A STUDY OF THE NEW GOVERNANCE MODEL IN THE PORT SECTOR AND SUSTAINABLE INFRASTRUCTURE OUTCOMES: A CASE STUDY OF DHAMRA PORT IN ODISHA

A Thesis submitted to the University of Hyderabad in partial fulfillment of the requirements of the degree of

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ECONOMICS

BY

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CERTIFICATE

This is to certify that the thesis entitled **"A Study of the New Governance Model in the Port Sector and Sustainable Infrastructure Outcomes: A Case Study of Dhamra Port in Odisha"** submitted by **KEDARSEN SAHOO** bearing **Reg. No. 11SEPH07** in partial fulfillment of the requirements for the award of **Doctor of Philosophy degree** in the **School of Economics** is a bona fide work carried out by him under my supervision and guidance. This thesis is free from plagiarism and has not been submitted previously in part or in full to this or any other University or Institution for the award of any degree or diploma.

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1. Deregulation in development project: A case of Dhamra port project in Odisha, *Ocean and Coastal Management*, Vol-100, November, 2014, Page- 151-158. ISSN- 0964-5691

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SE-680	Dissertation	16	Pass

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TABLE OF CONTENTS

Abbreviation …… vii
List of Tables…… viii
List of Figures and Maps……. ix
List of Boxes……..... ix

Chapter-1: Introduction ……1-39

1.1: Infrastructure and Economic Development ……..……..…1
1.2: Rationale behind Public Provisioning of Infrastructure Services ……..…..……2
1.3: Significance of Transport Infrastructure and its Role in the Indian Economy …….……..5
1.4: Maritime Transport and Maritime Trade in India ……8
1.5: Port Infrastructure in India: Overview and Structure …….……12
1.6: Role and Function of Seaports ……14
1.7: Debate on Ports and Development; An Overview ……...…….18
1.8: Globalisation and Port Development ……29
1.9: National Importance of Port Development …….…….31
1.10: Problem of the Study ……. ……...…….33
1.11: Research Objectives and Questions of the study ……..…..…….37
1.12: Conclusion ……..…….……39

Chapter-2: Methodology, Study Area and Data Source……..40-59

2.1: Introduction …….……40
2.2: A Brief Historical Overview of Dhamra Port Project ……..…43
2.3: Change in Ownership of Dhamra Port Project ……....45
2.4: The Stated Vision of Adani Group in Acquiring Dhamra Port Project ……..47
2.5: Locational Advantage of the Dhamra Port Project ……...49
2.6: Master Plan of the Dhamra Port Project. ……..52
2.7: Significance of the Dhamra Port Project …….……54
2.8: Study Area, Sample Design, Methodology and Data Sources ……56
2.9: Organisation of the Study …….……59

Chapter-3: Privatisation, New Modes of Governance and Performance of Indian Port Sector……..…….60-95

3.1: Introduction …… 60

3.2: Port Development Models ……..…… 60

3.3: Port Management New Governance Models …… 63

3.4: Extent of Privatisation …… 65

3.5: Modes of Privatisation …… 67

3.6: State of India's Port Sector in Pre-Reform Period ……..69

3.7. Port Reforms in India ……..71

3.8: Performance of Port Sector in India ……74

3.9: Port Performance Parameters of India Ports ……88

3.10: Conclusion …… 95

Chapter – 4: Impact and Consequences of Dhamra Port Project: The Construction Phase……96-134

4.1: Introduction..... 96

4.2: Situation of the Dhamra Port Project in the Pre-Construction Phase…… 96

4.3: Regulatory Capture and Legal Loopholes in the Development of Dhamra Port Project…. 99

4.4: Analysis of Dhamra Port Project during Construction Phase …… 105

4.5: Total Land Acquisition for Construction of Dhamra Port Project …… 107

4.6: Displacement, Rehabilitation & Resettlement …… 111

4.7: Analysis of Sample Households …… 117

4.8: Impacts of Dhamra Port Development on Different Categories of People……. 124

4.9: Impact of Dhamra Port Project on Socio-Economic Issues…….. 130

4.10: Impact of Dhamra Port Project on Ecology ……. 132

4.11: Conclusion…… 133

Chapter - 5: An Analysis of the Impact of the Dhamra Port Project: The Operational Phase of Project…….……135-162

5.1: Introduction …….. 135

5.2: Role of Dhamra Port in Transportation of Minerals in Odisha …….. 135

5.3: Impacts of Restrictions on Iron Ore on Dhamra Port …… 138
5.4: Dhamra Port Project Based Infrastructure Development in Odisha …….. 141
5.5: Proposed Commercial Development Surrounding the Dhamra Port Project ……... 142
5.6: Total Employment Generation in the Dhamra Port Project ……. 146
5.7: Spill-Over Impact of Dhamra Port in the Operational Phase …… 154
5.8: Contribution of Dhamra Port Development to the Local Economy …… 160
5.9: Conclusion …….. 162

Chapter-6: Summary & Conclusion…….. 163-170

Bibliography ……...171-179

Appendix ……...…. 180-190

Appendix – 1 ……. 191-194

Questionnaires …….…….. 195-199

List of Tables

Table No.	Title of Tables	Page No.
1.1	Share of Different Modes of Transport in GDP in India (in %)	7
1.2	Share of India's Sea-borne Trade in the Total Foreign Trade	11
1.3	State/Island Wise Distribution of Indian Ports	13
2.1	Salient Features of the Second Phase of Dhamra Port Project	54
3.1	Allocation of Responsibilities between Public and Private Authority	65
3.2	Port Function Matrix	67
3.3	Allocation of key responsibilities under the main private sector participation options	67
3.4	Total cargo handled by Indian ports during the period of 1985-86 to 2014-15	75
3.5	Growth rate of Total Cargo Traffic Handled at Indian Ports during 1985-86 to 2014-15	76
3.6	Capacity Utilisation of Major Ports	85
3.7	Major Port-wise Capacity Utilisation during 2010-11 to 2014-15 (in %)	86
3.8	Non-Major Port-wise Capacity Utilisation during 2010-11 to 2014-15 (in %)	87
3.9	Turnaround Time at Indian No-Major Ports (in Days)	94
4.1	Comparison between the ISPL' EIA and DPCL's Master Plan	99
4.2	Acquisition of Total Land for Dhamra Port Project	107
4.3	Acquisition of Govt. Land for Dhamra Port Project	108
4.4	Acquisition of Total Private Land for Dhamra Port Project	109
4.5	Tahasil-Wise Private Land Acquisition for Dhamra Port Project	109
4.6	Acquisition of Land for Exchanging of Grazing & Burial Lands	110
4.7	Category-Wise Total Displaced Household in Dhamra Port Project	114
4.8	Rehabilitation and Resettlement Assistance Package for DHs	115
4.9	Category-Wise Onetime Cash Assistance	117
4.10	Size of the Households	118
4.11	Age structure of the Households	118
4.12	Compensation of R&R Assistance of Sample Households	119
4.13	Amount of Land Sacrificed for the Dhamra Port Project	120
4.14	Size of Land Holding Before and After the Location of the Port	121
4.15	Change in Occupation of the Sample Households	122
4.16	Change in Income of the Sample Households (in number)	124
5.1	Commodity-Wise Import in Dhamra Port (In 000' tonnes)	137
5.2	State-Wise Movement of Cargo from the Dhamra Port (in tonnes)	137
5.3	Commodity-Wise Export in Dhamra Port (in tonnes)	140
5.4	Skill-wise Employment in the Dhamra port for operation and Management	146
5.5	Employment of Project Affected People at Dhamra Port	147
5.6	Skill-Wise Employment of People under Major Contractors	148

5.7	Details of Each Category of Employment	149
5.8	Nature of Employment of the Displaced Households	151
5.9	Nature of Employment of the Land Losers Households	152
5.10	Purchase of land from Master Plan Area	156

List of Figures and Maps

Figure No.	Title of Figures and Maps	Page No.
1.1	Trend in Maritime Trade and GDP in India	10
2.1	Location of Dhamra Port Project in Indian Map	50
2.2	Location of Dhamra Port Project	50
3.1	Share of Major Ports and Non-Major Ports in the Total Cargo Handled	76
3.2 (a)	Trend in POL handled in Indian ports	79
3.2 (b)	Trend in Iron Ore handled in Indian ports	79
3.2 (c)	Trend in Coal handled in Indian ports	80
3.3 (a)	Trend in Total Overseas Traffic Handled in Indian Ports	81
3.3 (b)	Trend in Total Coastal Traffic Handled in India	82
3.4 (a)	Total Cargo Loaded (Overseas & Coastal) at Indian Ports	83
3.4 (b)	Total Cargo Unloaded (Overseas & Coastal) at Indian Ports	83
3.5 (a)	Total Cargo Vessels Sailed at Indian Major Ports	89
3.5 (b)	Average Pre-Berthing Detention Time at Indian Major Ports	90
3.5 (c)	Average Turnaround Time at Indian Major Ports	91
3.5 (d)	Average Output per Ship Berth Day at Indian Major Ports	92
3.5 (e)	Percentage of Idle Time at Indian Major Ports	93

List of Boxes

Box. No.	Title of Boxes	Page No.
2.1	A Brief Historical Overview of the Area	44
4.1	Terminology Used in the Study	111
4.2	History of the Displaced and Land Loser Households	113

CHAPTER-1
INTRODUCTION

1.1: Infrastructure and Economic Development

Infrastructure is generally defined as the physical framework of facilities through which goods and services are provided to the public (Government of India, 1996). The infrastructure is broadly classified into physical and social depending upon the nature of service. Economic infrastructure includes public utilities such as electricity, water supply, sanitation & sewerage, solid waste collection and disposal, gas, telecommunications, transport (railways, roadways, airways, and waterways pipeline), irrigation, water supply and so on. Physical or economic infrastructure contributes to economic growth through lower transaction costs, generates multipliers of income, investment, employment, output, and other ancillary development. Social infrastructure often encompasses education and healthcare, housing, recreation facilities and so on. Social infrastructure improves the capabilities of individuals as well as the quality of life.

Infrastructure is considered as the engine of economic activity which is used in the production process of almost every sector. There is a significant positive correlation between infrastructure and economic growth. If total infrastructure increases by 1 per cent with each 1 per cent increase in per capita GDP; access of household to safe water increases by 0.3 per cent, roads increase by 0.8 per cent, power by 1.5 per cent, and telecommunications by 1.7 per cent (World Development Report, 1994). Infrastructure services are demanded not only for their direct consumption but also for raising the productivity of users. Infrastructure services are neither directly productive nor directly used for final use but support the undertakings of various production activities. In other words, Infrastructure per se may not be the part of the production process, but has crucial role in providing the necessary services. For instance, infrastructure services facilitate the access to intermediate inputs to production as well as provide access to markets that are willing to pay a higher value for the final products. Also it raises the productivity by connecting goods to the markets, workers to industry and people to services. In this way it helps to lower the cost, enlarge the market and facilitate trade. Any reduction in the input costs for production or augmentation of revenues from the final product raises the profitability, thus leading to higher levels of output and employment in the economy as a whole. Since the infrastructure services lead to higher returns from other factors of production by enhancing the productivity, therefore, it is

considered as unpaid factor of production. The availability of adequate infrastructure facilities helps to determine success in diversifying production, expanding trade, enhancing the productivity of capital and labour and increasing the production, profitability, income and employment. The development of infrastructure is so important for the Indian economy that the 12th Five Year Plan has doubled the expected investment in infrastructure to $1 trillion. Still, it is hardly going to suffice the required demands that are likely to be placed on transport and other infrastructure services by a rapidly growing economy (Planning Commission, 2013). On the other hand, lack of access to infrastructure services lead to underutilisation of the existing productive capacity and constrain short run productive efficiency and output growth.

1.2: Rationale behind Public Provisioning of Infrastructure Services

Availability of adequate, efficient and affordable infrastructural facilities constitutes the core of any development strategy of accumulation and growth, the success of which is judged on the basis of whether the economy has been able to provide the infrastructure services of high quality at reasonable cost. As the infrastructure projects involve high upfront costs, huge capital investments and long gestation period for these investments, high risk and low return, the private sector was also loath to bear the risk because of having little financial resources during that period (Hall and Soskice, 2001). Infrastructure services are also characterised by the existence of externalities, high capital intensive, essential for social welfare which make it difficult for infrastructure entities to recoup investment costs and operational expenses through the levy of user charges. They are the nature of 'public goods' (Bhaduri, 2005). As it was felt that private firms pursue profit maximisation as the goal in their economic activities and such pursuit of objective would hamper resource allocation in infrastructure services where public interest is the main focus. Hence, the public sector became obligated to take the responsibility of developing the various infrastructures to expedite economic development as these are essential for the growth of the nation. Hence, historically, the infrastructure services were being perceived as natural monopolies in ownership and regulation of the government in many countries for most of the 20th century. The main reason of such regulation is to prevent or minimize the effects of market failure and to protect the public interest. Market failure arises when what in fact is a public good is produced and transacted as if a private good through the market, leads to a failure in achieving overall welfare of the society with unaccounted social costs outweighing the private benefits. Because of profit motivation, the

private markets will not supply some goods and services at socially desirable levels, that is, private markets tend to undersupply the public good as a consequence to market failure.

Bator (1958) has defined market failure in the allocation theory as the failure of a more or less idealized system of price-market institutions to sustain "desirable" activities or to stop "undesirable" activities. The desirability of an activity, in turn, is evaluated relative to the solution values of some explicit or implied maximum-welfare problem. The central theorem of modern welfare economics, the so-called duality theorem, asserts a correspondence between Pareto efficiency and market performance. Duality can fail in many ways but he talked, specifically, in a statical and "laissez-faire" context. He has classified market failures as failure of existence, failure by signal, failure by incentive, failure by structure and failure by enforcement. There are three causes of the above fivefold classification of market failures. They are Ownership Externalities, Technical Externalities and Public Good Externalities. These are not mutually exclusive.

However, there are three important cases where market fails to produce efficient outcomes. They are:

(i) Monopoly Power: A firm enjoys the monopoly because of economies of scale, immobility of assets, or legal barriers to entry. Economies of scale arise when the cost of producing good or service declines as the volume of production increases. In the absence of competition, the monopolist restricts output to less than the optimal level and raises the price more than the competitive level, thereby reducing welfare of the society.

(ii) Asymmetry of Information: Information asymmetry exists where the producer is aware of all the information related to the product but the consumer is not. In other words, the information provided to the consumer is inadequate while he makes a purchase decision. The producer does not pass the full information or at least the critical part of it, to the consumer. The information gap can be minimized if there is a suitable regulation. The guidelines mentioned on the package of drugs are an example where a regulation aims to bridge the information asymmetry.

(iii) Externalities: An externality arises when action (consumption or production) of one party impacts to another party's (consumption or production) due to a transaction and these effects (costs or benefits) are not reflected in the price. For instance, a steel plant dumps its

waste in a river so that irrigation water downstream becomes unsuitable for use. For the steel producer it is an externality, for it is not paying the true cost of waste disposal. For the farmer, using the same water for irrigation purpose, the externality is negative, for the water may affect the yield. Regulation is expected to minimize the externalities and correct such market failure.

The provision of basic infrastructure services was under state ownership and control because they are considered as strategic and sensitive from a national security perspective, and therefore, they were afforded a statutory monopoly status. This natural monopoly feature of the government precludes market competition, and its social and environmental externalities and other public good aspects that result in social benefits exceeding private benefits (Nestor et al. 1999). As private operators are guided by the motive of profit maximization objectives, they may not necessarily provide infrastructure services that are of economic, environmental or social value if doing so would conflict with profit maximization objective. This resulted to entrust the responsibility of providing the services to the public authority so that the public interest is upheld.

Apart from this, the provision of the infrastructure services was the public monopoly because of economies of scale prevailing in the sector, equitable access, and public goods characteristics. The first implies that provision by a single firm will always be cheaper than by more firms. Second reason states that because of market failure, markets may not provide equitable access to a basic quality of service to groups that are less able to pay or are more costly to supply. Third reasons state the non-exclusive nature of public goods where consumption of one person cannot exclude others from consuming it. Markets do not provide such goods such as defence or street lighting because private suppliers cannot charge consumers for their use of the good. However, sometimes governments are involved in the provision of public infrastructure for historical or cultural reasons. For example at a stage of nation's development, when markets or institutions are yet to reach maturity, it is the government who is capable of taking on the risk of an infrastructure improvement sought by the community (Productivity Commission, 2014).

Prior to economic liberalisation the Government of India not only owned and provided the infrastructure services but also regulated them. However, the government faced with several constraints to raising resources from the market for providing budgetary supports

for infrastructure development and therefore failed to deliver quality infrastructure services efficiently. Hence, Government moved away from its traditional role as a provider of infrastructure services to the roles of being a facilitator and regulator of infrastructure by ensuring the delivery of services happen in a desirable manner. If provision of these services is left entirely to private sector without intervention of the Government and, it might lead to non-adherence of the usual social welfare objectives. The regulatory reforms were initiated where both the Government and the business entities (public private partnership) have a role to play. In this approach the Government would play the role of a facilitator and overseer and the business entities as service provider. This reform transforms the role of Government from a producer to that of a facilitator which would promote competition. The public interest in a PPP is to maximize the social welfare from an infrastructure good. For this the public sector will seek to deliver an infrastructure asset at the lowest possible cost and at the highest possible benefit (TERI Report, 2003).

The belief that only the public sector can provide the best services and serve the public interest best; therefore, the entry of the private sector should be restricted, if not altogether prevented stands challenged in the new approach to development. This new approach has induced commercialisation of infrastructure services through a wave of privatisation and deregulation measures, leading to the provisioning of infrastructure services by the market. In spite of this, the state continues to be responsible for providing appropriate regulatory frameworks which assists investors and infrastructure entities on the one hand and ensures efficiency, productivity and protect consumer' interest from monopolistic exploitation on the other. So there is a substantial progress witnessed in recent years from the old paradigm of public monopoly provision of infrastructure services to the new paradigm which encourages private investment and provision of infrastructure services within a stable and commercially viable regulatory framework (Jetli and Sethi, 2007).

1.3: Significance of Transport Infrastructure and its Role in the Indian Economy

Transport systems address the significant challenge of reducing the costs of spatial movements. It is found in many cases that transport costs in the contemporary context constitute a far more serious trade barrier than tariffs. A study in 2001 by the World Bank concludes that, for 168 U.S. trade partners, transport cost barriers outweighed tariff barriers. For the majority of Sub-Saharan African countries, for example, the share of transport costs in trade value is approximately five times as high as the tariff burden. In the developing

countries, transport costs are on average 70% higher than in the industrialized countries (WTO, 2004). Generally, the transport costs account for 10 percent of the total cost of a product. Transport costs have significant impacts on the structure of economic activities as well as on international trade. Thus, apart from the real benefits accruing from provisioning of transport services at reduced prices in the domestic economy, empirical evidence underlines that raising transport costs by 10 percent reduces trade volumes by more than 20 percent. Therefore, it can be concluded that under a development policy regime that emphasises on export promotion, it is imperative that reductions in transport costs could lead to an increase in international trade (Rodrigue, 2013).

India has become one of the fastest growing countries in the world and therefore it needs to maintain the growth momentum in sustainable manner, therefore, it is very crucial to improve the quality of infrastructure all over the country to sustain economic growth. High transaction costs arising from inadequate and inefficient infrastructure can prevent the economy from maintaining the high growth rate and realising its full growth potential in the medium and long-term. Indian policy makers realize that any credible efforts for sustainable economic growth in India must involve substantial up-gradation of infrastructure investment and provision of quality infrastructure facilities. The transport sector is an essential component of the infrastructure development. It is not possible to accelerate economic growth if transport investment is not accelerating correspondingly. Conversely, it will not be possible to find the resources required for infrastructure unless the country's economic growth accelerates (Planning Commission, 2014).

The transport system in India comprises of distinct modes, such as; rail, road transport, coastal shipping, civil aviation, inland water transport and pipelines. Rail and roads dominate the transport system in India carrying about 87 percent of total freight traffic in the country in 2007-08. There is close relationship between economic growth and infrastructure investment, of which transport investment is a very significant component. In India, distribution of various goods has become mainly possible through transport routes such as railways, roads, airways and waterways. Of all modes of transport, road sector is contributing maximum to the India's GDP. The share of transport sector and composition of various sub-sectors of the transport sector into the GDP of Indian economy is given in the table-1.1 below.

Table-1.1: Share of Different Modes of Transport in GDP in India (in %)

Year	Railways	Road Transport	Water Transport	Air Transport	Share of transport sector to total GDP
1985-86	0.61	2.59	0.66	0.34	
1990-91	1.3	3.8	0.2	0.2	6
1995-96	1.2	2.9	0.7	0.2	5
1996-97	1.1	3	0.7	0.2	5
1997-98	1	3.2	0.7	0.3	5.2
1998-99	0.9	3.3	0.6	0.3	5.1
1999-00	1.1	3.5	0.6	0.3	5.3
2000-01	1.1	3.7	0.7	0.2	5.5
2001-02	1.2	3.9	0.2	0.2	6
2002-03	1.2	4.1	0.2	0.2	6.2
2003-04	1.2	4.6	0.2	0.2	6.4
2004-05	1	4.8	0.2	0.2	6.7
2005-06	1	4.8	0.2	0.2	6.7
2006-07	1	4.8	0.2	0.2	6.7
2007-08	1	4.7	0.2	0.2	6.7
2008-09	1	4.8	0.2	0.2	6.6
2009-10	1	4.7	0.2	0.2	6.5
2010-11	1	4.6	0.2	0.3	6.4
2011-12	1	4.8	0.2	0.3	6.5
2012-13**	0.8	3.2	0.1	0.1	4.9
2013-14**	0.9	3.1	0.1	0.1	4.8

Source: Ministry Of Road Transport & Highways, Government of India
Note: Data up to 2003-04 are at 1999-2000 prices. Data from 2004-05 onwards are at 2004-05 prices, **= Percentage of GDP at the base year 2011-12.

Transport sector accounted for a share of 6.5 per cent in India's Gross Domestic Product (GDP) in 2010-11 of which the road transport is the dominant mode of transport with a share of 4.7 percent. The share of road transport in GDP has increased whereas the share of railways has fallen and share of water and air transport have remained constant. It may be noted that the entire increase in percentage share of transport into GDP is coming from road transport sector only, with share of other modes remaining either constant or falling marginally. Even though waterways are considered the cheapest mode of transport, its contribution to GDP was less because of its slow progress in India. The contribution of water transport to the GDP ranges between 0.7and 0.2 per cent in the post-liberalization period.

The ports as an infrastructure facilitate trade and transport and in this way underpin economic activity. The port as infrastructure provides various services to firms in terms of transfer of goods from inland transport to maritime transport modes and vice versa which involves series of activities. Thus, the port is considered as a cluster of infrastructure

attributes from which a series of regional economic development benefits flow. If the ports are seen primarily as clusters of facilities that confer services on users, then the efficiency of port operations takes on particular importance in policy. An efficient port may make hinterlands more attractive to business firms, and allow for expansion of the firms and more efficient production and compliment the competitive advantage of firms already located there (Hall, 2002).

1.4: Maritime Transport and Maritime Trade in India

The term maritime transportation refers to seaborne transportation. There are different modes of transport such as waterways, airways, railways, by which people and freight achieve mobility. Of all modes, the maritime transportation is the most effective mode to move large quantities of cargo over long distances because the physical properties of water confer buoyancy and limited friction. More than any other mode, maritime transportation is linked to heavy industries, such as steel and petrochemical facilities that are adjacent to development of port sites (Rodrigue, et al., 2013). Thus, this study focuses on maritime transport.

The importance of sea transport in the early stages of economic development is not new. It is well known to economists that shipping and seaports act as an catalyst of economic development. As productivity increases and businesses produce more goods than they can sell locally, they need access to wider markets. In The Wealth of Nations (1776, chapter 3), Adam Smith argued that the key to success of a capitalist society is the division of labour and the extent to which this can be practised depends crucially upon the size of the market. So unlocking the power of 'division of labour' depends on transport. This is where shipping had a crucial part to play, as the source of cheap transport which can open up wider markets to specialization. Shipping could be a means of transport for even the most everyday products, at prices far below those that can be achieved by any other means. Smith viewed the importance of trade for division of labour and specialisation as essential for resource efficiency and economies of scale. He predicted that shipping would be the source of cheap transport that would fuel the world economy. Economic development has gone hand in hand with sea trade for sound economic reasons, a process which Adam Smith explains in the following way:

> *As by means of water carriage a more extensive market is opened to every sort of industry than what land carriage alone can afford it, so it is upon the sea-coast, and along the banks of navigable rivers, that industry of every kind naturally begins to subdivide and improve itself, and it is frequently not until a long time after that those improvements extend themselves to the inland parts of the country* (cited in Stopford, 2009).

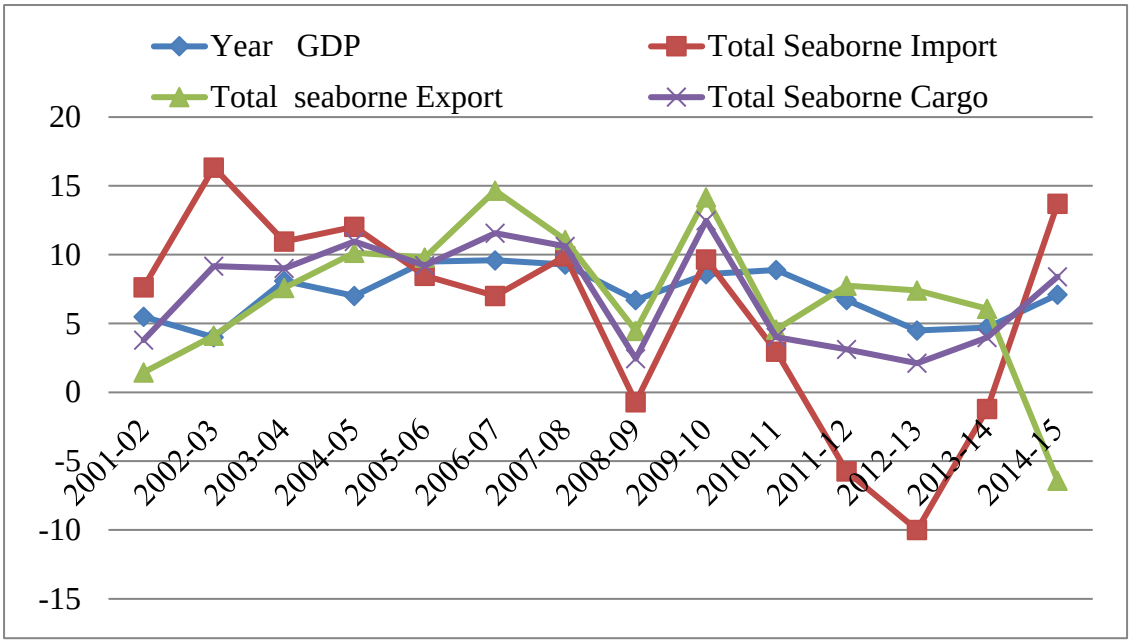
Adam Smith saw shipping as one of the stepping stones to economic growth. In the era prior to the development of aeronautics, shipping was generally more efficient than land transport, allowing trade to get started earlier, thus contributing to economic development. A business operating in a countryside town without links to the outside world can never achieve high levels of efficiency, because, it would be able to supply to very small market which in turn could limit the degree of scale and specialization.

The success or failure of trade is influenced by the availability and efficiency of transport system. Without this the nation fails to participate in regional or global trade effectively. Therefore, the nations need to expand, rehabilitate and maintain a developed physical underpinning of trade such as airports, seaports, railways etc. to support and stimulate their economic development. Ports provide the direct linkages from international to regional and local transport system; hence, by improving their performance, ports can encourage the integration of local and regional economy into global supply chains and thus stimulate structural changes of the economy. If the current level of global integration provides an impetus to seaports to perform better as fundamental link in the overall trade chain so that surrounding localities can gain comparative advantages. Therefore, the policy makers should assess the port performance and productivity in a regular basis and make appropriate strategies for sustainable economic development.

The maritime trade changes in tandem with worldwide macroeconomic conditions. World economic growth, merchandise trade and the demand for seaborne transport are closely linked. When world Gross Domestic Product (GDP) growth is less, the volume of seaborne trade shrinks. Developments in the world economy and merchandise trade are primary drivers in seaborne trade. Maritime transport activity depends on developments in world trade. The global merchandise trade has been growing much faster than world GDP up to the year 2011-12. India’s maritime trade comprises of export-import trade in various bulk

and non-bulk commodities. Since the launch of economic reforms, there has been a persistent increase in handling of cargo traffic at Indian ports. Though India's share in global exports is about 1%, export growth has shown vigour and vitality over the last few years. To sustain the momentum of exports and improve competitiveness the country would need adequate and efficient infrastructure in terms of ports and maritime services. Trade can generally grow faster or slower than GDP, although since the 1990s it has tended to grow about twice as fast (Ministry of Shipping, 2014-15).

Figure-1.1: Trend in Maritime Trade and GDP in India



Source: Basic Port Statistics 2014-15, Ministry of Shipping

Figure-1.1 depicts that India's total seaborne traffic during the last decade was quite impressive particularly from the period 2002-03 onwards. This has been demonstrated in the high growth rate in the Indian GDP from the period 2003-04 to 2007-08. To a large extent the strong growth of India's seaborne cargo traffic reflected buoyancy in India's overall Gross Domestic Product (GDP) growth and robust growth in merchandise trade in recent years. Because of uncertain global market conditions and more challenging domestic market environment India's seaborne cargo traffic and GDP grew by a mere 2.46 per cent and 6.7 per cent in 2008-09 but recovered sharply to 12.47 per cent and 8.6 per cent in 2009-10. On the other hand the growth of total seaborne import registered a negative growth in 2008-09 but it bounced back in 2010. However, the growth of total seaborne export has been positive although it registered 4.48 percent in the year 2008-09. Because of lack of data up to the

period, 2014-15, the share of India's sea-borne trade in the total foreign trade is given below in table-1.2 up to the year 2006-07.

Table-1.2 Share of India's Sea-borne Trade in the Total Foreign Trade

Year	Share of seaborne in export (in %)	Share of seaborne in import (in %)	Share of seaborne Trade to total foreign trade (in %)
1985-86	71.7	87.9	82.2
1988-89	59.5	69.6	65.2
1991-92	66.6	80.8	74.0
1994-95	64.3	79.8	72.4
1997-98	64.4	74.7	70.0
2000-01	64.5	68.4	66.6
2001-02	64.6	68.2	66.5
2002-03	65.1	61.5	63.2
2003-04	64.8	65.1	65.0
2004-05	66.2	65.8	65.9
2005-06	69.1	70.3	69.8
2006-07	64.2	66.6	65.6
2007-08	66.0	67.1	66.6

Source: Basic Port Statistics 2014-15, Ministry of Shipping

Table-1.2 shows that share of seaborne export in total export has been decreasing but value of total exports and total imports have been increasing. It indicates that more than 60% of the India's foreign trade is carried out through the waterway transport and rest less than 40% of the trade is carried out by other modes of transport.

There is a close relationship between Economic growth and Port growth. The economic approach treats maritime transport as a derived demand from international trade. In other words, there will be no need for transport if no trade takes place. This is explained with the help of *national income account identity*.

There is a close relationship between the economic growth of a country and its international trade. Economic development and rise in the national income influences the pattern and volume of international trade while changes in the condition of international trade affect the composition and level of national income. In order to study the relationship between Economic growth and Port growth, it is pertinent to determine which variables are appropriate to be used as indicators of economic growth. Bigger is the size of economy, bigger will be the country's seaborne trade. When the relationship between seaborne trade

and GDP is examined, there exists a close relationship between them. Here, GDP is used as indicator or proxy for economic growth as well as for port demand. GDP can be defined as the total value of all goods and services produced within the boundaries of a nation within a year. This relation is shown in following equation.

$$GDP = C + I + G + (X-M)$$

Where, GDP = Gross Domestic Product.

C = Household consumption, I = Investment, G = Government Expenditure

X-M = International trade estimated by the deduction of gross export value (X) with gross import value (M)

There is direct and linear relationship between nation's economic development (GDP) and port development as GDP incorporates international trade in its calculation indicated by the deduction of gross export value with gross import value. International trade (X – M) which involves export and import of goods are most likely carried out via seaborne transportation which will use ports. This reflects that if there is a change in international trade, there will be a change in GDP and also for the demand for port services. Maritime Transport growth is driven by developments in the world economy viz. growth in world output & trade as well as in the Indian economy. Thus, volume of seaborne cargo traffic is essentially in the nature of derived demand. The demand for port services is characterised as a derived demand because, it is derived from the demand for the commodities from one region that needs to be delivered to other areas for a greater economic value. Without any demand for commodities from an area, people may not demand port service merely for consumption purposes alone. The demand for port service is contingent upon both the global and domestic activity. As the domestic industry grows, the demand for port service will also grow.

1.5: Port Infrastructure in India: Overview and Structure

Ports are important components of infrastructure. India has an extensive coastline of about 7517 km, with 13 major ports and 200 notified non major ports (minor/intermediate ports) spread across 11 maritime states and sea-islands. Out of all the 13 major ports, 12 ports are sea ports and Kolkata is a river port. Out of the 200 non-major ports, only some ports are well developed and provide all-weather berthing facilities for cargo handling. In 2013-14, only 69 Non-major Ports were reported to have handled cargo traffic. The major and non-major ports of the respective maritime states are given in the table 1.3 below.

Table-1.3: State/Island Wise Distribution of Indian Ports

West Coast of India			East Coast of India		
States/island	Major Ports	Non-Major Ports	States/island	Major Ports	Non-Major Ports
Maharashtra	2	48	Tamil Nadu	3	15
Gujarat	1	41	Andhra Pradesh	1	12
Kerala	1	17	Odisha	1	13
Karnataka	1	11	West Bengal	1	1
Goa	1	5	Pondicherry		2
Daman & Diu		2	Andaman & Nicobar Islands	1	23
Lakshadweep Islands		10			
Total	6	134	Total	7	66

Source: Basic Port Statistics, 2013-14, Ministry of Shipping

The Major Ports: are Kolkata, Paradip, Visakhapatnam, Ennore, Chennai, Tuticorin, Cochin, New Mangalore, Mormugao, Jawaharlal Nehru, Mumbai, Kandla and Port Blair. All major ports are administered by a 'Port Trust' except Ennore port (a satellite port of Chennai) which has been corporatized and incorporated in 1999 under the Companies Act, 1956. Two thirds of its shares of this port are owned by the Government of India, one third by the Chennai Port Trust. All ports (Major and Non Major Ports) are regulated under the Indian Ports Act, 1908. The Act defines the jurisdiction of Central and State Governments over all ports in the country.

In India, the major ports are placed under the Union list of the Indian Constitution, and are administered under the Indian Ports Act, 1908 and the Major Port Trust Act, 1963 by the Government of India. The Indian Ports Act, 1908 lays down general rules for safety of shipping and conservation of port for the entire port sector and regulates matters pertaining to the administration of port dues, pilotage fees and other charges. The Major Port Trust Act, 1963 lays down the institutional framework for the major ports in India. Under this Act, each major port is governed by a Board of Trustees appointed by the Government of India. The non-major ports are placed in the Concurrent List of the Constitution and are administered under the Indian Ports Act, 1908. To establish a Minor Port, the state government need not require the permission from the Central Government. The responsibility for the development of Non-Major Ports vests with the concerned state government. At the State level, the State Maritime Boards are in charge of administration, control, regulation and management of all Minor Ports in their State. The Maritime Boards exercise the powers through a landlord approach than following extensive control mechanisms under the Major Port Trusts Act,

1963 applicable to the Major Ports. Maritime Boards have so far been constituted in Gujarat, Andhra Pradesh, Maharashtra, Karnataka, Kerala, Odisha and Tamil Nadu.

Non-major ports were viewed as suitable mainly for fishing and coastal trade and the major ports were viewed as the principal gateways for international trade. The non-major ports include minor ports, intermediate ports and captive ports. As the Indian Constitution nowhere defined the size of a major or minor port Gujarat found that it could keep expanding its "minor ports" without limit, even if they became larger than some major ports. Some of minor ports of Gujarat are small and handle limited cargo, there are a few ports such as the Pipavav Port and the Mundra Port, which handle more volume of cargo than even some of the major ports.

The difference between minor and intermediate ports lies only in their throughput, the dividing line being 150,000 tons. In general, both minor and intermediate ports are known as "minor" ports (Haralambides and Behrens, 2000). Captive ports are jetties, with or without a breakwater, which are set up by corporations (such as Reliance Industries Ltd.) to serve their own import, export, and coastal movement needs. The corporation alone can use such ports, so they are called captive ports. Captive jetties are usually associated with coast based plants, and have helped in substantial reduction in logistics costs.

1.6: Role and Function of Seaports

Traditionally, the major role and function of the ports were being restricted to the provision of services to ships and their cargoes. However, in the present context of globalisation, the role and function of the port has been multifarious. Today, ports are not just merely a node or transfer point between sea and land to serve the purpose of ships but much more. Now, ports carry out various value-added and other related logistic services. With the development of modern production and trading systems, freight transportation has now become part of an integrated logistics system. The logistics approach treats transport as an integrated part of an overall planned system which links purchasing, production, packaging inventory management, labelling and marketing. Sometimes ports are induces to carry out their operations to more lucrative business of leisure and real estate property development when they are allowed to expand freely. Ports can also serve non-sea-related activities such as leisure, fishing, military ships deviating from traditional commercial cargo-ship activities. For instance, dry ports are inland logistics centres which are not directly linked to sea or

waterway connections but fall under broader definition of port (Bichou, 2009). The role of ports as logistics centres has been fully recognised in recent years with many ports worldwide expanding their activities into a wide range of logistics and value-added services. Thus, the port system not only serves as an integral component of the transport system, but is also a major sub-system of the broader logistics and supply chain systems.

From a logistics approach, ports are considered as logistics and distribution centres which not only optimise the movement of goods and services within the maritime transport system, but also provide complementary services and add value to members of the larger logistics and supply chain network.

In the contemporary times ports are becoming capital and technology-intensive from labour-intensive industries. With the development of containerisation and the growing specialisation of ships and terminals, ports became even more capital and technology intensive with sophisticated handling equipment. Ports have also developed as spatial and regional entities. More recently, the importance of ports and their corresponding hinterlands has been influenced by many new factors such as containerisation, inter-modal integration, information technology, shipping networks, logistics patterns, environmental sustainability, land use and policy (Bichou, 2009).

Ports and port infrastructures have changed considerably over the years. The role and function of the ports are changing because of the economies of scale in ship size, specialisation of shipping and development of various types of specialised ships and emergence of new technologies for handling cargoes. The evolution of seaports has been driven by growing containerisation. This change started in the 1970s with the growth of containerisation. Ports were originally located near cities, but developments in maritime trade have led to continuous redesign. Increased specialisation in cargo handling, growing ship sizes and the need for extra space for cargo handling and storage have resulted in port activities being concentrated at new, larger sites away from the original locations near city centres. Ports no longer serve only a city and the direct hinterland.

Ports are critical infrastructure resources and serve a key role in the transportation of freight and people. More than 80% of international trade is being carried by sea in terms of volume, therefore, ports are considered as vital for seaborne trade and international

commerce. Ports are the nodal interfaces where maritime transport connects with other modes of transport and where trading, distribution and logistics activities can take place. Efficient port operations significantly lower both the maritime cost and trade costs, however, any delays in ports increases the costs on logistics and supply chains by increasing cost of warehousing and inventory. Ports also serve as economic catalysts for the markets and regions in its hinterland and the aggregation of port services and activities that takes place in this hinterland generates socio-economic, wealth and benefits (Bichou, 2009).

The efficient working of seaports has great significance in an economy since all goods and passengers transported by sea require the use of two ports. In most of the countries, large share of international and domestic trade is done through maritime transport and there are no alternative transport modes to ships with the exception of air transport which carries less volume cargoes but are high value in nature.

Since ports act as interfaces between maritime and inland modes of transport (railways, road or inland navigation), seaborne traffic depends on seaports for all its operations. Therefore, in order to have an efficient maritime transport system, seaports must act efficiently. The basic objective of a seaport is to provide a fast and safe transit of goods and passengers through its facilities, so that the costs are minimised. Seaports also play the role of hubs for connection and trans-shipment allowing cargoes to move on different long-haul routes.

The role of a modern seaport can be summarized in the following UNCTAD definition: "Seaports are interfaces between several modes of transport, and thus they are centres for combined transport. Furthermore, they are multi-functional markets and industrial areas where goods are not only in transit, but they are also sorted, manufactured and distributed. As a matter of fact, seaports are multi-dimensional systems, which must be integrated within logistic chains to fulfil properly their functions. An efficient seaport requires, besides infrastructure, superstructure and equipment, adequate connections to other transport modes, a motivated management, and sufficiently qualified employees" (Trujillo et. al, 1999). Seaports are considered as focal points for regional development in North Europe like Antwerp, Rotterdam, Hamburg, etc. having long traditions of being linked with municipalities and accordingly, they justify the outlay of subsidies from governments for the improvement of port facilities.

Ports are very dissimilar in their equipments, assets, roles, activities, and institutional organisation and governance from one another and even within a particular port these activities or services vary. Ports are very complex and diverse in scope and nature where various activities take place by different actors and operators.

From a macro-analytical approach ports have been defined as being geographical, physical and corporate assets. Port roles and functions are identified through political, geographical (urban and spatial), economic and social perspectives. For instance, In Singapore, the port's role lies in the provision and development of the distripark and trading hub concept, while in Japan ports are being recognised as distribution centres, industrial zones and energy supply bases, mercantile trading centres, urbanisation and city development centres, life activity bases and maritime leisure bases (Bichou, 2009).

From a public policy perspective, ports are considered to be critical trade and transport infrastructure facilities and as economic and development catalysts for the nations or regions they serve. Policy maker ought to also consider urban planning and expansion, land use, safety, security and environmental sustainability for comprehensive developmental outcomes. This policy perspective approach identifies two major approaches.

The first approach relates port development to urban planning and management by giving particular importance to the port-city interface. The second approach perceives ports in terms of environmental factors where port planning and management should allow sustainable development and waterfront regeneration. Nowadays, much emphasis is being placed on the environmental sustainability of port development as on its economic, social and financial benefits. This approach is increasingly gaining prominence at the international, national and even local level with the widespread implementation of Environmental Impact Assessment (EIA) and Integrated Coastal Zone Management (ICZM) policies and the climate change agenda.

On the other hand, from a micro-perspective approach, ports can be analysed in terms of sets of activities and operations determining a port's roles and functional dimensions. The broad definition of this approach considers ports as facilities where vessel maintenance and cargo/passenger transfer is ensured. Other definitions extend the role of the beyond this

merely ship/cargo handling, storage and inter-modal tasks and include wide activities not necessarily linked to maritime transport and ship operations.

With the increasing roles and functions of the pots, it can carry out various activities and services within its sphere. UNCTAD distinguishes between a port's internal and external functions where the latter is being divided into services to ships and services to cargo. It outlines essential facilities or activities that should be provided by ports. Services to ships include such activities as pilotage, mooring and unmooring, bunkering, supply, repair and maintenance. Services to cargo are usually cargo-handling services such as loading, discharging, storage and stacking. The World Bank identifies three types of port assets: basic infrastructure, operational infrastructure and superstructure. Apart from these facilities and services, a port can offer so many other services. Sometimes, port activities can serve both ship and cargo interests such as those performed by the customs and health authorities, whereas other activities do not necessarily require being carried out in the port area, for example, logistical operations performed at inland logistics centres, dry ports or inland container depots.

A fourth approach perceives ports as general business ventures regardless of their specific role or functional status. Here, ports are analysed in terms of business and operational units such as operations, human resources, sales and marketing. Other approaches integrate ports within the wider logistics and production system which include industrial ports, network ports, trade ports and teleports. Port functions may be limited to simple berthing facilities, ship/shore or inter-modal interfaces; or extended to trade, logistics and production centres. Operational and management features also vary with the type of cargo or ship operated and the extent of services offered (Bichou, 2009).

1.7: Debate on Ports and Development; An Overview

The academic contributions to the analysis of ports and development are large. This analytical literature can be classified into various themes that are very significant. On the basis of a framework of classification, this section presents the contemporary analytical contributions to the debate on ports and development.

(a) Competitive Ports; International Trade and Economic Growth

One of the important possible reasons for the rise in international trade is a decline in international transportation costs. High transportation costs significantly impede trade of the

countries and make it more volatile than some of the other elements that impact trade. It varies between different products. Transport is an integral part of the production process in which it has direct bearing on a country's economy and development. An economy of a nation survives depending on the movement of goods it produces and receives in exchange from other nations. The interrelationship between trade and development plays a crucial role in the economic growth of a nation. The international trade of developing countries is more closely related to national economic growth than that of developed countries.

Almost all merchandise global trade moves via ocean and air modes to non-adjacent countries. The non-bulk commodities like oil and petroleum products, iron ore, coal, and grains are shipped almost exclusively via ocean cargo. Bulk cargoes constitute the majority of international trade when measured in terms of weight, but are a much smaller and shrinking share of trade when measured in value terms. Manufactured goods are the largest and most rapidly growing portion of world trade.

Openness to trade is one of several important factors to achieve economic growth. Countries that are open to trade have had faster economic growth than countries that have been more closed to trade. Greater openness to trade is clearly associated with faster economic growth. Trade contribute to a positive economic development both by generating incomes from exports, as well as by importing products in demand. Through trade both the exporting and importing country can take advantage of their respective resources and relative competitive advantage in a more efficient way, and contribute to diffusion of new knowledge through technology transfer. International trade through specialization and economies of scale decreases per unit production cost as production rise and lowers the price. The combination of lowered prices and specialized products is beneficial for consumers (Persson et al., 2009).

Radelet and Sachs (1998) have shown that shipping costs reduce the rate of growth of both manufactured exports and GDP per capita. If the shipping cost is doubled (e.g., from an 8 percent to a 16 percent CIF band) it reduces the rate of annual growth of slightly more than half of one percentage point. Greater transport costs lead to lower levels of foreign investment, a lower savings ratio, reduced exports of services, reduced access to technology and knowledge, and a decline in employment. The doubling of transport costs reduces the rate of economic growth of more than half a percentage point.

