indian Ports Act 1908

Provisions	Details
Power to dictate operational parameters	State can make rules to regulate the entry and exit of vessels entering the port; regulate berths, stations, anchorage occupied by vessels; crew number etc
Alter Port Limits	State can alter port limits and also merge two ports to make one port
Levy of Port Dues	State can levy and change port dues on vessels entering the minor ports. It can also exempt vessels from paying dues and vary the rates at which port dues are fixed. (Charges paid by private developer will be as per CA signed with the state)
Powers of Central Government in Minor Ports	<ul style="list-style-type: none"> • Demand co-operation in times of emergency and for defense operations • Power to appoint and control port health officers. • Rules to prevent danger to public health from vessels on the port
Exemptions from the Act	<ul style="list-style-type: none"> • Won't apply to vessels belonging to or in service of the central or the state government, vessels of war or belonging to any foreign state

The Act effectively gives the state control over major aspects of minor ports including regulation of traffic and levy of charges in the port limits.

9 Indicative Environmental & Social Impact

9.1 Environmental Impact

As the proposed developments lie close to the sea, the project will be regulated by various CRZ Regulations and Environmental Regulations in the country. Any development at the port and near the shore area can impact the natural environment at sea and also flora and fauna in the sea. As a result, the project proponent will need to ensure that it gets relevant clearances and undertakes necessary mitigation measures if suggested by the concerned authorities.

9.1.1 Clearances required

From the Coastal Zone Management Program map of the coastline it can be inferred that the proposed port facilities would have to be built in CRZ III (up to 500m from the shore) and inter-tidal zones (between High Tide Line and Low Tide Line)

CRZ-III refers to areas that are relatively undisturbed including coastal zone in the rural areas (developed and undeveloped) and also areas within Municipal limits or in other legally designated urban areas which are not substantially built up. Being an agricultural area, Padubidri comes under CRZ-III zone.

1. The CRZ notification 2011 specifies that construction and operation for ports and harbours, jetties, wharves, quays, slipways, ship construction yards, breakwaters, groynes, erosion control measures are regulated activities within the CRZ areas.
2. However, the notification mentions that for projects which are listed under the CRZ notification 2011 and also attract EIA notification, 2006 only clearance under EIA notification shall be required subject to it being recommended by the concerned State or Union territory Coastal Zone Management Authority (referred to as the CZMA).
3. Under the CRZ notification 2011, laying of pipelines, conveying systems, transmission line in CRZ areas, exploration and extraction of oil and natural gas and all associated activities and foreshore requiring facilities for transport of raw materials, facilities for intake of cooling water and outfall for discharge of treated wastewater or cooling water from thermal power plants shall require prior clearance from the Union Ministry of Environment and Forests.
4. If the port is handling less than 5 MTPA, the breakwater and the dredging operations that need to be done at the port come under 'Category B' of the EIA notifications in 2006. Hence, as per the EIA notification 2006, the concessionaire would also have to obtain EIA clearance from the State Level EIA Authority (SEIAA), duly constituted by the Central Government for Category 'B' activities, before any construction work, or preparation of land is done.
5. If the port is handling cargo more than 5 MTPA, it requires environmental clearance from the Union Ministry of Environment and Forests after an appraisal from an Expert Appraisal Committee (EAC) constituted by the Central Government for this purpose.

Irrespective of the handling capacity of the captive port and the proposed construction at the site, the following steps need to be followed.