Limao and Venables (2000) have shown that raising transport costs by 10 percent reduces trade volumes by more than 20 percent and the poor infrastructure causes to increase the predicted transport costs more than 40 percent. He has found that the quality of onshore infrastructure is an important determinant of transport costs which accounts for 40 percent of predicted transport costs for coastal countries, and up to 60 percent for landlocked ones.

Limao & Venables (2001) found that landlocked countries have transport costs that are 50% higher than other maritime countries. Indeed, landlocked countries face a major cost disadvantage which is important because more than a fifth of the world's countries are landlocked. They have stated that an improvement in the infrastructure of landlocked countries from the 25th percentile to the 75th countries can dramatically increase trade flows and overcomes more than half of the disadvantages associated with being landlocked. If the shipping of imports of intermediate and capital goods becomes more expensive, this increases the cost of local production. Similarly, if exports become dearer to ship, earnings of the exporting country is reduced depending on the elasticity of demand and the availability of substitutes. The doubling of a country's transport cost leads to 80% drop in its trade and sometimes even more.

Clark et al. (2002) have analysed that port efficiency is an important determinant of maritime transport costs. If countries like Ecuador, India or Brazil improved their port efficiency from their current level to the 75th percentile, that is, to a level attained by France or Sweden, they would reduce their maritime transport costs by more than 15 percent each.

Adhitma and Tam (2009) have explained the relationship between port development and economic development in two ways. First, because a nation's economy is developing rapidly it will gain enough capital to invest in ports and develop its ports. Second, because a nation views the maritime sector as a main economic driver of international trade it invests in ports, which will then induce economic development. They have taken two approaches i.e. Market Led Economies and State Led Economies, in order to understand the diversity and differences in economic development in Southeast Asia region which will help to explain the difference in port development. They have chosen GDP to evaluate the relation between nation's economic development and port development in Southeast Asia. They also accepted that this relation between port growth and GDP growth will hold good when a national economy is based on industrialism, which has direct impact on export and import of a country rather than service based economy or agricultural economy.

Abe et al. (2009) find evidence that congested ports indeed generate higher costs. They find that transport cost reductions from investments in East Asian port infrastructure would generate $8 million of consumer surplus per year and cost less than $3million per year. The elasticity of transport cost per unit weight with respect to port-to-port distance is between 0.14 and 0.21 and the elasticity is higher by land than by sea.

Ghosh et al. (2011) has stated that the growth of traffic at Indian ports is expected to be driven mainly by higher volumes of coal containers, crude oil and POL, fertilizers and steel. The expected traffic growth in India is largely based on domestic demand drivers compared with international trade related demand while domestic demand is fundamentally stronger and more stable than international trade demand. This favourable demand environment would spur the growth in various port related activities and competitive pressure would remain high in the business line.

(b) Ports' Efficiency; Business Organization and Governance Structures

A port' growth is contingent upon the cargo it handles. An inefficient port impedes the competitiveness of the port and creates the anti-competitive forces. Indian ports were experiencing the inefficiency in the handling of the cargo and this propelled for reforming the port sector in order to improve the performance and efficiency. This reform has facilitated the entry of private organisation into the port sector through different port governance models. The literatures on this issue by different scholars are presented below.

Berkoz et al. (1999) have shown the role of ports in economic development of Turkey. The seaway transportation accounts for major share in turkey's total trade transportation. Turkey, after liberalizing its import and export regimes, is enjoying greatest share of world trade in coupled with strong linkages and strong merchant marine fleet. They have used multiple regression to analyze the relationship between Gross National Income (GNI) of the cities in which ports are located and port length total traffic figures, export and imports, ship visits, number of workers and storage capacities. They have found that there is strong positive relation between ship visit, export and imports GNI.

Sommer (1999) has stated the recent trend in private participation in port facilities. He argued that the private sector has become increasingly involved in the operation of

common user port facilities during the 1990s but public sector had dominance in this sector since 1940s. Public port agencies have been moving away from the service port model to the landlord port model. Before 1990s, private involvement was largely limited to captive facilities in managing and financing ports. The private sector has become increasingly participated in the operation of common-user port facilities due to strong growth in world trade and economic scale in cargo shipment.

Robinson (2002) argued ports were operating in the new environment of globalisation and corporatisation. He asserts ports as elements in value driven chain system. The ports deliver value to shippers and to third party service providers. The ports as element compete with other ports as a firm or entities embedded in supply chains. They also act as one element in the import and export supply chain between producer and consumer and intervene in the supply chain of individual firms as third party service provider. They will segment their customer in terms of value proposition and capture value for themselves and for the chain in which it is embedded.

Tull et al. (2002) have analyzed the process and outcomes of port privatization in Malaysia, examining the Port Klang. They argued that privatization would lead to reduction in the demands on the public Budget, reduction of expenditure on port labour by removing the state from port operations, raising revenue through windfall gains from the sale of public assets, and encouraging share ownership. In order to evaluate privatization, they have considered effective regulation to ensure that efficiency gains are passed on to port users and the degree of complementarities between ports policy and broader transport policy and economic objectives. In the economic ground to port privatization, they have explained that with the adoption of the New Economic Policy (NEP) in 1971 Malaysia emerged as a newly industrializing economy and it needed to minimize transport costs in order to remain internationally competitive as ships carry about 90 per cent of Malaysia's international trade. Malaysian government rejected its past policies of promoting public enterprises and accepted privatization because it was profitable so could encourage further privatization and (ii) port was inefficient by world standards. They have assessed that performance of privatization has improved the government's budgetary situation and increased the competition for port business. They have shown that process of privatization has brought the opening of new port, provided the access to foreign investment and management expertise to the new port development and induced the shipping companies to switch some trade away from Singapore.

Langen et al. (2006) have highlighted mainly three categories of port related competition-inter-port, intra-port and intra-terminal competition. The scale of the competition often depends on the size of the hinterland of the concerned ports. Hinterland connectivity with rail and road connectivity is a major issue especially in the case of minor ports. Lack of sufficient hinterland connectivity, especially due to inadequate rail and road connectivity at a number of ports, also hinders competition. He argued that the intra-port competition is as a means to achieve 'economies of scope' and flexible multi-service organisation structures and prevents monopolistic rent seeking of port service providers and intra port.

Oghojafor et al. (2012) have examined the how well the concession has improved the performance of the Nigerian ports by using the content analysis method. The Nigerian Ports witnessed tremendous increase in the cargo throughput, more activities in the operations of the port, improvement in average turnaround time and berth occupancy rate, reduction in Personnel Strength and operational expenditure and so on. In spite of these improvements the port authority has failed to keep its part of the contract agreement, there are still complaints of high charges, corruption, bad link roads, unimproved average berth occupancy rate, lack of infrastructure, and logistics; dwell time has not substantially reduced and corruption still soared high. The cost of port services to users is on the increase; turn-around time has not improved on the average relatively; berth occupancy rate has not improved on the average.

By the 1990s many countries had adopted a development strategy emphasizing integration with the global economy and therefore had reduced their tariff and non-tariff barriers to trade. This reduction in artificial trade barriers has raised the importance of transport costs as a remaining barrier to trade. Therefore, any strategy aimed at integrating a country into the trading system has to take transport costs seriously. The literature points predominantly to the changing business organizational as well as governance structures which together with technological development seem to be in different ways contributing to cost efficiency and enhanced competitiveness of ports. The existing research suggests that it is pertinent for any meaningful assessment of the developmental impact of ports sector to analyze the effects of the ports sector on the local economy. Finally, the analysis of the ports sector can be made comprehensive only by considering the social impact analysis with specific reference to taking on board displacement and ecological concerns.

(c) Impacts of Port on Local Economy

Ports acts as gateway for the international trade for the countries especially in India where 90% of the international trade is being carried away by the maritime transport. With the establishment of port in a geographical area it has bearing on the local economy either positively or adversely or both the ways. The impact of port on the local economy in helps in generation of employment and agglomeration and so on. The literatures of impact of ports on local economy are presented here.

Yochum et al. (1988) have attempted to analyse port's economic impact on industries within the spatial area of the port. They have proposed and applied a methodology to measure primary economic impact to the port of Hampton Roads for the years 1979 and 1984. They have distinguished the activities of the port and activities dependent on the port. They have categorised the port related industries into port-required, port-attracted and port-induced. They analysed the economic impact on the employment, income, and tax revenues of firms providing some services to the port. They found that a port can act as a magnet in attracting firms to a nearby location.

Gripaios and Gripaios (1995) have analyzed the Playmouth's port trade in terms of merchant trade and passenger trade from the perspective of national and foreign trade. They have stated that though the contribution of the port to the local economy is measured in terms of value added of port output in best possible manner but due to paucity of data and figure at the country as well as southwest region, (where playmouth port exists) this is exhibited in term of employment. They have shown the importance of port of playmouth to the local economy in terms of port related direct and indirect employment taking into account the spending of the tourists and the direct employees in the local economy. The port induced tourist spending has helped to generate the extra jobs to the local residents. They have found that the ports don't serve industry in their own area but in other areas. So they concluded that ports are not efficient vehicles of economic development, so there should not be over dependent on port development for economic regeneration.

Jung Duk Lim (2005) has analysed the impact of Busan port and port related industries on regional economy by using the Busan regional Input-Output table which is composed of 170×170 sectors without disaggregated port related industries. He stated that there is more or less bilateral relationship between national economy and port activities but if

national economy regulates the port activities, the relationship is unilateral. When regional economy is considered, the relationship between port, port related industries and regional economy is almost unilateral flowing from the port to regional economy. He has proposed two ways of measuring the impact i.e. by direct survey method and input-output-table method and compared both results. He found that survey method underestimates the impact than input-output. In the case of Busan the regional input output model shows the port and port related industries account for more than one quarter of regional production, more than one seventh of employment.

Bryan et al. (2006) have assessed the economic significance of port activities. They have assessed this from the operations of Associated British Ports (ABP) in industrial South Wales. The input-output framework has been used in examining the direct and indirect consequences of port activities. This methodological approach involved two stages: the first stage is to estimate the indirect (induced) effect of ABP activities and second task is to estimate the indirect and induced effects connected with ABP tenant activity. This paper has ignored the pertinent aspect of port in improving regional competitiveness by focusing more on the employment, incomes and output supported by ports. They have outlined many of the port infrastructures which operate fast in the sectors contributing to the social and economic needs of the local economy.

Pradhan (2007) has explained that continuance of exploitation of mineral resources by Tata Steel from mineral belt of Odisha has caused low value addition and low paid manual job creation in state in compared to the state like Bihar and Jharkhand. Odisha has got just ₹ 15 and just 9 out of each 100 rupee of value addition and every 100 employment based on Odisha's raw material. So Odisha suffered hefty social costs inflicted by mining activities like adverse impact on environment degradation, desertification of agricultural land, water, health, livelihood and displacement of large number of tribals. On the other hand, the states like West Bengal prospered through expansion in pot activities at Calcutta/ Haldia for export and import of Odisha's exhaustible mineral resources.

Grobar (2008) has made a comparison between port districts and surrounding metropolitan areas in terms of per capita income, unemployment rate, poverty rate etc. The scholar has taken a case study of the area surrounding the port of Long Beach and port of California. He found that per capita income is lower in port district than in the surrounding

metropolitan area but the rate of unemployment and poverty is higher in port districts than their surrounding metropolitan area because of spatial mismatch between job seeker and job opening. The study shows that jobs are available plenty in the port districts but the residents of port districts are unable to take full advantage of the available employment opportunities because they lack the necessary skill to be employed in the port district where they reside.

So the presence of larger port does not act as an engine of growth for the local area surrounding the port rather presence of large container port generate negative externalities from port activities, ship loading, unloading, and warehousing operations. This may drive the rent of the vicinity of a port, thereby attracting low-income households. He highlights the conflicts between ports and local communities regarding environmental issues and the local activists and different lobbying organisations are putting pressure on local politicians to address these externalities.

Acciaro (2008) has examined the role of the ports in the generation of employment of the Island of Sardinia. He has used the technique (developed by Musso et al. 2001), which is based on location quotients and control regions. This technique attempts to evaluate employment impact of ports on the region in terms of the share of employed labour force to be ascribed to a port according to the estimated probability that specific economic activities is totally or partially port oriented. The technique distinguishes economic activities into port local economies (PLEs) and non-port economies (NPEs). It determines what share of employed labour force in a pre-defined region is attributable to the presence of the port by applying probability theory. The port municipalities have been used as proxy of the region affected by the presence of the port. He found that the employment directly generated by the port sector in Sardinia accounts approximately three percent of the total employment on the Island. As the size of the port municipality increases, its impact is spread on a larger region, and becomes less relevant because of increase in the importance of the other activities. The author only considers port employment impact whereas other variables such as value added and accessibility are not taken account.

Ferrari et al. (2010) have studied the impact of port activities on local development in terms of employment in Italian provinces. They have divided port activities in Italy into three different macro regions i.e. the North Tyrrhenian, North Adriatic and Southern ranges, on the basis of geographic proximity and distinctive features of the local economies. They

have shown that due to lack of efficient inland connection with its hinterland have caused the Italian ports to suffer which diminishes their competitiveness. They have used Tobit model to identify the positive impact of pot activity by controlling for other variables that may influence the level of employment. They found that port located in Sothern Italy have a competitive advantage over the northern and central provinces and the total employment impact of ports on local development, in terms of cargo moved, is more significant in territory sector.

Bottasso et al. (2013) have evaluated the impact of port activities on local employment by analyzing a sample of about 560 regions belonging to ten West European countries and observed over the period 2000–2006. The empirical analysis is based on the estimation of a set of employment equations with the GMM System estimator of Blundell and Bond (1998) that take into account persistence effects in employment, regional unobserved time-invariant heterogeneity and endogeneity of port activity. They found that regional employment is positively correlated to port throughput not the number of passengers. The results are quite applicable in case of service and manufacturing employment instead of total employment. The port activities have lower impact on service employment and higher impact on industrial employment.

Shan et al. (2014) have examined the impact of the seaport on host city's economic development based on data from 41 major port cities in China over the period 2003–2010. They have used the econometric analysis to examine the impact of the seaport activity on the host city's economic growth. They have employed the annual growth rate of per capita GDP to proxy for economic growth and cargo throughput to proxy for the port's production. They found that seaport cargo throughput significantly impacts the host city's economic growth, the containerized cargo flow of larger ports is more significantly associated with the economy than that of smaller ports and the competing ports in the neighbourhood have an even larger positive impact with the local port city's economy.

Bottasso et al. (2014) have analysed the impact of port activities on local development in 621 TL-3 regions located in thirteen European countries over the period 1998-2009. They have used spatial panel econometric framework which controls for spatial fixed effects to provide an estimate of both the direct and indirect (i.e. spillover) effects associated to port activities. They found that ports tend to increase not only local GDP but

also the GDP of nearby regions. Their empirical finding suggests that an increase of 10% in the level of port throughput in a given region tends to increase GDP in that particular region by about 0.01–0.03%.

(d) Impact of Port Project on the Social Cost

The policy of liberalisation, privatisation and globalisation has brought the win-win situation all around the global level by increasing the international trade, reducing maritime transport cost by technological advancement and thus improvement in the efficiency of the port. However, it is not always so at the local level where port is located. The establishment of port sometimes costs to the local economies in terms of traffic congestion, displacement of the people from their habituations, fertile and agricultural land consumption, environmental problems and so on.

Parasuraman (1996) has analysed the most significant and direct impact of the port project is the displacement of communities (mostly fisherfolk) through land acquisition where community land rights exist. For the development of the new modern port namely, Jawaharlal Nehru Port (JNP) in New Bombay across from the existing Bombay port, the government of Maharashtra acquired 2,584 hectare land from 1829 families belonging to 12 villages. The major sources of these families were salt pan work, agriculture and fishing. In the port affected villages, 91 per cent families owned land and lost all, but less than 33 per cent got employment.

Joshi (2000) has discussed how has the Umargaon (Gujarat) harbour caused the displacement of fishing communities and affected the highly profitable traditional fishing and agriculture area. The fisherfolk spearheaded wide scale protests under the slogan of *Kinara Bachao Sangharsh Samiti* (save coastline movement), in early 2000 under the auspices of port-protester and activist Pratap Save. Save died when he was allegedly beaten up by the police in custody on 7th April 2000 following a protest by villagers of the area against the survey work being carried out for the port in Umargaon. As a result of the protests, it led to the withdrawal of the promoter, UNOCAL. In the year 2007, five thousand protestors had marched to the Pondicherry bus stand demanding the cancellation of the deep water port anticipating the construction of ports and harbours would be affected, they will be displaced and their boats will be damaged and livelihoods would be jeopardised.

Monteiro (2007) has explained the significance of the Mormugao Port in the overall development of the region. He has given a broad outline of Goa's seaborne trade and commerce during pre-Portuguese period (i.e. before 1510) and how did construction of Port of Mormugao and the Railway line simultaneously provide impetus for the expansion and growth of this region in the western coast of India. After the port of Mormugao becomes free from the Portuguese rule of 451 years (1510 – 1961) the port expanded further on account of the hinterland development and Goa's exploitation of the rich mineral resources of iron ore, manganese, aluminium, mica etc by the continuous increment of facilities and infrastructure at Mormugao Port. The influx of people into Goa from neighbouring States on account of increased employment opportunities has led to heavy pressure on existing resources and created health and social problems.

Rodriguez and Sridhar (2010) have discussed that the development port projects such as Gangavaram Port in Andhra and Mundra in Gujarat have resulted displacement of people whose major livelihood is fishing. The development of Gangavaram port project has caused displacement of 3,600 families. When People, being dissatisfied with the compensation and rehabilitation package, protested, it led to firing on 27th March 2007 where one fisherman was killed and 12 others were injured. Gangavaram fishermen were denied access to their traditional fishing grounds, which is compelling them to move towards poor fishing grounds.

1.8: Globalisation and Port Development

Globalisation is a very broad concept which implies different meanings to different people. According to maritime economist, globalisation is a trend in international trade. Ports have gone through major changes since the globalisation period. In globalization era, ports are moving from being traditional interfaces between land and sea to providers of complete logistics networks. But, very few ports are increasingly capable of handling the latest generation bigger container ships. Maritime transport is growing because trade in maritime services is taking place on an ever more global scale. Trends in the evolution of maritime transport and structural change in international trade have a direct impact on port growth and expansion.

Kumar and Hoffmann (2002) have considered transportation one of the four cornerstones of globalization, along with telecommunications, international standardization,

and trade liberalization. Together with above cornerstones, the increased efficiency of port and shipping services has made it easier to buy and sell merchandise goods, raw materials and components almost anywhere in the world. International standards and homogenous products foster global competition. Trade liberalisation allows the efficient international allocation of resources. Finally, telecommunication and transportation are the necessary tools to transfer information and goods.

Slack (2004) has mentioned there is a reciprocal relationship between globalisation and container shipping. The expansion of international commerce and the establishment of global manufacturing systems would have been impossible without the efficiencies and economies that containerisation has brought. Container shipping has become a facilitator of globalisation by providing the means to connect markets and customers with a safe, reliable and cost-effective transportation system.

Bichou (2009) has stated that there is a symbiotic relationship between globalization and maritime shipping, whereby globalization has increased the demands for maritime shipping, while maritime shipping has more fully enabled globalization. The enduring tenet of maritime transportation is its ability at moving large quantities of cargo over long distances. As the world economy has become more integrated through the process of globalisation of production, consumption and services, the market place for an increasing number of port users and customers is now simply the globe. In international logistics, the relentless striving for greater economies of scale, global coverage, higher efficiency and improved service quality have leveraged port competition for cargo and shipping services to a global market level. Successful ports have realised that in order to survive and prosper in today's global business environment, they have to adopt a global view. Today, many port operators have reached a global status by extending their activities to international port markets and global factors have become more predominant for explaining international trade flows than country-specific traditional factors.

IMO (2012) advocated that maritime shipping is the lynchpin of the global economy and highly globalised industry in terms of operation and ownership. Of all the world's great industries, shipping is the most international because without it, intercontinental trade, export and import of raw materials and finished products would not be possible. Shipping industry and international trade are interdependent. A country where export and import are flourishing, there the shipping business is also very active. The global nature of shipping

makes it dependent on the development of the world's economy. The increasing industrialisation and the liberalisation have fuelled free trade in international exchange of goods which brought an unprecedented boom of international trade by sea transport. The basis of the world trade system in the twentieth century originated in the West: from Europe to the rest of the world. Although the pattern of seaborne trade has changed but still the West has maintained its leadership role in the global manufacturing of high-technology products. Advances in technology have also made shipping an increasingly efficient and swift method of transport.

1.9: National Importance of Port Development

India cannot sustain a high growth phase without investing on ports. Water transport is an easy, cheap, environment-friendly and energy efficient means of exports and imports of heavy items. Water transport has the lowest operating costs as well as a lower consumption of materials and resources than other modes of transport. Therefore India has to devote sufficient attention and resources to connect ports with the hinterland using the rail, road or the waterways. The railways, roadways and inland waterways are limited to the boundaries of a country and, therefore unable to render international transport services. Although the airways and shipping are the modes by which international trade is carried away but the airways are very costly and it carries a significant amount of trade by value and less global freight by volume. Therefore, shipping is the only means to carry heavy and bulky commodities like machines, industrial goods and agricultural commodities and minerals.

Ports are the gateways of foreign trade and commerce of a country and they serve its maritime transport and play a vital part in the national economy. After Partition, India's foreign trade was carried on through the five major ports of Calcutta, Bombay, Madras, Cochin and Visakhapatnam. The loss of Karachi threw an additional strain on the Bombay port to which a part of the traffic previously handled by the Karachi port had been diverted. The port of Kandla came into existence after independence to compensate for the loss of Karachi port in 1965 (Planning Commission, 1951). Ports play a strategic role in the international trade of the country the import substitution policy adopted in the post independence era till 1991 resulted in a low share of India in international trade. As a result the role of ports in the Indian economy was rather limited with the import of petroleum products and export of iron one forming a major component of traffic.

With the commencement of economic liberalization in 1991, the role of international trade in the Indian economy has increased significantly. Therefore, the importance of ports in the country became indispensible to cater the burgeoning trade in the era of liberalisation and globalisation. The Indian Economy has been on a growth trajectory since the process of liberalization started in the year 1991. Various sectors and new models of development have been adopted to address the basic infrastructure needed to match the growing GDP of the country. However, the existing port structure was inadequate for the nation to meet the growing challenges and therefore the increase in trade led to the congestion at the ports. It was not able to avoid the delay in pre-trade activities as well as time taken by the ships in completing their journey.

It is now generally appreciated that the capacity and efficiency of ports have a direct bearing on the global competitiveness of Indian Industry. The key problem facing Indian ports is their low productivity which led to higher transport costs, undermining India's exports. This obviously affected the competitiveness of Indian industry since the detaining ships for a longer period add to the shipment costs. With increasing levels of trade, substantial investments are required to augment port capacity. If an additional capacity is not created to handle this traffic gap, Government of India’s plans to promote trade will face serious setback. The revenues generated by the Major port trust are not adequate to fund this development. So, the Government had no option but to invite private participation in development of modern ports.

In order to improve efficiency, productivity and quality of services as well as to bring in competitiveness in port services, the port sector has been opened to private sector participation. There have been a number of privatisation initiatives taken by the Government of India for major ports. However, the emphasis of these policies has been on private sector participation in portions of major ports rather than privatisation of whole port. It is expected that private sector participation would result in reducing the gestation period for setting up new facilities, and also in bringing the latest technology and improved management techniques. The first private sector investment in a container terminal came up at Jawaharlal Nehru Port Trust (JNPT) on a BOT basis.

The state governments (notably Gujarat and Odisha) have also shown considerable initiative in encouraging private sector development of minor parts. In consonance with the various policy measures to promote industrialization, Odisha State has taken steps to convert

its predominantly agricultural economy into an industrial one. Industrialization couple with infrastructural facilities has been recognized as a major thrust for development. As a part of major initiative to propel the economic growth, the Government of Odisha (GoO) is aggressively working on the improvement of the import/export capabilities of the sea ports along the coast of the Odisha State. The major port of Paradip has been in existence since 1966 in the state of Odisha. However this port alone is not adequate to meet the demands of its coastline. In view of this, the state of Odisha had decided to expand the existing minor port at Dhamra in to a full-fledged all weather multi-user port. The state decided to develop the port on a public-private partnership (PPP) mode based on the pre-feasibility study performed to explore possibilities of expansion of the existing port at Dhamra. Dhamra port has a significant locational advantage over its counterparts on the eastern coast.

1.10: Problem of the Study

From the above discussion it is clear that the Private-Public Partnership models are a peculiar combination of improving efficiency and comparative advantage of the ports sector involving an approach to the ports as private business organisations while on the other-hand there is an institutional framework akin to a coordinated market economy model which emanates from recognition of market failure in the realm of protecting 'public interest'.

Connecting the efficiency enhancements, economies and comparative advantage achieved at the unit level (port level) being coordinated with similar effects in the overall economy involving the regulation and realization of public goods, externalities and social costs for addressing the overall 'public interest' is the real challenge of the new governance structures. Since the nature of the micro-level business organization is such in the case of ports that these units for reasons related to the basic characteristics of a port activity being exclusive control of a coast in a geographical location implies that the business organization operates as a monopoly. It is therefore that in order to convert the maximization of benefits at the unit level into maximization of social welfare could stumble on market failure and would require institutional coordination addressing the challenge of public goods, externalities or spill over effects and social costs. Arguments on similar lines have been offered by New Keynesians. They assumed that markets fails to clear (to attain full employment) due to wage and price stickiness which is because of imperfect competition in price and wage setting and therefore the government should intervene to bring up more efficient macroeconomic outcome.

The problem that this study tries to address is the mode in which in the new models of governance that have developed in the port sector in India in the post reforms scenario, how are the objectives of the private sector business organisation model introduced for enhancing unit level efficiency, economies and comparative advantage being resolved with the objectives of the public component of the coordinated market economies based institutional complementarities framework which has at its core the protection of larger public interest where most likely the market fails (Hall and Soskice, 2001).

The business organisation models resolve the process favouring greater role for the private sector with its ability to resolve 'public interest' through innovative combination of super-normal profits with high powered incentives (Lazonick, 1991). The coordinated market economies model on the other-hand resolves the process in favour of institutional regulation anticipating market failure (Hall and Soskice, 2001). Given this background, this study investigates into the emerging nature of the Public Private Partnership model of governance in the port sector by taking Dhamra port as a case study

The infrastructure bottleneck is a stumbling block for the progressive growth of an economy. The Indian port sector was plagued by problems of inadequate capacity on the one hand, and operational inefficiency and sub-optimal use of existing facilities on the other. Even though most of the Indian ports have completed forty years of their operation after independence, its performance and productivity are extremely low compared with international standards. For instance, the average ship turnaround time is 84 hours at Indian ports as against seven hours in Singapore and Hong Kong. Similarly, the annual container throughput capacity is 4.3 million TEUs (Twenty feet Equivalent Units) in the JNPT in India as against 35 million TEUs and 23 million in Singapore and Hong Kong. This is due to inadequate capacity. Unless the productivity and capacity of ports are increased, more bottlenecks will occur as demand for port services grows. The very low draft at Indian ports is a major constraint in traffic handling. Many of the Major Ports, except a few newer ports which have drafts of more than 14 m, have a minimum draft under 10 m. The conveyance of cargo from origin countries to India is routed through transhipment ports like Colombo and Singapore and this entails extra time and costs because of inadequate draft at Indian ports. On top of this plan investment in the transport sector as a whole and particularly in port sector was significantly low. The share of transport sector in total plan outlay has fallen from 22.10 per cent during first Five Year Plan (FYP) to 13.10 per cent during the eight FYP and

the share of ports in the transport sector has fallen from 7.31 per cent in the first FYP to 6.34 per cent in eight FYP. The economy where about 95 per cent of international trade in terms of volume and 70 percent in terms of value are carried out by sea through the port sector, allocation of insignificant part of plan investment and the aforementioned bottlenecks in the Indian port sector posed serious impediments in the growing path of the Indian economy. Therefore, it was imperative to improve the maritime transport and particularly port sector.

Usually, the expenditure for the provision of the infrastructure services was borne by the government, but slowly government failed to raise capital for financing new infrastructure development projects. As a result, ports failed to deliver the quality services. Even though the government used to finance the expenditure, it was doing through the deficit financing which increased the current account deficit and later it turned into Balance of Payment crisis. This made the government to open up the economy and allow the private sector to invest in the infrastructure projects.

The process of liberalization in Indian economy started in mid-eighties and got intensified with the enunciation of the New Economic Policy in 1991. This New Economic Policy allowed private sector to invest in the infrastructure projects and up to 100 % FDI for construction and maintenance of ports. With the opening up of the Indian economy, the international trade has been increased significantly as there are less restriction on exports and imports. More and more multinationals are registering their entry into the Indian market. This burgeoning foreign trade of India has put lot of pressure on ports. However, Indian port sector could not handle such massive demand expansion due to certain constraints and bottlenecks existed in port sector. The government of India constituted a committee under the chairmanship of Rakesh Mohan to identify the bottlenecks in the sector and to suggest necessary measures for removing constraints in the port the sector. Following the Rakesh Mohan Committee Report 1996, the private sectors were encouraged to involve in developing the infrastructure projects including ports. Thus, the period of real reform for the transport infrastructure in general and port infrastructure in particular started from 1996 onwards.

After allowing the private sector participation (PSP) in the port sector, the government decided to adopt the ‘landlord port’ model propagated by the World Bank and chose Build Own Operate (BOT) route of financing port projects. This change in governance structure with the introduction of private sector participation in ports led to new models of

port ownership and institutional structuring. If Indian ports were to emerge to be catalyst of economic development in the country, they need to be globally competitive. According to the World Bank Group (2012), introducing sustainability into infrastructure projects is indispensable for a country to stay competitive. The process of private sector participation was adopted to bring up the sustainability of the infrastructure projects and ports in this particular case. The new governance model is also expected to deliver the larger sustainable infrastructure objective subsumed by the regulatory and development role which is expected to be played by the government.

Sustainable infrastructure can be defined as "infrastructure in harmony with the continuation of economic and environmental sustainability". Although, the infrastructure alone could achieve economic and social development, but sometimes the environmental aspects are compromised for this. Therefore, the decision makers have adopted environmental protection policies on infrastructure development in order to achieve sustainability (ESCAP, 2006). Apart from the environmental dimension, the significance of infrastructure should not be accorded precedence over the other dimensions of sustainable development viz. the social, cultural, and economical aspects. The other dimension of sustainable infrastructure projects included that it creates job opportunities; facilitates training for women to reap the economic benefits associated with construction and maintenance projects; promotes the restoration of livelihoods of displaced individuals; accords appropriate respect for the property rights of displaced individuals; create the adequate mechanisms of compensation; and improves the living standards of displaced persons; examines the ways to improve the living standards of displaced persons, generate positive social impacts on local communities especially remote and poor regions, promotes full respect for human rights and the inherent dignity of all people particularly for vulnerable and marginalized individuals and groups and their environment; encourages full respects for livelihood systems, territories or natural or cultural resources that indigenous peoples own, use, occupy, or claim as an ancestral domain or asset; strives to identify impacts on biodiversity; respect for the principles of transparency and accountability and so on (UNOPS, 2012; UNEP, 2016).

Dhamra port is a case in question where the Port is functioning under the new governance model of BOOST (Build-own-operate-share-transfer), one of the many variants of BOT schemes. With BOOST, the private sector is involved in building, financing, operating a port facility and sharing a part of revenue with the government for a certain period of time and

eventually the ownership is transferred to the public sector at the end of the agreement. In case of Dhamra Port the concession agreement is for the period of 34 years which includes 4 years for the construction and 30 years for operation.

The objective of this study is to understand whether the new port governance model adopted in the case of Dhamra Port has been successful in terms of delivering twin objectives of cost reduction and competitiveness on one hand together with the other objective of 'public interest' as represented by the sustainable infrastructure model. The success, failure or limitations of this model have huge ramifications for the future trajectory of development of governance institutions with reference to the Ports sector in India. Therefore, it is important to assess the impact of the new governance model of the Port comprehensively.

1.11: Research Objectives and Questions of the Study

In the backdrop of the novelty and significance of the new governance model to the development of the Ports sector, the objective is to inquire if the new governance model has been able to deliver the objectives of the sustainable infrastructure model. Two dimensions of the success and desirability of the model with reference to the delivery of outcomes need analysis in the backdrop of the theoretical analysis presented earlier viz.,

(a) The cost reduction and competitiveness dimension emphasised by the mainstream development thinking and

(b) The delivery of 'Sustainable Infrastructure' objectives representing larger 'public interest' or 'public purpose'.

These dimensions are aimed to be unravelled by addressing the following research questions, the first of which addresses the first dimension and the rest addressing the second dimension:

i. Have the ports that are being governed by the new governance (BOOST) model been able to show improvements in their performance in terms of the Services offered by the Ports in comparison to the ports operating under the old governance model as well as with reference to the international standards?
ii. Has the new governance model as implemented in the Dhamra project been able to address larger developmental concerns of Sustainable Infrastructure Model such as the development of the local economy and the livelihood diversification, generation of high quality employment inside the port, and contribute towards improving the labour relations?

iii. What have been the new governance model's outcomes in the context of the Dhamra Port project with reference to the indicators pertaining to environmental and social impact dimensions of the sustainable infrastructure model?

iv. What has been the nature and role of institutional mediations and regulations with reference to the environmental and social impacts in the construction and operational phases of the Dhamra Port?

Since regulatory institutions play a significant role in mediating and regulating the environmental and social impact and since the Sustainable Infrastructure Model concerns itself with reference to the transparency with which institutions are functioning under the new governance model, this study inquires into the question with reference to the evidence that has emerged from the Dhamra Port Project. In order to address the first question, a comparative governance models framework with reference to port performance in terms of volume of cargo handling and port performance parameters with reference to the period from 1985-86 to 2014-15 (30 years) have been presented. The secondary source of data from the Ministry of Shipping has been used for this purpose. These 30 years have been divided into three periods such as 1985-1995, 1995-2005, and 2005-15. The rationale behind the division of 30 years period is mentioned below.

Period-1 (1985-1995)

In mid-1980s the major changes in trade policies started by which the country was on a path of trade liberalisation, especially in terms of the de-licensing of imports. Although it promoted growth yet depended on internal and external borrowings. Finally in 1991, the government introduced the New Economic Policy which replaced the *license, permit and quota* (LPQ) raj by liberalisation, privatisation and globalisation (LPG) regime. This brought in reform many areas besides industry and trade. Therefore, the year 1985 has been chosen for the analysis of first 10 years (1985-1995).

Period-2 (1995-2005)

India embarked upon the policies of economic of liberalization from mid-eighties and more vigorously with the enunciation of the New Economic Policy in 1991. Even though impacts of economic reform have been realized in many sectors of the economy but reform in the infrastructure sector particularly transport infrastructure sector did not take off till 1996. The first policy guidelines on the private sector participation in the Indian port sector were announced in 1996 following the Rakesh Mohan committee report on infrastructure development.

Period-3 (2005-2015)

The Odisha government formulated port policy during the year 2004 aiming at facilitating developers for development of new ports. Since this Dhamra port started land acquisition and construction of the port in the year 2005 and commenced its operation (first phase of port) in 2011, the study has taken the period of 2005-2015 as the third decade of analysis. On the other hand, in order to examine the impact of port sector (particularly Dhamra port) on the local economy (particularly Dhamra Port), the study has taken the period of around 10 years which includes construction period (2005-2011) and operation period (May 2011-2015).

In order to address the rest of the questions, the study has used both primary data and the secondary data pertaining to the effective delivery of the 'public interest' dimension with reference to environmental and social impact regulation as well as the percolation of the development and diversification of livelihoods in the local economy. The above research questions have been tested with reference to the development of Dhamra port which entails the phase of construction and phase of operation. So, how has the development of the Dhamra port been able to deliver the objectives of sustainable infrastructure model have been analysed with reference to both construction phase and operation phase. The details of area of the study, sample design and methodology adopted etc. have been described in the second chapter.

1.12: Conclusion

It is evident from this chapter that transport infrastructure plays a significant role in the growth process of an economy in terms of diversifying production, reducing transport cost and expanding trade. Although, the public sector was sole purveyor of infrastructure services in order to avoid market failure and protect the public interest but it has changed its traditional role as a provider of infrastructure services to the roles of being a facilitator and regulator of infrastructure services and provision of these services is left entirely to private sector. This new approach has been initiated in order to accelerate efficiency and competitiveness. The new model of port governance has been emerged by dividing the responsibility between public and private sector with respect to the port infrastructure service. Since Dhamra port, being developed in accordance with this new model of port governance, is the focus of the study, the historical background, significance of the Dhamra port, methodology and database etc. have been the matter of discussion in the next chapter.

CHAPTER-2
METHODOLOGY, STUDY AREA AND DATA SOURCE

2.1: Introduction

The port sector has radically changed over the past two centuries. During the 19th century and first half of the 20th century, it was in the hands of state or colonial powers and competition between ports was minimal. As a result, there was very little incentive to improve the efficiency of ports. However, in the recent past most ports are competing with one another on a global scale to achieve gains in productivity in ocean transport. Therefore, it is the need of the hour to make the port sector more competitive so that comparative advantage of lower cargo handling costs and integration of port services with other components of the global distribution network are achieved.

It is argued in literature that institutional dissimilarity has a bearing upon the performance and competitiveness of ports. There are several organisational and ownership models as a consequence to which the institutional dissimilarity exists in the ports across the world. The classification of ports based on the type of ownership or administration has been one of the most debated topics concerning port efficiency over the last decade. Traditionally, ports were owned, operated and regulated by state-controlled public organisations. There are varieties of public port models wherein ports are controlled either by the central, local or municipal authorities. Other models include autonomous and corporate ports. An autonomous port is a public enterprise which enjoys a high degree of autonomy and independence from the central government with respect to the administrative autonomy. A port corporation is a public company that can be either government-owned or statutory-owned depending on the legislation and regulatory regime that govern its operations and management (Bichou 2009).

However, the introduction of private sector participation in ports and the emergence of new forms of port governance have led to the adoption of new models of port ownership and institutional structuring. Private sector participation and investment in ports emerged as a significant issue in the 1980s. By this time, many ports were facing the bottlenecks of port congestion and consequent chronic service failures which contributed to the gradual deterioration of service quality during this period. World Bank (2007) identified following major reasons for such deterioration. They are

(i) Restrictive Labour Practices

After World War II, the prevailing work practices were outdated and needed to be updated with modernised port handling equipment to adjust to modern bulk handling methods, unitized handling, and containerization. Initially labour unions refused to accept reductions in the labour force and ignored the need to upgrade skills. Later, realising the necessity of port reform labour leaders accepted moderate reforms.

(ii) Centralized Government Control

Many ports failed to respond adequately to the increased demands imposed on them because of slow-paced and rigidly hierarchical planning of central government. In the 1980s, the introduction of market-oriented policies on a worldwide basis opened the way for decentralized port management and reduced government intervention in port affairs.

(iii) Lack of investment in port infrastructure

Many governments were unable to invest in expensive port infrastructure which led to failure in catering the needs of foreign trade and shipping.

As a result of systemic failures in managing port development, fundamental questions arose about the appropriate division of responsibilities between the public and private sectors. While improving competitiveness in the wake of rising emphasis on globalization of markets and significance of competitiveness involving rationalization of institutional structures for comparative advantage are imperative, the pervasive role of constitutional obligations (Ramanathan, 2011), citizenship and rights discourse (Saxena and Haragopal, 2014) as well as democracies, legitimacy and pressures of political society (Sanyal, 2007) cannot be ignored by the modern State in contemporary times. This implies that any innovative governance model combining the Public and Private sectors must not only enhance competitiveness and deliver comparative advantage but also prove to be effective in protecting what could be broadly defined as ‘public interest’. The evidence generated by the mainstream development thinking emphasised on the aspect that large scale government involvement in port operations was self-defeating and destructive of private initiative. The governments have learned to rely increasingly on private investors to reduce ports’ reliance on state budgets and to spread investment risks through joint undertakings. The policy makers have taken variety of approaches under the current regime and development discourse with respect to the role of government in a market economy. Some governance models have been designed to focus on the provision of public goods (goods and services that the private sector has no adequate incentive to provide and, consequently, are undersupplied without some form

of government intervention). Another trend that has emerged in many countries of the world is with reference to models wherein private provisioning of public services is resorted to in which government transfers public tasks to private contractors. With a similar understanding, in many ports today, the public sector mainly acts as planner, facilitator and regulator of Ports, whereas the private sector acts as a service provider, operator and port developer (World Bank, 2007).

This transfer of responsibilities to private sectors, it is held by the protagonists, has resulted in a healthy pragmatism in increasing service levels for infrastructure users, increasing cost reduction and increased competitiveness in operations and improved allocation of limited public funds. Even though the government transfers the financial and operational risks to the private sector but continues to act mainly as regulator and land developer. This is done through the legal instrument called 'concession'. In this concession contracts, the operator covers investment costs and takes all commercial risks combined with specific financing schemes such as Build, Operate and Transfer (BOT).

BOT schemes are a specialized form of concession designed to increase private financial participation in the creation of port infrastructure and superstructure without changing the landlord structure of the concerned port. The Prime examples of the use of BOT schemes are the development of new greenfield terminals in Gujarat state and the new container terminal at Nhava Sheva (JNPT) in India. There are many variants of BOT schemes and BOOST (Build-own-operate-share-transfer) is one of such variant based on which Dhamra port has been developed. With BOOST, the private sector is involved in building, financing, operating a port facility and sharing a part of revenue with the government for a certain period of time and eventually the ownership is transferred to the public sector at the end of the agreement. In case of Dhamra Port the concession agreement is for the period of 34 years including a period of 4 years for undertaking the construction of the Port and 30 years for operation. Before analysing how the new governance model adopted in the development of Dhamra port has been able to deliver the objectives of sustainable infrastructure, it is pertinent to understand the background of port development. The original proposal designing and Environmental Impact Assessment of the Port date back to 1997. The construction of the Dhamra Port began in 2007 and its first phase has come into operation in 2011. This study assesses the new governance model on the basis of the evidence generated during different phases of the development of the Port spanning between 1997 and 2015. This study will

unearth the various stages the port has undergone from the stage of receiving the clearance to the current operation in which ownership of port has changed from the original proponent to the Adani group.

2.2: A Brief Historical Overview of Dhamra Port Project

Following the release of Rakesh Mohan Committee Report on Infrastructure Development, the first policy guidelines on the private sector participation in the Indian port sector were announced in 1996. In addition to the steps taken by the central government, various maritime states have also taken initiatives to develop the minor ports within their jurisdiction. All maritime states have issued policy statements, which highlight the various incentives offered by the respective state governments for investment in port projects. Gujarat is the first state which formulated its port policy in December 1995 spelled out an explicit strategy of port-led development and set up of the Mundra and Pipavav ports under the initiative of public and private sector initiative.

The availability of natural resources when coupled with good infrastructure facilities will promote industrial growth. Industrialisation coupled with infrastructural facilities is being recognised as a main thrust for development. To propel the industrial growth and economic growth, the Government of Odisha also took initiative on the improvement of the import and export capabilities of the sea ports along the coast of the state and decided to develop the port on a Public-Private Partnership ("PPP") basis. In pursuance of these policies, the Government of Odisha signed a MoU with a Singapore-based International Seaports Ltd. (ISPL) on 31st March, 1997 for substantial development and expansion of the port at Dhamra, Bhadrak district of Odisha. At this point of time the detailed feasibility report of the project was not yet finished and the first phase of the project was estimated to cost ₹ 750 crores. This ISPL was a joint venture; promoted by three international companies with equal equity participation viz., Stevedoring Services Associates Inc of the USA (33.23% share), Precious Shipping Public Company Limited, Thailand (33.23% share) and Larsen & Turbo (L&T) Limited, India (33.54% share).

Historically, the proposed region has always been a port area with links to Southeast Asia. A brief history along the port facilities at Dhamra is mentioned below in a box 2.1.

Box-2.1: A Brief Historical Overview of the Area

The Dhamra port region was earlier in the undivided Baleswar district, but following the division of the district, now it falls in the district of Bhadrak (Bhadrak was earlier a part of Baleswar). The district of Baleswar was neither linked by rail nor by good road with other parts of the country before 1989. It was, however, connected with maritime places inside and outside the country through its ports which had thriving trade in the past. At the time of East India Company, Baleswar, Chandbali and Dhamra ports were active. These points had a trade link with the ports at Calcutta, Madras, Bombay, Ceylon, Maldives Island, Lakshadweep and occasionally Mauritius.

Dhamra port has been in existence since the government of India has established fishing harbour which was opened in 1978. The port was used mainly by fishing vessels. A 200 meters long and 8 m wide landing quay (concrete landing platform) has been constructed to facilitate loading and unloading of fish from trawlers. 15 medium sized fishing trawlers could simultaneously berth alongside the landing quay. The port had been designed to accommodate 200 mechanised vessels besides catering to the needs of nearly 300 traditional crafts. The minimum depth alongside the landing quay is 3 metre at the lowest level. The port had its own water system. A small port workshop had been set up to repair machinery parts of port crafts. The port also catered to passenger traffic and regular passengers' launch was plying between Dhamra, Talchua, and Chandbali.

Odisha government signed this agreement without having floated a global tender. The government argued that if there would be floating of a global tender, no international party would have shown interest in the project since Dhamra is a desolate place without any road and rail communication.

The opposition party (Janata Dal) had, however, raked up a controversy over the project by challenging the government's unilateral decision to award the job to Singapore-based International Seaports private Ltd (ISPL) and its description of the project as a Greenfield one. The opposition party accused the government's decision and alleged that there was lack of transparency in the deal. The party pointed out that the area was well connected by road and that a fishing jetty was now in operation at Dhamra, and the Singapore firm had padded up the cost of the project by at least ₹ 100 crores by discounting the existing government assets in the absence of a global tender. The government refuted the allegations of the opposition party stating that no international party had evinced interest in the project

owing to the lack of infrastructural facilities at Dhamra, and it was with great difficulty that the government had managed to persuade International Seaports Ltd to invest in the project. The scope of the project included the construction of road and rail links between the port and nearest town of Bhadrak (Satapathy, 1997).

The ISPL signed a concession agreement with Government of Odisha on 2nd April, 1998 to develop the port at Dhamra with world class infrastructure facilities on BOOST basis. The Odisha government accorded formal rights to Singapore-based ISPL for its substantial expansion and development in the coastal district of Bhadrak. The period of concession from the official date of commencement is 34 years, after which the port reverts back to government ownership. The Dhamra Port Company Limited (DPCL) was formed in the year 1998 as a special purpose vehicle (SUV) for smooth implementation of the project. On May 5th 1999, ISPL signed a deed agreement, by which it has transferred all its rights and obligations to Dhamra Port Company Limited (DPCL) under the concession agreement for the implementation of the project.

2.3: Change in Ownership of Dhamra Port Project

The Dhamra project was envisaged in late 1990s but it was delayed due to protests by different environmental groups of which the Greenpeace is primary. They protested against the project owing to the perceived threat to Olive Ridley turtle's habitat around the site. Since the project was plagued with delays in execution process, the two foreign companies, i.e. Precious Shipping of Thailand and Stevedoring Services of America left the consortium in 2002 leaving L&T (Larsen & Toubro) as the lone member of ISPL. Tata Steel then entered into a partnership with L&T and decided to set up a port in Odisha jointly which would be operational in three years time. In February, 2004 both the companies signed an agreement to develop the port as 50:50 joint ventures through the Dhamra Port Company Limited (DPCL). The already delayed project finally got underway in 2005, but trouble laid across the horizon and finally the first phase of construction began in March 2007.

Tata steel participated with L&T with the aim to hike in its present production capacity of four million tonne to 7.5 million tonne in the next three years and to ramp up production to 15 million tonne by the end of 2010. The company at that point was importing around five million tonne of steel which included import of coal and limestone and planning to export iron ore and steel. The company was planning to enhance its iron ore exports to

China, South Korea and Japan and establishment of the port was expected to result in substantial cost savings for the steel firms. In this way Tata Steel and L & T had formed a 50: 50 joint venture in October 2004 for setting up a Greenfield port at Dhamra in Bhadrak district on the eastern coast and the port started its operation in May, 2011.

According to the concession agreement signed by the state government with developers of non-major ports (L&T and Tata Steel), original promoters have to retain at least 51 per cent stake till the port begins operations. In the case of DPCL, the combined equity of the promoters stood at 100 per cent when the port began operations in May 2011. Since the beginning of commercial operations, DPCL has handled 8.5 million tonnes (mt) of cargo traffic till mid-August, 2012 of which the export traffic accounted for barely 10 per cent because of restriction on iron ore exports by the state government. L&T, which holds a 50 per cent stake in DPCL identified Dhamra port as a non-core asset and therefore decided to sell its share by the end 2012. Dhamra Port's project cost was about ₹ 3,600 crores and it reported a total income of ₹ 198 crores till the year 2011-12 and this resulted in a net loss of ₹ 458 crores. As this was the first year of operations, it had high amortisation and interest costs, along with initial ramp-up traffic. It was important for L&T to sell its stake in Dhamra Port because it would have been difficult for L&T to achieve the growth of 2012 year in 2013 in the absence of recovery in the investment cycle. Soon after its second quarter results, the company had decided to exit from Dhamra Port by the end of March 2013 (Chatterjee et al., 2013).

When Tata Steel acquired Anglo-Dutch Corus for $12.1 billion (₹ 53,460 crores) in 2007, it increased the company's consolidated net debt to ₹ 49,392 crores by March 2008 from ₹ 14,037 crores in March, 2007. Tata Steel's net debt reached to ₹ 70,095 crores in March 2014 from ₹ 56,215 crores in March 2013 and it was expected to rise to ₹ 75,826 crores by March 2015. Therefore, Tata steel was reeling under high consolidated debt and any disinvestment in assets would help it raise funds and retire its high-cost debt. By selling its 50 per cent stake in Dhamra Port, the company would able to reduce its debt marginally and exit a non-core business (Kumar, 2014).

The L&T and Tata Steel, neither of which had experience in running ports, decided to sell their stakes in late 2013. Dhamra Port's initial project cost was ₹ 3,600 crores. The Adani group, India's biggest private port operator showed interest to buy it and therefore immediately made an offer. The Ahmedabad-based Adani Group acquired L&T and Tata

Steel's stakes in DPCL in Odisha for an enterprise valuation of ₹ 5,500 crores on June 22, 2014. In this way, both of the companies sold their share of ownership to Adani group and Adani established its footprint across eastern part of India by acquiring Dhamra port project.

2.4: The Stated Vision of Adani Group in Acquiring Dhamra Port Project

The Adani Group had been operating one of the largest private sector ports in Mundra and operates terminals at Hazira and Dahej in Gujarat, Visakhapatnam in Andhra Pradesh, and Mormugao in Goa. It is also setting up a bulk cargo handling capacity in Kandla port and a container terminal in Ennore port. In this way, the company has been building its own string of ports along India's coastline (Divekar et al., 2014).

Dhamra port is strategically located on the east coast where it is felt that there is a need for a gateway. The acquisition of Dhamra port, one of the deepest ports in the country, is seen as opening up a strong frontier for Adani in the east where there is an anticipated immense hinterland potential and scope for significant economic development over several decades to come. Although the business house recognises that the acquisition will pull down Adani Ports' short-term profitability, however, it is observed that the Dhamra Port will not only ship the Adanis' coal from the east to the west coast as part of its own vertical integration of the power sector, but also provide stable cash flows because Tata Steel and other resources companies in east India use it for coking coal imports. The Dhamra port acquisition would provide an opportunity to the business house Adani to replicate the development and phenomenal growth of the Mundra port also on the eastern coast of India and thereby continue to execute on the pan-India strategy (Balan et al., 2014).

The port business has good prospects since much of the cargoes such as coal, crude, chemicals and liquefied natural of India's requirement will have to be brought into deep draft ports along the country's coastline and Dhamra port is having such deep draft. Keeping this in mind, Adani Port and Special Economic Zone Ltd (APSEZL) has acquired the Dhamra port in Odisha. The acquisition is a strategic move on the part of Adani to make inroads in the business on the east coast as the company has already established itself as a major player on the west coast with the above mentioned ports.

The acquisition of Dhamra Port Company for ₹ 5,500 crores was expected not only to boost APSEZL's port business, but also to complement the Adani group's mining operations in Australia - where the Queensland state government recently granted its approval for the

$16.5-billion Carmichael Coal Mine and Rail project - and facilitate import of coal from south-east Asia. The firm also runs a coal loading terminal at Abbot Point in Queensland, Australia. The acquisition of Dhamra bodes well for the Adani group's port business. The group has ambitious plans for Dhamra, and the port's impact on the economy of the eastern states, the business house claims, will also be positive. The terms of the Dhamra port contract, its location and facilities is seen as being a big positive for APSEZ. All these account for the business house's understanding that the Dhamra Port has the potential to replicate Mundra's success also on the eastern coast.

Since Dhamra is strategically located to serve the rich mineral belt of the eastern states, the company hopes to tap into the demand from power, steel, coal and mineral mining businesses in order to increase cargo volumes and grow over the next decades. This is precisely why Adani started the construction of the additional berths to achieve the growth. The company expects investments in the port and associated infrastructure to trigger new businesses or expand the existing businesses in the nearby regions. For example, investments into liquid terminals and liquid storage systems would develop a regional ecosystem for liquid and chemical businesses. The power deficiencies across the country drives the need for imported coal, the infrastructure available at Dhamra to handle imported coal will allow natural synergies between APSEZL and the group's holding company. Adani Enterprise is the country's biggest coal importer. Dhamra port's location and the draft advantage along with the state of the art infrastructure have its logistical and economic advantage in importing coal not only from Australia but also from south-east Asia.

Buying the Dhamra port was part of the company's strategy to have a string of ports along the Indian coast and meet the target of raising capacity to 200 million tonnes by 2020. Dhamra is an attractive acquisition for Adani Group because it is close to the mineral-rich region in Odisha and allows Capesize ships to berth and. Gautam Adani is aggressively expanding his ports business in India. Adani Ports and Special Economic Zone (APSEZ) buying Dhamra port is by far the biggest deal yet in the Indian ports sector. The deal is seen as further consolidating the APSEZ's standing as India's biggest private port operator and positions it among the galaxy of top-notch global port developers and operators such as PSA International Pvt. Ltd, DP World Ltd. and APM Terminals Management. In a short span of 13 years, Mundra has catapulted itself to the top spot among commercial ports in India by becoming the only port to handle 100 million tonnes (mt) of cargo in a year. None of the

major ports operating for close to four decades owned by the Indian government have achieved this feat.

The firm currently has port-operating assets mostly located on India's western coast, a big chunk of it in Gujarat which is the home-state of Adani. APSEZ runs mainly ports outside central government-control. These ports are owned by the states but are being given to private firms for developing and operating them. Firms operating such ports are free to set rates for the service provided and have greater operational flexibility. Cargo-handling rates at ports owned by the Union government are set by the Tariff Authority for Major Ports (TAMP). The private developer is contractually mandated to share 5% if its annual revenue with the Odisha government during the first five years of operations, 8% during the next five years, 10% in the following five years and 12% for the remainder of the contract period. In contrast, port tenders at Central government-owned ports have seen revenue share percentages quoted by bidders range between 20% and 55%. As the rates are concerned, APSEZ's expansion could pose a concern to exporters and importers. It is a fact that ports outside the control of the Indian government levy higher rates on customers. Despite the higher rates, shipping lines prefer to call at these new generation ports because there are lower real costs owing to higher level of through-put efficiency. Though the rates at the Indian government-owned ports are lower, the berthing delays and demurrage add up to the costs of exporters and importers. The presence of these ports has had a sobering impact on rates at non-Indian government ports and ensured competitiveness.

2.5: Locational Advantages of the Dhamra Port Project

The Dhamra port is being projected as one of the largest deep-water ports in India. This port is situated between two major ports namely Haldia in West Bengal and Paradeep port in Odisha. The port is located on mainland, north of Dhamra river mouth and west of Kanika sand at the latitude of 20"47'30" and longitude of 86"57'35". The Dhamra River is formed by the confluence of the Brahmani and Baitarani River. Dhamra discharges to sea through two distinct river channels, a north and southern channel, which are further separated by an island in the sea named Udabali or Kanika sand. It is located in the immediate vicinity of the extremely important and fragile zone of the north boundary of the Bhitarkanika National park. The port is 13 km away from the nesting beaches of Gahirmatha Marine Sanctuary in a straight line and less than 5 km away from the northern boundary of Bhitarkanika National

Park. The location of the port (figure-2.1) and discrepancy between port site chosen by the EIA and the one currently being developed has been represented in the figure 2.2 below.

Figure-2.1: Location of Dhamra Port Project in Indian Map

Source: www.dhamraport.com

Figure-2.2: Location of Dhamra Port Project

Source: Santillo, D. Johnston, P. (2007)

The Dhamra port project in Odisha is going to become the gateway of economic prosperity for the state as it has a significant locational advantage over its counterparts on the eastern

coast. The mineral heartlands of the country (Odisha, Jharkhand, Chhattisgarh and West Bengal) are in close proximity to Dhamra port and it will attract a number of small and large industries in the periphery, and in this way it will foster development of the region. A number of steel plants, thermal power plants and mineral based industries are located in these states and many more mineral based industries are coming up. The dedicated railway link developed by the port provides connectivity to Howrah-Chennai main railway line which offers an efficient and cost effective supply chain/value proposition to the local importers and exporters in the states of Odisha, Chhattisgarh, West Bengal and Jharkhand which are immediate hinterlands of Dhamra port. These states are rich in mineral resources with reserves of iron ore, thermal coal, nickel, bauxite and chromite, all of which have brisk export demand. The export of finished products, the spurt in import/export cargo traffic from the region would be huge. With 18 metre draught, Dhamra is capable of handling super capesize vessels up to 1, 80, 000 DWT. This would bring down the cost of import of coking coal from Australia by $7-8 per tonne thus making it the favoured port for the industries vis-à-vis the existing ones.[1]

Though Paradip is more accessible to industries in West Bengal and Jharkhand, it is faced with the problem of low availability of railway rakes. Dhamra, on the other hand, offers more efficient mechanised cargo handling and under Adanis, the availability of rail rakes improved as did its operational efficiency. Although both the ports are operating under the same Khurda division of East Coast Railways, traders report that there is ready availability of rakes at Dhamra whereas they have to wait for five-six months at Paradip port. The deep-draft Dhamra port is seen as a big draw for coal importers from the neighbouring Haldia and Paradip ports.

Kolkata and Haldia ports have limited draft of approach channel which cannot cater for cape size and super cape size vessels now used for shipment of crude oil. In view of this, super cape size carriers can call on Dhamra port from where cargo can be shipped to Kolkata and Haldia by smaller vessels and barges. Based on the feasibility studies, expansion of Dhamra port is recommended up to three berths for dry bulk cargo, two berths for liquid bulk jetties and six berths for clean and container cargo. It is expected that the fining cargo for the port will not be a problem as bulk of the import of coking coal and export of steel by Tata

[1] Available at http://www.business-standard.com/article/companies/dhamra-port-closure-by-sept-06-106072901100_1.html

Steel's existing facility at Jamshedpur will be routed through Dhamra. Besides, it would also function as a captive port for the proposed six million tonne Tata's steel venture at Kalinga Nagar in the Jajpur district of Odisha (Satapathy, 2005). Odisha state had signed memorandums of understanding for steel plants for creation of 58 million tonnes of steel capacity and a number of aluminium and power projects lined up for implementation in Odisha, DPCL was eyeing to position itself as the main gateway for both inward and outward bound cargo to be generated from these industries. Even Jharkand and Chhatisgarh have also signed for steel plants. Dhamra Port was expected to tie up at least 15 per cent of estimated cargo to be handled at port.

The project, being set up on BOOST (Build, Own, Operate, Share and Transfer) model, was expected to generate revenues for the state during its operation before the assets are transferred back to the state government. Besides, the socio-economic development of the people of Bhadrak and in other parts of Odisha will get a boost with commencement of the port operations of all berths. Now only two berths are operational.

2.6: Master Plan of the Dhamra Port Project

The master plan for the ports envisaged a total of 13 berths which included 2 berths for liquid bulk (petroleum, oil etc), 5 for dry bulk (coal, iron ore etc) and 6 for break types of cargo such as dry bulk, break bulk, liquid bulk and containerized cargo in different independent zones. The construction of port was to be done in two phases. First phase involved the construction of two berths. This study mainly focuses on the experience and functioning associated with the Phase-I. The features of Phase-I development of port are as follows.

Phase I Development

- ✓ Cargo handling capacity - 25 MTPA (Iron Ore: 2 MTPA; Coal: 15 MTPA; Lime Stone: 8 MTPA)
- ✓ Land area – 578.2 hectares
- ✓ Quay - 700 m long with two fully mechanised berths of 350 metres each along with back-up facilities for handling imports of coking coal, steam/thermal coal, limestone and export of iron ore w-+9hich commenced its commercial operations in May, 2011.
- ✓ At a time two capesize vessels of 1,80,000 DWT can be berthed wherein discharging and loading operations can be carried out simultaneously
- ✓ depth: 19 m

- ✓ construction of core infrastructure such as a navigational channel (Navigation channel: 18 km long ; Outer channel: 240m width, 18.3 m depth; Inner channel: 170m width , 17.5 m to 17.0 m depth; Turning circle of 600 m diameter, 17 m depth)
- ✓ Bulk Material handling System such as conveyors, Wagon tippler complex, Stacker and Reclaimer, Ship loaders & Unloaders, Silos rail loading facilities
- ✓ Stock Yards for Coal, Limestone and Iron Ore
- ✓ Dust suppression systems
- ✓ Water/wastewater Treatment facilities
- ✓ The initial estimated project cost was ₹ 2464 crores (24.64 billions). But for revised scope of work and capacity upgradation the estimated project cost has been enhanced to ₹ 3239 crores.
- ✓ 62.5 km rail line connecting Dhamra port with Bhadrak on the main Howrah-Chennai line which is meant for cargo transportation from the port. This is a single track rail line with an exchange yard at Bhadrak and terminal yard at Dhamra.

The Dhamra Port commenced its commercial operations in May, 2011. During its operation period port received its first cape-size vessel with the arrival of a Chinese ship from Australia. The first cargo ship from Australia carrying 1.5 lakh tonnes of coal for Tata Steel plant at Jamshedpur berthed at Dhamra Port. The ship had the capacity of 1,80,000 dead weight tonnage and its length was around 290 metres. This was the largest vessel that Odisha, as well as neighbouring state West Bengal, have received so far. In the first one year of operation, more than 90 ships have berthed at the Dhamra Port which include several cape size vessels of more than 1,50,000 DWT. The port has also handled around 6 million tonnes of cargo which include coal and lime stone in the import cargo and iron ore as export cargo. Keeping in mind the cost effectiveness and competitiveness factors, the process of construction work to add new import and export facilities for the second phase is now in full swing.

Phase-II Development

Under phase-II the remaining 11 berths will be constructed. Expansion of the facilities is planned based on the future traffic envisaged. The estimated cost of the project is ₹ 10,060 crores. The salient features of second phase are mentioned below in table-2.1.

Table-2.1: Salient Features of the Second Phase of Dhamra Port Project

Parameters	Description
Land Area	485.5 ha (1200 Acres)
Berthing Facilities and Cargo handling capacity	Three Berths for dry bulk cargo (Coking coal: 30.31 MTPA; Limestone: 6.03 MTPA •Two liquid cargo jetties (Crude: 23.0 MTPA; Naphtha : 3.96 MTPA) •Six berths for container (1 million TEU) & clean cargo (Steel: 8 MTPA)
Cargo Storage Capacity	Stockyards; container yard and tank farms
Cargo handling Equipment	Ship loader, stacker cum re-claimer, rapid loading silo, conveyor, marine loading arm, harbour mobile cranes, EOT cranes, heavy lift cranes, forklifts, tractor trailers etc.
Navigational Facilities	Approach channel and turning circle of Phase I development will cater the Phase II expansion
Dredging and Disposal	Capital dredge material: 19 MCM •Dredge material disposed beyond (-) 20 m depth offshore at identified disposal ground
Navigational Aids	Channel marker buoys •Leading light transit markers and storm signals
Connectivity	Road along the 62.5 km rail corridor from Bhadrak to Dhamra Port

Source: www.hamraport.com

DPCL has decided to revise the master plan for the Dhamra port based on the future cargo projections and business requirement of the hinterland. In this revised plan, total 35 berths are proposed which include 2 existing operational berths and 1under construction berth. Total cargo handling capacity will be 314 MMTPA. These 35 berths include barge handling berths, one mooring facility for trans-loading operations, liquid berths, container and break bulk/clean/general cargo berths. This requires around 2658 acres of land for LNG, LPG berths and development of associated back up facilities.

2.7: Significance of the Dhamra Port Project

The Dhamra port has been developed with the recently developed model of BOOST with the intention of increasing its performance and competiveness by the way of using the sophisticated mechanised technology. The Dhamra port is one of the deep water all weather port in India and one of the largest ports in south Asia with a draught of 19 metres. The Dhamra port has much significance for the economy and it is the first port which has implemented some agreement and policies. They are mentioned below.

(i) Dhamra port was the first Indian port in which the DPCL entered into a sister port relationship agreement with the US-based Port of Seattle. The pact's objective was to

exchange information on port users, transfer of technology and sharing of best practices in port operations between the two ports. Besides trade delegations from India to port of Seattle and from US to Dhamra port will be visiting and this will give a boost to the trade ties between the two countries.

(ii) Dhamra port will be the first port project to implement the relevant provisions of the newly introduced Railway Initiatives for Infrastructure Investments (R3Is) policy. According to the provisions, after 30 years the Indian Railways (IR) will become the owner of the land provided by the Odisha Government for constructing the railway line on the 62-km stretch between Bhadrak and the port. Indian railway will share with DPCL a portion of the freight it earns by it for transportation of cargo to and from the port. Accordingly, agreements are being signed between DPCL and Odisha government and also between DPCL and India Railways.

(iii) Dhamra Port Company Limited (DPCL) after being taken over by Adani signed a commercial agreement with Ministry of Railways (East Coast Railways). The Agreement accords the status of Non-Government Railways (NGR) to DPCL under the Indian Railway Act, 1989. This is the first in the State of Odisha and the second one across India where this kind of NGR status has been granted. Non-Govt. Railway Policy, promulgated by the Govt. of India is a recent concept based on which Indian Railways encourage its strategic partners like ports & industries to invest in creating additional railway infrastructure as a result, the connectivity to hinterland can be extended to major railway network. Since Railway connectivity is crucial to the economic development of the country, the Government of India came forward with a very ambitious plan under "Participatory Policy for Capacity Augmentation and Increasing Rail connectivity" in Public Private Partnership (PPP) mode. DPCL, with help from the Odisha government, opted for the scheme and constructed 62.5 kms of Railway line. This is the longest ever non-government railway system constructed by any private organization. The success or failure of the Dhamra Port in contributing towards the expansion of National Railways Network will determine the future of this model with reference to other industries, mines and port sectors that could come forward to build more railway networks in the future.

(iv) The Dhamra port is located in close proximity to the mineral belt of Odisha, Jharkhand and West Bengal and its deep draft suitable for large vessels is expected to make Dhamra port a very cost effective and competitive port in the eastern coast of India. It is expected that the port would be the gateway of economic prosperity for the state and attract small and large industries in the periphery, thereby resulting in the development of the region.

(v) The construction activities of the port have been carried out with the modern sophisticated technologies. This port has acquired land for the construction of the railway line and the port and this has caused massive scale of displacement of the people. Since the development of the project is regulated by the environmental as well as other laws, the outcome is expected not to have any irreversible damage to the ecology regulated by the Environmental Impact Assessment and also take into account the costs for the impacted society through Social Impact Assessment. Further, the development caused by the Dhamra port in Odisha is expected to absorb the displaced providing them with more productive alternative employment opportunities contributing towards the socio-economic development of the people of the Bhadrak district.

2.8: Study Area, Sample Design, Methodology and Data Sources

In order to address the research questions raised in the first chapter of this thesis, the study has used data from both secondary and primary sources. The secondary data sources are Special Land Acquisition Office, Dhamra port Project, Bhadrak; Dhamra Port Company Limited Office, Sub-registrar office, Chandbali tahasil, Ministry of Shipping and Newspaper. However, the data and information obtained through the secondary sources are sufficient to understand the problems of the project affected people, their subjective perception about the project, therefore, it becomes pertinent to carry out a primary household survey to under the problems better and fulfil the objective of the study. The primary data has been collected by conducting a field survey in the Dhamra port area, particularly focusing on the Dosinga village. The Dosinga village has been chosen as the study area because this is the most affected village in the location of the port project. The Dhamra port project has acquired land from 74 villages. However, the displacements of the people have taken place from 18 villages. Out of these 18 villages, Dosinga village is the most affected village. All the people from this village have been displaced by losing their agricultural as well as homestead land. The location of Dhamra port has caused the displacement of the households and more than 52% of the displaced households caused by the development of Dhamra port project belong to this village. Therefore, Dosinga village has been chosen for the study.

The study has selected a representative sample of 140 households for the analysis through stratified purposive sampling. The necessary data and information have been collected by carrying out household survey based on the structured questionnaires. The head of each household have been interviewed to get the authentic and reliable data. The different

questionnaires have been used to collect information from the different respondents. The port has affected the socio-economic life of the people in the surrounding area. However, the lives some of the households have become more vulnerable compared to others. Considering vulnerability as criteria of the households, the collected 140 sample households have been categorised as

(i) Displaced households (DHs) - These households are those who have lost homestead land and home. Total 319 households have been declared as displaced households and the study has taken into account 80 sample households (48% of total displaced households of Dosinga village) for analysis.

(ii) Government encroacher households (GEHs) - These are those households who did not have any legal entitlement over land but used to say in the government land. Total 31 households have been declared as government encroacher households and the study has collected 20 sample households for analysis.

(iii) Private encroacher households (PEHs) - These households did not have also any legal entitlement over land where they used to stay. Officially that land was in the name of another person. Total 39 households have been declared as private encroacher displaced households out of which this study has taken 20 households for analysis.

(iv) Land Loser Households (LLHs) – These households are those households who have not been displaced but lost their agricultural land for the port project and this study has taken into account 20 households for analysis.

The 140sample households of different categories are the representative sample of the total universe mentioned in the each category of affected households. In order to materialise the objectives of the study, sample of 140 the project affected households such as the displaced households (DHs), government encroacher households (GEHs), private encroacher households (PEHs) and land loser households (LLHs) are major respondents. First three categories of household are the displaced households and last category of households is land loser household. As the number of government and private encroached families of Dosinga village are less in number, some sample of government and private encroached families have been collected from other villages like Oramal, Balisahi, Chianipahi, Sompatia which are close to Dosing village. This has been done so to make the analysis effective and easy.

Apart from above respondents, the study has also extended the interview and discussion with others including non-displaced households (20 households), company employees, port

workers working in the construction activities of the port (20 people), Official of Dhamra Port, Rehabilitation & Periphery Development Advisory Committee (RPDAC), the local political leaders, the president of Dhamra port labourer Union, spokespersons of the displaced people, secretary of the fishermen and affected leaders who raised the voice against the port and suffered jail sentences. The study has also undertaken the group discussion with the fishermen of the villages of Ravindra nagar and Amar nagar whose livelihood has been severely affected by the port.

Limitation of the Study

In spite of putting of much effort to look into the problem in systematic and fair manner, this study is subjected to certain limitations. There is dearth of secondary data for the port performance parameters, capacity utilisation and so on with respect to non-major ports which disable the study to compare between major and non-major ports. Further, analysis of port related data cannot be generalised also because each port in the world is unique in several ways and the capacity, operation and hinterland effects in themselves are partly influenced by unique geo-climatic externalities apart from unique social and institutional settings into which developmental effects of ports are embedded. The impact of Dhamra port can be observed during the location, construction and operation of the port. The construction of the port project and the impact of the operation of the Port project are two different aspects. The first focuses on the location, some portion of construction and operation of the port (only first phase of port) has been constructed and two berths are operational. Since the second phase of port project is under construction and has not yet started its operation fully, there is very limited information collected about impact of the port itself. Since, Dhamra port started its operation since 2011, it is not so practical to fit trend in its performance and project its performance in the future years of its concession period. Although, so many industries and power plants are expected to come up in the surrounding area of Dhamra port but it is difficult to envisage how far these expectations will be realised and in the event of its realization, in what way the port will bring the benefit to the local economy. Since this study is based on the primary survey, the responses are partly dependent on the subjective biases of the respondents. While other supplementary objective indicators have been used wherever data was available to calibrate the veracity of the inferences, yet, since the study is based on a limited sample size, as well as draws on a limited experience temporally, its extrapolation and generalisation has limitations.

2.9: Organisation of the Study

The present study has been organised in the following way.

The chapter-3 discusses various port development models emerged after the World War II and various port management model proposed by the World Bank. It also discusses initiation of adopting the new governance model of the reform process. It has discussed impact of the new governance model on the performance of both major and non-major ports in terms of volume of cargo handling, efficiency of the port in terms of port performance parameters and capacity utilisation etc.

As this study has considered Dhamra Port project has two aspects i.e. construction of the port and the operation of the port. This chapter has taken into account various impacts and consequences witness during phase of the construction of the port. This chapter has analysed the process of land acquisition and its resultant displacement of the people and its resettlement and rehabilitation programme carried by the project authority. This chapter also discusses the impact of port on various sections of the people; livelihood of the displaced householders as well as local people; ecology; and the loopholes in the existing policies and regulation and how have the non-major ports including Dhamra port has taken advantage of those bizarre aspects of the policies to come into being.

The Chapter-5 broadly discusses the operation phase of the port and its various resultant impacts witnessed surrounding the port area. It discusses the importance of Dhamra Port in the conveyance of minerals; the various upcoming proposed infrastructure and industries surrounding the Dhamra port; the spill over impact of the port; the generation of employment opportunities; the contribution of Dhamra port to the local economy. The Chapter-6 is the conclusion and finding of the study.

How has the private sector been encouraged to enter into the Indian port sector and how have the adoption of the new governance model recommended by the World Bank been fruitful in terms of capacity utilisation, volume of cargo handling, and various port performance parameters? These are the broad set of questions which have been the matter of discussion in the next chapter.

CHAPTER-3
PRIVATISATION, NEW MODES OF GOVERNANCE AND PERFORMANCE OF INDIAN PORT SECTOR

3.1: Introduction

After adoption of the new governance model by the Government of India in the Indian port sector there is an expectation of a significant impact on the cost reduction and increased competitiveness of the ports. This chapter focuses on one important aspect of how far did the new governance model adopted by Government of India help to improve the performance of the port sector in terms of cargo volume and efficiency of the port in terms of physical performance parameters in comparison with earlier models? This is the question which has been probed in this chapter. As a precursor to analysing whether the performance outcome have improved after implementation of new governance model, a brief outline of various port development models and the role played by the private and public sector in these models are discussed.

Public-private partnerships are often perceived as a middle ground between full privatisation and state ownership. A wider range of reform models and of public-private partnership formats exists for the delivery of port services than any other infrastructure service. This is because the ensemble of services provided by seaports is vast and requires more diverse and specialized skills and involves more categories of service than other public/ private institutions (World Bank, 2007).

3.2: Port Development Models

The Second World War was an outcome of the shipping industry's effort to respond to the changing needs of world trade. In the post-war period world trade was dominated by Western industrial countries that imported raw materials from developing countries and re-exported part of them in a more processed form. Maritime transportation is a sector of strategic importance for these countries and it is in their interest to develop large and efficient fleets. Some of countries such as the United States and Japan are unable to cover the transport needs of their cargoes with their national fleets and purchase shipping services from third parties. This creates the opportunity for traditional maritime countries, such as the UK, Greece and Norway, to become involved in cross-trade transport of goods between third countries. These maritime nations provide their services on a short-term or a long-term basis, depending on the demand.

The economic development of the port industry that followed the Second World War was based upon two economic theories trends (Pardali, 2008). They are theories based on Keynesianism and on Neo-liberalism. Until the late 1970's the model based on Keynesianism forms the basic idea for ownership, pricing policy, infrastructure, investment, and role of ports. Since the early 80's Neo-liberalism is adopted as a new model of development oversetting what was taken for granted until now and employing a new basis for the port production.

In Keynesian model of port development, port policy was mainly determined by state intervention and the regulatory frameworks as well as handling operations were controlled by public Port authorities. The port authority was determining port production, its pricing, expansion policy, infrastructure and investment. The port was considered as usually a national business and served national interests. Ports were located in regions with trade flows and port operations served the local area. Different kind of businesses directly or indirectly related to port production and various industrial and commercial development related to ships and cargo were located in the area around port facilities. The positive impact of business agglomeration and multiplier effects sustained the public ownership of status in the port industry, as well as public financing of port infrastructure, rendering it a public good subject to governmental subsidisation. This model contends that port infrastructure itself could lead to increasing employment and prosperity in the region and its administration undertook investments mainly for regional economic development purposes. The main role of the port authority was maximising value added operations and employment growth in the local community in the hinterland. The greater impact in the economic development of the local community stems from the location and development of industrial businesses in the port region. The port region attracts the development of industries related to ships, such as shipyards, ship repairing and scrap businesses, as well as industry related to freight processing. The port became a pole of economic development due to additional operations particularly the businesses attracted by the port.

Neoliberalism emphasises the virtues of individual liberty, competitive markets and private enterprise believing that role of the state in the economy should be minimized to that of enforcing private property rights, free markets and free trade. From the early 1980's and on, Neoliberalism constitutes the dominant ideology globally. In the Neoliberal model of port development, the role of the port has changed. The logistics chains, instead of natural

hinterland, to the port were chosen as a determinant for the port selection process that can offer service with the minimum total cost (for transport and handling). The general idea in the Neoliberal model focuses on competitiveness which can be initiated through private sector participation in port production. In this phase of development an intense trend for privatisation in the world port industry has been emerged. The Keynesian model was critiqued by Neoliberal protagonists for having created significant difficulties and inefficiencies in the port industry. These problems, it was contended, were removed by attracting private capital ideally through open competitive bidding for financing new investment schemes either for infrastructure or new cargo handling technology development, adopting new management and so on.

The sharp increase in world trade over the last 50 years emphasised the attention of national governments on the economic importance of ports. In the 1950s and 1960s, many nations introduced institutional changes with the aim of coordinating port development at national and regional levels and preventing overinvestment in expensive port infrastructure. In the late 1970s and early 1980s, UK launched the privatisation in the port sector and resulted in a reassessment of the role of the government and private enterprise. The demise of the communist system in the beginning of the 1990s resulted in the virtual collapse of centrally controlled port systems in the former socialist countries. They also embarked on port reform and adapted the institutional and financial structure of their port sectors to market conditions. Despite these reforms, the public sector has retained a strong role in port development. Generally, in a market-oriented economy a government continues to be responsible for the development of "public goods," goods that have a social utility, but that cannot be provided by the private sector because of low profitability (World Bank, 2007). Therefore, the provision of public utilities such as port was natural monopoly of public authority however, the public sector failed to provide these services. As a result the private sector was allowed to participate in the Indian port sector in 1991 but it is observed that this did not produce good response due to existing bottlenecks. Again India introduced the revised policy in 1996 in order to remove the ambiguity of the past. The corporatisation and commercialisation were also pursued for the Indian major ports along with the private sector participation. This reform in 1996 considered the most popular port management model namely landlord model for the future. A landlord port does not involve itself directly in port operations rather confers to the private port operators who conduct their business

independently and compete in the market. Various other port management models along with landlord model are presented in the next section.

3.3: Port Management New Governance Models

Ports constitute a critical link in the overall logistics or supply chain. Thus, their level of efficiency and performance influences, to a great extent, a country's competitiveness. To achieve and maintain a competitive edge in international markets, nations need to understand the factors underlying port competitiveness, administration of a port, organization and the appropriate form of port administration (Cullinane et al., 2002). The governance structure of ports has changed quite dramatically over the past two decades at global level. Brooks (2004) has found that this has been in response to at least two drivers of change. First, rapid improvements in information technology have increased the transparency of government operations, providing citizens with greater ability to monitor and participate in government activities. Second, throughout the late 1980s and into the 1990s, increasing deficit and accumulated debt burdens, coupled with low levels of public confidence in government, forced governments to find ways to do more with fewer resources. The World Bank (2007) identifies four main categories of ports: the service port, the tool port, the landlord port, and private service port. The adoption of the above models in a country is determined by the way the ports are structured, managed or organised. A number of factors such as socio-economic structure of a country (e.g., market economy, open borders); historical developments (e.g., former colonial structure); location of the port (e.g., within an urban area, in isolated regions); and types of cargos handled (e.g., liquid and dry bulk, containers) influence the way ports are organized, structured, and managed. These four models of ports are:-

(i) Service Port Model

Service ports have a predominantly public character. Under this model, the port authority owns, maintains, and operates every possible asset (fixed and mobile) and all cargo-handling operations are performed by labour directly employed by the port authority. Under this model, the port authority executes the regulatory functions, developing infrastructure and superstructure, and operational activities. The main functions of a service port are cargo-handling activities. Generally there is an absence of private sector involvement in port activities. Many former service ports are in transition toward a landlord port structure such as Colombo in Sri Lanka, Nhava Sheva in India (World Bank, 2007).

(ii) Tool Port Model

This model is characterized by divided operational responsibilities between private and public. In the tool port model, the port authority owns, develops, and maintains the port infrastructure and superstructure, including cargo handling equipment such as quay cranes and forklift trucks. The port authority also employs workers who carry out all the port-related cargo handling operations. However, port authority does rent out its equipment and facilities to private parties, who are also allowed to set up specific facilities and services, which the port authority does not wish to operate on its own. The Port of Chittagong (Bangladesh) is a typical example of the tool port.

(iii) Landlord port model

The landlord port is characterized by its mixed public-private orientation. Under this model, the port authority acts as regulatory body and as landlord, while port operations (especially cargo handling) are carried out by private companies. In this model, the port authority maintains ownership of the port land while the infrastructure is leased to private operating companies. The private operating companies provide and maintain their own superstructure including buildings (offices, sheds, warehouses, container freight stations, and workshops), purchase and install their own equipment, and employ the stevedoring/dock labour. This model is highly compatible with the Build Own Operate (BOT) route of financing port projects and is strongly recommended for moving out of the services port model that is less amenable to cooption of private sector in port development. Ennore port is the only Indian port, which has adopted this organisational model. Examples of landlord ports are Rotterdam, Antwerp, New York, and Singapore. Today, the landlord port is the dominant port model in larger and medium-sized ports.

(iv) Private Service port Model

In this model, the government no longer has any interest in port activities. Port land is owned by the private sector. All regulatory functions and operational activities are performed by private companies. This model is found mainly in the United Kingdom and New Zealand. This model often results in investment in port operations is flexible and port development and tariff policies tend to be market-oriented. This type of model may result in monopolistic behaviour as well as a loss of public involvement in developing long-term economic policy and strategies. How the responsibilities are allocated between public and private authority in aforementioned models are given below in table-3.1

Table-3.1: Allocation of Responsibilities between Public and Private Authority

Responsibilities	Service	Tool	Landlord	Private
Infrastructure	Public	Public	Public	Private
Superstructure	Public	Public	Private	Private
Port labour	Public	Private	Private	Private
Other functions	Majority public	public /private	public /private	Majority private

Source: World Bank 2007

Service and tool ports mainly focus on the realization of public interests. Landlord ports aim to strike a balance between public and private interests. Fully privatised ports focus on private interests i.e. interests of the shareholders. Now, the Landlord model is becoming the dominant port model worldwide. However, this is not fully implemented everywhere since port reform requires institutional and managerial competence which is not always available in port organisations. Service ports have a predominantly public character. Many ports in developing countries are still managed according to this model (e.g., India, Sri Lanka). Under it, the port authority offers the complete range of services required for the functioning of the sea-port system.

3.4: Extent of Privatisation

There are four main models of port administration mentioned above. To differentiate between each of these models, A. Baird (1995) offered three distinct and essential functions of the ports to be considered. These essential functions are; regulatory function, landowner function and operator function.

a) **A regulatory function:** This function is mainly concerned with whether the ownership of a port lies mainly in private or public hands and this function is, in general, is regarded as the primary role of a port authority. A port can involve substantial powers being given to the port's management, the majority of which will be of a statutory nature.

b) **A landowner function:** Ports control significant land areas. Irrespective of whether the land area of a port is large or small, however, the essential tasks of a port landowner are to manage and develop the port estate, to implement port policies and development strategies, to coordinate port marketing and promotion activities, and to provide and maintain port infrastructure such as channels, breakwaters, and road and rail access to the port facilities.

c) **An operator function:** This is concerned with the physical transfer of goods and passengers between sea and land. In a comprehensive port, the cargo handling activity

will be controlled by state-owned organizations while in a landlord port, either private companies alone or a mix of private and public companies will undertake this activity.

According to these three functions, Baird (1995) proposed a port function matrix (table-3.2) which suggests the four main patterns (in terms of port administration, ownership, management and operation) into which a government is able to organize its port industry. They are

1) Public Port

In this model, all three functions are controlled by the government or public authority and this may also be referred to as a 'service port', in which, there is no private sector involvement. An example of this type of port would be Singapore, Israel, India, and in certain African states where the entire port area is managed by the Port Authority.

2) **Public/private Port*:*** In this model both the regulatory and landowner functions are controlled by the public sector and the operator function (cargo handling) is carried out by the private sector. This model might be termed the Private/I model, where one element of the port, i.e. port operation has been privatised. This type of arrangement is also referred to as a 'landlord' or 'tool' port. This type of port can be interpreted to be a variant of the landlord port. The examples of this type of port are New York, Los Angeles, Rotterdam and Antwerp.

3) **Private/public*:*** In the third model, both landowner and operator functions are in private hands, while the regulatory function remain in the public sector. This model might be termed the Private/II model, with two element of the port has been privatised. Examples of this type of model are the ports of Hong Kong where private companies build their own terminals but the government retains responsibility for vessel traffic management and other regulatory policies, as well as the planning of new port and terminal development.

4) **Private port***:* The fourth model can be described as pure private sector. In this case, all three essential functions are controlled by the private sector. With this model the state has virtually no involvement in the port other than perhaps to react in certain instances such as sub-standard vessels, pollution or serious accidents. There are currently many private ports in the UK, including all 23 ports owned by Associate British Ports, as well as the ports of Liverpool, Manchester and Felixstowe.

The model of Private Sector Participation in Managing Port is presented through Port function Matrix below in table-3.2.

Table-3.2: Port Function Matrix

	Port Functions		
Port Models	Port Regulator	Port Landowner	Port Operator
PUBLIC	Public	Public	Public
PUBLIC-private	Public	Public	Private
PRIVATE-public	Public	Private	Private
PRIVATE	Private	Private	Private

Source: Baird, 1995

In the second and third models practice there is a mix of government agency and private enterprise involvement. The second alternative (the Public/ Private port or the landlord port) is extensively preferred throughout the countries of North America, Europe and Asia.

3.5: Modes of Privatisation

Private sector participation can assume different kinds of contractual forms with regards to ownership, operations and maintenance, financing, risk allocation and duration. Depending on the nature of service, private operators can enter into a service contract, a management contract, a concession agreement or a divestiture to operate services. The most common forms of private sector participation in the provision of infrastructure can be summarised in four categories: 1) service contracts; 2) management contracts; 3) construction support contracts; and 4) divestiture.

Table-3.3: Allocation of responsibilities under the main private sector participation options

Option	Asset Ownership	Operation & maintenance	Capital Investment	Commercial Risk	Duration (in years)
Service Contracts	Public	Public and Private	Public	Public	1-2
Management Contracts	Public	Private	Public	Public	3-5
Concession	Public	Private	Private	Private	20-30
Lease	Public	Private	Public	Semi-Private	8-15
BOT, BOO	Public/Private	Private	Private	Private	20-30
Divestiture	Private	Private	Private	Private	Indefinite (may be limited by license)

Source: The World Bank, 1997

i) **Service Contract**: In a service contract, the overall operational responsibility remains with the public sector but the contracted private sector performs a specific operational service for a fee. The service contract has two main forms: the management support contract and the operation and management contract. Management support provides

technical and human resources against a fee. Ownership and some management responsibilities remain within the sphere of the public authority. Operation and management places more responsibility in the private hands. The private contractor is responsible for operating and maintaining the facility. It is paid according to the achievement of agreed performance criteria.

ii) **Management Contracts:** In management contracts the public entity preserves ownership of the asset but hands over the responsibility to private operator for operating a specific service and maintaining the relevant assets. The duration of this contract is longer than for service contracts. The management contract is usually for a specified period between three and five years. When the contract period expires, it may be renewed or awarded to another private party.

iii) **Concession:** Another contractual form is the concession that is widely used in the port sector today. A port concession is a contract in which a government transfers operating rights to private enterprise, which then engages in an activity contingent on government approval and subject to the terms of the contract. Under this type of contract the private sector finances the project and also has full responsibility for operations and management. The government owns the asset and all full use rights must revert to the government after the specified period of time. There are two main forms of concession used in ports today: concession contracts and lease contracts. In concession contracts, the operator covers investment costs and assumes all commercial risks. Such contracts are often combined with specific financing schemes such as Build, Operate and Transfer (BOT). In lease contracts, an operator enters into a long-term lease on the port land and usually is responsible for superstructure and equipment.

iv) **Build, Operate and Transfer (BOT) Schemes**

Port concession is the most common form adopted world over, including India, for getting private sector participation in port development and operation. Within this, BOT (Build-Operate-Transfer) is the mostly accepted form of financing, and has been recommended by Infrastructure Development Finance Company (IDFC) for terminal privatisation in major ports. BOT scheme represent specific agreements between a government and the Special Purpose Company (SPC) established by the concessionaire to carry out construction and operation of a port development project. Under concessions, the ultimate ownership of the affected assets is retained by the port authority. The core of a BOT arrangement is a concession for a specified period

of time involving the transfer or re-transfer of all or some of the project assets. There are many possible variations on the BOT model.

v) **Divesture:** A divestiture can be two types - partial or complete. In complete divestiture, like a concession, the private operator is given full responsibility for operations, maintenance and investment. In partial divestiture, unlike a concession, it transfers ownership of the assets to the private sector.

It is quite obvious that private sector participation in the port industry can be done in many different ways and it varies according to the level of private participation in port operation.

3.6: State of India's Port Sector in Pre-Reform Period

India's shipping and port sector experienced drastic growth in the period 1947-90 under the initiative of planned development and active government support. More than two-thirds of the port cargo handling capacity and more than half of India's national shipping tonnage were established in the first four decades of independence. From the period 1947-90, Indian policymakers of both central and state governments have emphasised more on the self-reliance, import substituting development strategy and public sector dominance without paying enough attention to port development. As a consequence, the overall trade, export and technology-driven growth of the economy remained constricted (i-maritime, 2003). This created a bottleneck for India's trade growth. India's ports in the 1980s suffered from obsolete technology, low loading rates, chronic congestion and delays, and poor connectivity with the hinterland, the constraints such as inadequate capacity, operational inefficiency and capacity underutilization which caused low productivity. Some of major constraints confronted by Indian ports are mentioned below.

i) Capacity constraints

The optimum range for major ports was estimated at 70-75% utilisation but major ports are operating at more than optimum level and even some ports are experiencing more than 100 per cent utilisation. It means the major ports were handling more traffic than their capacity. This led the ships to wait for berths instead of berths having to wait for ships.

ii) Usage of obsolescence of equipment

The Indian ports were not having necessary equipments in the berths for the quick handling of the cargo. Around 55 per cent of equipments available at all ports were running beyond their rated economic lies, resulting in low utilisation. Frequent breakdown of cargo handling equipments due to obsolescence or wrong specification of equipment and inefficient and non-operational deployment of port equipment and poor maintenance etc. led to inefficient cargo

handling and thereby low productivity of port performance. The average availability of equipment in Indian ports is around 70% as compared to 85% - 90% for other Asian ports. The number of containers handled per ship/ hr is 10 at JNPT port (which is India's most modern container terminal) as compared 69 in Singapore respectively (World Bank, 1995).

iii) Inadequate Drafts

The sizes of vessels are increasing with the pace of technological advancement. Indian ports are unable to handle larger vessels and containers because they cannot be accommodated. This makes large shipper not to enter into the Indian ports rather move to other ports.

iv) **Low Labour Productivity**

Indian ports handled around 1424 tonnes of cargo/ employee in comparison to the port of Rotterdam handled around 50,500 tonnes of cargo / employee during 1998-99.