The project proponents shall apply with the following documents seeking prior clearance under CRZ notification to the concerned State Coastal Zone Management Authority (here Karnataka CZMA),-

- (a) Form-1 (Annexure-IV of the CRZ 2011 notification);
 - (b) Rapid EIA Report including marine and terrestrial component except for construction projects listed under 4(c) and (d) of CRZ 2011 notification.
 - (c) Comprehensive EIA with cumulative studies for projects in the stretches classified as low and medium eroding by MoEF based on scientific studies and in consultation with the State Governments and Union territory Administration;
 - (d) Disaster Management Report, Risk Assessment Report and Management Plan;
 - (e) CRZ map indicating HTL and LTL demarcated by one of the authorized agency (as indicated in para 2) in 1:4000 scale;
 - (f) Project layout superimposed on the above map indicated at (e) above;
 - (g) The CRZ map normally covering 7km radius around the project site.
 - (h) The CRZ map indicating the CRZ-I, II, III and IV areas including other notified ecologically sensitive areas;
 - (i) No Objection Certificate from the concerned State Pollution Control Boards' Pollution Control Committees for the projects involving discharge of effluents, solid wastes, sewage and the like.
- The concerned CZMA shall examine the above documents in accordance with the approved CZMP and in compliance with CRZ notification and make recommendations to MoEF or State Environmental Impact Assessment Authority, depending on points 3, 4, 5 of the previous paragraph within a period of sixty days from date of receipt of complete application.
 - MoEF or SEIAA shall consider such projects for clearance based on the recommendations of the concerned CZMA within a period of sixty days.
 - Further, the concessionaire would also have to submit compliance reports every six months in respect of the terms and conditions stipulated for granting environmental clearance in hard and soft copies to the concerned regulatory authority.
 - In addition to this, the concessionaire would have to renew CRZ and EIA clearances every five years.

9.2 Social Impact

1. Boost in the local economy: Captive port generally feeds an industry and results in an overall industrial development of the neighbouring areas. This will boost the local economy by generating substantial employment.
2. Displacement due to land acquisition: The project requires land acquisition and may lead to resistance from local communities.

10 Operating Framework

For the project, several types of risks exist:

- a. Construction Risk: Risk arising out of delays in construction leading to cost overruns
- b. Environmental & Social Risk: Risk of project getting delayed due to environmental considerations. Further, there can also be risks due to delays in land acquisition and protests of the people being displaced due to the project
- c. Traffic Risk: Due to traffic that is lower than the quoted MGT
- d. Political Risk: Risks arising due to changes in law and delay in grant of approvals
- e. Force Majeure Risk: Risks arising due to incidents not in control of the project proponent like natural calamity, strikes etc.

10.1 Risk Mitigation

The following matrix gives risk mitigation measures for various types of risks.

Table 19: Risk Mitigation Measures for the Project

Risk Type	Factors	Mitigation Measures
Construction Risk	<ul style="list-style-type: none"> • Geo-technical risks • Construction technology • Availability of construction materials • Delay by EPC Contractor selected by the project proponent 	<ul style="list-style-type: none"> • Robust technical and engineering studies before the start of project • Fixed time EPC contracts by the project proponent, with built-in penalties for delays • A fixed concession period for the project creates an in-built penalty for the project proponent for delays in terms of loss of revenue earning years
Environmental & Social Risk	<ul style="list-style-type: none"> • Site in environmentally sensitive areas • Delay in land acquisition and protests of locals 	<ul style="list-style-type: none"> • Required environmental clearances be obtained and mitigation measures be adopted as per the recommendations of the relevant environment authority • It is recommended that the project proponent employs locals to the maximum extent possible to ensure participation of the local community in the economic growth of the region due to the project
Traffic Risk	<ul style="list-style-type: none"> • Cargo in a year less than 	<ul style="list-style-type: none"> • Provisions in the agreement for

	Minimum Guaranteed Tonnage	termination only if the 90% of MGT is not met for 3 consecutive years
Political Risk	<ul style="list-style-type: none"> • Change in law, • Revocation of licenses, permits etc • Delays due to political instability 	<ul style="list-style-type: none"> • Effective legal provisions for safeguard interests of the project proponent
Force Majeure	<ul style="list-style-type: none"> • Natural Calamity 	<ul style="list-style-type: none"> • Contractual provisions where any penalties for not meeting contractual obligations are suspended for the time of the force majeure event • Insurance

10.2 Indicative Project Structure

The project will be handed over for development to a private player on Build Own Operate and Transfer basis for a concession period of 30 years. There is no real revenue source for the operator as the port will be for captive use.