In addition to the above factors, Sundar (1998) has pointed out the following factors that have led to inefficiencies in the Indian ports. They are:

a) Although, most major ports were originally designed to handle specific kind of cargo but in due course of time those cargo declined in time and other types of cargoes gained importance. But the ports were unable to adjust themselves with the changing categories of cargo which grew the most. This led to underutilisation of berths meant for traditional cargo and over-utilisation of berths meant for new cargoes.
b) Equipment utilisation was very poor both because equipments were obsolete and poorly maintained.
c) Labour intensive methods of bulk handling of sensitive commodities like thermal coal which led to overstaffing.
d) Documentary procedures relating to cargo handling such as customs clearance requirements were unduly complicated and time consuming.
e) Port access facilities and arrangements for moving inbound and outbound cargo were inadequate and unsatisfactory.
f) The number of labourers employed at the ports far exceeded the optimum level. The port labours enjoyed significant representation in the Boards of Trustees of major ports due to strong unionized labour lobbies and this made retrenchment of excess labour a difficult task.
g) The public ports failed to meet the growing efficiency-related demands of the port users. The capacity growth in the port sector too has been tardy, due to paucity of public investment resources. This congestion is due primarily to the slow evacuation

of cargo rather than a lack of handling capacity, since ports are not adequately linked to the hinterland.

Besides above inefficiencies, inefficient port services escalated transport costs of exports and imports and posed a major burden on the national exchequer. The greenfield port ventures in the private sector have made slow progress because of a host of problems at the bidding, pre-construction and post-completion stages. The most prominent problems are being delays in land acquisition and statutory clearances (coastal, forest, pollution and environmental). As a result, India's performance became poor and lagged behind their foreign ports. Inefficient port services raised transport costs of exports and imports and the Indian exporters and importers became looser. Sundar (1999) estimated that the annual incidence of various factors like demurrage charges, transshipment costs, pre-berthing delays and vessel turnaround time might have been as high as US$ 1.5 billion per annum. The inefficiencies of the port sector also gave rise to certain unethical practices like acceptance of speed money and high custom agent charges in order to expedite port operations, which worked to the benefit of private individuals, often in connivance with port personnel, as well as employees in customs and other agencies (Ray, 2004).

The port sector has radically changed over the past two centuries. During the 19th century and first half of the 20th century, ports tended to be instruments of state or colonial powers and port access was regarded as a means to control markets. Competition between ports was minimal and port-related costs were relatively insignificant in comparison to the high cost of ocean transport and inland transport. As a result, there was little incentive to improve port efficiency. Although the trade traffic in major ports is increasing but because of technical and instrumental constraints, they fail to operate at an optimal level. All these problems of inadequate capacity, operational inefficiency and sub-optimal use of existing facilities constituted the key driving forces for port reforms in India.

3.7. Port Reforms in India

Though the concept of private ports was conceived in the 1980s, Pipavav port in Gujarat being the first private port to come up in India in 1998. The privatisation gathered momentum only after the major economic reforms of 1991 and liberalisation policies adopted in various sectors. With the introduction of liberalisation policy, India moved towards a more outward oriented trade regime and experienced the booming external trade. This has caused a

massive expansion in the volume of India's sea borne trade and brought changes in the composition of Indian port traffic from break bulk to liquid bulk and containerized cargo. The Indian port sector failed to handle such massive demand expansion due to certain constraints and bottlenecks existed in port sector. The process of economic liberalisation and globalisation in Indian economy started in early 1990s but reform in the infrastructure sector particularly the transport infrastructure sector didn't take off till 1995 because of those bottlenecks. The government of India constituted a committee under the chairmanship of Rakesh Mohan in 1996 to identify the bottlenecks in the infrastructure sector and to suggest measures for augmenting resources and removing constraints to make the sector a catalyst for economic growth in the country. The Rakesh Mohan Committee Report, which was submitted on June 22, 1996, identified the following bottlenecks in the Indian port sector. The labour and equipment productivity levels were also too low due to

i) Operational constraints such as frequent breakdown of cargo handling equipment due to obsolescence and wrong specification
ii) Inadequate dredging and container-handling facilities
iii) Inefficient and non-optimal utilisation of port infrastructure
iv) Lack of proper co-ordination in the entire logistic chain
v) The handling of containerisation was costlier in Indian ports compared to other ports in Asia. The additional cost burden due to use of second and third generation vessels was estimated at US$ 250 million a year and container delays at Indian ports cost US$ 70 million a year.

Although, Indian ports have the potential for emerging as hub in Asia but it can be realised unless above bottlenecks are removed and Indian ports are exposed to the private sector participation for various cargo handling activities. After identifying the bottlenecks in the infrastructure sector, Rakesh Mohan Committee report suggested measures for augmenting resources and removing constraints to make the sector a catalyst for economic growth in the country. Keeping the recommendation in the view, the government of India allowed the private sector to play a significant role in developing infrastructure. Therefore, the real reform in the transport infrastructure in general and port infrastructure in particular were initiated following the release of Rakesh Mohan Committee Report on Infrastructure Development in 1996. This report recommended policy measures to encourage private sector investment in infrastructure services. This helped the onset of a new approach in the development of port sector.

If Indian ports were to emerge to be catalyst of economic development in the country, they need to be globally competitive. The competition promotes innovation which leads to increase productivity and efficiency, low fee for port users and high fee for port owners. World Bank report (1995) provided clearer direction to India's port reforms (1995) which addressed various inefficiencies prevailing in India's port sector and provided modalities for private sector involvement in Indian ports. Allowing the private sector participation (PSP) in the port sector, the government decided to adopt the 'landlord port' model propagated by the World Bank. This particular model distinguishes between the port owner and the port operator. Application of the model implies that the government (major port trusts) progressively relinquishes the responsibility of providing operational port services and their management to private developers through various contractual agreements.

The Government of India has been encouraging private sector participation in ports since 1996 especially by awarding Public Private Partnership (PPP) concessions. Port concession is the most common form adopted world over, including India, and within this, BOT (Build-Operate-Transfer) is the mostly accepted form of financing. In India's port sector, these agreements have been in the form of BOT schemes where the private sector takes responsibility for developing and operating the port project and returns ownership of the project to the government at the end of the concession period. The concession period is determined primarily by the length of time needed for the project's revenue stream to pay off the company's debt and provide a reasonable rate of return for its effort and risk. The government, however, retains the right of ownership over port land. The period of lease was to be restricted to a maximum of thirty years, at the end of which, the assets were to be reverted back to the port free of cost (Ray, 2004).

The major areas that have been opened for private investment, mainly on a Build, Operate and Transfer (BOT) basis with revenue sharing formulas, include the construction of berths for cargo handling, container terminals, cargo handling equipment, warehousing and the construction of dry docks and ship repair facilities. This BOT approach mitigates risks associated with the infrastructure project to a level of acceptance to the private sector. BOT schemes are a specialized form of concession between a government and the Special Purpose Company (SPC) established by the concessionaire to increase private financial participation in the creation of port infrastructure/superstructure without changing the landlord structure of the concerned port.

There are many possible variations on the BOT model like schemes such as build-operate-own (BOO), design-build-operate (DBO)s, build-own-operate (BOO) without any obligation to transfer); build and transfer (BT); build, lease and transfer (BLT); Build-Operate-Own-Transfer (BOOT), Build-Own-Share-Transfer (BOST), Build-Own-Operate-Share-Transfer (BOOST) and so on. In the build operate transfer (BOT) contract ownership remains with the public sector. It should be noted that Government of India has adopted the BOT route for privatisation of terminals in major ports, while Gujarat Government has adopted the BOOT mode. The state of Gujarat has also demonstrated more success in bringing together public and private resources for the development of ports and related infrastructure facilities, convincing other state governments to use PPP for their port developments.

By and large, the objectives of the new policy guidelines were to attract new technology and investment through joint ventures with overseas and domestic private sector. Private participation was also expected to introduce better managerial practices leading to improvement in efficiency of ports and make India's trade more competitive in the world market. The guidelines cleared the ground for a series of privatisation initiatives in various segments of Indian port sector and helped to develop several minor and intermediate ports especially for the setting up of the Mundra and Pipavav ports on the Gujarat coast, under joint sector initiatives. The non-major ports such as Mundra, Krishnapatnam, Dhamra, Karaikal have shown better success bearing testimony to the successful PPP model (i-maritime, 2003). The performance of the Indian port sector after inviting the private sector into the transport sector has been delineated in the next section.

3.8: Performance of Port Sector in India

The main function of the port is handling the cargo. Cargo is the goods transported generally for commercial gain by ship or any other mode of transport. Cargo handled at the port reflects nature of port activity. The port has to provide different facilities according to the type of the cargo being handled and the cargo handled by the port may be categorised as break bulk cargo, dry bulk cargo, liquid bulk cargo and containerised cargo. The break bulk cargo is the cargo which is handled in units, packages, crates, bags and the like. The dry bulk cargo is homogeneous dry cargo that is unpacked or undivided into parts and handled in mass. The liquid bulk cargo is the homogeneous liquid cargo (including gas) that is unpacked or

undivided into parts and handled in mass. Containerised Cargo is the cargo packed in containers for easy handling and transporting of the same as a unit (Ministry of Shipping, 2015).

(i) Total cargo handled by Indian ports

Traffic handled at the Indian ports has been increasing over the years in tandem with the economic activity and trade volume. Volume of seaborne cargo traffic is essentially in the nature of derived demand and is mainly determined by changes in both the global and domestic activity. The total cargo handled by Indian ports during the period of 1985-86 to 2014-15 is given below in the table-3.4.

Table-3.4: Total cargo handled by Indian ports during the period of 1985-86 to 2014-15

Year	Major ports	Non-major ports	Year	Major ports	Non-major ports	Year	Major ports	Non-major ports
1985-86	119.62	9.05	1995-96	215.21	25.71	2005-06	423.57	150.12
1986-87	124.37	8.39	1996-97	227.26	28.35	2006-07	463.78	184.92
1987-88	134.6	5.89	1997-98	251.66	38.61	2007-08	519.31	206.38
1988-89	146.71	9.03	1998-99	251.74	36.31	2008-09	530.81	213.22
1989-90	147.57	10.96	1999-00	271.97	63.38	2009-10	561.09	288.94
1990-91	151.67	12.78	2000-01	281.13	87.37	2010-11	570.09	315.36
1991-92	156.64	13.26	2001-02	287.58	95.52	2011-12	560.19	353.74
1992-93	166.5	15.4	2002-03	313.55	108.3	2012-13	545.83	387.92
1993-94	179.02	19.47	2003-04	344.8	118.86	2013-14	555.49	416.97
1994-95	195.89	22.28	2004-05	383.76	136.96	2014-15	581.34	470.89

Source: Basic Port Statistics, 2014-15 and other issues, Ministry of Shipping

The table-3.4 depicts that total cargo handling by both the major ports and non-major ports is in increasing trend, except the year 2012-13 in the case of major ports. The total cargo handled at Indian Ports (major and non-major) increased to 1052.33 million tonnes in 2014-15 from 972.46 million tonnes in 2013-14 reflecting increase of 8.20 % during 2014-15. The growth of total cargo traffic handled by both India's major ports and non-major ports during of 1985-86 to 2014-15 are shown below in table-3.4.

Table-3.5: Growth rate of Total Cargo Traffic Handled at Indian Ports during 1985-86 to 2014-15

Year	Major ports	Non-major ports	Total	Year	Major ports	Non-major ports	Total	Year	Major ports	Non-major ports	Total
1985-86	14.93	26.85	15.77	1995-96	9.86	15.39	10.43	2005-06	10.37	9.61	10.17
1986-87	3.97	-7.29	3.18	1996-97	5.6	10.27	6.1	2006-07	9.49	23.18	13.08
1987-88	8.23	-9.8	5.82	1997-98	10.74	36.19	13.56	2007-08	11.97	11.61	11.87
1988-89	9	53.31	10.85	1998-99	0.03	-5.96	-0.76	2008-09	2.21	3.31	2.53
1989-90	0.59	21.37	1.79	1999-00	8.04	74.55	16.42	2009-10	5.7	35.51	14.25
1990-91	2.78	16.61	3.73	2000-01	3.37	37.85	9.89	2010-11	1.6	9.14	4.17
1991-92	3.28	3.76	3.31	2001-02	2.29	9.33	3.96	2011-12	-1.74	12.17	3.22
1992-93	6.29	16.14	7.06	2002-03	9.03	13.38	10.11	2012-13	-2.56	9.66	2.17
1993-94	7.52	26.43	9.12	2003-04	9.97	9.75	9.91	2013-14	1.77	7.49	4.15
1994-95	9.42	14.43	9.91	2004-05	11.3	15.23	12.31	2014-15	4.65	12.93	8.2
CAGR	**6.63**	**0.32**	-0.05	**CAGR**	**15.86**	**10.13**	0.02	**CAGR**	**14.78**	**31.08**	-0.2

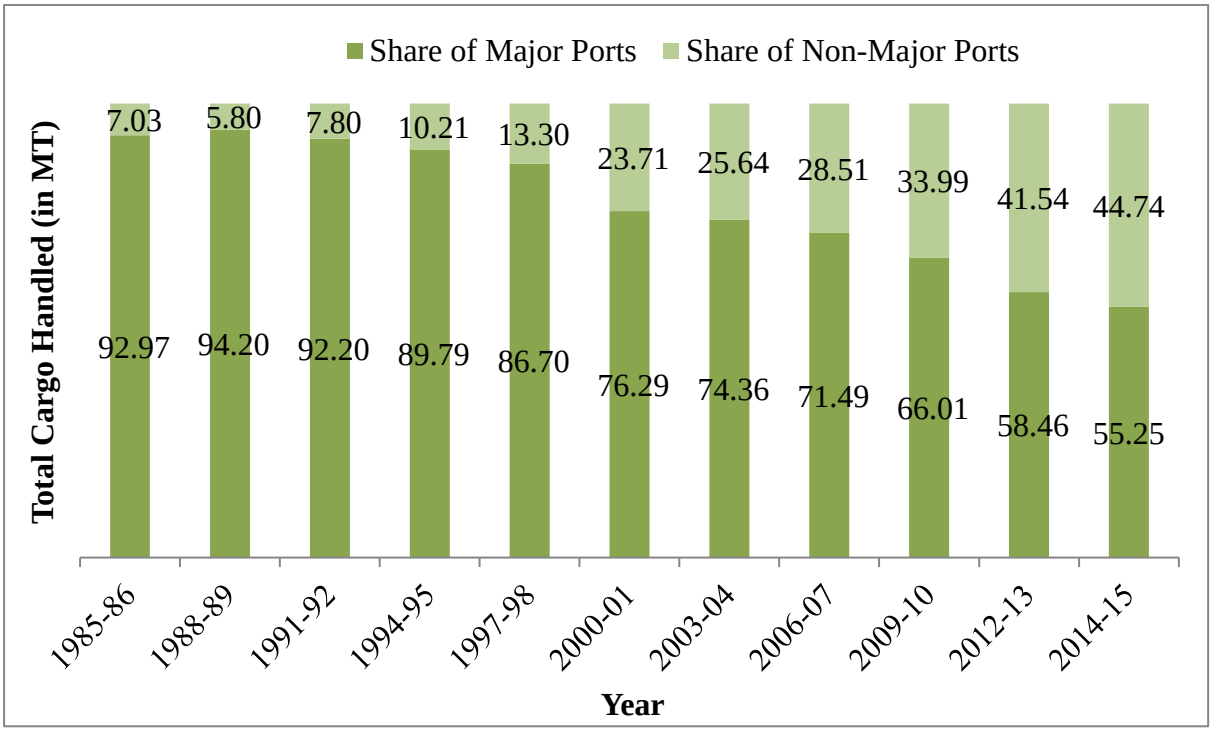
Source: Basic Port Statistics, 2014-15 and other issues, Ministry of Shipping

The growth rate of major ports and non-major ports increased from 1.77% and 7.49 % in 2013-14 to 4.65% and 12.93 % in the year 2014-15. The growth of major ports is more or less stable till the period 2007-08. Its growth decelerated significantly but remained positive in the year 2008-09 because of global economic slowdown, however, it became negative in the year 2011-12 and 2012-13 due to ban of iron ore exports by the state of Karnataka. Although, the major ports experienced negative growth but the total cargo handled in the Indian ports experienced a positive growth because the positive growth of non-major ports outpaced negative growth of major ports. It is expected that the non-major ports will have an edge over the major ports due to coming up of number of green field ports with huge capacities through private sector participation. The compound average growth rate (CAGR) of cargo handled by both major and non-major ports were 6.63 and 0.32 but it has increased to 15.86 and 10.13 after two consecutive decades.

According to a report released by ICRA in July, the cargo growth at the ports in 2011-12 was subdued mainly due to slump in volumes of iron ore due to mining restrictions and policy issues. While major ports saw a -1.77 per cent decrease in cargo handling to 560.19 MT in 2011-12 mainly due to their higher exposure to iron ore, on the other hand, the non-major ports gained 10.85 per cent in terms of cargo volumes because of more diversified cargo mix and higher efficiency standards. This resulted in a drop in overall share of major

ports in total cargo handling and increase in share of the non-major ports.[1] The share of both major ports and non-major ports to the total cargo handled in the Indian ports during the 1985-86 to 2014-15 are shown below in figure-3.1.

Figure-3.1: Share of Major Ports and Non-Major Ports in the Total Cargo Handled



Source: Basic Port Statistics, 2014-15 and other issues, Ministry of Shipping

It may be noted that after the time of independence all the cargo traffic were handled by the major ports. In the year 1985-86, the shares of major and non-major ports were 92.97 per cent and 7.03 per cent. With the enunciation of the New Economic Policy the door was opened for the private sector to participate in the port sector and this provided a tremendous boost to the manufacturing sectors and exports. This has led to a drastic change in the percent share of major and non-major port in the total cargo handling during 1990s. The share of major ports started declining from 92.20 per cent in 1991-92 to 55.25 percent and the share of non-major ports increased from 7.80 per cent to 44.74 percent in 2014-15were 93.29 percent and 8.47 percent of the total cargo traffic of India in the year 1991-92. The expected reason for declining in the share of major ports is due to global economic uncertainty and ban on iron ore. The development of non-major ports has shifted cargo traffic from major ports (those operate at above-optimum capacity) to non-major ports and it is expected to increase further.

[1]http://maritimegateway.com/mgw/index.php/resource-centre/718-changing-cargo-profile-a-nebulous-story accessed on 25th May, 2016

This increase of traffic of the non-major ports is mainly due to congestion and inefficiencies at major ports and simultaneously development of many non-major ports by the maritime states through Public Private Partnership (PPP). However, the increasing the volume of cargo in the Indian port sector is not the sufficient criteria to conclude that this is the outcome of adopting the new governance model for the development of the port.

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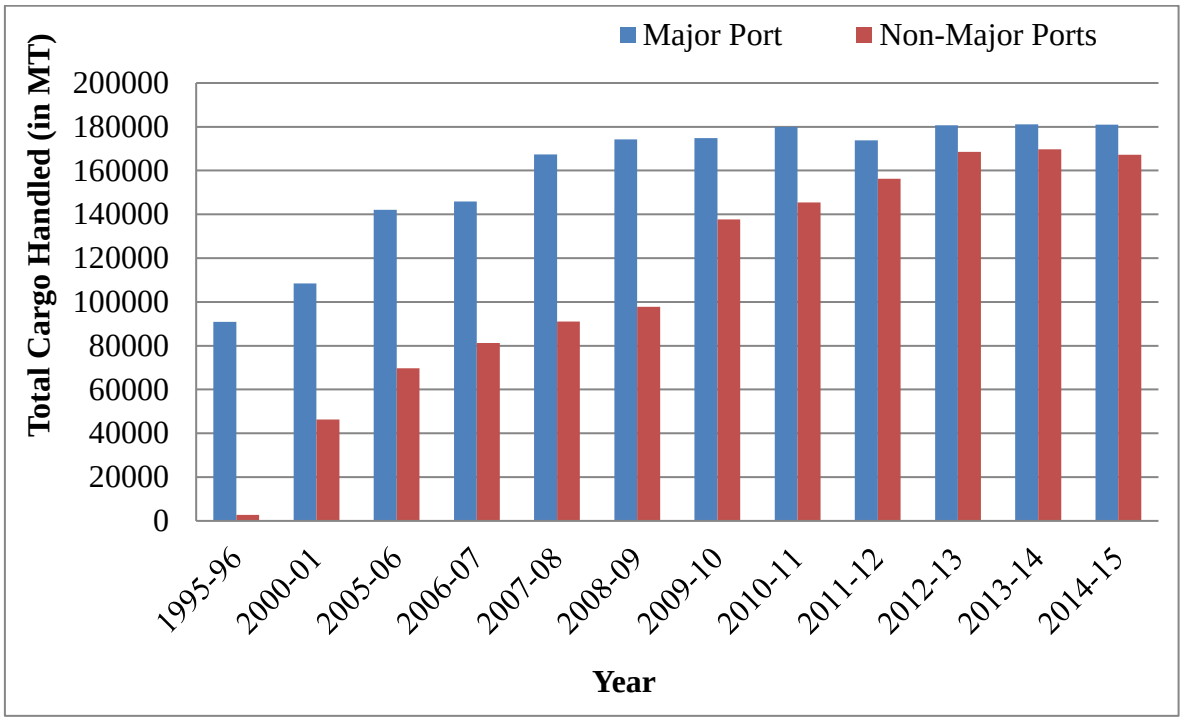
Non-major Ports have been more successful in attracting higher private investment, because they are perceived to be more efficient, customer-friendly, cheaper and in general more business-oriented. The growth in quantity of cargo handled at non-major ports has been primarily driven by growth in non-major ports in Gujarat such as Sikka, Mundra and so on which account for about three-forth share in cargo handled at non major ports in recent years. The growing importance of non-major ports in handling cargo traffic has helped alleviate the congestion at major ports. The future of port sector belongs to non-major ports which will account for an increasing share in India's traffic growth in days to come. Maritime states will have a role to play on how the sector shapes up as developers have committed huge amount of investment by now and more is in the offing. The states like Andhra Pradesh, Gujarat and Odisha for the amount of investment they have attracted from the private sector developers. The future augurs well for the sector with private investment growing at an amazing rate. Gujarat accounted for (71.38%) of the traffic handled by the non-major ports followed by Andhra Pradesh (17.72%), Maharashtra (5.8%) and Odisha (3.28%) in 2014-15. These four maritime States together accounted for about more than 98% of the total cargo traffic handled by the non-major ports in 2014-15.

(ii) Major Commodity-Wise Traffic at Major and Non-Major Ports

Although the major ports and non-major ports have been handling different commodities such as POL-crude, POL product, fertiliser, cement, chemicals, coal salt, vegetable oil, sugar, iron ore and other ores, salt tea and coffee, oil cake, building materials, Fertiliser & FRM and so on but cargoes such as POL (petroleum, oil and lubricant), iron ore and coal handled make up a major share in total traffic handled. The table 3(A) in Appendix shows that the share of these three commodities (POL, Iron Ore and Coal) handled by the major ports was 76.3 % in the year 1985-86 and it decreased gradually to 54.79% in the year 2014-15. However, the table- 3(B) in Appendix shows that share of these three commodities (POL, Iron Ore and Coal) handled by the non-major ports has increased from 34.62% to 74.5% in the year 1995-

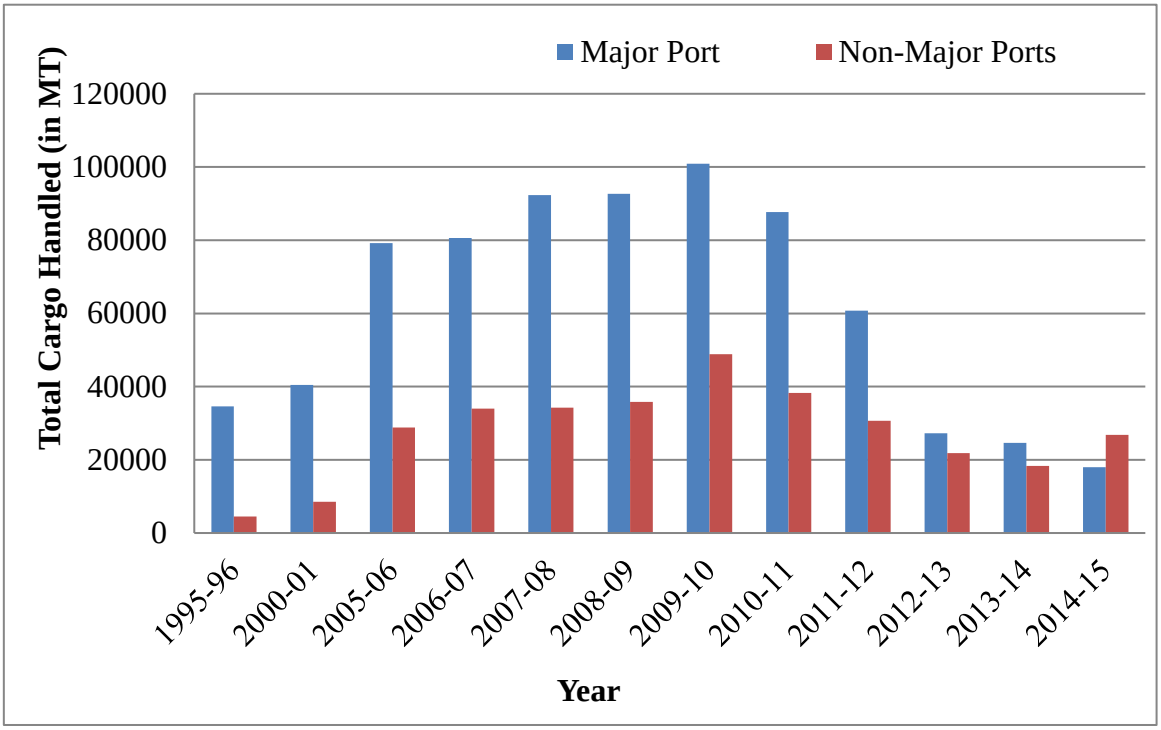
96 to 2014-15. Thus, this study has been restricted to see the performance of these three commodities. This has been depicted below in figure 3.2.

Figure-3.2 (a): Trend in POL handled in Indian ports



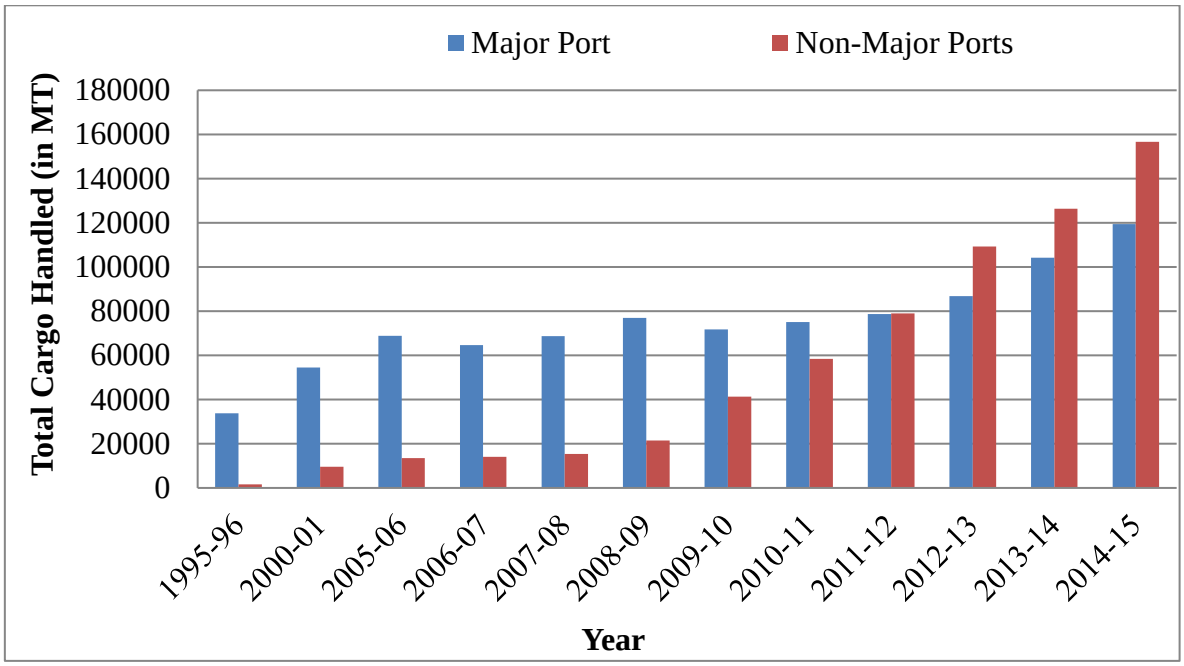
Source: Basic Port Statistics, 2014-15 and other issues, Ministry of Shipping

Figure-3.2 (b): Trend in Iron Ore handled in Indian ports



Source: Basic Port Statistics, 2014-15 and other issues, Ministry of Shipping

Figure-3.2(c): Trend in Coal handled in Indian ports



Source: Basic Port Statistics, 2014-15 and other issues, Ministry of Shipping

The figure-3.2 (a), 3.2(b) and 3.2(c) depicts that there is an increasing trend in the commodities handled at both major and non-major ports and POL (Crude & Products) constitutes the major share in these three commodities handled by both major and non-major ports. Besides these three major commodities there are other commodities such as fertilisers, fertiliser raw materials, food grains and so on which are handled in the Indian ports but there is no constant trend in this. The annual growth of the major commodities has been presented in the table-3(C) and table-3-(D) in Appendix.

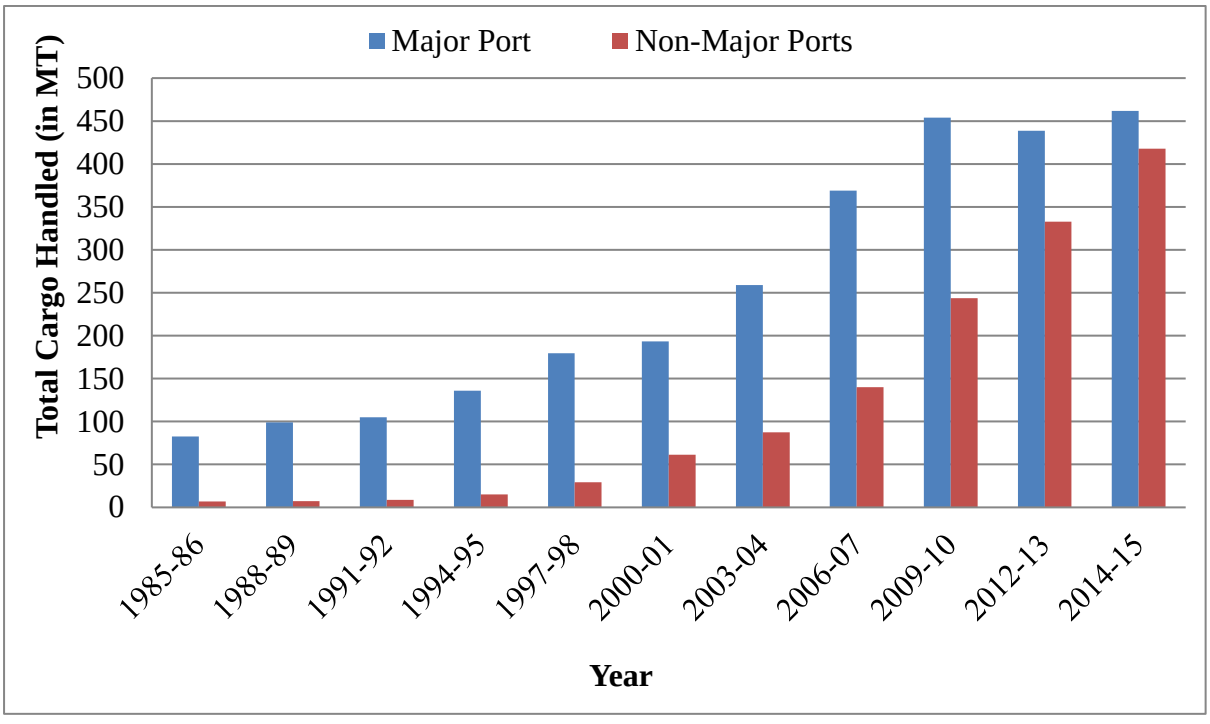
The figure -3.2 (a) indicates that the POL commodities handled by the major ports has been decreasing compared to the year 1985-86 but it has remained constant in the recent year. On the other hand, POL commodities handled by the non-major ports is increasing compared to the year 1985-86 but in the recent years, it has remained more or less constant. However, the figure 3.3(b) and figure 3.3 (c) shows that the major ports were handling more volume of iron ore and coal but in recent year the share of major ports in total iron ore handling is decreasing and share of non-major ports is increasing. In the year 2014-15, the non-major port has surpassed the major ports is the handling of iron ore. The share of non-major ports in the handling of coal has been greater in comparison to the major ports since the year of 2011-12. Therefore, it is concluded that the share of non-major ports is increasing in the handling of the three major commodities such as POL, iron ore and coal in recent years. So, it cannot

be concluded that these increase share of cargo handling by the non-major ports is the result of adopting the new governance model.

(iii) Trend in Cargo Traffic in Terms of Overseas and Coastal Traffic

The cargo handled by ports is classified as overseas traffic and coastal traffic. The overseas traffic is determined by the structure and pattern of international trade and coastal traffic depends on the structure and pattern of inter-region domestic trade. The overseas type of trade is the traffic between ports in two different countries. The coastal traffic is the traffic between different ports in the same country. Apart from these the kinds of traffic, there is another kind of traffic called transit traffic. It is the traffic physically passing through a port in one country (without entering into that country's foreign trade) having originated in a second foreign country, and being consigned to a third country. The transit traffic may leave the country by sea or any other mode of transport (rail, canal, road, pipeline or air) (Ministry of Shipping, 2015). The cargo throughput at India's major and non-major ports in terms of their coastal and overseas trade and cargo unloaded (import) and loaded (export) during 1985-85 to 2014-15 are shown below figure 3.3.

Figure – 3.3 (a): Trend in Total Overseas Traffic Handled in Indian Ports

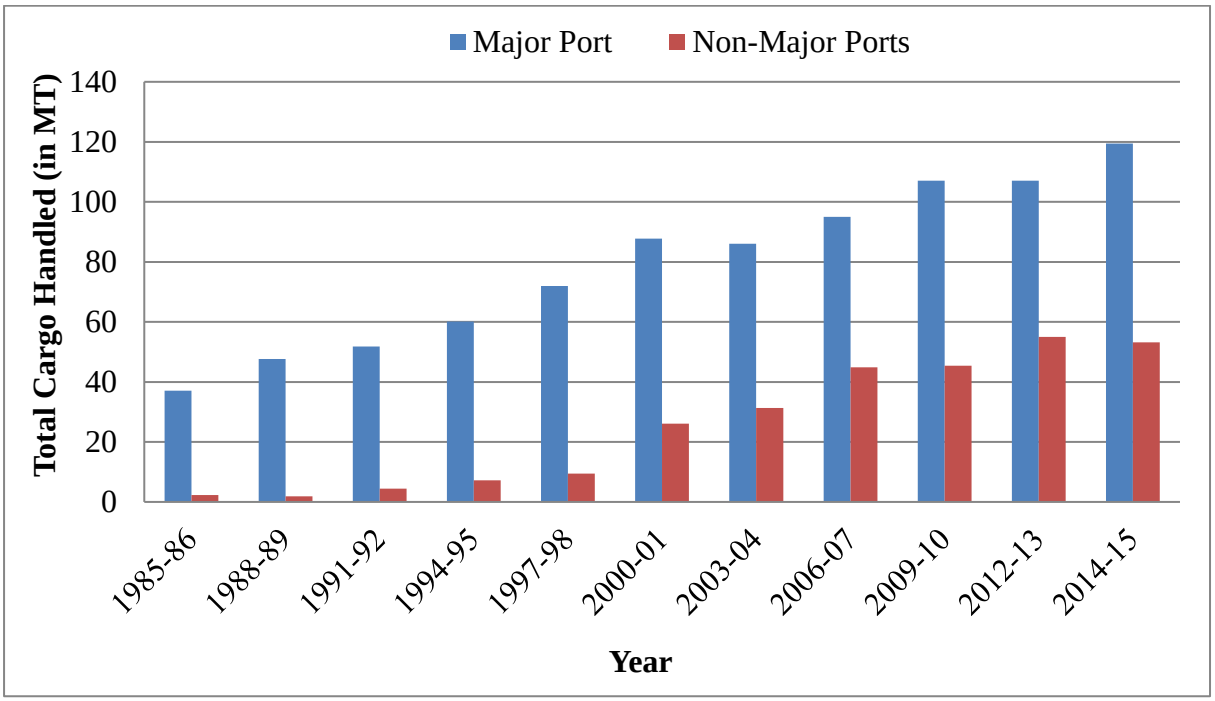


Source: Basic Port Statistics, 2014-15 and other issues, Ministry of Shipping

The figure-3.3 (a) depicts that overseas cargo handled by both by major ports and non-major ports is in the increasing trend and the non-major ports' share is increasing and coming

almost close to the major ports in handling overseas cargo in the recent past. The growth of non-major ports is increasing more than that of the growth of the major ports.

Figure – 3.3 (b): Trend in Total Coastal Traffic Handled in India



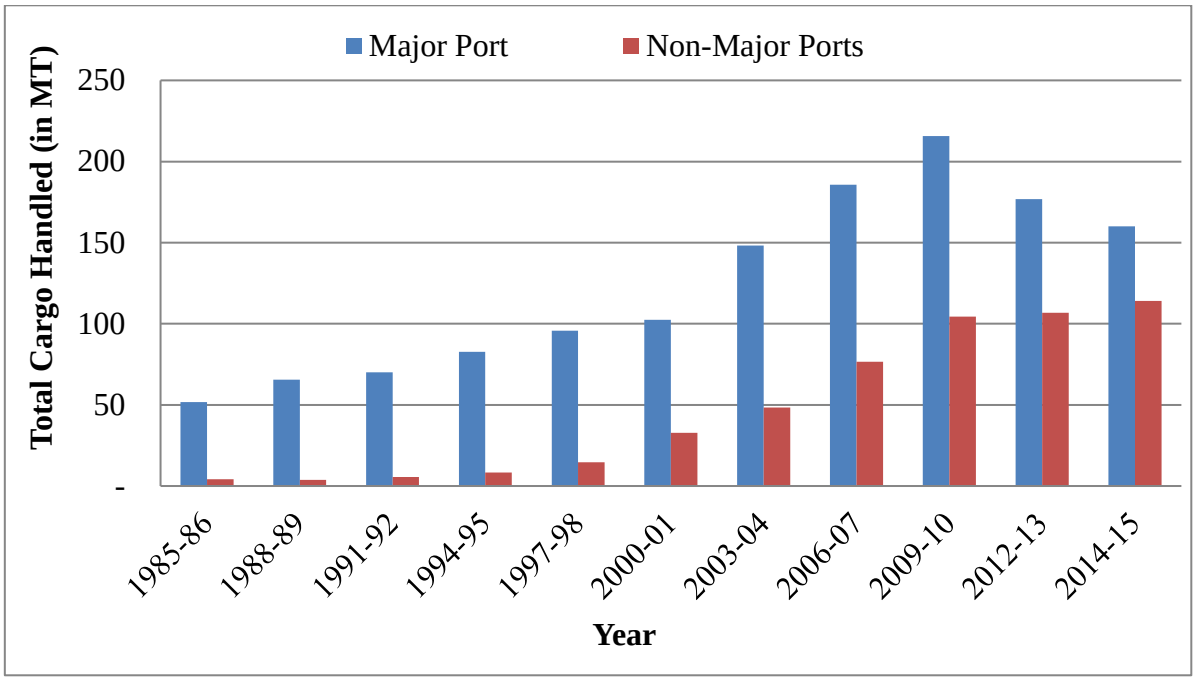
Source: Basic Port Statistics, 2014-15 and other issues, Ministry of Shipping

The figure 3.3 (b) depicts that although handling of coastal cargo by both major and non-major ports have increased in the recent years still the major ports handle major share of it. Therefore it is clear that the non-major ports are playing significant role in handling overseas cargo than coastal cargo in comparison with the major ports.

(iv) Trend in Cargo Traffic in terms of Unloaded and Loaded Traffic

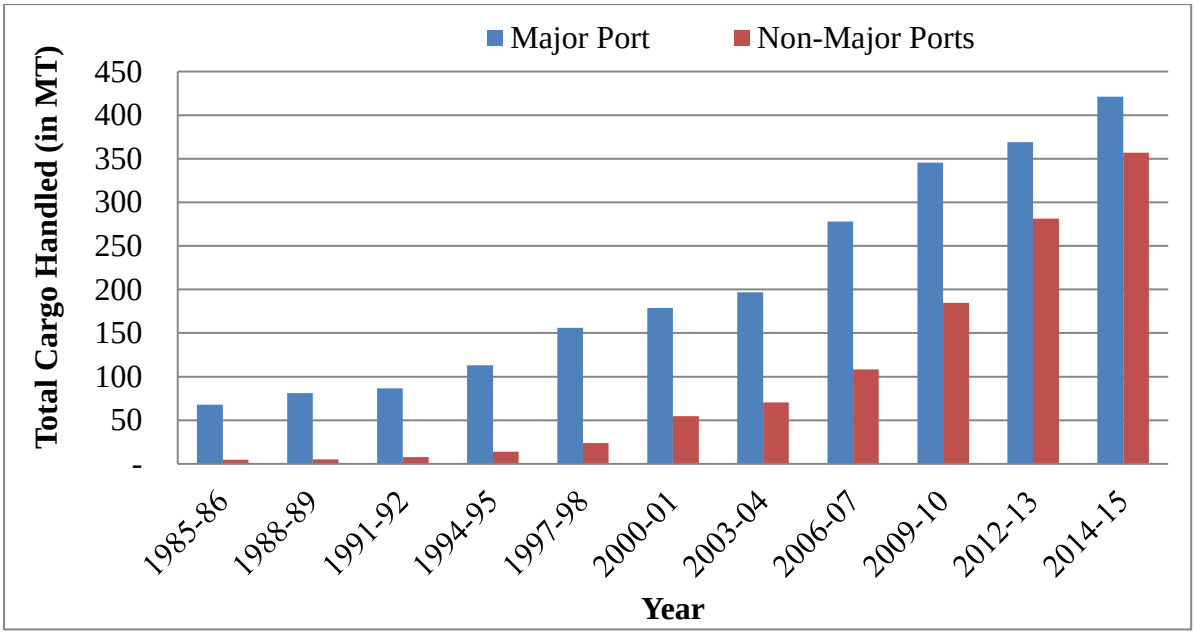
The cargo handled in a port can be divided as (a) Cargo loaded (export) and (b) Cargo unloaded (import) and (c) Transhipment - A port may handle some cargo, which is destined for some other port, by unloading this cargo from a merchant ship and loading it on to another to complete journey is considered as transhipment cargo (Ministry of Shipping, 2015). The total cargo traffic loaded and unloaded is shown below in figure-3.4 (a).

Figure 3.4 (a): Total Cargo Loaded (Overseas & Coastal) at Indian Ports



Source: Basic Port Statistics, 2014-15 and other issues, Ministry of Shipping

Figure - 3.4(b): Total Cargo Unloaded (Overseas & Coastal) at Indian Ports



Source: Basic Port Statistics, 2014-15 and other issues, Ministry of Shipping

The figure-3.4 (a) depicts that cargo loaded by all the major ports is increasing from the year 1985-86 onwards, but there has been declining trend since 2009-10 due to global economic slowdown. However, the cargo loaded by all the non-major ports is steadily increasing from 1985-86 onwards to 2014-15. On the other hand, there is continuous increase in unloaded cargo by both major and non-major ports and non-major ports are handling unloaded cargo

close to major ports. By and large, the unloaded cargos both by major and non-major ports are increasing steadily without any interpretation.

It is clear from above analysis that the volume of cargo handling by the major and non-major ports have increased and the share of non-major ports to total cargo traffic has increased comparatively better than the share of major ports. However, we cannot conclude that this increasing trend in the volume of cargo traffic is solely because of adoption of new governance model by India. Also there is no empirical evidence to substantiate this. Therefore, this study moves forward to check other criteria to understand the impacts of new governance model on the performance of the port sector.

(v) Capacity and Capacity Utilisation of Indian Ports:

Indian ports handle over 95 per cent of the country's total trade in terms of volume and around 70 per cent of total trade in terms of value. It is thus imperative to build adequate capacity at our ports. The capacity of a port is the aggregate capacity of individual berths and it depends on the type of commodity handled at that berth. The capacity of berth is rated at the time of commissioning by considering the parameters such as the kind of cargo to be handled, number of days required for dredging, the quantity and efficiency of equipments available etc. This capacity has to be continually reassessed. Berth capacity is determined by the berth's size and length, and the size of vessels it can handle. It is measured by the deadweight tonnage of the vessel that can be serviced by the berth. Various factors, which determine the efficiency of berth, are cargo handling capacity of the vessel, cargo handling capacity of the berth, nature of cargo, method of storage of cargo ashore, removal of cargo from the berth area (by train, truck etc.) or the adjoin storage facilities.

The international norms recommend that capacity utilization should not be more than 70 percent to avoid delays, that is, the pre-berthing detention of ships on port account is minimised. In world class ports, there is no concept of "pre-berthing detention" because the capacity is much more than the actual traffic and therefore, there is no question of any ship waiting at anchorage (Ministry of Shipping, 2011). The 100 per cent capacity utilisation of the ports appears to be optimum use of port capacity (number of berths), but it is not so. When the port authority utilises the capacity 100 per cent or more, it seems that it would minimise the costs per ship, however, the ship owners would incur costs while waiting for berths. On the other hand, if enough berths were to be constructed and maintained in order to avoid any waiting, the ship owners waiting time and costs would be reduced to zero; but the

port authority would face the high costs of constructing and maintain the berths. It implies that more berths indicates higher costs for the port authority but lower costs for the ship owner and the vice versa. Therefore, there has to be trade off and the optimum number of berths will be somewhere between that number which would be fully utilised year round (lower limit) and the number required to avoid any waiting by ships (upper limit) (Weille and Ray, 1974).

Increasing and upgrading port capacity is utmost important with the expectation of greater volume of foreign trade, otherwise it would exert much greater pressure on the currently available port capacity. The capacity utilisation of major ports is given in table-3.6 below.

Table-3.6: Capacity Utilisation of Major Ports

Year	Traffic	Capacity	Utilisation	Year	Traffic	Capacity	Utilisation
1991-92	156.64	169.23	93%	2003-04	344.8	389.5	88%
1992-93	169.23	173.93	97%	2004-05	383.8	397.5	96%
1993-94	171.03	173.21	99%	2005-06	423.6	456.2	92%
1994-95	195.9	174	112%	2006-07	463.8	504.8	91%
1995-96	215.2	177.2	121%	2007-08	519.3	532.1	97%
1996-97	227	219.6	103%	2008-09	530.8	574.8	92%
1997-98	251.7	222	113%	2009-10	561.1	561.7	99%
1998-99	251.7	239.5	105%	2010-11	570.1	670.1	85%
1999-00	272	258.1	105%	2011-12	560.2	695.5	80%
2000-01	281.1	291.5	96%	2012-13	545.8	744.9	73%
2001-02	287.6	344	83%	2013-14	555.5	800.5	69%
2002-03	313.6	362.8	86%	2014-15	581.3	871.5	66%

Source: Basic Port Statistics, 2014-15 and several others Issues, Ministry of Shipping

The capacity utilisation rate is calculated by dividing total cargo handled in the port by its cargo handling capacity of the port. The major ports have consistently handled more cargo traffic than their rated capacity and have operated at more than 100 per cent utilisation during the period of 1994-95 to 1999-2000. But Indian ports continue to be inefficient in comparison to other ports located in Singapore, Hong Kong and Colombo which are largely dependent on transhipment cargo which inflates the amount on traffic handled. All these ports have a much higher proportion of containerised cargo as compared to Indian ports and thus have greater and speedier cargo movement. Before 1999-2000 major ports used to operate above optimum utilisation level due to uneven development of port infrastructure across the country. However, as the cargo handling capacity of major ports has been added, it outpaced the cargo

traffic at ports, capacity utilisation at major ports started declining from 105 per cent in 1999-00 to 66 per cent in 2014-15. One of the reasons is that in India due to certain compulsions, the general cargo berths (which have a relatively lower capacity rating than dedicated bulk or container berths) are often used to load or unload bulk cargo such as coal. This naturally increases the capacity utilisation of the port temporarily. This above-optimum capacity utilisation at Indian ports can also be partly because of inefficient utilisation of resource (including equipment and labour handling) and operational performance.

The cargo handling capacity of major ports has been augmented steadily over the years through construction of new berths/jetties/terminals and through mechanization of cargo handling in order to cater to the growing volume of internal and international trade in the globalisation period. The major port-wise capacity utilisation since from the period since 2011-11 to 2014-15 is presented below in table - 3.7.

Table-3.7: Major Port-wise Capacity Utilisation during 2010-11 to 2014-15 (in %)

Major Ports	2010-11	2011-12	2012-13	2013-14	2014-15
Kolkata	76.7	71.35	69.08	75.09	72.43
Haldia	69.05	61.1	60.6	57.31	62.33
Paradip	73.24	67.56	55.28	62.5	59.27
Visakhapatnam	104.79	101.64	87.69	65.79	59.95
Ennore	35.52	179.71	57.71	88.19	81.76
Chennai	77.09	17.98	62.39	59.4	61.07
Tuticorin	95.16	84.28	84.76	68.09	72.76
Cochin	43.57	47.99	44.42	42.07	43.49
N.Mangalore	69.23	64.63	48.25	50.62	47.02
Mormugoa	119.38	93.2	48.74	32.03	33.62
J.L.Nehru	100.5	102.7	97.89	94.61	80.38
Mumbai	122.59	126.18	130.34	132.9	138.47
Kandla	94.21	90.44	100.43	85.04	76.17

Source: Basic Port Statistics, 2014-15 and several others Issues, Ministry of Shipping;

The table-3.7 depict that capacity utilisation of the some of the major ports has increased over the last five years and some of the ports have decreased. The capacity addition is increasing slowly because of private sector participation in the construction of the berths in the major ports. On the other hand, the major ports like Vishakhapatnam, Mormugoa, J.N Neheru port and Mumbai port used to operate at more than 100 per cent utilisation in the year 2010-11 but it started declining in the later period. The capacity addition achieved by the major ports coupled with growing participation of Private Sector in cargo handling will have a favourable impact on efficiency of cargo handling operations at India's major ports. However, it is clear

from above table that 6 major ports are operating above the 70 per cent in the year 2014-15. This high utilization rate on average indicates the shortage of capacity and consequent congestion at Indian ports. As a result, performance of ports is very poor. Therefore, the cargo handling capacity has to be planned separately for each commodity group because each commodity requires different facilities. The capacity utilisations of some of the non-major port are presented below in table-3.8.

Table-3.8: Non-Major Port-wise Capacity Utilisation during 2010-11 to 2014-15 (in %)

Non-Major Ports	2010-11	2011-12	2012-13	2013-14	2014-15
Dahej	59.16	72.84	92.02	89.38	111.99
Mundra (GAPL)	66.55	83.66	98.64	123.36	135.72
Sikka	105.33	107.73	113.64	114.29	113.52
Magadalla	43.02	47.34	52.66	45.39	47.55
Jafrabad	98.45	90.95	75.28	75.72	82.78
Bedi	37.26	47.80	117.75	136.20	150.97
Pipavav	33.40	39.60	34.43	38.74	47.33
Dharamtar	88.50	94.00	121.50	127.25	127.13
Revdanda	41.75	32.75	33.75	26.25	28.50
JSW Jaigarh	8.93	33.80	50.40	39.33	57.80
Krishnapatnam	21.50	20.84	28.54	34.05	55.05
Gangavaram	46.13	46.67	43.50	52.70	69.13
Dhamra	1.84	20.32	44.36	57.20	61.80

Source: Basic Port Statistics, 2014-15, Ministry of Shipping; Website of Maritime Boards and Department of Port of Maritime States

Above table-3.8 depicts that the capacity utilisation is very high and they are operating above the optimum standard of 70 percent capacity utilisation except the ports like Revdanda and few others who are operating at the below the capacity level. Although, the process of privatisation sector participation has been encouraged in the port sector since 1996 but the table shows that there has been significant utilisation of the existing port capacity of the non-major ports. The capacity utilisation is expected to improve in the future due to an increase in coal imports and container trade. Of course, it is known that some of the berths of the non-major ports are in construction of second phase and when all berths will be constructed, and then the congestion in the non-major ports will decrease. Since the major ports have been established since long time, they are having good infrastructure and superstructure facilities and good hinterland connectivity. The customers who are familiar with using major ports become difficult to change the network. The ranges of commodities handled by the non-major ports are on the commercial line and cannot be used for varieties of actors and purposes. These are the possible reasons for which the capacity utilisation of some of the non-major is less.

Pre-berthing detention arises because of congestion at the port and hence indicates the lack of capacity. In Indian ports, the average ships have to wait for more than 2 days to get a berth. The capacity utilisation above the international standard norm implies the congestion of the ports which leads to excess turnaround delay. As a result, the long delays and inadequate port services induces the carrier to charge higher freight rates from the ports.

3.9: Port Performance Parameters of Indian Ports

Performance and efficiency of ports and shipping positively contribute to the growth of trade and vice versa. With rise in competition, performance of Indian ports has improved drastically in the last two decades. The performance of any port may be judged by the Parameters such as – number of vessels handled, Pre Berthing Detention Time (PBD), Non-Working Time at Berth (NWT), Turn Round Time (TRT), Output per Ship Berth day (OSB) of the vessels (Ministry of Shipping, 2015). These port performance parameters are inter-dependent and factors affecting one parameter will have cascading effect on the others. The main parameter of port performance is TRT which indicates the efficiency of the port since it reflects all the other components effectively. While making comparison on the basis of performance indicators it is important to note that ports differ significantly in their infrastructure, cargo mix, types of ships calling at the Ports and nautical constraints etc. For these reasons, comparison of the port performance parameters not only with international ports but also amongst other Indian Ports may not be appropriate.

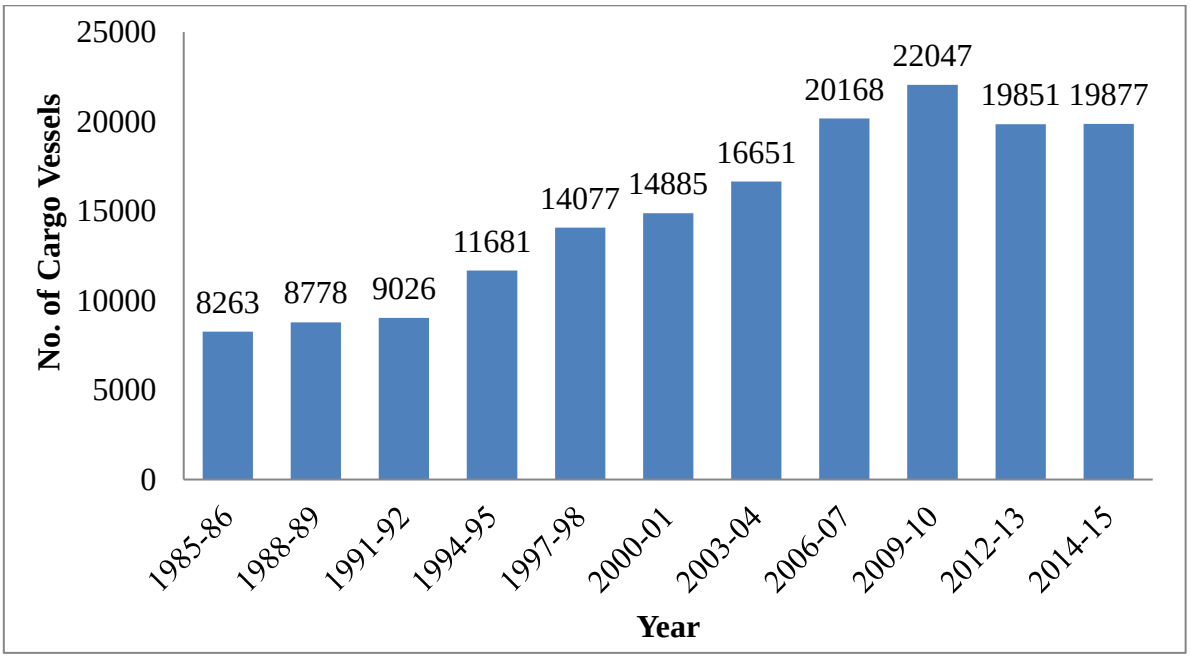
(A) Port Performance Parameters of Major Ports

The major performance indicators of Indian port sector have been presented in the figures below.

(i) Number of Cargo vessels handled

It is the number of ships that actually left the port during a year. This comprises (a) cargo vessels (such as break bulk, dry bulk, liquid bulk, lash, passenger cum cargo, RORO etc.) which sailed after completion of cargo operations and (b) non-cargo vessels (such as passenger, fishing, navy etc) sailed.

Figure-3.5(a): Total Cargo Vessels Sailed at Indian Major Ports



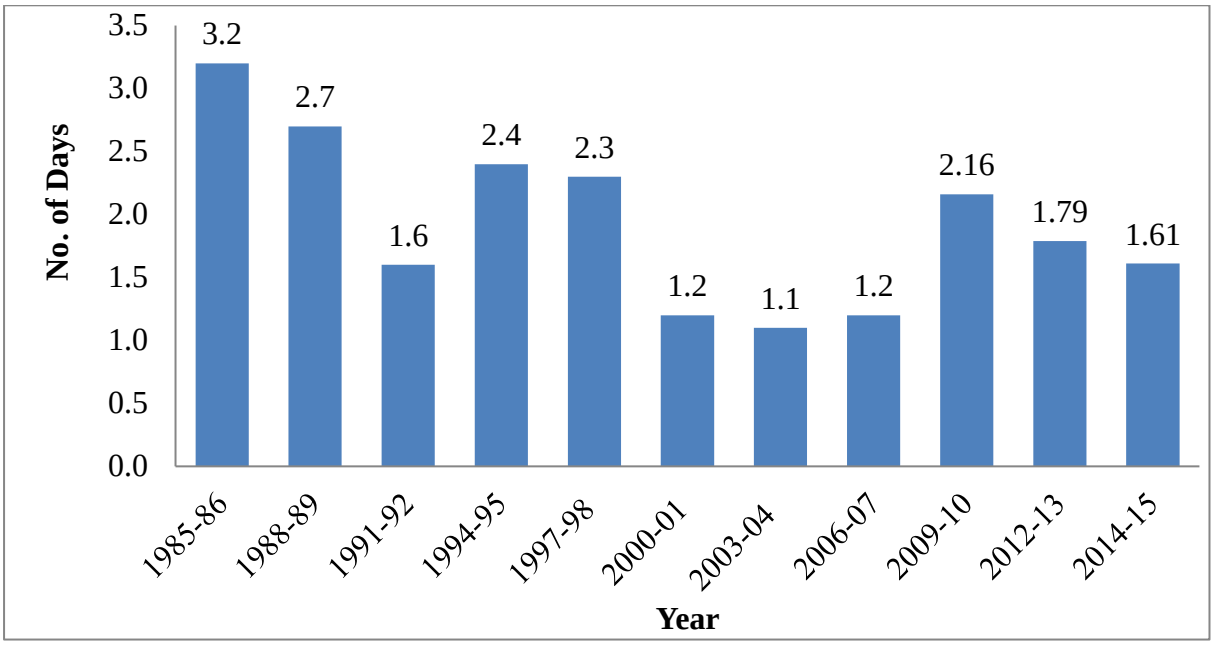
Source: Basic Port Statistics, 2014-15 and several others, Ministry of Shipping

The major ports in India handled 8263 vessels in 1985-86, as against 19877 vessels in the year 2014-15. This indicates an increase in average tonnage in the ships handled. The vessel handled in Indian major ports was an increasing trend up to year 2009-10 but thereafter it shows a decreasing trend, although it has increased in the year 2014-15.

(ii) Pre-Berthing Detention time:

This is the time taken by a ship from its arrival at the anchorage (reporting station) till it arrives at the operational berth excluding time taken for inward movement. The average pre-berthing waiting time can be obtained by dividing the total pre-berthing waiting time of all cargo vessels sailed from the port during a period by the number of cargo vessels sailed during that period. Pre berthing Detention is a component of the Turn Round Time and any increase in the PBD correspondingly increases the Turn Round Time.

Figure-3.5 (b): Average Pre-Berthing Detention Time at Indian Major Ports



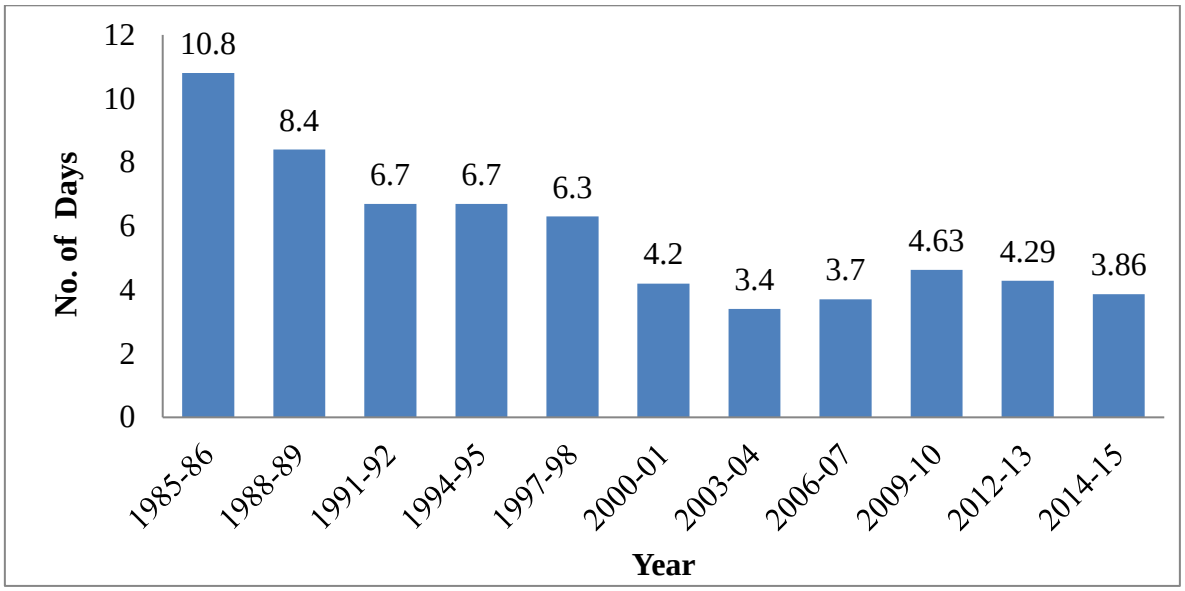
Source: Basic Port Statistics, 2014-15 and several others, Ministry of Shipping

The average pre-berthing detention time (PBDT) for all major ports was very high in the year 1985-86 and it declined to 1.2 days in 2000-01 from 3.2 days in 1985-86. Although it again started increasing from1.1 days in the year 2003-04 to 2.16 days in the year 2009-10, but, it decreased to 1.61 days in 2014-15 and this indicates greater performance of ports which could also be due to the lower volumes handled by ports with the global downturn that we had few years back. However, except for average output per ship berth day, the other two indicators have not shown much improvement over the years.

(iii) Turn Round Time (TRT):

Ship's Turn Round Time (TRT) in the port is the primary indicator to judge the quality of service being given by the port to the ships. It is the total time spent by a vessel at the port from its arrival at reporting station till its departure from the reporting station. It thus includes pre-berthing waiting time, navigation time (inward movement and outward movement time), stay at working and non-working berths and shifting time (Ministry of Shipping, 2015).

Figure-3.5 (c): Average Turnaround Time at Indian Major Ports (in Day)

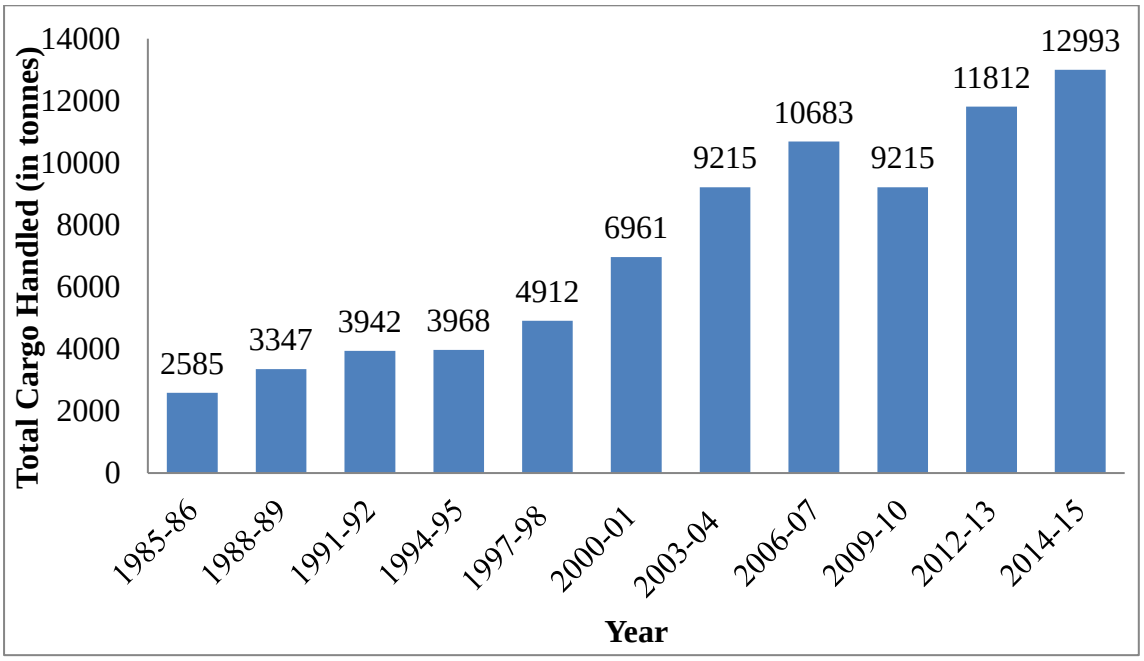


Source: Basic Port Statistics, 2014-15 and several others, Ministry of Shipping

The average turnaround time has improved significantly during the past one and half decades for all the major ports. The average turnaround time for all major ports improved from 10.8 days in 1985-86 to 3.4 days in 2003-04. Thereafter the TRT has increased steadily to 4.63 days in 2009-10 and then decreased to 3.86 days in 2014-15 compared to 4.29 days in 2012-13.

(iv) Output per Ship Berth Day: The average output per ship berth day is defined as the ratio of the aggregate cargo handled to the total number of berth days (both at working and non-working berths) spent by the cargo ships during a year. This is the total tonnage handled distributed over the total number of berth days. The low values for OSB indicate lower productivity and there is enough scope for improving the same by way of minimizing the non-working time.

Figure-3.5 (d): Average Output per Ship Berth Day at Indian Major Ports

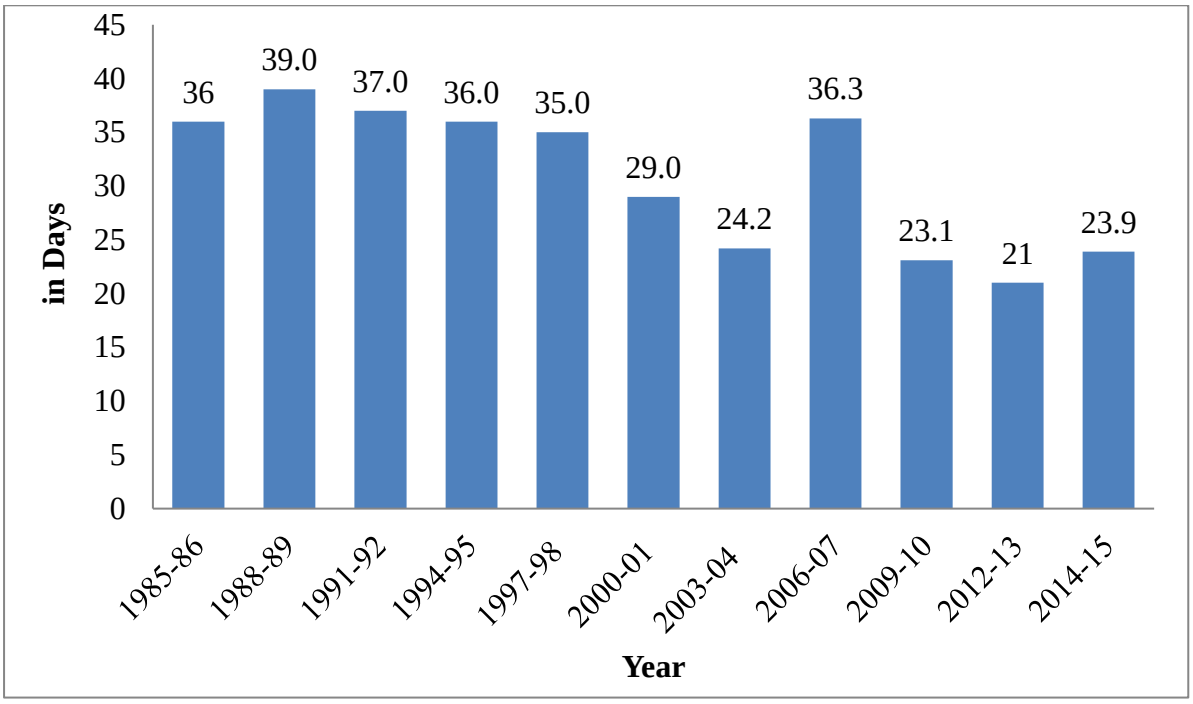


Source: Basic Port Statistics, 2014-15 and several others Issues, Ministry of Shipping

The average output performance of Indian maritime sector per ship-berth-day has improved around five times from the year 1985-86 to 2014-15. It has increased from the 2585 tonnes in 1985-86 to 10689 tonnes in 2006-07. Thereafter it decreased to 9215 tonnes in the year 2009-10 and again started to increases further to 12,993 tonnes for all major ports during 2014-15 compared to 11,812 tonnes in the period 2012-13.

(v) Percentage of Idle Time at Berth: Non-working time or Percentage of Idle Time is defined as sum of the idle time from the time of berthing to start of work, idle time during ship operation and idle time taken from the time of completion of operations to sailing from berth together.

Figure-3.5 (e): Percentage of Idle Time at Indian Major Ports



Source: Basic Port Statistics, 2014-15 and several others, Ministry of Shipping

The percentage of idle time at Indian major ports has decreased significantly from 36 days in 1985-86 to 23.9 days in 2014-15. Although, it started to decrease from 39 days in the year 1988-89 to 24.2 days in 2003-04, but the year 2006-07 experienced significant increase of 36.3 days. However, it started to decrease from 36.3 days in 2006-07 and reached to 21 days and 23.9 days in the year 2013-14 and 2014-15.

(B) Physical Performance of Non-Major Ports

Efficiency at ports has an impact on transaction cost of shipping lines. It is observed from above analysis that the major Ports have improved their efficiency of operations shown in different select physical performance indicators over the last several years. However, in order to understand the performance of the non-major ports, it is demonstrated through two indicator such as number of vessel left and turnaround time. There is unavailability of data for other indicators. The physical performance of some of the non-major ports based on the indicator of turnaround time for the year 2011-12 to 2014-15 are given below in table-3.9.

Table-3.9: Turnaround Time at Indian No-Major Ports (in Days)

Non – Major Ports	2011-12	2012-13	2013-14	2014-15
Karwar	3-4	3-4	3-4	2
Malpe	1-2	1-2	1-2	1-2
Hangakatta	1-2	1-2	1-2	1-2
Mangalore	3-4	3-4	3-4	2
Tirukkadaiyur	1	1	1	1
Cuddalore	9.9	12.5	6.6	6.6
Cuddalore Chemplast Jetty)	2	2.3	3.4	2.2
Ennore	2	2	2	2
Kattupall	7	2	2	1-3
Panaji	4	4	4	2
Kakinada(Sea Port)	3.5	3	2.2	2.2
Krishnapatinam	3.3	4	4.4	4.5
Kozhikode/Beypore	2.4	2.2	3-4	5
Koavalam/Vizhinjam	3	NA	1	1
Kollam	2	2	NA	NA
Azhikka	3.4	NA	NA	2
Dhamra	4	11.1	3.5	9.2

Source: Basic Port Statistics, 2014-15 and other issues, Ministry of Shipping

It is clear from the table 3.9 that some of the non-major ports are operating more efficiently than major ports. For instance, the average turnaround time in the major port is 3.4 day for the year 2014-15 but for the most of the non-major ports (such as Karwar, Malpe, Hangakatta, Cuddalore Chemplast Jetty, Ennore, Kattupall, Panaji, Azhikka and so on) it is much less than the 3.4 days. Then it can be said that some of the non-major ports developed under the new governance model of BOT are operating efficiently than some of the major ports. But it cannot be concluded that this better performance of non-major ports are due to adoption of new governance model.

Although, most of Indian major ports were operating at more than 100 per cent of capacity utilisation) still they were inefficient when compared to other ports of Singapore, Hong Kong and Colombo which are largely dependent on transhipment cargo which inflates the amount on traffic handled. The Singapore ports have been considered for benchmarking with the world's most advanced ports. The average ship turnaround time is 3.86 days for the major ports and 1-2 days for the non-major ports (ports mentioned in the table-3.8) in the year 2014-15 where as the average ship turnaround time for the Singapore ports are 0.3 days. Therefore, the non-major ports may perform better than that of major ports within the country, but when it is compared with international standard, still is significantly less.

3.10: Conclusion

This chapter depicts that until 1970s, the provision of port services was based on Keynesian model in which port development, ownership, investment and pricing policy was mainly determined by the public sector. However, Keynesian model of port development created significant difficulties and inefficiencies and therefore government allowed private sector participation in ports since 1996 especially by awarding Public Private Partnership (PPP) concessions mainly adopting Build, Operate and Transfer (BOT) model. After adopting this BOT model of port development, the performances of Indian port sector in terms of volume of cargo and physical performance in terms of said parameters have increased significantly. The share of non-major ports is increasing gradually in the total cargo handling in comparison to major ports. The non-major ports are able to handle greater share of coal and iron ore than the major ports in the recent years. The share of non-major ports in handling POL is increasing and major ports it is decreasing in comparison with the year 1985-86. Although, the capacities of major ports have increased in tandem with cargo traffic, still 6 major ports are operating above international norms of 70 per cent capacity utilisation in the year 2014-15. The adoption of the privatisation in the case of non-major port have not succeeded in the improving the capacity utilisation. If the ports are not able to utilise the present capacity, then it is suspicious whether the strategy of increasing additional capacities of the port will be viable. All these aspects are not sufficient to conclude that the improvement in the performance of the cargo handing in terms of volume and the efficiency parameters of port performance are result of adoption of the new governance model. There is quite dearth of data for the non-major port in order to compare the overall performance between major and non-major ports.

Odisha also signed a MoU with the ISPL to develop the Dhamra Port on the BOOST basis (one of the variant of BOT model). When such a mega infrastructure project like port is established, it will have different impact on different sectors of the economy. How far has the establishment of the Dhamra port developed on the new governance model of BOOST been able to deliver the objectives of development of local economy, transparency in the development of the port project, diversification of the livelihood of the people, environmental and social impact of the project etc. as enunciated by sustainable infrastructure model. As the construction and operation of the port are two different aspects. How has Dhamra port location have fulfilled the objectives of sustainable infrastructure model during construction phase of the have been discussed in the next chapter.

CHAPTER-4
IMPACT AND CONSEQUENCES OF DHAMRA PORT PROJECT: THE CONSTRUCTION PHASE

4.1: Introduction

Since Dhamra port is already located it will have impact in the construction as well as and operational phase. However, the port has not yet been fully constructed and fully operated. The master plan of the port entails the construction of 13 berths in two phases. Only the first phase constriction has been completed in which only two berths have become ready for operation since May, 2011. The second phase construction is in progress in which rest 11 berths are to be constructed. Therefore, this study has been restricted to study the impact of Dhamra port with reference to the location and the first phase of construction and operation aspect and the construction of 62.5 km rail line falls in the first phase of construction. The study has been restricted the collection of the sample households who have lost their land for the construction of the port. Dhamra port has been developed with the new governance model of BOOST, one of the variant of BOT model which has been adopted in India to increase private financial participation in the creation of port infrastructure/superstructure without changing the landlord structure of the concerned port. How has this new governance model been able to promote transparency in the development of Dhamra port infrastructure project and help to deliver the objectives of sustainable infrastructure model with respect to development of the local economy, diversification of livelihood, and ecological impacts in the construction phase? Before probing the aforementioned research question in this chapter, the study analyses the situation before construction of the port begins and the various necessary requirements before construction of the port including the carrying out the environmental impact assessment (EIA) and obtaining the environmental clearance from the authority and so on.

4.2: Situation of the Dhamra Port Project in the Pre-Construction Phase

As we know from the chapter-2 that the Government of Odisha signed a MoU with a Singapore-based International Seaports Ltd. (ISPL) on 31st March, 1997 for substantial development and expansion of the port at Dhamra port project. It is mandatory by law that before construction of such mega infrastructure project, it is necessary to conduct the environmental impact assessment (EIA) of the area where port is going to be projected. Therefore, ISPL hired a private consulting firm, Kirloskar Consultants Ltd to conduct an

Environmental Impact Assessment in October 1997. The EIA report 1997 prepared by Kirloskar Consultants Ltd considered two different alternative port sites based on the following criteria:

(i) Minimum dredge depth to 14 m.

(ii) Minimum capital and maintenance dredging, which generally means shortest length of approach channel

(iii) A harbour protected from significant wave action, for all-weather operation

(iv) Minimum environmental and other impacts

Based on above criteria, a number of potential locations and concepts were identified. The two primary concepts are concept-I and concept-II. The mainland shoreline fall under the concept-I and Kanika sands falls under the concept-II.

(i) Concept-I

The key and necessary element for supporting a port at this location will be the approach channel dredged to 14 m. The indicated channel alignment follows the path of a recently identified existing deep-water channel in the southern reaches of this approach. The harbour at this location will be fully protected from any wave action; is contiguous to the mainland; and was identical in all respects except for the length channel. The length of approach channel will be approximately 19km long requiring very large volume of capital and maintenance dredging. Preliminary estimate of dredge volumes are approximately 47 million m^3 of initial dredging. Maintenance dredging may be as high as 10 million m^3 per year in the first five years and 5 million m^3 per year in the subsequent years (EIA Report, 1997).

(ii) Concept-II

The concept-II was developed to mitigate the need for a long approach channel, such as in concept-I. The idea was to get the port as close to the deep water as possible without totally losing the protection provided by the surrounding islands. The presence of Kanika sands provides such an opportunity to locate the port on reclaimed land at the eastern edge of this emerging island. The reclamation concept may also provide for a beneficial and potentially cost saving use of dredge spoil, provided the dredge material is found suitable for fill. The terminal at the proposed location will still have the protection from the southwest quarter, but will be exposed to waves from the northeast quarter, and will require some breakwater protection. The concept-II will require much shorter approach channel approximately 7 km long with significantly less initial and maintenance dredging, but will require a 10 km long road and rail dike, additional fill for the terminal area, and some breakwater protection. The

preliminary estimate of dredge volumes are approximately 20 million m^3 of initial dredging. Maintenance dredge volume is estimated at approximately 4 million m^3 per year for the first five years and 2 million m^3 per year in subsequent years (EIA Report, 1997).

Considering above these concepts and leaving aide all the other considerations for port site, Kirloskar Consultants Ltd haa reached the conclusion that the initial cost of constructing the approach channel in concept-I will be comparable to the combined cost of construction for the approach channel, additional rail and road on dyke, fill for terminal island, and breakwater in concept-II. The cost for concept-II may be less, if the dredge material is found suitable for reclamation of the dyke and terminal island. Compared to concept-I, maintenance dredge volumes for concept-II will be significantly less and assuming initial costs are comparable, will mean significantly less maintenance cost. Therefore, of the above alternatives, Kirloskar Consultants Ltd. considered concept-II to be suitable and was finalised to undertake the EIA in the Kanka sand (EIA report, 197).

However, the project is currently located on the mainland and not Kanika Sands. The site where EIA was conducted (Kanika Sand Island) and the site where port is currently located (i.e. mainland) is different. When the project proponent changed from ISPL to Tata Steel and L&T, the site and scale of the project also changed significantly. The new plan at the mainland was larger than previously planned. The details of changes in master plan of the port are mentioned in table-4.1.

Table 4.1: Comparison between the ISPL' EIA and DPCL's Master Plan

Port Details	**ISPL EIA (1997)**	**DPCL Master plan (2005)**
Location	On Kanika Sands	On mainland
Land Area	1200 acres on main land for port area 5000 acres for industrial park 3000 acres for rail road alignment	4013 acres for Port and 3000 acres for rail road Ancillary Industries- Ship building yard, Steel plant Port-based fertilizer plant
Channel Length	7 Km	18 km
Depth	14 m	18 m
Dredging	50 million tonnes	60 million tonnes for phase I (2 berths)
Maintenance Dredging	2.2 Million tonnes/year	No details available
Max Vessel Size	120,000 DWT	180,000 DWT
Cargo Handling /yr	25 Million tons/year	83 million tons/year
No. of Berths	2	13 (Two in Phase I)

Source: ISPL 1997 and DPCL 2006

When the project proponent changed, state government moved the location of the port from Kanika Island to the mainland. As a result, the site and scale of the project also changed significantly. This fundamental discrepancy in the change of port location raises the question about credibility of the entire EIA as a basis on which to gauge the environmental impacts of the project. According to the EIA notification 1994, there should not be any change in the site of the project once it is approved. If change in site happens, then new EIA has to be carried out. The new plan at the mainland was larger than previously planned. Many experts and NGOs proposed for a fresh EIA as earlier EIA undertaken by Kirlosker in Kanika Sand Island is not valid to mainland but Tata refused to do so. On the other hand, the Odisha government accepted new site and didn't allow the new study to be conducted because it found the new site is the most suitable for a deep seaport. The port's location at mainland makes it ideal for shipment of minerals and raw material for steel plants in the region compared to location at an island. It provides good connectivity to Howrah-Chennai main railway line which offers an efficient and cost effective supply chain to the industries in the states of Odisha, West Bengal, Jharkhand and Chhattisgarh. The government resolved this matter saying it is merely a refurbishment of the old plan so the new study and a fresh EIA is not required. Therefore it is absolutely unfair to locate the port in place where there has not been undertaken.

In addition to this, Dhamra port has come into being by manipulating the existing regulations and taken the advantages the loopholes in the existing regulation and policies before the commencement of the construction work of the project. They have been described in the next section.

4.3: Regulatory Capture and Legal Loopholes in the Development of Dhamra Port Project

The government's transition from purveyor into the new role of regulator and facilitator of infrastructure services has generally become more challenging than anticipated. This has made the public sector governance in which government is more concerned with the private business organisation's interest than the public interest. Not only the in the development of the port but also in the provision of employment to the project affected people, the public interest has been kept aside. The regulatory process should be formulated in such a way that the projected affected people will be allowed to raise their concerns through formal channels

rather than leaving it to informal channels which are more susceptible to manipulation by influential persons, political leader or business interest groups. Here is the case where the rules and regulations are not taken into considerations and exceptions have been derived from the existing policies and regulation for locating Dhamra port. The lacunas in the environmental regulation of the country have made the procedure simple and easier for the development of minor port like Dhamra Port Project. The loopholes have allotted the space for the private proponents to take the full advantage of it in accomplishing their interest of maximising profit and accumulation (Sahoo, 2014). How has the flouting of regulations and loopholes in it been witnessed in the development of the Dhamra port project are mentioned below.

(i) Loophole in Granting Environmental Clearance (EC)

The principal Environmental regulatory agency in India is the ministry of Environment and Forests (MoEF), New Delhi which formulates environmental policies and accords environmental clearance for the projects. It is mandated by law that before starting a project, Environmental Impact Assessment should be carried out and the environmental clearance (EC) be obtained. Hence ISPL hired a private consulting firm, namely Kirlosker Consultant Limited, pune; to conduct an environmental impact assessment and it produced and handed over the report in October 1997. In April, 1998 Odisha government asked for environmental clearance for Dhamra port and it was granted by the Empowered Committee of the Ministry of Surface Transport (MoST) instead of Ministry of Environment and Forestry (MoEF) of the Government of India. This is so because the MoEF amended the Coastal Regulation Zone (CRZ) notification 1991, in 1997 and conferred the power of granting EC from MoEF to the MoST. As the MoST is more concerned about developing the infrastructure like ports than about environmental issues, it granted the clearance to Dhamra Port project in January 2000 perceiving that development of shipping at Dhamra Port is beneficial. This difference in viewpoints reflects a grave conflict of interest. Though, the MoST's clearance power was finally taken back in August, 2000, by another amendment to the CRZ, but by that time the MoST had already granted EC to the ports like Dhamra and Mundra (Sekhsaria, 2005). The nature of clearance questions the real value of assessment and clearance of Dhamra port.

(ii) Challenging the environmental clearance (EC)

The EC by MoST was challenged vide a petition filed by the Odisha Beach Protection Council (OBPC) with National Environment Appellate Authority to review appeals and grievances with respect to environmental clearances under the Environment Protection Act,

1986. The petition challenged the Dhamra port EC on only two grounds: Firstly, the project site is a marine turtle nesting area and secondly, it is ecological sensitive and falls under the CRZ-I (i) categories in the Odisha Coastal Zone Management (CZMP) which advocates this area as 'no development zone.' According to the CRZ notification, areas such as mudflats and fish breeding grounds are supposed to be included in CRZ I (i) category but this was not done in the CMZP and never corrected despite the MoEF's condition. The National Environment Appellate Authority (NEAA) upheld the port's clearance by dismissing the petition which erroneously stated that the port was on a nesting ground. The NEAA only looked at the fact that the site was not a nesting ground, and overlooked other issues such as turtle presence offshore, impact of oils spills, ship traffic, dredging, port lighting on turtles, impacts on Gahirmatha Marine Sanctuary and Bhitarkanika and on the ecology of the port site itself, as these issues were not raised by the petition. The Ministry of Environment produced a guideline namely, "Manual on Eco (Turtle) Friendly Coastal Development" with the United Nations Development Fund, Wildlife Institute of India and the Madras Crocodile Bank Trust in 2003. This states that "No ports, harbours and jetties should be planned within a range of 25 km from any important nesting and congregating site". Dhamra port is in violation of this guideline (Choudhury et al.2003 cited in (Rodriguez and Sridhar, 2008).

(iii) Exemption from the Environmental Impact Assessment (EIA) process

The EIA notification, 1994 states that "The investment less than ₹100 crores for new projects and less than ₹ 50 crores for expansion / modernization projects of Schedule-I have to go through the EIA process" (Ministry of Environment and Forests, 1994). However, minor ports have been exempted from the Environmental Impact Assessment process even if the proposed investment is much greater than the stated in the notification. Although, the amount of investment in the Dhamra port is much greater than the amount of investment stipulated in the notification, yet it has been exempted from the Environmental Impact Assessment process.

(iv) Glitch in the EIA notification, 1994

The Schedule I of the EIA notification, 1994 states that the developmental projects like ports, harbours, and airports (except minor ports and harbours) need the environmental clearance (EC) from the GoI (Ministry of Environment and Forest, 1994). It means the minor ports (such as Dhamra Port) don't require going through EIA procedure and obtain EC. Hence this exception has become one of the serious loopholes in the environmental legislations in the

country which has caused the development of at least a 100 such minor ports located in the ecologically extremely sensitive areas along the country's coastline. These include Dhamra port in Odisha, Kulpi port in West Bengal, Positra port in Gujarat and Tadri port in Karnataka and so on (Sekhsaria, 2005). The reasons for excluding a minor port from the ambit of EC are not clear. There seems to be an assumption that the amount of proposed investment, land requirement, socio-economic and environmental consequences in the case of minor ports would be minuscule vis-a-vis the major ports. But in reality this is not so because some minor ports like Sikka and Mundra ports in Gujarat are larger than some of major ports in terms of costs, scale, traffic volumes and level of investments made. In the case of Dhamra port, land requirement for the port and port related development is more than 4000 crores and again there is demand for land as revised estimate of number of berth increase. Thus, the classification of ports as major and minor in India is not by the size of investment and the amount of consequences but by the jurisdiction alone. The scale of activity entails far reaching consequences than do administrative structures.

(v) No Public Hearing in the Dhamra Port Project

Although the minor ports were exempted from EC process under the EIA notification 1994, but if the port site fell within the ambit of Coastal Regulation Zone (CRZ), they are required to conduct an EIA and seek EC under another law i.e. the Coastal Regulation Zone (CRZ) notification, 1991. But the glitch in the CRZ notification, 1991 is that it doesn't require any public hearing as part of clearance process unlike EIA notification 1994 (Rodriguez and Sridhar, 2008). At that time neither the Dhamra Port Project nor the kirlosker EIA report went through and scrutiny by larger public at that time. So, the opinions of the coastal communities dwelling in the vicinity of Dhamra port area, who are going to be affected by the project have not been taken into consideration.

Since Dhamra port proposed at this time, it did not undergo any public hearing process. For that matter, no proposed minor port underwent public hearing process between 1994 and 2006. The new EIA 2006 notification replaced the EIA notification 1994 incorporating minor ports into the ambit of public hearing process but already much damage has taken place by this omission from the earlier notification of 1994.

(vi) Undermining the Ecological Value

The Bhitarkanika National Park, a hot-spot of biodiversity, is the second largest mangrove ecosystem in India. When Odisha government proposed port at Dhamra, it was found that

port site boundary was in the ambit of Bhitarkanika national park boundary. The state government issued a letter to reduce the area of park and in 1998 the final notification was issued to ensure that proposed port site is outside the boundaries. For the Dhamra port come to existence, the boundary of Bhitarkanika was reduced from the 367 sq km to 145 sq km (Dhamra Port Project Backgrounder, 2009). It shows that for the development of an infrastructure project, the significance of National park with ecological value has been overlooked.

(vii) Violation of Forest Conservation Act (FCA), 1980

Several environmentalists claimed that the part of the land allotted for construction of port was falling under the protected forest category although the State Forest Notification, 1961 did not mark the forest area in ground. They claimed that the forest blocks overlapped the area required for the port development and 300 ha of forest land was diverted for construction activity. Hence, this violated the Forest Conservation Act of 1980 as the land category was changed without permission from the Central Government. The environmentalists filed a petition at Supreme Court of its violation of FCA, 1980 and claimed to stop the projects. The Supreme Court ruled that the port area should be treated as non-forest land, thus confirmed the interpretation of the notification of the State Government of Odisha (Mandal and Vivek, 2013).

(viii) Breaching the Clause of Agreement

International Sea Ports Private Limited (ISPL) was a Consortium of three companies promoted by SSA International Inc., Seattle and Precious Shipping Company Limited, Bangkok (a company of G Premjee Group) each holding 33.23 per cent shares in the consortium while remaining 33.54 per cent was held by L&T. As per Clause 2.4 of Concession Agreements (CA) CA of Dhamra Port, each of the partners would hold not less than 17 per cent of total equity capital subscribed which was to be locked till in-operation date. Thus, no partner of the Consortium should exit within this lock-in-period. However, the main partner ISPL, who signed the CA and holding 66.46 per cent shares in the Consortium through its two foreign promoting companies (SSA International Inc., Seattle and Precious Shipping Company Limited), exited in 2002 from the project. This happened even before the construction of the port which is certainly within the lock-in-period and this is contrary to the provisions of CA. This exit delayed the project by 13 years. The commerce and transport department of government of Odisha had not taken any step to enforce the provision of CA

and the Commissioner-cum-Secretary stated in November 2012 that ISPL exited due to irreconcilable difference between business partners and Tata Steel (Government of Odisha, 2012).

The aforementioned analysis depicts that the Dhamra Port has been developed by bypassing regulatory concerns emanating from the objectives of protecting ecology and the community and taking advantage of gaps and loopholes in the regulations. The nonchalant attitude of regulatory authority is manifested in the ineffective implementation of the law during the development of the port and in its inability to hold the parties involved in the development of the port accountable for the violations afterwards. There are legal loopholes which made clearance easy in the absence of authenticity and credibility of EIA report without involving public consultation and hearing.