It is proposed that the private player will be awarded the project on the basis of quoted Minimum Guaranteed Throughput and the equivalent NPV of the revenue to the state from wharfage. While the tentative project structure is summarized in the table below, the detailed terms and conditions will be governed by the finalized Captive port policy of the state and the model concession agreement of the planning commission.

Table 20: Indicative Project Structure

Component	Description
Structure	<ul style="list-style-type: none"> • BOOT model with 30 year concession period • Company bidding for highest promised MGT and equivalent NPV of revenue to the state from wharfage • If the company does not meet the 90% of the quoted MGT for 3 consecutive years, the government will have the right to terminate the contract
License Period	<ul style="list-style-type: none"> • 30 years
Payment to the Concession Authority	<ul style="list-style-type: none"> • Wharfage • Lease Rentals for the land
Role of Concession Authority	<ul style="list-style-type: none"> • Provision of unencumbered land for port development
Role of Private Partner	<ul style="list-style-type: none"> • Development of the port infrastructure • Ensuring that the quoted MGT is met

11 Way Ahead

The way ahead for the project will be to first carry out detailed technical studies for assessing the dredging and breakwater requirements for developing a port.

The state will, then, be required to finalize the captive ports policy to ensure that the ports are awarded on PPP basis through a transparent process.

Once the policy is finalized, based on technical feasibility and land availability, the state can go ahead with the procurement process.

The Consultants will also hold Capacity Building workshops for officials identified as PPP cell personnel. Three training sessions will be organised as a part of capacity building. Various techniques of effective communication like audio-visual media in form of PowerPoint presentations, videos, notes, interaction dialogues etc will be used for these capacity building sessions.

12 Annexure 1: Cashflow Statement

The table below gives the cashflow statement of the scenario where the potential investor (Thermal Power Plant importing coal) has an option between Padubidri and alternative site 500 km from NMPT to locate its unit

INR Cr								
FY-->		2016	2020	2025	2030	2035	2040	2042
Inflow								
Equity		0.00	0.00	0.00	0.00	0.00	0.00	0.00
Debt		0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total Income		103.22	125.47	160.13	204.37	260.84	332.90	367.02
Total Inflow		103.22	125.47	160.13	204.37	260.84	332.90	367.02
Outflow								
Capex		0.00	0.00	0.00	0.00	0.00	0.00	0.00
Principal Repayment		32.98	32.98	32.98	0.00	0.00	0.00	0.00
Interest Repayment		37.60	21.77	1.98	0.00	0.00	0.00	0.00
Opex		46.01	56.24	72.40	93.43	120.89	157.00	159.33
Total Outflow		116.60	110.99	107.37	93.43	120.89	157.00	159.33
Opening Balance		0.00	(12.43)	134.82	582.84	1193.02	1961.61	2321.56
Net Surplus		(13.38)	14.47	52.76	110.95	139.94	175.90	207.69
Closing Balance		(13.38)	2.04	187.58	693.79	1332.96	2137.51	2529.25
Project IRR								
Capex		0.00	0.00	0.00	0.00	0.00	0.00	0.00
PBT		8.83	36.67	74.96	100.16	129.16	171.05	202.84
Depreciation		10.78	10.78	10.78	10.78	10.78	4.85	4.85
Interest		37.60	21.77	1.98	0.00	0.00	0.00	0.00
Project Cashflow		19.61	47.46	85.75	110.95	139.94	175.90	207.69
Project IRR	12%							
Project NPV	60.77							
Equity IRR								
Equity		0.00	0.00	0.00	0.00	0.00	0.00	0.00
PAT		8.83	36.67	74.96	100.16	129.16	171.05	202.84
Depreciation		10.78	10.78	10.78	10.78	10.78	4.85	4.85
Principal Repayment		32.98	32.98	32.98	0.00	0.00	0.00	0.00
Equity Cash Flow		(13.38)	14.47	52.76	110.95	139.94	175.90	207.69
Equity IRR	18%							