Although development per se is seen as a desirable objective but what constitutes it remains an unsettled debate. There has been flouting of laws and regulation in the development of Dhamra port and it is this constitutional, legal, rights based framework that has become dysfunctional in the case of the development of the Dhamra Port. The government has remained a silent spectator in facilitating the development of project. Although India has introduced the strategies of liberalization and privatization intending to change the way in which the state interacts with firms. This has minimised the role of the state and emphasised to the role of markets and private enterprise. The flipside of this relationship is the ways in which firms exert influence on the state. Some firms have been able to shape the rules of the game to their own advantage, at considerable social cost, creating what Hellman, Jones, and Kaufmann call a "capture economy" in many countries. In the capture economy, public sectors privately sell public goods (infrastructures like port) or allow individual firms to build public goods and a range of rent-generating advantages to individual firms at the cost of environmental, ecological and social cost. And this has happened with the active connivance of the state. This processes has been conceptualised as Institutional or Regulatory capture by scholars (Kaufmann and Kraay 2002; Frédéric Boehm, 2007). Institutional capture can be defined as the efforts of firms to shape the laws, policies, and regulation of the State to their own advantage by circumventing, manipulating, underestimating or ignoring legally recognized norms, standards, procedures, and obligations having consequential social cost for private benefits (Hellman and Kaufmann, 2001).

It is as a consequence to this regulatory or institutional capture by the port proponents that the state institutions are unable to be neutral and the rule of law has ceased. In the entire

development process it is found that there is a bias articulating itself in the form of an over estimated weight assigned to the valuation of the benefits accruing from the development of the port and the potential export earnings and an under estimation of the weight assigned to the valuation of costs. The regulatory institutions have lost their capacity to objectively evaluate the magnitude of values. This port development involved the flouting of rules and regulation making the government a silent spectator because of its obsession for achieving higher growth. As in recent past the minor ports outdo major port in performance, rules and regulations are being kept aside ignoring the externalities of the port to bring in the number of minor ports through the private sector participation.

4.4: Analysis of Dhamra Port Project during Construction Phase

The construction of the port project can have wide range of impacts during different phases of its development. Rodriguez et al. (2010) have classified three major sources of adverse impacts of a port in the following classification of the phases of development.

a) **Location of the port:** This will determine the nature and magnitude of impacts. This could be environmental (near high erosion and turtle nesting areas), social (near to fishing communities or fishing ground), or ecological (change in biodiversity).
b) **Construction activities of the port:** It takes place in offshore water or on shore lands. The construction activities imply dredging and disposal of dredged materials transport of construction materials.
c) **Operation of the port:** This includes ship-traffic and discharge, cargo handling and storage and land transport. Port operation consists of ship related factors such as vessel traffic, ship discharges and emission spills and leakages from the ships; and cargo related factors such as cargo handling and storages, handling equipments, hazardous materials waterfront industry discharges and land transport to and from the port.

There are different impacts of port such as environmental impact, social impacts, ecological impacts, locational impacts, shoreline impacts, and economical impacts. Sometime, the development of a port generates positive externalities from which surrounding people accrue benefits and sometimes negative externalities which the local communities bear it. Although, the ports will have various possible impacts, this study has restricted to understand the impact of the construction of the port project in terms of displacement of the people, loss of physical

assets including agricultural land, the resettlement and rehabilitation packages as compensation, diversification of the livelihoods, other impacts on socio economic life of the people.

With the development of the port infrastructure, the displacement of the people from their habitats happens due to land acquisition for the location of the port. Sometimes, it leads to many conflicts between the government and local people, mainly involving the fishing communities over port development plans in so many states. One of the important aspects of port development is that it leads to displacement of the people as well as fishermen. Since fishermen depend on the sea to earn their livelihoods for the sustenance, when they are displaced and resettled away from the shore, this disturbs the livelihood of fishing communities. This has been the case in the ports such as Gangavaram Port in Andhra Pradesh and Mundra Port in Gujarat (Rodriguez et al. (2010). The lack of formal legal recognition of traditional land and housing rights of fisher folk in almost all the states make them more vulnerable despite having lived there for centuries. The social impacts of development of a port are manifold however; the focus of this study has been on the land acquisition and displacement of the people. Before explain the social impact in term of agricultural land and its consequences displacement of people in the next section, a bird's eye view about socio economic condition and the geographical area are given below.

The development of an infrastructure like port will have a wide range of effects on socio-economic and livelihood, production, standard of living over geographic areas. The environmental condition and the nature of soil of this particular geographical area are such that it is congenial for the cultivation paddy. Therefore, major portion of the agricultural lands are utilised for the cultivation of the paddy. The people of the area find the employment opportunities by engaging themselves in the cultivation of paddy. As the lands are completely rain-fed, there is also uncertainty in the cultivation: the land confronts severe drought on account of lack of rain. Besides the paddy cultivation, people also engage themselves fishing. They use the coastal belt land for drying the fish. Since, the coastal area was close to their habitation, the other family members used to help in the fishing activities of the family head. The coastal belt area is also used as pasturing ground for the livestock. Apart from this there were common property resources (grazing and burial ground). There was also forest land near to the coastal area where people used to collect fuel and wood etc. By and large, people primarily were dependent on the agricultural land and fishing for their livelihoods. How has the construction of the Dhamra port project in such area have affected their livelihoods is the

topic of discussion in this next section. The affected area is ecologically sensitive area filled with mangrove forests. There is presence of offshore coral reefs, horseshoe crabs, turtles and other aquatic flora and fauna.

4.5: Total Land Acquisition for Construction of Dhamra Port Project

Most of the infrastructure projects require huge amount of land and Dhamra port project is not an exception to this. In India, land is generally acquired by the state for public purposes for any infrastructure project or any other industrial activities. The principal legislation that governs acquisition of land by the state is the Land Acquisition Act (LAA), 1894. This Land Acquisition Act, 1894 expresses the 'Doctrine of eminent domain' which vests power in the state to take possession of private land for public purpose. The land for the Dhamra port Project has been also acquired under this Act, 1894, under which government can acquire any type of land for 'Public Purpose'. As this Act did not define the term public purpose, however, it has been interpreted as a purpose which is beneficial to the community and in which the general interest or the public interest of the community is preserved as opposed to the particular interest of individuals. However, in 1984, the LAA 1894 was amended; the Amended Act contains an inclusive definition of the term public purpose.

Land is a valuable asset. The development of the Dhamra port project has acquired the agricultural land from the private citizens. The port project has acquired total 4330.77 acres of land from 74 villages under three Tahasils namely Chandbali Tahasil, Tihidi Tahasil and Bhadrak Tahasil. Of these three Tahasils, maximum amount of lands have been acquired from the Chandbali Tahasil and the Dhamra port comes under this Chandbali tahasil. This port has acquired the private land and government land. The details of total acquisition of land are mentioned below in table-4.2.

Table-4.2: Acquisition of Total Land for Dhamra Port Project

Private Land	Government Land	Total Land
2422.85 acre	1907.92 acre	4330.77 acre

Source: Special Land Acquisition Office, Dhamra Port, 2015

4.5.1: Acquisition of Government Land

The government has also handed over land to the port authority for the construction of port and rail line. The total amount of government land for Dhamra port project are shown below in the table 4.3.

Table-4.3: Acquisition of Govt. Land for Dhamra Port Project

Details of Government Land	**Area (in acre)**
First Phase	875.72
Alienation Under Progress	167.48
Communal Land (Grazing & Burial)	101.22
Second Phase Expansion	763.50
Total	**1907.92**

Source: Special Land Acquisition Office, Dhamra Port, Bhadrak, 2015

The table-4.3 indicates that company has been allotted total 875.72 acres of government land, out of which 741.61 acres of land is for port area and 134.11 acres of land for railway corridor. Besides this, port needs additional 167.48 acres of land and for this IDCO has already filed requisition for alienation before the respective Tahasils. The communal land which includes gochar (grazing land) and smasan (burial land) of 101.22 acres has been earmarked for the port project.

After the grant of environment clearance to Dhamra port for its second phase expansion in January, 2014 DPCL asked for around 800 acres of government land in the second phase for port operations. The Odisha government consulted Rail India Technical and Economic Services (RITES), the engineering and consultancy arm of Indian Railways to make an assessment of land requirement for non-major port projects. Rites has done an extensive study and suggested a 'thumb rule'- allotting 50 acres of land for every million tonne of cargo handling capacity proposed by the developer. This is set to be the first ever benchmarking procedure for land allotment to port developers in the state. Then government has given 763.50 acres of land for the second phase expansion of the port projects in accordance with the guidelines prepared by Rites Ltd (Dash, 2013).

4.5.2: Acquisition of Private of Land

For the Dhamra port project, the DPCL has received a total of 2094 acres of private land from the Odisha Industrial Infrastructure Development Corporation (IDCO), Bhubaneswar. The IDCO is a statutory corporation of the Government which provides assistance in the identification of project site, acquisition of land on behalf of the project, R&R facilitation. Total acquisition of private land for different purpose has been summarised in the table - 4.4 below.

Table-4.4: - Acquisition of Total Private Land for Dhamra Port Project

Details of Private Land	Area (in acres)
First phase	2094
2nd Phase Expansion	227.63
Exchange of grazing land	93.73
Exchange of burial land	7.49
Total	**2422.85**

Source: Special Land Acquisition Office, Dhamra Port, 2015

Out of total acquisition of 2422.85 acres of land 2094 acres of land were acquired by the requisition authority, IDCO and handed over the port authority for the development and expansion of the first phase of the Dhamra Port. Since IDCO acquired 101.22 acres of government land (the grazing land and burial ground), again it purchased an equal amount of land from the private parties and handed it over to the villagers to be used for the same purpose. The Revenue department of government of Odisha had notified on 16th August, 2005 vide Notification No. 33293/R to acquire the amount private lands in Dosinga village for the construction of railway corridor from Bhadrak to Dhamra and it was presented in the local people at the panchayat office on 8th September, 2005. Then field inquiry by the Revenue department was made. The handing over of the possession of land was declared on 27th September, 2008. During the interim process from communication to the possession of land, people were given compensations in the form of cheque in accordance with the amount of land they had alienated on the 23rd June, 2006 after which they have been asked to vacate the land by 27th September, 2008. This is the case with respect to Dosinga village where the field study has been conducted. Likewise, in other affected villages notifications have been given at different dates followed by the acquisition of land. The Tahasil wise private land acquired from the 74 villages fully or partially for the port project is outlined below in the table-4.5.

Table-4.5: Tahasil-Wise Private Land Acquisition for Dhamra Port Project

Name of the Tahasils	No. of Villages	Total Land (in acre)
Bhadrak	13	546.17 (26.08%)
Tihidi	28	571.47 (27.29%)
Chandbali	33	976.36 (46.63%)
Total	74	2094.00

Source: Special Land Acquisition Office, Dhamra Port, 2015

It is evident from the table-4.5 that total 2094 acres of the land for the first phase of port project and maximum amount of land has been acquired from the villages of Chandbali Tahasil (i.e. 46.62%) in comparison to the villages of Bhadrak (26%) and Tihidi Tahasil (27%). The number of villages under the Chandbali Tahasil is more than the number of villages under Bhadrak and Tihidi Tahasils. The port authority had acquired the government land including both grazing land and burial land and people are facing the problems of not having them. Therefore, the government has acquired the same amount of private land and earmarked it for the purpose of the grazing and burial land. The acquisitions of private land for the purpose of grazing and burial grounds are given below in table-4.6.

Table-4.6: Acquisition of Land for Exchanging of Grazing & Burial Lands

Tahasils	Villages	Grazing Land	Burial Land	Total Land (in acre)
Bhadrak	10	8.95	2.07	11.02 (11%)
Tihidi	14	22.64	0.75	23.39 (23%)
Chandbali	20	62.14	4.67	66.81 (66%)
Total	44	93.73	7.49	101.22 (100%)

Source: Special Land Acquisition Office, Dhamra Port, 2015

Total areas of 101.22 acres of land in respect of 3 Tahasils have been acquired for the port project out of which Chandbali Tahasil has offered 66% of land. The Bhadrak district statistical handbook (2011) states there were 394789 number of cattle and 25290 acres of pasture and grazing land in the year 2010-11. The average area of land per cattle is 0.06 acres of land. In the second phase of Dhamra port project, more 11 berths have to be constructed which requires 227.63 acres of land for further expansion. These 227.63 acres of land were acquired from five villages namely Gobindapur, Sankhajodi, Narsinghaprasad, Oramal, Somapatia under Chandbali tahasil for the purpose of Water Reservoir, Township, Extension of Railway Corridor. The land losers of Dhamra port project protested against the district land acquisition officials for this additional land acquisition for Dhamra Port Company Limited (DPCL) during a public hearing conducted at Dhamra. Despite the protests the hearing was conducted on behalf of the State owned IDCO. The affected households have expressed their resentment against the official proceedings of acquisition claiming that various resettlement & rehabilitation (R&R) provisions for the displaced people and the land losers have not been fulfilled. The landowners who had lost their fertile land for the DPCL's first phase project were not properly compensated; therefore, they protested the acquisition process (Rout, 2012).

4.6: Displacement, Rehabilitation & Resettlement

It is very difficult to acquire land without displacing people especially in the habitation area. Various development projects that involve displacement of the people come through the process of adopting the R&R policy. The acquisition of private land for the development of Dhamra port project has caused displacement of the people. Dhamra port project has adopted Resettlement and Rehabilitation (R&R) policy, 2006 to handle the rehabilitation activities of the project affected people and rewarding the compensation. The Odisha R&R policy 2005 did not include the benefits of rehabilitation and resettlement to the linear project in which port is considered as linear project. But the R&R policy issued by the Revenue and Disaster management Department of Government of Odisha in 15th May, 2006 included the linear projects. Therefore, the Dhamra port project has extended the benefit the of R&R assistance to its displaced households as per the R&R policy, 2006. There are some important terms which have been frequently used in this study. Some of the important terminologies in the Odisha R&R Policy 2006 are mentioned below in Box-4.1.

Box-4.1-Terminology Used in the Study

The R&R, 2006 policy defines the following terminologies used in the study. They are

Original Family means the family, which at the time of Notification under provisions of relevant Act(s) is living together in a single household with a common kitchen.

Rehabilitation & Periphery Development Advisory Committee (RPDAC) means the committee constituted by the Government under relevant provisions of this Policy by Government to look after rehabilitation and periphery development matters.

Family means the person and his or her spouse, minor sons, unmarried daughters, minor brothers or unmarried sisters, father, mother and other members residing with him or her and dependent on him or her for his / her livelihoods.

Land Losers are the households those who have only lost agricultural land without losing home or homestead land.

Displaced Family means a family ordinarily residing in the project area prior to the date of publication of notification under the provisions of the relevant Act and on account of acquisition of his/her homestead land is displaced from such area or required to be displaced.

An encroacher family is one who is landless as defined in the Odisha Prevention of Land Encroachment Act, 1972, and is in possession of the encroached land at least for a period of ten years continuously prior to the date of notification under relevant law(s) declaring

intention of land acquisition will get ex-gratia equal to compensation admissible under the Land Acquisition Act, 1894 for a similar category of land to the extent of land under his/her physical possession up to a maximum of one standard acre, if the encroachment is unobjectionable.

Each of the following categories is treated as a separate family for the purpose of extending rehabilitation benefits under this Policy.

a) A major son irrespective of his marital status.
b) Unmarried daughter / sister more than 30 years of age.
c) Physically and mentally challenged person irrespective of age and sex; (duly certified by the authorized Medical Board). For this purpose, the blind/ the deaf/ the orthopedically handicapped/ mentally challenged person suffering from more than 40% permanent disability will only be considered as separate family.
d) Minor orphan, who has lost both his/her parents.
e) A widow or a woman divorcee.

Further, for the purpose of R&R benefits under this policy, development projects are classified into the following types:

1. Industrial Projects;
2. Mining projects
3. Irrigation projects, National Parks and Sanctuaries;
4. Urban projects and linear projects like roads and railways, power lines; and
5. Any other projects

The Dhamra Port falls in the fourth category as a linear project. The Dhamra Port has acquired land from 74 villages for railway corridor as well as construction of the port. This land acquisition has caused displacement of 389 households from 17 villages. These total 389 displaced households (DHs) include 39 private encroached displaced households (PEDHs) from 5 villages, 31 government encroached displaced households (GEDHs) from 8 villages and 319 displaced households who have legal entitlement over lands. The village-wise displaced households, private encroached households and government encroached households have been mentioned in Table-4(A), Table-4(B), and Table-4(C) in Appendix. The definitions of government encroacher and private encroacher households have been mentioned in the sample design section of chapter-2. Before explaining these households, it is pertinent to know the history of those households (given in Box-4.2).

Box-4.2: History of the Displaced and Land Loser Households

The displaced and land loser households are basically from the West Bengal and their mother tongue is Bengali. These people are immigrants form Bengal more than hundred years back. They were from the places viz., Kanthi, Digha, Jaleswar, Bogarai, Vardhaman, etc. of West Bengal. When they came to that area, this area was a jungle; they cleared the area by cutting trees and settled down. In Bengal 1349 (in Sal), there was great flood and great want in Bengal. So, some people came here (Odisha) and settled because here rice and other things were cheap and people had a fairly large catch of fish and crab sufficient to maintain their families. Those were rich, they accumulated 40 acre, 50 acre like this. During that period, Dhamra port area was being ruled by Kanika king and he called these people to cultivate the lands. People cultivated the land without thinking of the registering land in their name. People usually were not used to maintain any record and documents of these lands. Those who were a little well informed registered the land in their name.

When king was ruling, he liked the Bengali. When he called them, initially a few people came and then a stream of chain migration started. At that time king was allocating the land at a price of one rupee per acre of land. People acquired the land using this opportunity. People used to live close to the sea coast. When there was flood, it was causing trouble to the habitants of sea beach area and some of them used to die. At that time there was no embankment to be saved from flood water but later period this embankment (called luna bandha in local language) was built around 25 years back and the force of flood was stopped. Earlier these lands were completely vacant. People started occupying land and declared this as their land. Gradually they stated to pay tax to the government and registered this land in their own name. People were not much conscious of value of land at those days.

After embankment was built, the forest department did not allow people staying close to the sea shore. So those people vacated that land came to the other side of embankment for their safety. The other side of embankment has agriculture land. People purchased 1 acre for ₹7000. Even though people acquired so much land, over the years due to several reasons they sold the land, grappling with poverty. They were not assigning much value to this land because they had large amount of it (Field Survey, 2015).

The aggregate figure of the total displaced households and their R&R assistance due to the Dhamra port projects are outlined below in table -4.7.

Table-4.7: Category-Wise Total Displaced Household in Dhamra Port Project

Category	No. of Displaced Households	No. of Households received R&R assistance	No. of Households not received R&R assistance
Displaced Households	319	311	8
Private Encroachers	39	39	-
Government Encroachers	31	31	-
Grand Total:	389	311	8

Source: Special Land Acquisition Office, Dhamra Port, Bhadrak, 2015

Out of total 319 displaced families 167 households belong *Dosinga* village alone. Therefore, this study is confined to this village. Out of 319 displaced persons, 311 persons have received the R&R assistance and the remaining 8 persons have not yet received R&R assistance. 2 out of 8 are the deity property (Kaliasuni Thakurani and Abhiram Paramhansa Thakur) under Bhadrak Tahasil and two people from Dosinga village and two people from Narasinghaprasad village and one person from Manipur village under Chandbali Tahasil have not received because of the dispute that the displaced persons were not major as on the cut-off date.[1] All the unpaid amount has been deposited in shape of Civil Deposit under the Head i.e. "8443-Civil Revenue Deposit" The R&R Assistance approved for the deity properties should be deposited in favour of the Interim Trustee after getting clearance from the Commissioner of Endowments, Bhubaneswar. As regards the remaining 6 cases, the Special Land Acquisition Officer of Dhamra port project has been directed to enquire into the matter that whether the displaced persons were major as on the cut-off date then he should submit a proposal before the Collector, Bhadrak for acceptance of rejection of R&R Assistance. The Collector, Bhadrak is authorised to take a decision in this regard.

The displaced households land owners with legal entitlements have received ₹ 2.36 lakh per household as R&R assistance as per Odisha Resettlement and Rehabilitation policy, 2006. The criteria to get this ₹2.36 lakh have been mentioned in the Box-4.1. Each criterion is considered as a separate family and eligible to get the assistance of ₹ 2.36 lakh. A son is considered as major if he is 18 years old otherwise, he is called minor son. The sons who are above the 18 years old are eligible to get this assistance. The basis on which 2.36 lakh is paid has been categorised below as per the R&R policy, 2006.

[1] Cut-off Date is the date, for the purpose of compensation, on which the notification declaring the intention to acquire land under the relevant Act or under the provisions of the R&R Policy, 2006 is published.

Table-4.8: Rehabilitation and Resettlement Assistance Package for DHs

Particulars	Payments (in ₹)
Household Assistance	1,50,000
Homestead Land	50,000
Maintenance Allowance	24,000,
Assistances for temporary shed	10,000
Transport Allowances	2,000
Total	2,36,000

Source: Resettlement and Rehabilitation (R&R) policy, 2006

On the other hand, the private encroachers and government encroachers are deprived from accruing such benefits because households pertaining to these categories did not have the legal entitlement over the land they were residing on. They are given ₹ 1 lakh ex-gratia amount as R&R assistance which was determined in accordance with the R&R policy, 2006. This states that the ex-gratia amount will be equal to price of one standard acre of agricultural land and this standard agricultural land was fixed to be ₹ 1 lakh per acre. (How this amount of one lakh has been determined is mentioned in the Appendix-1).

People came into category of private and government encroached households because most of the households are immigrants from West Bengal since last 100 years ago during the reign Kanika King in Odisha. When they came to that area they found that lands were open and vacant and therefore they amassed huge chunk of land. Some of the owners of the lands deputed some persons to take care of cultivation and allotted some amount of land for their stay. Although this person used to stay on that land but he did not have legal entitlement over the land but in the name of another private person. Such persons have come to be characterised as private encroachers. In some cases, some people purchased the land for constructing house and stayed in that land for a long time, but land was not registered in the buyer's name. The buyer had enough trust on the sellers of the land and a private understanding as well as social recognition existed for such relations in those communities. But when company came and found that they are staying in the land for which they do not have ownership and record, the company declared such residents as private encroachers. The compensation amounts for the lands were given to the original owners of the lands who continued to possess the entitlement over the lands. Some owners of the lands returned the amount of money they had received from the buyer households when they had purchased the lands and the rest of the amount of the compensation they kept with themselves. So the so called 'private encroacher households' of this kind, became worse off not getting any R&R

assistance except ex-gratia of Rs. 1 lakh. But, the original owner of the land became the beneficiary of R&R assistance. Similarly, those people who were staying in the government land have been declared as government encroaches. Both private and government encroachers got compensation of ex-gratia ₹ 1 lakh as per Odisha R&R policy, 2006. All the encroached households have accepted the compensation even though initially they were hesitant to accept. Later they realised that they are staying in government land or private land and they do not have any right to get any benefits. Whatever was coming of its own accord they first accepted and then demanded for equal benefits and treatment on par with the displaced households. After they were evicted from the government land, they are again staying in the government land. But the difference is that they used to pay tax earlier, but after they have been evicted, they are not paying the tax. It was done with the motivation that if they would pay the tax, sometime or other they will have option of registering this government land in their name.

The identity cards have been issued to each displaced family for identifying the households as beneficiary of displaced households. Out of 125 original households, 68 households have received their identity cards 56 households have not received yet because they are demanding individual displaced person wise identity cards separately. The port authority is providing the identity cards to the displaced by considering the family as a unit. Some households have accepted this approach of the government. However, in some members of the household wanted separate identity card and therefore sought that individual members of households be considered as the unit for disbursing the identity cards recognizing them as displaced by the port project.

Provision of Employment and One Time Cash Assistance

Dhamra Port is considered as a linear project as per the Odisha R&R Policy, 2006. The Odisha R&R Policy, 2006 states that if house/homestead land of any landholder is acquired for linear project or if there is displacement of households due to acquisition of land for such project, the project authority shall provide employment to one of the members of such displaced family in the project. However, if the employment cannot be provided to the displaced or other households or they do not opt for employment/self-employment, they shall be provided onetime cash assistance instead of employment at the scale indicated below by the project authority. Or wherever RPDAC decides that provision of such Employment is not possible, onetime cash assistance as decided by the government will be paid by the project

authority. There are four categories of the displaced households to which the project proponent will give preference in the matter of employment and if employment is not possible due to aforementioned reason then onetime cash assistance. The details of categories and payment of onetime cash assistance are mentioned below in table- 4.9.

Table-4.9: Category-Wise Onetime Cash Assistance

Categories	Onetime cash assistance amount	Particulars
Category-1	₹ 7, 47, 000	Displaced households losing home and homestead land along with all agricultural land
Category-2	₹ 4, 48, 000	Displaced households losing home and homestead land along with more than 2/3rd agricultural land
Category-3	₹ 2, 99, 000	Displaced households losing home and homestead land along with 1/3rd agricultural land
Category-4	₹ 1, 50, 000	Displaced households losing only home and homestead land but not agricultural land

Source: Special Land Acquisition Office, Dhamra Port, Bhadrak, 2015

A total of 48 households have been approved to get onetime cash assistance in lieu of job in Dhamra Port Project. The category-1 category-2 and category-3 displaced persons/land losers are claiming category-1 saying that since maximum agricultural lands has been taken for the port projects and the remaining agricultural lands are found unviable for cultivation. Before the acquisition of these agricultural lands, people were depending upon the yield derived from the agricultural land. Since they have lost their valuable land for the port project, on which the whole family members were depending upon, even they belong to other category but claiming onetime cash assistance under Category–I. The RPDAC will take a decision in this regard (Special Land Acquisition Office, 2015)

4.7: Analysis of Sample Households

This section discusses about the 140 sample households collected from the household survey by the questionnaire method. The sample size of 140 households has been collected by conducting the field survey from the Dosinga village and villages near to Dosinga village like Oramal, Balisahi, Chianipahi, Sompatia who are staying close to the project. Of the entire affected villages, the Dosinga village has been adversely affected by the development of Dhamra port project and 46% of the whole displaced households under the project belong to the Dosinga village where the port is located. Total sample of 140 households considered for the micro level study have been segregated into four categories, first category involve 80

households belongs to the displaced households collected from the Dosinga village who has legal entitlement over lands, 20 households from land loser, 20 households from the government encroachers and 20 households from private encroachers from the villages such as Dosinga, Oramal, Balisahi, Chianipahi, Sompatia.

(i) Profile of Sample Households

The size of the households and the age structure of the sample size are presented below in table-4.10 and 4.11.

Table-4.10: Size of the Households

Size of the Family	Displaced Households	Land Loser	Government Encroachers	Private Encroachers	Total
2	4	-	-	2	6
3	14	3	2	4	23
4	25	11	10	2	48
5	21	2	5	5	33
6	18	3	3	4	28
Above 6	2	1	-	3	6
Total	80	20	20	20	140

Source: Field Survey, 2015

Table-4.11: Age structure of the Households

Age	Displaced Households	Land loser	Government encroachers	Private encroachers	Total
Less than15	114	31	27	36	208
15-60	226	52	55	62	395
60 and above	39	12	7	13	71
Total	379	95	89	111	674

Source: Field Survey, 2015

Above table-4.10 and table-4.11 shows that families consisting of four members in the household are larger in numbers amongst all categories except the categories of private encroachers and households consisting more than six members are less.

The agricultural lands are used for Paddy cultivation. People mainly earn their livelihood by the occupations like fishing, cultivation of paddy, rearing livestock, stitching fishing net and so on. They manufacture different kinds of mats out of palm leaves and debt (khajuri) leaves with the traditional design. People are mostly dependent on agriculture and fishing activities. However, due to uncertainty and irregular incomes from these two sources, people of the area move towards other places in search of employment.

Most of the households owned thatched houses. Now the people of the study area are having the houses made of both pucca and kaccha types. Even large number of households used to live in a big thatched house with more number of rooms. After displacement, those who have got bulk amount of money, they have constructed the buildings. However, the

government encroached households are still living in the thatched house. Government has allotted land to the government land encroached households and they have made thatched house for shelter. The students of the area are having educational facilities of primary and secondary schools. For further education, they have to go Basudevpur College which is 45 km distance from Dhamra port area. The children of the fishermen from this region rarely study beyond the secondary school education. The children help their parents in fishing activity rather than going to school for study. Out of the sample household 140 households, 85 households are having children below 14 years old. Out of these 85 households, the children in the 18 households have quitted the study and assisted to their parents for earning livelihoods. They engage their children in earning from fishing than giving them higher study. People in this area speak Bengali language, although they know Odia language very well.

(ii) Resettlement and Rehabilitation (R&R) Package

The DPCL has followed the Orissa Resettlement and Rehabilitation Policy, 2006 to carry out the resettlement and rehabilitation activities. Out of these 140 sample households the distribution of compensation is given below in a table-4.12.

Table-4.12: Compensation of R&R Assistance of Sample Households

Category of sample Households	Total sample Households	R&R Assistance Received	R&R Assistance not Received
Displaced Households	80	78	2
Land Loser	20	20	-
Government Encroachers	20	17	3
Private Encroachers	20	20	-
Total	140	135	5

Source: Field Survey, 2015

Above table-4.12 depicts that two out of 80 displaced households have not received the R&R assistance because of some dispute. Their R&R has been pending. Similarly, three out of 20 government households have not received the R&R assistance because they did not agree to receive the ex-gratia of ₹ 1 lakh considering it as very meagre. 8 out of 20 government encroacher households are expecting same benefits on par with the displaced households who have legal entitlement over land. However, all the private encroacher households have received the compensation of ex-gratia of ₹ 1 lakh as per R&R policy 2006.

As the company purchased land from the Dosinga village with meagre compensation i.e. ₹ 1 lakh per acre therefore the land losers and displaced have done strikes in July, 2015 in which around 40 to 50 participated. Their claim was for demanding more compensation for their land and they have been given words that they will be given the amount of ₹ 40,000 as compensation for one acre of agricultural land. However, till December, 2015, it was not fulfilled. Apart from that still some people have not yet received because of considering it as very less and meagre.

Since both the private and government encroacher households have received only compensation of ex-gratia 1 lakh as R&R package nothing more, the study has taken into account of both displaced households and land loser households to examine the amount of land lost for the project. Out of collected samples of 80 displaced households, 23 households have sacrificed only homestead land and rest 57 households have sacrificed both homestead land and agricultural lands. The amount of land lost by both displaced households and land loser for the development of the port projects are mentioned below in a table-4.13.

Table-4.13: Amount of Land Sacrificed for the Dhamra Port Project

Category of Land	> 1 acre	1-3 acres	> 3-5 acres	> 5 acre
Displaced Households				
Homestead land	52	23	5	0
Agricultural land	28	17	9	3
Land Loser Households				
Agricultural land	12	5	3	

Source: Field Survey, 2015

The table-4.13 indicates that around 52 (65 per cent) displaced household have lost land within range of o-1 acre of homestead land and only 3 displaced households have sacrificed more than 5 acres of agricultural land. On the other hand, 12 households out of 20 land loser households have lost land within the range of 0-1 acre of land. By and large this table indicates that maximum amount of displaced and land loser households lost less than one acre of land.

Since the displaced and land loser households have the legal entitlement over the land and they have received the R&R assistance for the loss of agricultural land, the size of land holding before and after the location of the port are presented below in the table-4.14.

Table-4.14: Size of Land Holding Before and After the Location of the Port

Status of Displacement	Landless	> 1 acre	>1-3 acres	>3-5 acres	> 5 acres
Displaced Households					
Before displacement	7 (8.75)	22 (27.5)	28 (35)	15 (18.75)	8 (10)
After Displacement	20 (25)	25 (31.25)	22 (27.5)	10 (12.5)	3 (3.75)
Land Loser Households					
Before displacement	-	8 (40)	8 (40)	3 (15)	1 (5)
After Displacement	4 (20)	8 (40)	6 (30)	2 (10)	-

Figure in parenthesis represents percentage of total sample households
Source: Field Survey, 2015

Above table-4.14 indicates size of land holding have shrunk significantly for both the displaced households and land loser households. The landless for the displaced household means they did not have any agriculture land. There were 7 (8.75 per cent) displaced households were landless before the location of the port and this landless households increased to 20 (25 percent) after the location of the port project. There is a deceleration in the amount of land holding of the displaced households of the ranges of 1-3 acre and 3-5 acre after location of the port compared to before. The number of displaced households of land holding of more than 5 acres of land has decreased from 8 to 3. These 3 households have purchased the land in the distance place (in other Panchayat) with their compensation amount. It was not possible for them to purchase land surrounding the Dhamra port project with their given compensation because land price already started inflating in that area.

In case of land loser household, there was no landless household before the location of the project. But after the location of the port, 4 land loser households have become land less. The size of land holding has decreased for the land loser of range of 1-3 acre and 3-5 acre. Total 18 % households who have lost only agricultural land responded that the company purchased land from the Dosinga village with meagre compensation i.e. ₹ 1 lakh per acre but after one month gap the company purchased land at ₹ 6 lakh from the neighbouring villages. In this way the company took land of the Dosinga village with lower price.

(iii) Impact of Location of the Port on Occupational Diversification

Most of the displaced households and other victims of land acquisition are from fishing community. After the initiation of the port project their sources of livelihoods have

been affected severely. Therefore, they have diversified from fishing as a principal occupation to other occupations such as cultivation, petty business, and agriculture labour and so on. Only a small portion of people are still continuing their old occupation of fishing. How their occupations have been affected and pattern of their occupation have been changed after port came into place is given below in table 4.15.

Table-4.15: Change in Occupation of the Sample Households

After Displacement / Before Displacement		Agriculture Labourer and fishing	Agriculture Labourer	Fishing	Cultivation	Working in DPCL	Others
Agriculture Labourer and fishing	53 (37.86)	9	14	10	2	12	6
Agriculture Labourer	23 (16.43)	7	5			8	3
Fishing	33 (23.57)	7	3	8		12	3
Cultivation	16 (11.43)	4	1	0	5	6	
Working in DPCL	0	0	0	0	0	0	0
Others	15 (10.71)	3			4	6	2
Total	140 (100)	30 (21.43)	23 (16.43)	18 (12.86)	11 (7.86)	44 (31.43)	14 (10)

Figure in parenthesis represents percentage of total sample households
Field Survey, 2015

The table 4.15 shows the change in sources of livelihood of the displaced householders. Out of total 140 sample households prior to the construction of the port, 33 (23.57%) households were engaged in fishing, in the aftermath of building the port, this number has declined to 18 (12.86%) households. This is because this occupation has become unviable as a consequence to the establishment of the port. Since the seashore land and the forest lands which were used for drying fishes have been acquired by the company and people are not allowed to enter into that occupied area, it becomes difficult to access the sea and the coast to catch fish and dry it. The above data suggests that 37.86% of householders' major sources of livelihood are constituted by multiple-livelihoods viz., agriculture labour and fishing, but after development of the port, 21.43% households are continuing with both occupations. The 53 households before the displacement have been distributed horizontally who have diversified to other occupations after the displacement. After port came into existence, (31.43%) 44 households

have been working in the construction activities of the port. It is important to note that out of these 44 people working in the DPCL, 30 households belong to displaced families and 6 households belong to land loser households and rest 6 people belong to both government and private encroacher households. These 6 households are working in the construction activities informally through the contractor. However, the employment of land losers and displaced households have been formally employed and acknowledged by the company.

Since most of the fertile agricultural lands have been taken by the company, the number of people who used to engage in cultivation as their principal occupation has decreased from 16 households to 11 households. This decrease is due to various reasons. The cultivation of the paddy depends on the rain. Also, the cost of cultivation has increased in a larger extent and at the same time possibility of getting output is uncertain because of unfavourable monsoon. The company has acquired a large chunk of agricultural land and very less amount of lands remained for cultivation. Some households consider cultivation as not being profitable with the present situation of rising price of various inputs. One of the reasons of decrease in the yield of paddy is due to coal dust suspended from the unloading of coal at the berth and insects coming from the light used by the port. Besides this, 10% of households have been engaged in different kinds of occupations to earn their livelihoods including blacksmith, stitching the nets, opening shops in the markets, doing business and selling beetle leafs from market to market and villages to villages. Some people are finding as new source of livelihood, opening shops and doing business. 2 displaced sample households have opened shops. One is earning around ₹ 3000 per month by selling beetle nut leaf and other is earning around ₹ 4000 per month by selling various eatable for breakfast purpose. Apart from the project affected household, non-displaced households are engaged in various business of selling cloth, audio cassette shop and varieties store etc. in this way the people have been engaged in various occupations. The households have been forced to diversify their occupation without finding any other alternative. The category-wise change in occupation of the sample households are presented in the table 4 (D), in appendix.

Moreover, these changes in occupational pattern made them vulnerable because of inconsistence and uncertainty in their earnings. The changes in the income of the sample households before and after their displacement are presented in the table- 4.16 below.

Table-4.16: Change in Income of the Sample Households (in number)

Income (in ₹) Classifications	Before Displacement	After Displacement
3000>	24 (17.14)	4 (2.86)
3000-6000	52 (37.14)	57 (40.71)
6000-9000	31 (22.14)	46 (32.86)
9000-12000	19 (13.57)	20 (14.29)
12000-15000	8 (5.71)	9 (6.43)
15000 and above	6 (4.29)	4 (2.86)
Total	140 (100)	140 (100)

Figure in parenthesis represents the percentage of the households to total sample households.
Source: Field Survey, 2015

The table - 4.16 indicates that the number of households belong to income group of less than 3000 and 15000 and above have decreased from 17.14 % and 4.29 % to 2.86 % and 2.86 %. Although, monetary incomes of the households belonging to other income groups have increased but it has not added any value to their real standard of living because the prices of the commodities have increased much greater in proportion than the increase in the money income. For example, price of necessary commodities such as rice, flour, dal (arad dal), edible oil, fish (Rohi fish in local language) were ₹ 7, ₹ 9, ₹ 40, ₹ 40, and ₹ 50 before displacement period (2006 year). Now prices have same commodities have increased to ₹ 17, ₹ 25, ₹ 140, ₹ 120, and ₹ 120 and so on. This clearly depicts that although the incomes of the households have increased in the monetary form but the real standards of living have worsened (Field Survey, 2015). The changes in the income of the category-wise of sample households have been given in the table 4 (E) and 4 (F) in Appendix.

4.8: Impacts of Dhamra Port Development on Different Categories of People

The development and location of Dhamra port has brought different kinds of impacts to the livelihoods, social condition and standard of living of different categories of people. These impacts on different kinds of people have been presented below.

(i) Impacts of Port on Displaced Households

The displaced households have been adversely affected by the location of the port project. Even if they have received compensation for their homestead land, agricultural land, and other physical assets but that is not sufficient to purchase same amount of land with the rehabilitation assistance given to them as per the R&R, 2006.

> *"The compensation amount for one acre of land was hardly sufficient to purchase even 1/5th of 1 acre of land because the land prices in the surrounding area appreciated rapidly. So, what is the use of getting money when it could not be used to acquire an asset like a viable sized piece of land, which, given their skills, is the only asset capable of generating a livelihood"* (Field Survey, 2015)?

Apart from land, they lost some other assets such as trees and ponds which were also sources of earning for the households. The compensation they got for their assets is equivalent to the returns in terms of value of the yields for the period of two years. Until now, some displaced households did not get employment which was promised to them. The compensation to the displaced households were so meagre and inadequate that they could not purchase 1/5th of their lost land with their available compensation because land price started to appreciate quickly because of upcoming port project. Therefore, number of household could not cope with the rising price of land and therefore moved out of that area and settled in different area where they could purchase a viable piece of land with their compensation amount. The agitation that the mode of development has caused amongst the displaced can be gauged from their emotive responses about their experience. Respondents have stated that:

> *"Whatever we lost due to port could not be compensated by anybody. The company has taken away everything except our lives. If company would have taken away that, then we would not have to worry about anything about our maintenance." (Field Survey, 2015)*

(ii) Impact of port on non-displaced households

Even though, this class of people has not been displaced, but they have been the victim of the location of the port directly or indirectly. Even if we have not lost the land, we became deprived of our occupation of fishing and use of coastal belt land. Ponds, trees, cloths, houses are becoming black because of coal dust. The non-displaced households view that

"The displaced households are not at all worse off because they got R&R assistance for being displaced households, compensation for agriculture land, homestead land, and tree, pond and other assets. With the compensation amount, they left this place and went to other areas where they could purchase larger amount of land with the compensation amount. In this way their condition has improved far better than previous situation. We are the real sufferers of the location of the port because we did not get any compensation, rather lost the opportunities and facilities of common grazing lands and access to coastal belt area, cremation grounds for dead bodies, fuel for cooking, and common water bodies for catching fish for our self-consumption. Company has occupied everything. Where are the benefits? After the development activity, if we allow the livestock for grazing freely in the open fields, there is fear of accidents if the cattle stray into the rail line. On the top of it, this coal dust is damaging so much. Even though we are not deemed as displaced households, but we are worse-off than the displaced households".

(iii) Impact on the Encroached Households

Of all the project affected households, the households who used to stay in the government land had to face serious trauma in course of their displacement from their habitation. The people those who had entitlement over land, they vacated the land by getting the notification. But, the government encroached households did not vacate their land. Those who voluntarily vacated land the government offered them 4 decimile of land in the nearby village, namely Vishalipada. The government officials told the encroached households to vacate the land so that the construction work could progress, but they insisted on not leaving the land in exchange with the meagre compensation and protested against the officials. As a result, they had to suffer imprisonment. The police force was summoned and they were arrested including both men and women. Total 102 people were accused and around 50 people including children were arrested with the pretext of people's misbehaviour and physical assault to the officials. Those who are leading the protest they have been detained more number of days. This agitation produced no result because there was no spokesman to represent the demands and bargain on behalf of the displaced people. In their absence, bulldozers were used to demolish their houses. When people were released from the jail after 22 days, they found their houses demolished and their furniture and other household

belongings buried in the ground and they could not recover it. Unfortunately, during the same period while they were rendered homeless and therefore risked unprotected exposure to vagaries of nature that the displaced households had to steer through a storm accompanied with heavy downpour. They were not given polythene covers or any other form of alternative materials for temporary accommodation or for self-protection faced with such an upheaval condition where they could not stay-put and assert a claim to their homesteads, they were compelled to leave their land permanently. Those who were fortunate enough to have received some polythene covers to protect themselves, it proved too inadequate for any effective protection in the backdrop of a massive storm and a heavy downpour. In this way, the government land encroached displaced households have undergone severe difficulties and troublesome situation. This is the inhuman side of the development in the present scenario which cannot be presented as succinctly in terms of observable and refutable facts but can be provided only as experiences, narratives and descriptions.

Although both the government and private encroached households vacated land but their source of earning have been affected severely after port occupied the fishing ground. They have received ex-gratia amount of 1 lakh as compensation and nothing more. However, they went for strike demanding the compensation of 2.36 lakh on par with the displaced households, employment in the port and so on but their voice is not heard. Only they are given false promise to solve their problem. Out of 20 sample households 8 government encroached displaced household responded that although, we got ex-gratia 1 lakh, but the officials and middlemen took around ₹ 20, 000 saying that they have helped them to get this ₹ 1 lakh.

(iv) Impact on Land Loser

The condition of land losers has become worse off because the cultivation of those lands were their sole occupation for earning livelihood. The land losers are those who have lost all agriculture land or large portions of it (2/3rd of total land) without being displaced from their homestead land. They were being maintained by the agricultural land. But when government acquired those lands for port purpose their situation became precarious. The land looser households responded that

"If at all they were to be displaced households, they would have been the beneficiary of getting employment in the port, R&R assistance and other benefits. There is very less possibilities to get employment for the land loser because the displaced households, who are deserved to get employment as per the law, are finding difficult to get employment in the company, then what to speak of the land losers. The company is not bound to give employment to the land loser. Even, the displaced households are getting employment in the company with great difficulties; i.e. they have to go for strike, approaching the leaders and so on. We expected that if port would come then we will get job and maintain life peacefully. But, after port came, we are not getting job in the port and are forced to go outside to work, then what is the use of sacrificing land at the least cost. We gave the land with some expectation of employment, but we are not getting any opportunity to work. When we were having lands we used to work in our own agricultural land and now with the absence of these, we are hesitating to work in other's fields as labourers keeping the prestige and self respect in view. At one point of time we used to hire labourers to work in our own fields and now it is uncomfortable for us to be hired as labourers to work on other's fields" (Field Survey, 2015).

(v) Impact on Fishing Villages/Communities

This location of the port has significantly affected the fishermen of the region. As the residents of coastal area, the main occupation of the people in this area was fishing. The fishing communities staying in the surrounding areas and close to the port expressed that they have been restricted from accessing the sea, and fishing ground near-shore waters. Before port came, the coastal people used to utilise the coastal belt land for drying fish and docking their boat on the sea shore. After the port came, the company has constructed the cement wall both side of the port with such a height that nobody can enter into port occupied area. This area was being used for drying the fishes, for grazing the cows, collecting the firewood and docking the boats. When that area was open, women and children and other family members were easily accessing the sea and in this way helping to earn the livelihood. Generally, the women in the fishing communities are considered as earning member of the households. They earn money by catching fish in nearby shore, but when they are restricted from accessing the nearby shore, they are unable to catch fish hence remain unemployed. When

fishing ground was close to the residence of the fishermen, women used to earn at least ₹ 150 to ₹ 200 per day. Now, since they are docking their boat 3 km away women earning has stopped because it is becoming awkward for them to go to a long way for fishing and drying the fishes. The port authority has not taken any initiative for the employment of these women.

> *"The fishermen expressed that Daria amar maa, jiban and jibika (sea is our mother, life and source of livelihood). If our mother and our right on mother are snatched away from us, how can we survive"* (Field Survey, 2015)?

The land which fishermen of Ravindra Nagar were using was taken by the company. The company told the fishermen of Ravindra Nagar village to dock their boats and use that open land for drying fish at the place which was already used by the fishermen of the Amar Nagar. For this company constructed a wall to dock boats of both the villages. The wall was good enough to dock around 40-50 boats. But the number of boats put together of both villages would be more than two hundred. If only 50 boats can be docked then what about the other boats? Sometimes there is rivalry leading to conflicts among the fishermen of two villages in the matter of docking their boats. In such conflicts, the fishermen of Amar Nagar dominate since they have been using the area for docking, they claim their first right to use. The consequence is that the fishermen of Ravindra Nagar have to dock their boats somewhere in the shore away from the wall. However, the wall has been ruined in the due course. The present conditions of the wall have been shown in the picture in figure-4(A) in Appendix. However the fishermen of Amar Nagar are able to understand the problems of the fishermen of Ravindra Nagar village and they are accommodating them in that place.

This condition is forcing the fishermen to give up their traditional occupation which is bread and butter for their survival. Out of 140 sample households, 38 households have left the occupation of fishing for earning the livelihood. Not only have the earning of fishermen been affected by the location of port but also it gets hampered during the nesting period of the turtles. Every year, the turtles come during the month of November to January for nesting in the nearby area, Gahirmatha marine sanctuary. The government announces and prevents the fishermen not to go for fishing to some specified zone where turtles nest especially during this period. If the fishermen do not obey order and go for fishing to the prohibited areas, the officials deputed by the government will cease the boat and impose a fine for not obeying the laws. Usually, they do not go for the protected area for fishing. The fishermen community

responded that “sometimes we give around fifty thousand as bribe because they detain our trawler which is worth ₹ 9 lakh.” Since the fishermen are restricted from fishing during these three months, in turn, the government provides 25 kg of rice (called as marine rice) in which cost of 1 kg rice is ₹ 1. So during the nesting periods, the earning also decreases which affects their overall standard of living. As market price of 1 kg of rice is ₹ 16, total market value of 25 kg of rice is ₹ 400. In other word, the government supports worth of ₹ 400 to each households per month.

(vi) Impact on the labourers

People in this area are primarily dependent upon the sea and agricultural land. When the company acquired major portion of land from this area for the port and railway project in which people used to work as agricultural labourers it has impact on the people who used to be engaged as agricultural labourer. As we observed, Out of 140 households, 16 households are engaged in the cultivation. Out of these five households responded that paddy cultivation has decreased around two quintal per acre. With the given monsoon, use of fertilisers and pesticide, the paddy cultivation has decreased; therefore, the responded believe that is because of coal dust and insects coming from the usage of lights in the port. As a result, the output of this area from the agriculture has not only decreased but the people’s occupation as agricultural labourers also ceased. Now wage rate has increased from ₹ 100 in 2007 to ₹ 250 for a female agriculture labour and from ₹ 150 to ₹ 350 is per man for agricultural activities. If more amounts of lands are there for cultivation then there is need of more agricultural labourer and vice-versa. Therefore, the number of agricultural labourer also decreased in case of private encroachers. The government encroached households didn’t own any land but used to stay on government land, therefore, most of them work as agriculture labour both before and after displacement occurs.

4.9: Impact of Dhamra Port Project on Socio-Economic Issues

Apart from the impacts of location of the port on various classes of people ports are having several other direct and indirect social impacts as well which are analysed below.

(a) Scarcity of Common Property Resources - After port has taken over the common property resources such as burial ground, grazing land, playground, forest land and so on, there is scarcity of such resources. Before port came into place people were releasing their livestock such as cows and oxen to graze on community resources freely. Usually, the cows used to go to the area of sea shore for grazing. Total 20.31 acres of grazing land and 0.38

acres of burial land have been taken by the company. But after the construction of the port, these lands have been blocked by the DPCL; forest lands have become areas of restricted entry and grazing or other public use is now construed as trespassing. So now people used to keep less livestock in their own homestead land and feed them purchasing from the market and therefore to rear livestock in the absence of grazing land is costlier. They purchase around ₹ 400 fodders per month per two cows. Similarly with regard to the burial land, people used to bury the dead body in the river bank. After the location of the port, the company has occupied and blocked the shortcut route to sea and not yet provided the land for burying the dead bodies. As a result people are forced to bury the dead bodies in their homestead land or sway it into the sea through the distance route without any restriction. Sometimes, they are making strike for the burial land and once they threw a dead cow before the gate of the port.

(b) Rearing the Livestock - The people of Dosinga village used to rear the livestock including oxen, cows, goats, hens, cocks etc. Some household used to keep any one of the livestock and some households keep mixture of them. 70% of the sample households used to keep cows and oxen which they use for the cultivation of agriculture and each household used to rear 4 or 5 livestock. Now, 30 % of people are still rearing these livestock but less in number which they are using for agriculture purpose. They used to keep four or five livestock before the location of the port but now they are rearing one or two (Field Survey, 2015). But now the number of livestock has decreased significantly because of not having much grazing land, pasture ground for grazing of cows. After they lost their homestead land, whatever compensation they received was hardly enough to purchase $1/5^{th}$ of land. It is difficult to rear more livestock with that small piece of land. Since there is not much open or free space for the animals, they are tying them in the small piece of land. They are scaring that if they will release livestock, there are possibilities of the livestock going to train line or drown in the pond. As a result, the earning from rearing such livestock has decreased.

(c) Increasing dependence on the market - Prior to the construction of the port, people used to depend less on the market, especially to meet their food requirements as compared to the current situation. They had ponds and easy access to sea for consumption of fish but now, the shortcut route to access sea has been blocked. At present the households are not having pond. They used to grow vegetable in their homestead land. Now, that opportunity has been ceased because they have purchased a small piece of land for habitation purpose only where growing

vegetable or digging pond is not possible. In this way people's dependence on market has become greater than before. They also used to collect firewood for fuel purpose from the forest land through short route which has been occupied and blocked by the company now. Now, the households are using coal as fuel. They are collecting this coal from the train wagons. After the coal is unloaded, whatever coal remains in the wagon, the households collect it for fuel purpose.

4.10: Impact of Dhamra Port Project on Ecology

The Dhamra project site is just 5 km from the Bhitarkanika National Park, Bhitarkanika Sanctuary and less than 15 km from the Gahirmatha Marine Sanctuary. These three critical sites and their surrounding areas abound in coastal and marine biodiversity. The Dhamra port area was covered with mangrove forests. In 2007, Greenpeace undertook a biodiversity assessment of the Dhamra port site and its surrounding areas and found presence of several species in mainland. They are sea turtles, horseshoe crabs, white-bellied mangrove snake, salt-water crocodiles, amphibian species, monitor lizards, dolphins, shore birds etc. The Bhitarkanika forest, the second largest in India, is a Ramsar site with population of salt water crocodiles, more than 215 species of avifauna and 70 species of mangrove and its associates. The study also recorded over 2 000 turtle carcasses on and near the port site which indicates that the offshore waters are important turtle habitat. The port and its accompanying industrial and residential development, dredging, artificial lighting, the shipping traffic, pollution, accidental oil and chemical spills, altered shorelines etc. are some of the potential problems it poses for the turtles and the wider environment (Dutta, 2007).

The conservation NGOs raised the concern that development of the port will severely threaten the nesting and existence of turtles. Following the concerned raised in April 2005 Tata Steel agrees to assess turtle presence in the area of the port site but would not halt port construction, if studies showed impacts on sea turtles. Rather Tata steel and DPCL were interested to take required measures to mitigate impacts but would not abandon the project at later stage. So, they were interested to know whether sea turtles were present in the offshore water of the port development site or not which is a very narrow terms of reference of the study. They approached (and paid necessary funds upfront) to World Wildlife Fund (WWF), India to conduct a study to ascertain turtle presence in the port site but WWF returned the fund realizing about the narrow terms of reference of the study. Then Bombay Natural History Society (BNHS) agreed to assess turtle presence in the port area but also retracted

when their members and other NGOs petitioned to stop construction until studies were completed. They claimed that if construction were to continue, eventually the company would claim that there had been too much investment to stop and second, the requisite clearance were already obtained by Tata and they insisted to continue construction, even if studies were to find negative impacts on turtle (Shanker, 2008).

In December 2006, DPCL approached IUCN (International Union for Conservation of Nature). But at the time of its first involvement, decision to develop port was already taken and work was under-way. IUCN was assigned the role to provide requisite advice for turtle conservations. Although IUCN has acknowledged that EIA was substandard and improper review of the port's environmental impacts but it agreed to provide advice on mitigation measures rather than being determined on a comprehensive impact analysis. In a meeting with conservation groups, the company once again refused to halt construction work, taking recourse in IUCN'S mitigation measures. Therefore, IUCN was invited to give the mitigation measure but not to stop the construction work (Fernandes, 2008).

Several national, local environmental and conservation organizations have expressed their concerns on the Dhamra Port Project including Ashoka Trust for Research in Ecology and the Environment (ATREE), Kalpavriksh, Wildlife Protection Society of India, Conservation Action Trust, Wildlife Society of Odisha, Odisha Marine Resources Conservation Consortium and the Bombay Natural History Society, National Fish workers' Forum, Odisha Traditional Fish Workers' Union (OTFWU). Different organisation, institutions, NGOs oppose to the impact of the port on different dimensions of ecology of which Greenpeace is the most outspoken critique. These oppositions from various groups emerge due to the grave concern about the impact of this port on the Olive Ridley Sea turtles. The Dhamra port has come into effect ignoring the serious ecological impacts of its construction and operation by the way of manipulating, adjusting the existing rules to suit to promoter of the port development and to safeguard their interest with connivance of the state.

4.11: Conclusion

From this chapter it is clear that the location of Dhamra port has been possible by taking advantages of loopholes in existing the rules and regulation of the country in which a slew of concession has been given to the non-major ports even though its function and impacts are sometimes major. The government has supported the project proponent to develop this port

without heeding to the proper implementation of the environmental regulation. It seems that this behaviour of the government is because of obsession of achieving higher growth by using the coastal area of the state. As a result, the development of the port has undermined the ecology and diversified the occupation of the local people. This project has become detrimental to the project affected people especially displaced households and fishermen who have lost their agricultural and homestead land at very low and meagre compensation. The compensation amount was quite insufficient to purchase same quantity of land with increase in price of the land in the surrounding area. The establishment of the port has affected adversely all classes of people regardless of whether somebody is beneficiary of its development or not.

The establishment of port has deprived the fishermen to give up their traditional occupation of fishing and 44 sample households are engaged in the activities of the port under the contractors. Apart from the livelihood of the people, the port has caused the decrease in the production of paddy of the land close to the port area because of insects coming from the light used by the port. The location of the port has made the local people bereft of grazing land burial land. How far has the Dhamra port been successful in delivering the objectives of sustainable infrastructure in terms of providing employment opportunities, quality of employment, contributing the growth of the local economy etc. during the operation phase of the port are some of the issues which has been the focus of analysis in the next chapter.

CHAPTER-5

AN ANALYSIS OF THE IMPACT OF THE DHAMRA PORT PROJECT: THE OPERATIONAL PHASE

5.1: Introduction

As the Dhamra port project is being constructed in two phases, in the first phase only two berths have been constructed and in second phase remaining 11 berths have to be constructed and the construction work is in progress. This study is dealing with only first phase construction as well as operation and second phase construction. The first phase construction was completed in the year 2011. In the chapter - 4, Dhamra port location and its impact on the acquisition of the land and its resultant resettlement and rehabilitation and compensation to the displaced households have been analysed. It also discussed how has the Dhamra port taken advantage of the loopholes and regulations to come into being. This chapter is mainly dealing with the operational part of the project which commenced since 6th May, 2011 and its impacts on different sectors and local economy.

This Dhamra port is being developed by the new governance model on BOOST basis with the concession period of 34 years including a period of 4 years for construction and 30 years of operation. Since the construction of the port and the operation of the port are two different aspects and the construction phase has been analysed in the chapter-4 and this chapter discusses the operational aspect of the port. How far did the new governance model as implemented in the Dhamra port project achieve the objectives with respect to port related employment opportunities, quality of employment and labour relations, and spill over effects on the local economy in the operational phase as enunciated by the sustainable infrastructure model? This is the question which has been explored in this chapter. Before answering the above questions, it first discusses the operation of the Dhamra port in handling cargoes and the competitive and locational advantage Dhamra port has over the other ports.

5.2: Role of Dhamra Port in Transportation of Minerals in Odisha

In order to augment port handling capacity, numbers of new ports have been proposed among which Dhamra and Gopalpur ports in the south have started operation on PPP mode. Apart from these two ports the state government has promoted a number of ports and fishing harbours at suitable locations for giving a thrust to economic activities in those regions. Special efforts are also being initiated to develop various industries and other commercial activities in the hinterland of ports for enhancing viability of ports and intensifying economic activities in the region of port development (Government of Odisha, 2015).

From mining areas of Barajamda, Mayurbhanj, Barbil, Keonjhar and Banspani etc., the iron ore is transported by railways to steel plants and to the major ports of Haldia and Paradip. Dhamra port is located between the above two major ports. Two major ports that have been handling the iron ore exports in the region are Haldia and Paradip. Since these two major ports have limited capacity and limited drafts, they cannot handle big sized vessels. The draft of Haldia port is very low as 6.5 meter so that vessel more than 20,000 MT cannot be loaded. At present Haldia can handle a ship of about 90,000 DWT (dead weight tonnage) and Paradip port can load a vessel of about 70,000 DWT. The draft needs to be increased for berthing bigger vessels. In view of the increase in demand for iron ore loading in these ports, the Planning Commission (2011) viewed that "immediate action is required for the completion of Paradip Port through PPP and deepening of Haldia Port and turning basin and construction of iron ore berth to receive bigger ships." Since the mineral heartlands of the country (Odisha, Jharkhand, Chhattisgarh and West Bengal) are in close proximity to Dhamra port, it has a significant locational advantage over the ports such as Paradip and Haldia on the eastern coast. It is capable of handling super capesize vessels up to 1, 80, 000 DWT. Dhamra port can call on super capesize carriers and cargo can be shipped to Kolkata and Haldia by smaller vessels and barges from this port. Therefore, the location of new Dhamra port project will augur well handling the big vessels. Presently it has the capacity of 25 Million Tonnes Per Annum (MTPA) and it will increase to approximately 100 MTPA after completion of second phase construction. The Planning Commission, Government of India constituted the Working Group on Mineral Exploration and Development for the formulation of 12th Five Year Plan which recommended that this project should be implemented expeditiously to handle additional iron ore from the region in order to reduce freight costs from India to iron ore importing countries and for this support should be given by way of separate allotment of rakes for Dhamra port from Eastern India. The Dhamra port plays a significant role in the import and export of the minerals. About 30% of India's iron ore resources are located in the states of Odisha and Jharkhand. Out of the total all India production of 136.02 million tonnes of iron ore the production of these two states was about 82.32 million tonnes during 2012-13. Since, this Odisha and Jharkhand belt supplies iron ore to several domestic steel industries, Dhamra port has significant importance in this region for conveying the iron ore and other minerals for domestic trading and exports.

In order to understand the role of Dhamra port in the mining industry and transportation of minerals, it is pertinent to examine handling of cargoes done by the Dhamra

port. The first phase of Dhamra port started its operation in May 2011. The port has been engaged in the export and import of various types of cargo with its two berths built in the first phase. One berth is meant for handling imports of coking coal, steam/thermal coal, limestone and another berth is for the export of iron ore. The imported commodities by using the first berth of Dhamra port is given in the table-5.1.

Table -5.1: Commodity-Wise Import in Dhamra Port (In 000' tonnes)

Year	Coking Coal	Limestone	Steam Coal	Pallets	Iron ore Fines	Total
2012-13	3513.37	522.50	4685.57			8721.44
2013-14	5029.25	668.46	4534.46			10232.17
2014-15	7598.68	918.11	5509.05		25.52	14051.35
2015-16	4644.98	644.54	2407.87	103.22		7782.72

Source: Dhamra Port Company Limited, 2015

The table-5.1 shows that the imported commodities are increasing over the years. The share of the coking coal and steaming coal are larger than the handling of other commodities. The origins of countries from which these commodities are being imported are given in table-5(A) in Appendix which depicts that Australia particularly among all the other countries is the largest shipping partner for the Dhamra port.

The ports serve a range of industries in surrounding states. The top imported commodities based on volume were coal (coking coal, non-coking coal, steam coal), and limestone and exported commodities were iron ore slag. Apart from the overseas cargoes, the Dhamra port is also carrying out the coastal movement of cargoes. The state-wise movement of cargo from the Dhamra ports to different ports in the respective states are presented below in the table-5.2.

Table – 5.2: State-Wise Movement of Cargo from the Dhamra Port (in tonnes)

Years		AP	Gujarat	Maha-rashtra	Tamil Nadu	West Bengal	**Total**
2011-12	Coking coal					47500	
2012-13	Iron ore		51765	940616	369922		1362303
	Non-coking coal		694707				694707
2013-14	Iron Ore	33000	1093372	752327	689646		2568345
	Pellets			77612			77612
	Non Coking Coal		587377				587377
2014-15	Iron Ore		54291	178589	740527		973407
	Pellets		26689				26689
	Coking Coal					218028	218028
	Non Coking Coal		79760				79760
	Grand total	33000	2587961	1949144	1800095	265528	6588228

Source: Dhamra Port Company Limited, 2015

The ports facilitate trade among surrounding states like AP, Gujarat, Maharashtra, Tamil Nadu, West Bengal as well as international partners. The table-5.2 indicates Dhamra port handle four commodities viz. cooking coal, iron ore, non-cooking coal and pellets for the coastal movement to different states that in the year 2011-12, Dhamra port transported 47500 tonnes of coking coal to the Haldia port in west Bengal. The Dhamra port is having different customers belonging to different geographies, who make use of this port, and these are not only from Odisha but also from other states. It is because Dhamra port is having capacity of handling big size vessels such as capesize vessel and super capesize vessel and panamax vessel. The customers who use the Dhamra port to import or export different quantum of commodities between year 2014-15 and 2015-16 is given in table – 5(B) in Appendix.

5.3: Impacts of Restrictions on Iron Ore on Dhamra Port

As about 95 per cent by volume and 70 per cent by value of the country's international trade is carried on through maritime transport, the ports in India play a vital role in the overall trade volume (Ministry of Shipping, 2014). A small change in volume or cargo profile can have significant bearing on port infrastructure and revenues because when cargo changes, type of ships to handle the nature of cargo also change and as a result the country's requirement will change to accommodate above changes. Ports have to change continuously to match the cargo requirements of the country. These changes have to be kept in mind while building or upgrading a port or else accommodating these changes can be a challenge which can deter the growth of the ports or the nation. For instance, if the port is ready with iron ore berths and there is no iron ore in the country or export of iron ore is banned then it becomes challenging for the port having berth dedicated to iron ore. For instance, Sical Logistics commodity trader MMTC Ltd won a public tender in 2006 to construct an iron ore terminal in Ennore Port. Although it was inaugurated in January 2011 but the commercial operations could not take place as the Supreme Court banned iron ore mining in Karnataka in July 2011. The terminal was completely dependent on the iron ore originating from the Bellary-Hospet belt for its operations. The terminal had to wait for a year to get an approval from the board of Ennore Port to approve its request to handle coal instead of iron ore. "The 500-crores assets now have turned into a high-risk investment for the lenders. What makes the situation grim is that neither the judiciary nor the government is in a position to alleviate the problems related to the country's vast natural resources and its use."[1]

[1] http://maritimegateway.com/mgw/index.php/resource-centre/718-changing-cargo-profile-a-nebulous-story accessed on 25th May, 2016.

In October, 2011-12, the Supreme Court banned all mining operations and transportation of iron ore in Goa. This had an impact on iron ore exports from India during 2011-12. This in turn decelerated iron ore exports to 45 million tonnes in 2011-12 from 61.8 million tonnes in 2010-11. The ban on iron exports imposed by Karnataka since July 2010 has already contributed significantly to the drop in exports of iron ore from India. Ports with large iron ore handling capacity have been severely impacted due to the slump in iron ore exports. Global iron ore prices were down by over 20 per cent in 2012, due to slowdown in Chinese steel production, which in turn impacted the exports of the country. Ports in Karnataka and Andhra Pradesh were the worst-affected by the sharp fall in iron ore traffic, followed by Odisha and West Bengal.[2]

The situation looks even bleaker in case of Odisha where all modes of illegal mining were identified. Many powerful people such as bureaucrats, politicians, businessmen from inside and outside the state were also involved in taking undue advantage of country's non-renewable natural resources for export earnings without any regard for law. The Odisha illegal mining scam was estimated to be worth ₹ 59, 203 crores out of which the illegal mining of iron and manganese ore amounting to 22.80 crores tones and it had been extracted from the state over a decade. The Commission estimated that iron ore worth over ₹ 45,453 crores and manganese worth over ₹ 3,089 crores have been extracted by miners "illegally and without lawful authority" by violating conditions of environment clearance alone (Shah Commission Report, 2013).

The Odisha government imposed ₹ 67,900 crores penalties on 103 mines for excess production of iron ore. The state was also looking at putting a cap on production of iron ore at 52-55 million tonnes (mt) a year, a significant reduction from the peak production of 76 mt in 2010-11. There was also reservation of areas for prospecting and mining through the state-owned Odisha Mining Corporation. This kind of a move will hit many sponge iron companies in eastern India and may force them to depend on import which is costlier and as a result the Ports which were involved in exporting iron ore will be engaged in importing the same commodity. Besides, steel sector producers including companies like Tata Steel and Vedanta, will come under pressure. When mining ban was imposed in Karnataka, both exports and steel production declined as there was decrease in demand due to high input cost. As a result, the sector was reeling under the pressure of low prices caused by higher imports

[2] http://maritimegateway.com/mgw/index.php/resource-centre/718-changing-cargo-profile-a-nebulous-story downloaded on 12/06/2016.

while Indian companies were forced to depend on high cost yet inferior quality iron ore. So, if mining ban continues for long in Odisha, it is stated that the steel sector will definitely be under pressure to cut output, affecting the balance of import and exports of steel and raw materials (ibid).

Curbs on iron ore exports by the Odisha government and imposition of 30 per cent export duty by the Centre have hit cargo volumes at Dhamra port which has one dedicated berth for exporting iron ore. Along with this, the state government had imposed a special condition for standalone miners to sell at least 50 per cent of their extracted ore to local industries had impacted adversely on port operations. Restriction on iron ore exports by the state government has been a dampener for the Dhamra port. As a result, one of the two berths, dedicated for iron ore shipments with handling capacity of 13 MTPA, saw 0.46 MT traffic from the operation of non-major Gopalpur port in 2011-12 (Dash, 2013). The export traffic from berth of Dhamra port since its commencement of operation is given below in a table 5.3.

Table -5.3: Commodity-Wise Export in Dhamra Port (in tonnes)

Year	Slag	Iron Ore	Iron Ore Fines	Grand Total
2012-13			297086	297086
2013-14			844702	844702
2014-15			102900	102900
2015-16	288005	79340		367345

Source: Dhamra Port Company Limited, 2015-16

Table- 5.3 shows that from the year 2012-13, port was exporting only one commodity namely, iron ore fines. However, the port has been engaged in exporting another two commodities, namely slag and iron ore, in the year 2015-16. The export traffic from this berth has gone up marginally from 297086 tonnes in 2012-13 to 102900 tonnes in 2014-15 (iron ore fines and thermal coal). The Dhamra port is exporting the iron ore fines to china and Singapore and slag to Bangladesh. The state government sought to restrain the iron ore to conserve the raw material for its local steel making industry. When Dhamra port realised that iron ore traffic is not going to be its growth driver given the current clampdowns on exports, it planned to expand to add berths in the second phase expansion which can handle diversified cargo like container cargo, liquid cargo, LNG (liquefied natural gas) and crude oil (Dash, 2013).

5.4: Dhamra Port Project Based Infrastructure Development in Odisha

India is having a long coastline of 7517 km over the nine coastal states. The coastline is nature's free gift and of all the states, the Gujarat state has been able to utilise and promote port based economic development in India. Gujarat accounted 71.3% of the total traffic handled by the non-major ports of India and all ports (both major and non-major) located along coastline of Gujarat handled more than 40% of the total cargo handled by Indian ports in 2014-15 (Mininstry of Shipping, 2015). The development of a port can spur the demand for several export/import oriented industries such as power projects based on imported coal, Greenfield refineries, steel projects and so on. This has been experienced in the Mundra port region of Gujarat wherein several seamless pipes and edible oil manufacturers have set up units. The same could happen at the Dhamra port. However, faster implementation of connectivity projects would be required to realise the potential of development of these port oriented industries. The success of a port is highly dependent on the strength and the connectivity infrastructures such as roads, railroads, waterways and pipelines for transporting cargo. Although the Dhamra port has commenced its operation since 2011, there is no proper hinterland connection to it. The roadways transport is extremely poor and there cannot be transportation of cargo through the roadway. The port is only connected with two way railway line. So in order to strengthen port sector in Odisha the government has been taking up a series of positives steps for promoting port linkage infrastructure.

(i) Roadway Infrastructure

This scheme coastal road development project is meant for connecting major ports, minor ports and logistics parks under which the central government provides 90 per cent of the fund for the project and the rest is borne by the state government. In the case of Dhamra port the central government would take steps to expedite the process of sanctioning funds for Jamujhadi-Dhamra road widening project taken up at an investment of around ₹ 160 crores. Once this road project is upgraded to a state highway, then the road can be developed into National Highway as per the rules and the upgraded road can be used to transport cleaner cargo such as finished steel and containerised merchandise. In September, 2014, the Dhamra Port Company requested the state government to make a proposal to the Centre for upgrading the road as a national highway. The port is located around 120 Kms away from coal bearing areas and iron ore rich Daitari region. Besides, several power plants and steel plants in Kalinganagar area are situated at less than 80 km from the port. Dhamra port had proposed to develop the road in public-private-partnership (PPP) mode into a two lane state highway,

which links the port with NH-5 at Jamujhadi. The second phase proposed expansion will facilitate construction of a four-lane road from Bhadrak to Dhamra port (Mohapatra, 2014).

(ii) Railway Infrastructure

In railway infrastructure, for Dhamra port, DPCL have constructed a 62.5 km railway link connecting Dhamra with Bhadrak and currently using that 62.5 km private rail line for the transportation of coal cargo. The second phase proposed expansion will facilitate doubling of rail link along the 62.5 km rail corridor from Bhadrak to Dhamra port. As of now Paradip major port and two minor ports namely, Dhamra port and Gopalpur port, are in operation. As the rail based connectivity projects are crucial for the transportation of bulk cargoes, the state government should give equal importance to Dhamra and Gopalpur ports vis-a-vis Paradip port. As the minor port have emerged on PPP mode on BOOST basis, after completion of the concession period the infrastructure projects will be reverted back to the government in terms of ownership rights. Therefore, state has to pay utmost attention to the construction of the infrastructure linking the minor ports.

(iii) National Waterway Development

As ports in Odisha are mainly handling bulk cargo of which coal and iron ore are the main commodities, the proposed waterway will make transportation of such cargo more efficient. Both Paradip Port Trust (PPT) and Dhamra Port Company Ltd (DPCL) have signed a pact with IWAI for developing the NW-5 which would connect the Dhamra and Paradip port with the steel and coal hinterlands at Kalinganagar and Talcher respectively with the estimated cost of ₹ 2,000 crores. In the first phase, 201 km stretch of the waterway would be developed, connecting Jokadia (Kalinganagar) with Dhamra and Paradip ports and in the second phase, another 131 km stretch will be developed, connecting the distance from Talcher to Jokadia. The ports expect the proposed waterway, which will connect the port with NTPC power stations through a web of river and canals, will add to the coal traffic. Coal from Talcher to Dhamra and Paradip ports is the most important cargo for this waterway.

For handling of liquid cargoes such as Petroleum and Natural Gas the government has to take steps to develop the connectivity infrastructure of pipelines and supporting infrastructure for Petroleum and Natural Gas.

5.5: Proposed Commercial Development Surrounding the Dhamra Port Project

Ports provide an economic multiplier for a region. Ports are not only gateways for cargo but also obvious potential sites for upcoming industry, banks, steel plants, other commercial

activities, shipping agents storage depots and distribution centres. They also turn to become large employers of people both from the local and non-local regions. With the development of a mega infrastructure project like the Dhamra port, many sectors and industries, local economy and local people are expected to get the benefit. Based on this port, many employment opportunities are likely to be generated not only inside the port but also in the port based industries which are likely to be situated in the vicinity of the area surrounding the port. Although Dhamra port started its operation since 2011, till now there is no single industry has come up in the surrounding area of the Dhamra port. However, many power plants and ancillary industries have been proposed in the surrounding area. They are as follows.

(i) Special Investment Region

A special investment region is coming up near Dhamra port which will to facilitate port-based industries in the state. The Industrial Infrastructure Development Corporation (IDCO) is planning to set up a special investment region near Dhamra port and for this it will create necessary infrastructure to promote these industries. The process had been initiated to set up the region and around 43 villages will fall in the ambit of the proposed region. The area has been declared lease-barred which indicates that no land will be given to any private or any government agency for any purpose on a lease without the necessary permission from the highest level of the government (Mohanty, 2013).

The state government has roped in IL&FS to formulate a policy on the project. Eight companies have shown the interest to set up industries at Dhamra. L&T has proposed to set up a 1680 MW Power Project in the region pegged at ₹ 10,200 crores. Similarly, the Oceanic Shipyard Limited will invest another ₹ 2200 crores near Dhamra to establish a ship building yard. WELSPUN Odisha Steel will also invest ₹ 1963 crores to set up a pelletisation unit at Dhamra. The Konark Kranti Energy Limited has also proposed to set up a petroleum storage tank near Dhamra port site at an estimated cost of ₹ 110 crores while Rashmi Metaliks will invest ₹ 3465 crores to establish a Petrolisation Plant and a Steel plant in Dhamra. Similarly, Altred Iron and Power Limited has proposed to set up a pellet plant pegged at ₹ 630.59 crores while Galvin Marine Private Limited has proposed to set up a Ship Repairing Yard pegged at ₹ 3100 crores. The state government has already given its nod to Oceanic Shipyard,

WELSPUN Limited and Konark Kranti Energy to set up their units in the Special Investment Region.[3]

(ii) Industrial Town and container Depot

Various steps have been taken to set up an industrial town at Ormal and Sompatia village near the port. There is also a plan to set up a container depot at Charampa across 59 acres near Bhadrak, around 50 km from Dhamra. The area has already been connected with the railway network from the port.

(iii) Port Based Manufacturing Zone

The Odisha government has decided to set up a industrial hub at the Dhamra port in Bhadrak district, therefore, the government has asked port authorities and Industrial Infrastructure Development Corporation (IDCO) to prepare a Master Plan for comprehensive development of industrial hub including an industrial park and fishing harbour. A committee has been set up under the chairmanship of Commerce and Transport Secretary for preparation of the master plan.

The industrial park will be developed over an area contiguous to the port and add to enhancing cargo profile. The proposed Industrial park has the potential to be developed into a thriving industrial hub in the sectors like food processing, steel, edible oil, fisheries and other manufacturing units. The port can also be developed to a transshipment hub for mainland container vessel. Pilot project has been approved by the Department of Economic Affairs, Government of India as port based manufacturing zone under PPP (public private partnership) for Regional Integrated Development of Enterprises. It is envisioned as an economic hub for port based manufacturing enterprises in the Asia Pacific region. The cost of developing infrastructure for the proposed zone is pegged at ₹ 3,100 crores. Of which, the central government will contribute ₹ 1,844 crores and rest amount will be borne by the state government. The zone is planned on 7,500 acres of land.

(iv) Mega Refinery Expansion Plan

Assam-based Numaligarh Refinery Ltd (NRL), a subsidiary of Bharat Petroleum Corporation Ltd (BPCL) has signed a MoU with DPCL in 2013 for import of crude oil and LPG. The MoU was signed for carrying out techno-commercial feasibility study for putting up 6 MMTPA (million metric tonnes per annum) bulk crude oil import facilities by NRL as well

[3] Odisha to set up a Special Investment Region near Dhamra, Friday, June 20, 2014. Down loaded on 6th June, 2016. Website: ttp://Odishadiary.com/ShowBussinessNews.asp?id=50991

as 1 MMTPA bulk LPG import facilities by BPCL at Dhamra Port in Odisha. As per the MoU, DPCL will build the required jetty facilities along with associated infrastructure for unloading of bulk crude oil and bulk LPG carrying ships at Dhamra port at their own cost, whereas NRL will construct the bulk crude oil storage facilities as well as crude evacuation facilities through pipeline at Dhamra port (Dey, 2013).

(v) JGreen Power Private Ltd: An eco-friendly project

The Odisha government has approved seven big investment proposals worth of ₹ 41, 900 crores in order to accelerate the process of industrialisation. Of these seven investment proposals, Tokyo-based JGreen Corporation Limited, will set up the JGreen Power Private Ltd, an eco-friendly project, for a 423 MW LNG based power plant project with an investment of ₹ 3109 crores at Dhamra in Bhadrak district (Bisoyi, 2015).

(vi) Setting up of LNG Terminal

Indian Oil Corporation Ltd (IOCL) has already entered into a MoU with Dhamra Port Company Ltd (DPCL) for setting up LNG terminal inside the Dhamra port area at an investment of ₹ 10,000 crores in order to meet the demand of natural gas in Odisha and West Bengal. The refineries at Paradip (in Odisha) and Haldia (in West Bengal) alone need 2.5 million tonnes of LNG. "The terminal will have a total capacity of 15 million tonnes per annum of which 5 million tonnes will be commissioned in the first phase. Out of this first phase capacity, 60% gas will be consumed by IOC's Paradip refinery and proposed petrochemicals complex while the rest can be supplied within the state. For this, Indian Oil Corporation (IOC) has asked for 125 acres of land to Dhamra Port Company Ltd (DPCL) by Odisha government as an early allotment" (Satapathy, 2012).

Apart from the vicinity of Dhamra port, other industries are also coming in the proximity of Paradip major port and Gopalpur minor port. When mega infrastructure projects like ports come to existence, many power plants and port based industries are expected to crop up in the hinterland of port. This has been demonstrated in the port of Mundra, Krishnapatanam port and in the case of many others which will require coal based industries. The coal is sourced from the countries such as Australia, Indonesia and Mozambique. Besides the power plants, the port based industries such as lubricant plants, IFFCO Kisan SEZ, sugar refineries, leather Park, steel manufacturing plants, and cement manufacturing plants are in pipeline to be set up around the Krishnapatnam port.

5.6: Total Employment Generation in the Dhamra Port Project

As any development project helps in the development of the surrounding area and generation of employment. This Dhamra Port is not an exception. One of the advantages of location of the port is that it has created an avenue for providing employment opportunities for the people in port and its other ancillary activities. However, the company is not directly involved in recruiting people. Since construction of port is still going on, people are getting employment opportunities through different contractors. Dhamra port has been able to employ total 3231 number of employees which can be categorised as operation and management manpower (1733 employees) and project manpower (1498 employees). The employment in accordance with their skills sets and geographical location are explained below.

(A) Operation and Management Manpower in Dhamra Port

The operation and management manpower are those employees who have been engaged in the operation and management of the first phase of the project. The port is located in the Bhadrak district of Odisha. The employed people have been categorised with respect to their skill. Total skill-wise number of employment created by the Dhamra port for the first phase of operation is presented below in table-5.4.

Table-5.4: Skill-wise Employment in the Dhamra port for operation and Management

Skilled wise	Bhadrak	Outside Bhadrak	Total Odisha	Outside Odisha	Grand Total	Share of skill wise employment to total employment
Unskilled/semiskilled	710	229	939 (93.06)	70	1009	58.22 %
Skilled	190	201	391 (90.30)	42	433	24.99 %
Supervisory/managerial	57	109	166 (78.67)	45	211	12.18 %
Senior executive	32	36	68 (85)	12	80	4.62 %
Grand total	989	575	1564 (90.25)	169	1733	100.00 %

Source: Dhamra Port Company Limited, 2015

Above table depicts that port has employed total 1733 number of people, of which more than 90% are from within Odisha in case of unskilled/semi-skilled and skilled manpower. Again within Odisha more than 93% of people are engaged in the unskilled or semi-skilled category of work. It indicates that port does not require much skill personnel in the different port activities at least in the present situation. The unskilled/semiskilled workers constitute the most part of the total employment engaged in Dhamra port. Also, the supervisory/managerial and senior executive constitutes 78.67 per cent and 85 per cent in total employment. This

indicates that port has higher share of employment from Odisha. Again within Odisha, people from the Bhadrak district are 989 (63%) and out of the district are 575 (37%). Of these 989 employed persons in Bhadrak district 710 people (75.61 %) are belonging to unskilled/ semiskilled category and 190 people (48%) are belonging to skilled category. Comparing the employment status of Bhadrak and outside of the Bhadrak district, it appears that employments in the outside of the Bhadrak district are more in terms of skilled, supervisory/managerial workers and senior executives. Therefore, this indicates most of the workers employed in Bhadrak district belong to unskilled/semi-skilled category. Prior to the land acquisition for the port the company gave word orally to provide the training to the people and then employ them in the port (response from Field Survey). The Odisha R&R policy, 2006 also states that "the Project authority will make special efforts to facilitate skill up-gradation of the nominated member of the displaced family to make him/her employable in their project". But, so far no training program has been conducted by the port authority. As Adani group purchased the Dhamra port at the value of ₹ 5500 crores from Tata Steel and L&T and it has created total 1733 number of employment. Therefore, it is estimated that the port has created one employment at the cost of more than ₹ 3 crore (i.e. ₹ 31736872).

As the port is located in the Bhadrak district, it has affected households by acquiring homestead land, agricultural land and so on. The classification of total employment of 989 people in the Bhadrak district is presented below in a table 5.5.

Table-5.5: Employment of Project Affected People at Dhamra Port

Geographical Area	Displaced	Land loser	Others	Grand Total
Bhadrak	74	94	821	989

Source: Dhamra Port Company Limited, 2015

The table-5.5 indicates that out of total employment of 989 people, 74 people belongs to displaced households and 94 belongs to land loser households who have got the employment opportunities in the port. Company promised that each individual who gets the R&R assistance would be provided employment in the port and those who have displaced got the R&R assistance. As per policy R&R 2006, the government and private encroachers who do not have legal record (called *patta*) over land, they are not entitled to get employment opportunities in the port. Therefore, out of 389 displaced households, 80 households (39 private encroached households and 31 government households) are deprived of employment. Out of rest 319 displaced households (who have legal entitlement over land) only 74 people

have got employment in the port and still remaining are waiting to be employed. Similarly there are 3741 affected families by losing land, however, there is no availability of data of how many numbers of affected families are deserved to get employment in the port but 94 families have received the employment opportunities in the port. This clearly indicates that the company is not paying sufficient attention to employ the displaced and land loser people but busy in employing other people. If the company is really eager for the welfare of the project affected people then it would have taken the approach of employing the project affected people first then the employing the rest people from within district and outside district. On the other hand the local people are very naïve and innocent that they are having conviction that if not today, someday in the future, the company will provide them employment. In this way the almost five years have been passed after the port commenced its operation.

These people have been given employment in the port on temporary basis and they have to work under the supervision of the contractors who have taken tender of executing particular operation and management activity of the port. This employment to the displaced households and land loser under different contractors are mentioned in the table-5(C) in Appendix which shows that there is no single person who has been employed either in the direct on roll or off roll category of the company.

(B) Skill-wise Employment of Project Manpower

The project manpower is the employees who have been engaged in the construction of the second phase of the project and for these different contractors have been engaged in different construction activities of the port. There are different categories of workforce working under the different contractors. The name of contractors and the nature of their activities they are engaged in are given in the table-5(D) in Appendix. There are four major contractors under whom most of the workers are working. They are Simplex, GDCL, Thyssenkrupp and L&T. The skill-wise employment of project manpower is presented below in Table-5.6.

Table-5.6: Skill-Wise Employment of People under Major Contractors

	Simplex	GDCL	Thyssenkrupp	L&T	Total
Skilled	341	80	55	26	502 (33.51%)
Semi-Skilled/ Unskilled	625	288	70	13	996 (66.49%)
Total	966	368	125	39	1498 (100%)

Source: Dhamra Port Company Limited, 2016

Out of 1498 numbers of employees 996 workers (66.49) are employed as the unskilled/semiskilled workers. The geographical location-wise skilled and semi-skilled/ unskilled manpower under different contractors are mentioned in the table 5.7.

Table-5.7: Details of Each Category of Employment

		Simplex	GDCL	Thyssenkrupp	L&T	Total
Break-up of unskilled/ semi-skilled manpower	Local	290	100	52	11	453 (45%)
	Bhadrak	56	11	9	2	78 (8%)
	Outside Bhadrak	107	35	0	0	142 (14%)
	Other state	172	142	9	0	323 (32%)
	Total	**625**	**288**	**70**	**13**	**996 (100%)**
Break-up of Skilled manpower	Local	91	42	80	128	341 (68%)
	Bhadrak	3	1	6	70	80 (16%)
	Outside Bhadrak	7	20	15	13	55 (11%)
	Other state	7	16	3	0	26 (5%)
	Total	**108**	**79**	**104**	**211**	**502 (100%)**

Source: Dhamra Port Company Limited, 2015

Above table-5.7 depicts that out of total employment of 996 unskilled/semiskilled people, 453 people (45%) of people belong to local people and rest 55% people belong to Bhadrak district as well as out of Bhadrak district. Similarly, out of 502 skilled employees, 341 belong to local people and remaining 32% belong to non-locals. This indicates that majority of local people have been engaged in the second phase construction of the port.

As company is now in the second phase of construction work of more 11 berths, the project manpower of 1498 is engaged in the construction work under different contractors. 20% land loser households responded that since these contractors are from different area of the state or outside of the state, they are hiring people from outsides. These contractors give payment once in a two month or three month. Since, the local employees are staying with their households, so they need money every month for the maintenance of the family. When they received salary once in two or three month it becomes difficult for them to manage their family. When the local people started complaining against this fact the contractors are considering that local people are doing disturbances, so they are hesitating in employing them. On the other hand, if the contractor is employing the non-locals and providing their salary once in two or three month, they cannot make raise voice and create any disturbance. Thus, they prefer employing non-locals than the local people. Apart from this fact some of local people are working half-heartedly and whimsically. Since these people are from local area, the contractors are not able to take any steps against them. Instead of tolerating this kind

of whimsical action of the locals, they are not interested to employ them. Even if they are employing local people after few days they are removing them. They are thinking that these local people will create disturbance and will not do their duty properly. The local people have been protesting against employment of non-locals (Field Survey, 2015). They claim that

> *We provided land to the company for the establishment of port, but if the outside people get employment and we do not get how far is this justified? We cooperated with the district administration and sacrificed our ancestral house as well as agricultural land for the establishment of the port without raising any protest because the government had assured proper rehabilitation, jobs and all round development of the area but, even after many years, the promises have been hardly fulfilled (Field Survey, 2015).*

Nature and Quality of employment

The project manpower of 1498 is engaged in the construction work under different contractors. Therefore, it is not considered as permanent. The employees are having 8 hours of working day. The workers who are having 8 hours of duty, it falls into three category of shifts such as shift A (6 am-2 pm), shift B (2 pm-10 pm) and shift C (10 pm- 6 am). These employees do not enjoy any bonus from the contractors or no provident fund amount is deducted from their salary. All these employees have been provided shoes, identity card, caps and one company dress to wear on top of their clothing. Without these the employees are not allowed in the check gate to enter into port premises for work. The workers working under these contractors stay in the surrounding area of the port within radius of 2-3 km of the port. They come to the work with their cycle or bikes. Those who are non-locals, they stay in the surrounding area with rented house. They enjoy four holidays in a month. If they do not work, they do not get payment. The workers reach in their duty in due time. Any delay in joining the work has to be informed a priori. If they reach late in the work place, then they have to extend their work to compensate duration of late time. They have the opportunities of doing the over duty with same amount of wage. If the relationship between workers and contractor is good and faithful, then the workers take advance amount of money from the contractors. The contractor maintains the attendance of the working days for the workers.

There is Dhamra Port Labour Union who helps the local people to get employment in the port. The labour union is representing from the Bharatitya Majdur Sangha (BMS). They

also settle the disputes between the workers and the contractors and any kind of misbehave of the contractors towards workers. Since the construction work is going on in full fledge manner, the aspirant workers join in the construction work with the consultation of contractors provided there is need for workers. Sometimes, the aspirant workers submit their application forms in the union office and the president and members of the union help the local people to get employment in the port by coordinating with the supervisor and managerial level people of the company.

(C) Quality of Employment of the Sample Household in the Company

Since, as per the R&R policy, 2006 the displaced people are eligible to get employment in the port and they have also given promised to provide. As mentioned above that out of these 319 households displaced household, who are promised to get employment in the port, 48 households have agreed to accept the onetime cash assistance instead of employment in the port project. Then the rest 271 households are supposed to get employment in the project, but the port authority has only employed 74 people (27 % of 271 displaced people) even after five years of operation of the port. Still, 197 households (73 %) people have not received employment opportunities. However, this study has taken into account 80 displaced households for analysis in which 30 people (40.5% of 74) have got employment opportunities in the port. The occupations of these 30 households before displacement have been presented in the table-4(D) in appendix. The nature of the employment and the correspondence salary of these 30 displaced households are mentioned in a table-5.8 below.

Table-5.8: Nature of Employment of the Displaced Households

Nature of Activity	No. of people	Salary (per day in ₹)
Railway	4	470
PSM	3	347
Gardening	3	187
Water spray	3	237
Spotter	4	293
DAV School	1	187
Coal Unloading	3	300
Ship Mooring	2	300
Construction	5	323
Vessel Cleaning	2	317
Total	30	

Source, Field Survey, 2015

The table 5.8 depicts that those who have been employed in the railway category, they are paid larger amount of salary. Generally, who are having the educational qualification of degree or the equivalent degree they have been recruited in this railway department. Others who are having educational qualification of 10^{th} pass and intermediate or equivalent degree, they have been employed in the PSM department and ship mooring department whose primary activities is to give direction to the ship come into the port and dock it. To acquire this skill they have given fifteen days training programme. Presently the agricultural wage is ₹ 250 for a female agriculture labour and ₹ 300 is for male agricultural labourer. The considering this wage rate, the daily salary of the employees belong to gardening, water supply, spotter, DAV school are less than the wage available outside. Similarly the company has also provided employment to land losers. Till now the company has recruited total 94 land loser people out of which the study has able to capture the 6 person in 20 sample households who got employment in the port. The occupations of these 6 households before displacement have been presented in the table-4(D) in appendix. The nature of employment of the six land losers are mentioned below in table-5.9.

Table-5.9: Nature of Employment of the Land Losers Households

Nature of Activity	No. of people	Salary (per day in ₹)
Housekeeping	3	220
Water plant	1	293
Construction	1	313
DAV Public School	1	186
Total	6	

Source, Field Survey, 2015

Above table-5.9 depicts that the land loser are provided very low scale job of housekeeping and muck cleaning, water plant maintenance and so on. Since they are not having educational qualification more than primary standard (class-v) they are provided job accordingly. On the other hand the person who has been recruited in peon post in the DAV public school, he has studied till class-VIII. Since these employees do not have high educational qualification, they are given the job of above category.

(i) Nature of Low level jobs

Above analysis depicts that the project affected families have been employment in the low level job of housekeeping, tea making, muck cleaning, gardening. People accept such job because they are not having higher educational qualification; nature of work in the company is very light whereas the nature of work outside is more laborious. Also there is insecurity

and uncertainty of getting work all the time outside. People are also working with the hope of increasing of salary in the near future and possibility of getting a permanent post. These factors are motivating them to work.

(ii) Nature of Contract

All the people who have been employed are working under the supervision of the contractor. They have not been assured to make their job permanent. All these employees have to be accountable to their supervisor for their respective activities.

(iii) Nature of the wage

Although, the salary of the employees have been fixed monthly, but if they become absent in any particular day, they have to bear the loss of pay for that day. Therefore, it is as good as daily payment.

(iv) Working Hours

The employees work around 8-9 hours in a day and they get around 0.5 -1 hour time for lunch break. There is no such punishment for the employee if they delay in the arrival time in the company. If they delay due to some unforeseen reason, they have to inform a priori to their respective in-charge so that they can do necessary adjustment. If they do not inform a priori, they have to give explanation for that. If they become absent without any information then their salary is deducted for the day.

(v) Emolument

The employees enjoy the fixed number of holidays ascertained by the company and these holidays are not on par with the public holidays. The employees get four holidays in a month and they have been provided identity card as an employee of the port. If they have minor health problem, they can avail the health care facilities without paying any fee. The company is deducting the provident fund amount of 12% of the salary of each employee and gives bonus of 8% of their salary every year during the local festival of Durga Puja. The employees were not having any ESI card.

(vi) Arbitrariness in the Institutional Mechanism

There is arbitrariness seen in the recruiting the project affected people in the port. There are seven displaced households who are the members of the RPDAC. The RPDAC members time to time employ some of the displaced and land loser people in the company in accordance with the requirement of the company. It is the members who decides who will be employed in the different phases of recruitment. It is their monopoly. If they favour to any particular

displaced household, they recommend recruiting him in the early phases without considering the degree of loss a person has undergone for the location of the project. In this way, there is partiality on the part of the members in recruiting the people who are friendly to them and solacing others that they will be recruited in the next phase. It has been found that there has been discrimination in the employment of the people. For instance, some displaced households are deprived of getting one member employment whereas some households are getting two member employments. This is because of lobby of the influential person by which second family member in the company is getting employed even though one member in that family has already got employment. This unfair practice is going on. These RPDAC members are expected to protect the interest of the displaced people but when they are showing the partiality in providing the employment, then to whom the displaced households approach in this regard? In this way, the arbitrariness is prevailing in the recruiting people and the land loser and displaced households are not getting employment in the port unless they are backed by some influential power.

(vii) Provision of Facilities to the Company Pay-Roll Employee

Apart from the displaced households and land losers households who have been employed under different contractors, there are 110 company on-roll pay employees who are directly recruited by the company. The working hours of these employees are 8-9 hours. Out of 110 company on roll pay employees 62 employees are staying in the township made by the company. Some of the employees stay in Basudevpur town (45 km distance from the Dhamra port) and some employees stay in the Bhadrak city (80 km from Dhamra Port). Daily two company vehicles are running from the Bhadrak to Dhamra in which employee staying in the both the cities commute. They also access the health facilities and holidays like that of the workers in the port. There is a community hall in the township for the company employees in which movie is screened in the weekend for the company employees. They get four holidays in a month and they have been provided identity card as an employee of the port. If they have minor diseases, they can avail the health care facilities without paying any fee. The company is deducting the provident fund amount of 12% of their salary of each employee and gives some bonus of 8% of their salary every year during the local festival of Durga Puja.

5.7: Spill-Over Impact of Dhamra Port in the Operational Phase

Dhamra port has a number impacts spring from the operational phase of port projects. They are delineated below.

(i) Impact of Dhamra Port Project on Real Estate

Seaports are a vital trade link in a growing international economy. They act as a gateway for 95% of total world trade. Depending on a port's efficiency and capacity, it drives the economic growth of the region it serves. Virtually in all countries, major cities evolved from the commerce in and around the major seaports. For example, New York, Boston, Chicago and Los Angeles of US all evolved into major economic bases through international commerce at their seaports. Similarly, cities like Calcutta, Madras, and Bombay of India are the major cities which evolved based on the trade through seaport. Land is the most crucial resource which is required not only for port development but also its peripheral development of the port area.

With the commencement of operation of Dhamra Port, the State government announced master plan area of Dhamra comprising 57 villages in Bhadrak District. Dhamra is emerging as a port town. This town will be bounded by Mantapada, Nachhipur, Kalibindha, Dhirsahi, Utarsahi, Banichua, Bijipur and Kumara from north, River Dhamra from South, Bay of Bengal from East and Mantei River from West side. All the 57 villages have been carved out from Chandbali Tahasil. The master plan area of Dharma would spread over six gram panchayats such as Bansada, Karanjmal, Kaithkhola, Dhamra, Jagula and Dosinga. Dhamra has attracted investments from other sector as a ship making company and a pellet manufacturer have already scouted for land to set up their respective projects near the place. Besides, proximity to tourist destination like Bhitarkanika is an added advantage for emergence of the urban centre.

The impact of Dhamra port on land price was quite impressive. Before port came into existence land price was very low. After port came into effect, land price started soaring up. Some of the real estate companies are also purchasing land to take advantage of the speculation of rising land price further. The people are selling land to the real estate companies in accordance with the government valuation. The government valuation of the land is revised once in every two year. All the companies are purchasing land from the master plan areas. Some of the real estate companies who have purchased lands in the surrounding area in accordance with the government valuation are given below in table-5.10.

Table-5.10: Purchase of land from Master Plan Area

Company's Name	Villages	Valuation (in ₹ per acre)	Amount of land (in acre)	Valuation (in ₹)
Arrrasan real estate Private Limited	Sankhajodi	380000	1.23	467400
Trishala Infracon Private Limited	Baliarpur	550000	1.25	687500
Marmik Real Estate Private Limited	Baliarpur	543600	1.58	858888
Nityam Infracon Private Limited	Paiksahi	1100000	0.165	181500
Welspun	Dosinga	880000	1.48	1302400
Shabari Real Estate Company Limited	Mahulia	400000	1.75	700000
Chelna Infracon Private Limited	Laxmiprasad	450000	5.35	2407500
Sulasa Infracon Private Limited	Sankhajodi	400000	4.98	1992000
Mahamrutyunjaya Infracon Pvt. Ltd.	Paiksahi	110000	0.46	50600
Sulochana Real Estate Private Limited	Chianipahi	550000	1.5	825000
Nitya Sunder Developers	Laxmiprasad	420000	1.09	457800
Amol Infracon Private Limited	Paiksahi	110000	0.56	61600
Viswabhuti Infracon Private Limited	Oramal	1200000	1.25	1500000
Rayasha Real Estate Private Limited	Paiksahi	1000000	1.86	1860000
Viswabhuti Infracon Private Limited	Sankhajodi	600000	0.73	438000
Sarvashreshtha Real Estate Private Ltd.	Sompatia	400000	0.86	344000
Yajvane developers Private Limited	Baincha	200000	2.2	440000
Viswarupa Real Estate Private Limited	Dhankuta	200000	3.67	734000
Trishala Infracon Private Limited	Amar nagar	1000000	2.1	2100000
Haridra Developers Private Limited	Hrudaya Prasad	500000	1.15	575000
Devadhideva Real Estate Private Ltd. d	Laxmi prasad	330000	1.16	382800

Source: Sub-Registrar Office, Chandbali, Bhadrak

Although the real estate companies have purchased the lands, however, the purpose of such purchasing is not yet ascertained clearly since construction work of the port for the second phase is in progress. Most of the real estate companies are from Gujarat and Maharashtra. About five years ago, Dharma area which was termed as a non-descript area, has seen its land prices climbing exponentially because of location of the port. Closer is the land to the port; higher is the value of land. For instance, villages namely Paiksahi, Oramal and Amar Nagar are relatively close to the location of the port and therefore, the government valuation of the land is more than 10 lakh per acre.

There has been creation of speculation in the real estate market surrounding the Dhamra Port area. When port was proposed, the land price was 1 lakh per acre of agricultural land with which the company purchased from the households. But, after port has come into existence, everybody is speculating that there is going to be so many industries, power plants and other commercial and development activities. This has caused the current market value has reached to 13 lakh per acre of land. Therefore, the land price has been inflated thirteen

times of price at which lands were acquired. This thirteen lakh is fixed by the bargaining power between real estate companies and individual households who have not transferred land formally. However, it is found from the field survey that actual price of land (thirteen lakh) is much higher than the real government valuation for per acre of land. The people sell their land to the real estate companies in accordance with the government valuation which is less compared to the land price fixed by the bargaining between real estate companies and individual households. Therefore, there are three valuation of the land: the price at which land was acquired for the construction of the port (1 lakh per acre of land), the price fixed by the government valuation (10 lakh per acre) and price bargained by the real estate companies and individual households (13 lakh per acre of land). However, till now no such substantial development has taken placed centring on the Dhamra port although operation of the port started since May 2011. One of the reasons is that the port is having only two berths to handle the cargoes and all these are cargoes are plied through the railway transport. The roadways transport is extremely poor. However, necessary measures have been undertaken to improve the infrastructure facilities. The future developmental activities will require a huge chunk of land. This has created speculation market and caused to appreciate the land price rapidly.

If the imputation of at least a part of the expected value enhancements in case of assets such as land from expected growth from infrastructure development could be institutionalised, it might help regulate excessive speculation by placing bench markers for moderate and realistic expectations avoiding misallocations and excessive risks for society. Since compensation is a liability, the speculative value enhancements to land prices could be moderated by the concerned private sector actors who otherwise do not bother to calibrate excessively speculated land prices. The real economy basis and time lag evaluations could be put in place through such mechanisms.

While the expected increase in land prices suggests positive expectations of growth in the area but it seems that those who have sacrificed their land they are not the beneficiaries nor do they have a share in this growth. This appreciation in the land price does offer any benefit the project affected household whatsoever especially those who have lost their land at very low cost of 1 lakh. Rather, those households who are having lands in the surrounding area, they are becoming more advantageous with the apperception of the land price.

(ii) Impact of Dhamra Port on Agriculture production

As mentioned earlier the environmental condition and the nature of soil of this area are conducive only for the cultivation paddy. The location of port has decelerated the production

of paddy. The lights used by the port at night are attracting different kinds of insects to this area and they are spreading into the agricultural lands surrounding the port area and affecting paddy cultivation. These insects are eating the crops and destroying the production of paddy. As a result, output of paddy has marginally decreased. In order to protect the paddy from the attack of insects, the farmers of the local area are using more quantity of pesticide and fertiliser which is leading to increase the cost of cultivation. Moreover, the availability of labourer is scarce because most of them are engaged in the second phase construction activities of the port. These factors are motivating the local people either giving up the cultivation or giving their lands to encroached families for cultivation for share cropping. 10% household from non-displaced families have sold their land near the port area with high price and purchased larger amount of land at less cost in other area where good cultivation is happening with that same amount (Field Survey, 2015).

(iii) Environmental Impact of Coal dust

The most important harmful negative impact is pollution from the coal dust. When the north wind blows, the air carries the coal dust from the place where the unloading of coal from ships takes place. The coal dust is spreading in the surrounding areas including ponds, trees, houses etc. This dust forms one thick layer in the pond water. As a result people are not able to use pond water. When the people are drying cloths outside of house or any open place, those cloths are becoming black because coal dust is sticking to the wet cloth and as a result it is damaging their cloth and they are not able to use the cloth for long time. They have to spend more money to wash and iron the cloth. The coal dust is also spreading to the leaves of trees and inside the house and so on. The households responded that “we are literally eating coal. In this matter even though people have given complain to the port company, they have promised to come up with some solution but nothing has done yet.

(iv) Impact on Fishermen

This commencing of operation by the Dhamra port has had significant adverse impact on fishery activity in the region. This study has taken the responses from the two fishing villages namely Ravindra Nagar and Amar Nagar which are close to the port and have been affected by the port project adversely. With the location of the port, the company acquired the land and the fishermen were restricted from accessing the sea and coast bed land which was being used for drying fish and docking the boats. As a result, fishermen moved a new place distance place to do fishing used that sea shore area. Now as port is expanding to construct berths, the company is also occupying land close to new land where the fishermen are doing fishing

presently. As result, doing fishing activity has become malady. Since the company has taken burial land from people and there is no alternative place; people are using that new place to bury dead bodies and this place has turned into the burial land. Therefore, the place where two villages are drying the fish, the company promised to make the floor of that area pucca (*chatana in the regional language*) but till now it has not been done. Therefore, they are facing problems.

Now, fishing is not possible in this area anymore because the company is doing dredging activities, fishes are not staying in that area. That area has been dug so much that it becomes impossible to catch fish because net is not touching the bottom part and therefore fishes are sneaking out through the opened bottom side of the nets. Those who have to do fishing they have to go to a distance place to catch fish which is time consuming and involves risk. As a result, the households are selling their boat and giving up the occupation of fishing. Still, those who have not sold their boats and continuing the fishing they have to dock their boat in another place called *talchua* which is three km distance from their residence. In docking their boat they are having fear in the back of their mind that somebody may remove the anchor and drift the boats. As a result, the fishermen are losing opportunity cost of around ₹ 100 for travelling such long distance of three km and docking the boat safely (Field Survey, 2015).

(v) Impacts on Ecology

Port development can create a wide range of impacts on the ecology and environment. The operation of the port is causing damage water pollution, loss of fishery in that area. The Dhamra port site is located about 13 km. away from the Gahirmatha Marine Sanctuary which is the largest sea turtle rookery in the world. Every year lakhs of sea turtles come to the offshore waters of Gahirmatha for nesting. Local people and fishermen of that area used to come across the turtle during the peak season of congregation (November-January). Nowadays, they are not able see the turtle. Since there is no such incident in the surrounding area, except the location of port, it is expected that operation of the Dhamra port and its resultant activities of dredging, noise pollution, cargo handling and other disturbances are preventing the turtle to come to that area.

(vi) Impact on Non-Farm Sector

The Dhamra port location has not helped development of any port based manufacturing industries or any commercial activities. However, some non-local households and unaffected households have opened hotels in that area. There are eight restaurants which have opened

outskirt of Dosinga market and close to the port gate. The employees from the port come to the hotel for lunch and dinner. There are 2 bike repairing shops and one four wheeler repairing shops have been established. Some householders are giving houses for rent and earning money in this way. The people outside the locality are coming to the port area either for jobs or for business purposes. The density of population in the local area has increased. The size of the market has expanded and numbers of shops have increased after the location of the port. There have three commercial banks and ATMs after the location of the port close to the Dosinga market.

5.8: Contribution of Dhamra Port Development to the Local Economy

Following are the some opportunities available to the local people after location of the port project.

(i) Establishment of DAV public school

There is one English medium DAV public school established by the company in the township where the children of the company employees as well as from the local area have the opportunity to study from class-I to class-VII. This school was established by the Tata Steel. After Adani group took over the Dhamra Port, it wanted to remove the school and establish the Adani School because the admission fees in the DAV school are ₹ 55, 000 per student in which every student has to pay ₹ 5000 and the company is bearing rest ₹ 50, 000. In case of Adani School the company has to bear less cost than paying the ₹ 50, 000 for each student in the DAV public school. However, because of protest by the employees and local people, it did not happen. Generally it was found that one employee working in the railway department is sending his two children to this school. Others are studying in the Dosinga government school.

(ii) Health centre – There is no primary health care centre in that area. The DPCL has set up a health centre in Dosinga village in November 2008 which caters to a need of the people in periphery villages. Health centre is having two doctors, para-medical staff, nurses, and health workers. They spread the awareness about the safe motherhood, childcare, importance of cleanliness and hygiene by door-to-door counselling. From the primary survey experience people viewed that all the minor diseases are treated but for the major cases they recommend to the primary health care centre in Vasudevpur, 45 km from Dosinga. In this health centre the patients do not have to pay for the consultation fee but they purchase medicine from the market. This Health Centre is serving the people of around 50,000 belonging to nine panchayats in the periphery areas. Before there was no health centre closer to that village,

they used to go 8 km. away from the village, but now DPCL has opened a health centre in the Dosinga market to provide the primary health facilities. Here, both out-patient and bed facilities are available. The doctors are there to treat general and common ailments such as cough, fold, fever, headache, pain; minor injuries etc. earlier people used to tolerate and suffer but were not going to doctor because of distance. Now they are accessing these basic primary health care services without any hesitation. This health centre was earlier the panchayat office of the Dosinga and company has taken over that building and constructed few more rooms and converted that panchayat office into health centre. In the health centre, the doctors do not charge any fee. The medicine for minor ailments are provided by the health centre, otherwise people have to purchase from outside. They do not deal with the major cases. The health centre is having ambulance to carry the patients to the vasudevpur hospital and Bhadrak hospital.

(iii) Setting Up of Tube-Well

Before people had access to drinking water from tube well set up by the government but now most of the people access drinking water from the tube well set by the government as well as private individuals. Now company has helped in providing tube well to the households for drinking water. Company has set up seven tube-wells in different area surrounding the port. However, people are now in better condition than before in these aspects of basic amenities.

(ii) Sports promotion- DPCL has promoted sports like Volleyball tournament. This game is performed in Dosinga market ground, Dhamra. From 2008 onwards, this programme is going on.

(v) DPCL Merit Scholarship scheme - Dhamra port authority has launched the DPCL scholarship for the meritorious students in the surrounding villages. The students scoring above 75 percent marks in the intermediate examination are provided scholarship of ₹1000 per month for the duration of two years. This amount is provided as a New Year gift to the students. In the beginning year of launch of this scheme three girl students were eligible to access this scholarship.

The study has also taken account of the 20 non-displaced household as control group in order to understand the spill over effect of the port on the surrounding area of the port. Although, these people have not been displaced or affected by the land acquisition process, but 60% (12 households) occupation of fishing have been affected. However, out of 20 households, person in 8 households are working in the port and become beneficiary of the

location of the port through the employment. However, all these households are getting affected by the coal dust. The 17 households consider the location of the port has brought some level of growth to the locality in terms of establishment of school, health centre and road of the company. The company has constructed one bridge over the railway line for commuting. However, people are not using the bridge to cross the railway line to go to other side; rather, they are crossing the railway line to go to other side for this they wait when train are in track. Once train comes, the security people block the road both side and after train pass, they remove the barricades for people to cross.

In spite of the above advantages of the location of the port, 3 households responded that the company has not done any good to the local people. Because, it has established the health centre so that the employees of the port and construction workers and all the people in the port to avail the facilities. The primary purpose is to help the port employee, we are the secondary beneficiary. Similarly, the DAV school is meant for the company employees because such elite class people do not want to educate their children in the ordinary government school. The ordinary local people cannot afford to send their children to that DAV school. This is also mainly for the high class people not low class people. The road company has constructed for their transport vehicles, Lorries and company employees. In all cases, we are the secondary beneficiaries.

5.9: Conclusion

It is clear from above analysis the port has created an avenue for employment generation and more than 58 per cent belong to unskilled category. It has not employed all the project affected people including the displaced households and land loser. The people who have been employed are all on temporary basis with inferior quality of job. The port has generated an informal real estate market and the speculation in such market has increased the price of land. Till now there has not been any port based commercial development or industrial activities even after five years of its commercial operation. The operation of the port has also caused decrease in the agriculture production and agricultural labourer in the local area. The port has affected people of surrounding area negatively in terms of coal dust and noise pollution and positively in terms of establishment of the DAV school and health centre and so on. Therefore, it is found that even after five years of operation the port has not able to deliver the sustainable infrastructure objectives in effective manner.

CHAPTER-6
SUMMARY, FINDINGS & CONCLUSION

6.1: Summary and Findings of the Study

Appropriate and efficient infrastructure plays a key role in the economic growth of a country through lower transaction costs, enlarging markets and facilitating trade and in this way supports economic growth by increasing the productivity of labour and capital. Infrastructure policy and governance of infrastructure play a crucial role in the realization of these benefits. In the pre-reforms policy regime, infrastructure services was the exclusive domain of public sector because of natural monopoly with reference to the nature and scale of investments into infrastructure development to realize the economies of scale prevailing in the sector, the public goods characteristics and with the belief that only the public sector can provide the best services and serve the public interest best. However, the reforms era has generated severe criticism of the old policy regime and its approach to infrastructure. As part of this criticism, it is held that government is an inappropriate agency to construct and operate infrastructure and is likely to fail in being able to deliver quality infrastructure services to bring in competitiveness in port services. Therefore, the government reformed the transport sector in general and port sector in particular inviting private sector participation into Indian port sector and government moved away from its traditional role as a provider of infrastructure services. While critiquing the government failure in being able to deliver competitive and quality services by the old regime of governance had adequate basis, to move towards complete privatization of infrastructure services and to handle them as if they were private goods had to face the challenge of market failure in being able to deliver the public goods components of infrastructure. While scholars like Lazonick have argued that logically it might well be possible to have a private enterprise operating as an innovative business organization to connect profit maximization objectives with the larger social good, such behaviour is an exception to the rule. Alternatively, and, more realistic is the view of the scholars like Hall and Soskice who have contributed to the debate on 'Varieties of Capitalism' that State plays a crucial role in terms of coordination functions in the case of certain commodities and services which have peculiar features such as long gestation periods, low rate of return and having the nature of public goods. The New Keynesians on the other hand come from the vantage point of imperfect markets to emphasize the role that government needs to play in coordinating the economy for optimal outcomes. Ports have the character of a monopoly and this makes the role of the government all the more pertinent. It is this framework based on which the government continues to play the crucial roles of being a facilitator and regulator. After allowing the

private sector participation (PSP) in the port sector, the government decided to adopt the 'landlord port' model propagated by the World Bank and chose Build Own Operate (BOT) route of financing port projects. The crucial question in assessing the infrastructure and its role in development under the new regime lies in being able to identify and analyze the core components of this coordinating function that government needs to perform to address market failure.

If Indian ports were to emerge to be catalyst of economic development in the country, they need to be globally competitive. According to the World Bank Group (2012), introducing sustainability into infrastructure projects is indispensable for a country to stay competitive. The process of private sector participation was adopted to bring up the sustainability of the infrastructure projects and ports in this particular case. While this notion of sustainable infrastructure effectively addresses the government failure dimension, addressing the market failure dimension requires a more comprehensive understanding of sustainability of infrastructure. This perspective is provided by the UNEP and the World Bank has in several instances, especially in infrastructure development projects undertaken in Africa has endorsed this model (UNOPS 2012; UNEP, 2016). This framework has both the components discussed under government failure as well as determines the foci areas with respect to the coordination role of the government with respect to the market failure aspects.

United Nations Environment Programme (2016) has advocated apart from the crucial dimension of enhancing performance, efficiency and contribution to growth, has emphasized several other outcomes to assess what it terms sustainable infrastructure model objectives. On the basis of a more comprehensive perspective of development, the sustainable infrastructure framework has several other parameters to assess the success of infrastructure policy regimes in being able to link the development of infrastructure to the larger goals of development of the society. Several areas of concern identified by the model include; the participation of affected communities in decision-making pertaining to infrastructure projects, promoting transparency in the development or operation of infrastructure projects and strengthening human and labour rights and improving working conditions as part of sustainability of infrastructure. The sustainability of infrastructure also forms the basis for reduction and effective mitigation of social and ecological costs so as to succeed in providing good livelihoods to the people, development of the local area and the local economy, offering wide range of benefits from the capital invested. It is on the basis of the sustainable infrastructure model based analytical framework that this research attempts at understanding the functioning of the infrastructure

projects and more specifically the minor-ports sector operating under the new governance model. Has the new governance model brought about by the post-reforms regime in the infrastructure sector in the case of the Dhamra Port been successful in terms of delivering improvements to performance of the port sector to make it internationally cost effective and competitive on one hand and in being able to protect the 'public purpose or interest' based delivery of public goods components? Together, both the above objectives determine whether the new governance model of the port sector has been successful in operating within the sustainable infrastructure model.

More concretely, this study tries to explore the research questions as how the new governance model called the BOT model, adopted as a mode of financing, constructing and operating port projects, adopted by the government of India has exert its influence in improving the performance of the Indian port sector gauged in terms of total cargo handling in terms of volume and through and improving the physical performance parameters in comparison with earlier model. Further,

The port sector was encouraged for the private sector participation, mainly on Build, Operate and Transfer (BOT) basis with revenue sharing mechanism. The private sector participation has resulted to improve performance and productivity of port with the new governance model. Although, the performance of both major ports and non-major ports have increased in the post- infrastructure reforms era, the share and performance of non-major ports has been outstripped the major port in period of 2004-05 to 2014-15 than the first decade of reform period, implying the fact that in course of development, economic activity is tilting in favour of non-major ports than that of the major ports in the recent past. The physical performance of the port sector has improved at a decent rate in terms of port performance parameters. As the share of cargoes such as POL (petroleum, oil and lubricant), iron ore and coal handled make up a major share in total traffic handled, this study has analyzed the performance of these three commodities. It was found that the POL commodities handled by the major ports has been decreasing and POL commodities handled by non-major ports is increasing compared to the year 1985-86 but in the recent years, it has remained more or less constant for both major and non-major ports. Although the major ports used to handle more volume of iron ore and coal but in recent year its share in total iron ore handling is decreasing and share of non-major ports is increasing. The share of non-major ports has surpassed the major ports in the handling of iron ore in the year 2014-15 and the share of non-major ports in the handling of coal has been greater in comparison to the major ports since the year of 2011-

12. The growth of non-major ports is increasing more than that of the growth of the major ports in handling the overseas traffic.

On a deeper analysis it is however found that this increase of traffic of the non-major ports is mainly due to congestion and inefficiencies at major ports. Now, 6 major ports are operating above international norm of the 70 per cent capacity utilization. This high utilization rate on average indicates the shortage of capacity and consequent congestion at Indian ports. As a result, performance of ports is very poor. Of course, it is known that some of the berths of the non-major ports are in construction of second phase. On the other hand, the major ports have been established since long time, they are having good infrastructure and superstructure facilities and good hinterland connectivity. The customers who are familiar with using major ports cannot easily switch from their current network. It is however expected that the future of port sector belongs to non-major ports which will account for an increasing share in India's traffic growth.

Odisha has developed Dhamra port with the new governance model of BOOST which started its construction in April, 2007 and commenced the first phase of its operation in May, 2011. This study has taken Dhamra port into consideration to examine whether in addition to the performance outcomes other objectives of the sustainable infrastructure outcomes have been delivered. This investigation has been divided into two phases of the development of the Dhamra port viz., construction as well as operation phases.

Much before the efforts towards construction of the port began, it was preceded by the prerequisite of seeking environmental clearance. The environmental impact assessment has been outsourced to Kirloskar Company. The EIA prepared by Kirloskar Consultants Ltd. considered two options for the port's location i.e. Kanika Sands and mainland. The EIA was underataken on the basis of the port location on Kanika Sands; however, the project is currently located on the mainland and not Kanika Sands. The site where EIA was conducted (Kanika Sand Island) and the site where port is currently located (i.e. mainland) is different. Therefore, this project has been come into being in the mainland area without EIA which is a grave conflict of interest. Again, there is loopholes in the conducted EIA and therefore the EIA and the environmental clearance have been challenged Odisha Beach Protection Council (OBPC).

The first challenge and impact proceeding towards construction of the port involves the task of land acquisition and eviction of the inhabitants of the geography where port is being constructed. This eviction has taken many forms. There has been acquisition of different types of lands; private agricultural lands, private homestead with entitlement to the private land,

private homestead in public lands, private homestead with entitlement to land held by private third party, common property lands including grazing lands and burial lands, and the coastline lands. The process of acquisition of land as it was conducted in reality itself created two categories of households viz., those households from whom land was immediately acquired and titles transferred and other households from whom land was acquired in terms of an initial payment of the compensation but legal entitlement was not immediately transferred. The port project has acquired total 4330.77 acres of land from 74 villages of which 1907.92 acres of government land and 2422.85 acres of private land. This land acquisition has caused the displacement of total 389 families from 17 villages. The Odisha R&R policy, 2006 has been followed to carry out resettlement and rehabilitation packages to the displaced households. The company has provided 2.361 lakh as compensation to the displaced households who have legal entitlement on the land and ex-gratia of 1 lakh to both the government encroached families and private encroached families. However, this compensation amount was so meagre that the households have responded stated that with the compensation hardly the displaced households could purchase a decent amount of land for habitation. Because, when port came to be established the land price started appreciating so fast that the households were unable to purchase not more than $1/5^{th}$ of the quantity of the land lost with the given compensation. As a result, some families left that area and went back to their original native place in West Bengal. Some people went to distant places from the current place of stay where they could purchase a small piece of land with their compensation amount. In this way Dhamra port has not been able to achieve the objective of social cohesiveness of the sustainable infrastructure. Some households were able to purchase very small piece of land by their compensation amount obtained through sacrificing huge area of land. The government encroached families are still staying in nearby vacant government land. Till now 8 household have not received the R&R assistance due to disputes.

The analysis of 140 sample households shows that the port has adversely affected the livelihood of the displaced who are engaging with different types of single occupation as well as multi-occupation livelihoods and non displaced fishermen, and agricultural labourer. Port has caused forced diversification of the occupations of the households by acquiring agricultural land, grazing land, burial land and government land along the coastal area which was used for drying fish and docking boats. The households who were engaged in both fishing as well as agricultural labourer and those who were engaged either only in fishing or only in cultivation have significantly decreased due to the location of the port. Many people have given up their traditional occupation of fishing due to lack of suitable avenue in coastal belt area for drying

fishes and docking boats. The women who used to be engaged in assisting fishery activities are now unemployed due to acquisition of the nearby coastline land. This has hampered their earnings and led to decrease in their standard of living with the increasing cost of living. While nominal incomes have increased, real incomes have declined. With reference to the non displaced people, although their livelihoods have not been affected in terms of forced diversification, their quality of life has been adversely affected due to coal dust, noise pollution and so on. The government encroacher households consider the development of port is painful due to trauma of imprisonment and demolition of their houses. The land loser households lost the opportunities of source of living which was maintaining them. The agricultural labourers lost the opportunities of work because the acquisition of the government land and have become landless. The households are now bereft of grazing lands and burial lands. The household dependence on market has increased for purchasing vegetable, fish which they used to grow in their lands and ponds. The port has been developed by the undermining the ecological value of the area where there is the presence of turtles, forest land and various aquatic flora and fauna. The government and port authority has captured the advantages of loopholes existing in the environmental regulations and manipulated the environmental impact assessment process and changing the area of Bhitarkanika national park boundary for the development of the port

Dhamra port started its commercial operation, but there has not been proper hinterland connectivity and no manufacturing industries or power plant has come up based on this port. Dhamra port has created an avenue for providing employment to local and non-local people. The company promised to provide employment in the port to those households who have lost their homestead land and all agricultural land but it has not been fulfilled. Port has created total 1733 people of which 93% people have been engaged in the unskilled/semiskilled category. Out of 1733 people 74 people belong to displaced households and 94 people belong to land loser households. The irony is that although so many people have been employed in the port, yet all the displaced and land loser people have not yet employed. In this way port has not paid attention to the project affected whereas still all the displaced people have not been employed. This indicates that port has not paid sufficient attention to the project affected people. These project affected households have been given low level jobs on the temporary basis. There is no assurance of being permanent. The location of the port has created speculation in the real estate market which has caused to appreciate the land price and many real estate companies have started purchasing land expecting to be useful in the future. The port has caused in the deceleration of the paddy of the agricultural land close to the port area due to insects. The coal

dust flowing from the port has affected everybody's life in the surrounding area of the port regardless of the beneficiary of the port. The operation of the port and dredging has driven the fishes from the nearby coastal area and for this the fishermen have to go deep into the sea for fishing. The operation of the port has caused loss of fishery and prevented the turtle come to that area. On the other hand, Dhamra port has affected positively to the development of the local area by establishing the DAV public school, health centre, bringing electricity to the area power, setting up and providing the employment to the local people in the construction activities of the second phase.

6.2: Conclusion

After public sector failed to provide the infrastructure services efficiently due to certain bottlenecks, the government has approved the public private partnership mode for the development of port adopting the BOT mode of financing. Although, the port sector performance has improved in India but, how far the alternative mode of governance structure in ownership has been able to contribute to the growth of cargo volume has not been clear. Again, this growth in the performance is not on par with the international standard and the comparative advantages have not been achieved in the performance. There is no empirical evidence to support this.

Although development is essential but it has to be sustainable. The private sector and the market have failed to address the objectives of the sustainable infrastructure. The sustainable infrastructure projects create job opportunities; facilitates training for women to reap the economic benefits associated with construction and maintenance projects; promotes the restoration of livelihoods of displaced individuals; accords appropriate respect for the property rights of displaced individuals; create the adequate mechanisms of compensation; improves the living standards of displaced persons; generate positive social impacts on local communities especially remote and poor regions (UNOPS, 2012).

It is clear from the study that the Dhamra port project has been hardly able to achieve the objective of sustainable infrastructure and this could be the hindrance in becoming competitive. There is no transparency and the authority of the institution has been challenged. There has been arbitrariness in the location of the port without considering the environmental impact assessment in the mainland, the ecological value has been undermined by reducing the area of the Bhitarakanika national park; in the recruiting the project affected people in the company and so on. The government encroached households have suffered the imprisonment and in this way dignity of the people have not been respected. There has not been any respect

for the livelihood of the people; no attempts has been made to restore the livelihoods of displaced individuals; there is no appropriate respect for the property rights such as burial ground and grazing land of displaced individuals; and no initiative has been taken to improve the living standards of displaced persons and other project affected households. The project has not been able to help to bring growth of other sectors of the local economy. In this way hardly the development of the Dhamra port on based on new governance model satisfied the objective of sustainable infrastructure. Therefore, the government should evaluate the performance of such model time to time and the failures to achieve the objectives of sustainable infrastructure and local development.

If the development projects do not help to protect the social interest it is not going to be sustainable. In the case of public provision of service, the social objectives are upheld the most. In the public private sector partnership, private sector is supplementing government's role of provider to facilitator and the government being a regulator, the government should improve policies and strengthen the institutional structure so that social welfare can be ensured. If provision of these services is completely left to private entities without government's intervention it might lead to non-adherence to the usual public interest.

Although reforms have to be undertaken by the government to improve the growth and performance of the port sector through the private sector participation but achieving but achieving a comprehensive set of outcomes as enunciated by the sustainable infrastructure can only address the challenge of market failure and deliver the public goods that are also in the nature of such infrastructure and are the obligations of a State in the backdrop of the constitutional vision of development. The State must therefore coordinate proactively to ensure that the development of the infrastructure and especially the non-major ports under the new governance model in the form of the Private-Public-Partnership model such as the BOOST model finds its currently missing justification by delivering the sustainable infrastructure outcomes in the future. In general, there has to be proper balance between public and private sector responsibilities for providing services and the infrastructure needed to promote economic growth in the sustainable manner so that it will ultimately lead to a better quality of life among the people, especially the surrounding areas of the project. By giving over emphasis on the international trade of the country, the development of the infrastructure project is undermining the ecology, livelihood of the local people, and growth of the local economy and in his way hardly it has fulfilled the objective of public interest as enunciate by the sustainable infrastructure model.

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www.dhamraport.com
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Appendix

Table-3 (A): Share of commodities handled in total cargo handled in the major ports (in %)									
Year	POL	Iron Ore	Coal	Ferti liser	Fertiliser Raw material	Food grains	Others	% Share*	Total
1985-86	45.89	24.11	6.30	3.43	2.26	0.95	17.06	76.3	100
1986-87	42.67	24.61	6.88	1.92	3.28	1.13	19.52	74.16	100
1987-88	43.77	21.36	9.50	1.05	3.09	1.24	19.98	74.63	100
1988-89	42.95	22.26	10.52	1.12	3.22	2.30	17.62	75.73	100
1989-90	41.99	22.49	11.94	1.98	3.52	1.01	17.07	76.42	100
1990-91	42.20	21.04	12.96	1.90	4.00	1.01	16.90	76.2	100
1991-92	43.17	20.49	14.30	2.01	4.32	1.02	14.72	77.96	100
1992-93	44.42	17.91	14.71	2.16	3.79	1.68	15.32	77.04	100
1993-94	43.16	19.05	14.97	2.34	2.96	1.10	16.43	77.18	100
1994-95	41.22	17.54	15.72	2.21	3.40	0.69	19.22	74.48	100
1995-96	42.25	16.06	15.70	2.66	3.08	1.79	18.46	74.01	100
1996-97	43.06	14.64	16.51	1.45	2.92	1.44	19.98	74.21	100
1997-98	41.48	15.74	16.81	1.91	3.03	1.15	19.89	74.03	100
1998-99	42.73	13.72	17.32	1.87	3.11	1.45	19.78	73.77	100
1999-00	43.27	13.38	15.88	2.07	3.02	1.10	21.28	72.53	100
2000-01	38.55	14.39	19.39	1.08	3.67	0.70	22.22	72.33	100
2001-02	35.91	15.91	17.82	1.21	3.64	1.36	24.13	69.64	100
2002-03	34.94	16.12	16.92	0.92	3.28	2.72	25.09	67.98	100
2003-04	35.43	17.07	15.92	0.83	2.59	1.98	26.18	68.42	100
2004-05	32.95	19.86	15.80	1.00	2.78	1.00	26.61	68.61	100
2005-06	33.55	18.70	16.25	1.56	2.52	0.50	26.91	68.5	100
2006-07	31.45	17.38	13.94	1.71	2.40	1.06	32.06	62.77	100
2007-08	32.24	17.77	13.22	2.29	1.23	0.58	32.67	63.23	100
2008-09	32.82	17.46	14.49	2.29	1.15	0.45	31.34	64.77	100
2009-10	31.16	17.98	12.79	1.95	1.21	0.21	34.69	61.93	100
2010-11	31.55	15.38	13.18	2.17	1.48	0.34	36.19	60.11	100
2011-12	31.03	10.84	14.06	2.18	1.46	0.59	39.84	55.93	100
2012-13	33.11	5.00	15.90	1.37	1.34	1.21	42.07	54.01	100
2013-14	32.59	4.43	18.77	1.11	1.37	0.86	40.86	55.79	100
2014-15	31.14	3.10	20.55	1.36	1.44	0.53	41.88	54.79	100

Source: Basic Port Statistics, 2014-15 and several others, Ministry of Shipping

*=represents the of Share of POL, Iron ore and Coal in total cargo handled

Table – 3(B): Share of major Commodities in total Traffic Handled at Non-Major Ports during 1995-96 to 2014-15								
YEAR	POL (Crude & Product)	Iron Ore	Coal	Building Material	Fertiliser &FRM	Others	% Share	Total
1995-96	10.66	17.43	6.53	16.02	8.75	39.44	34.62	100
1996-97	16.42	19.94	9.45	16.53	6.90	32.73	45.81	100
1997-98	22.09	16.65	12.28	15.02	4.30	27.01	51.02	100
1998-99	17.35	20.77	13.49	18.26	7.46	22.39	51.61	100
1999-00	43.86	13.81	10.43	11.36	5.84	14.61	68.1	100
2000-01	53.08	9.73	10.99	10.72	3.42	12.03	73.8	100
2001-02	55.00	8.02	9.32	10.04	3.20	14.43	72.34	100
2002-03	51.58	12.00	10.24	10.32	2.72	13.13	73.82	100
2003-04	50.56	14.59	8.29	11.27	2.77	12.52	73.44	100
2004-05	49.48	15.63	9.87	10.32	2.85	11.85	74.98	100
2005-06	46.48	19.21	9.04	8.92	3.74	12.65	74.73	100
2006-07	43.91	18.37	7.58	7.78	3.69	18.67	69.86	100
2007-08	44.11	16.58	7.49	7.88	3.45	20.50	68.18	100
2008-09	45.88	16.82	9.91	6.22	4.15	16.87	72.61	100
2009-10	47.66	16.89	14.28	4.55	3.29	13.32	78.83	100
2010-11	46.10	12.14	18.54	3.93	4.03	15.28	76.78	100
2011-12	44.19	8.66	22.34	3.64	4.45	16.72	75.19	100
2012-13	43.45	5.64	28.17	3.08	3.24	16.43	77.26	100
2013-14	40.72	4.41	30.29	3.40	2.88	18.31	75.42	100
2014-15	35.52	5.69	33.29	3.02	2.96	19.52	74.5	100

Source: Basic Port Statistics, 2014-15 and several others, Ministry of Shipping

*=represents the of Share of POL, Iron ore and Coal in total cargo handled

Table-3 (C): Annual Growth rate of Commodity-wise Cargo Traffic Handled at Major Ports								
Year	POL	Fertiliser	Fertiliser Raw	Iron Ore	Coal	Food-grains	Others	Total
1985-86								
1986-87	- 3.32	- 41.87	50.93	6.13	13.44	23.74	18.95	3.97
1987-88	11.02	- 40.64	2.21	- 6.08	49.55	19.26	10.81	8.23
1988-89	7.21	16.30	13.76	13.88	20.96	102.63	- 3.64	9.26
1989-90	- 1.90	77.25	9.60	1.37	13.89	- 55.93	- 2.77	0.35
1990-91	3.29	- 1.44	16.77	- 3.86	11.60	2.34	1.70	2.77
1991-92	5.66	9.52	11.59	0.62	13.96	4.25	- 10.03	3.28
1992-93	9.37	14.02	- 6.64	- 7.08	9.31	75.46	10.67	6.29
1993-94	4.47	16.36	- 16.26	14.31	9.47	- 29.73	15.28	7.52
1994-95	4.51	3.61	26.01	0.76	14.89	- 31.62	27.97	9.42
1995-96	12.59	32.14	- 0.58	0.61	9.71	186.82	5.54	9.86
1996-97	7.62	- 42.41	0.08	- 3.77	11.07	- 15.13	14.32	5.60
1997-98	6.68	45.45	14.79	19.10	12.70	- 11.17	10.20	10.74
1998-99	3.05	- 1.67	2.93	- 12.78	3.10	25.79	- 0.48	0.03
1999-00	9.39	19.59	4.72	5.31	- 0.94	- 17.79	16.19	8.04
2000-01	- 7.90	- 46.30	25.56	11.20	26.23	- 34.13	7.93	3.37
2001-02	- 4.71	15.29	1.70	13.11	- 6.00	97.88	11.12	2.29
2002-03	6.09	- 17.50	- 1.86	10.47	3.49	118.14	13.38	9.03
2003-04	11.49	- 0.90	- 13.07	16.41	3.50	- 19.90	14.71	9.97
2004-05	3.50	34.71	19.34	29.48	10.48	- 43.88	13.14	11.30
2005-06	12.38	72.23	0.06	3.96	13.49	- 44.42	11.64	10.37
2006-07	2.66	19.70	4.34	1.73	- 6.09	131.13	30.43	9.49
2007-08	14.78	49.75	- 42.50	14.54	6.24	- 39.35	14.10	11.97
2008-09	4.04	2.50	- 4.67	0.40	12.03	- 19.70	- 1.96	2.21
2009-10	0.38	- 10.11	11.20	8.87	- 6.68	- 50.19	17.01	5.71
2010-11	2.87	13.03	24.17	- 13.09	4.68	60.12	6.00	1.60
2011-12	- 3.35	- 1.20	- 2.91	- 30.75	4.83	71.23	8.17	- 1.74
2012-13	3.95	- 38.87	- 10.48	- 55.06	10.19	101.19	2.90	- 2.56
2013-14	0.18	- 17.67	4.19	- 9.80	20.12	- 27.30	- 1.15	1.77
2014-15	- 0.02	28.90	9.56	- 26.87	14.58	- 35.59	7.27	4.65

Source: Basic Port Statistics, 2014-15 and several others, Ministry of Shipping

Table-3 (D): Annual Growth rate of Commodity-wise Cargo Traffic Handled at Major Ports							
YEAR	POL (Crude & Product)	Iron Ore	Building Material	Coal	Fertiliser &FRM	Others	Total
1995-96							
1996-97	66.79	23.88	11.65	56.55	- 14.67	- 10.16	8.25
1997-98	86.65	15.86	26.09	80.23	- 13.54	14.49	38.74
1998-99	- 26.14	17.26	14.31	3.38	63.25	- 22.05	- 5.96
1999-00	341.27	16.05	8.60	34.90	36.53	13.90	74.55
2000-01	66.83	- 2.86	30.14	45.23	- 19.19	13.50	37.85
2001-02	13.28	- 9.88	2.35	- 7.29	2.34	31.11	9.33
2002-03	6.32	69.71	16.58	24.61	- 3.59	3.19	13.38
2003-04	7.59	33.38	19.86	- 11.18	11.53	4.64	9.75
2004-05	12.76	23.41	5.45	37.26	18.84	9.07	15.23
2005-06	2.95	34.77	- 5.24	0.37	43.48	17.01	9.61
2006-07	16.38	17.79	7.47	3.32	21.57	81.78	23.18
2007-08	12.12	0.74	13.00	10.20	4.25	22.54	11.61
2008-09	7.45	4.79	- 18.45	36.83	24.47	- 14.96	3.32
2009-10	40.79	36.11	- 0.90	95.22	7.34	6.98	35.51
2010-11	5.56	- 21.59	- 5.78	41.65	33.89	25.26	9.14
2011-12	7.53	- 19.99	3.96	35.20	23.74	22.74	12.17
2012-13	7.83	- 28.61	- 7.15	38.23	- 20.27	7.74	9.66
2013-14	0.72	- 15.87	18.66	15.61	- 4.30	19.78	7.49
2014-15	- 1.47	45.73	0.28	24.08	16.24	20.37	12.93

Source: Basic Port Statistics, 2014-15 and several others, Ministry of Shipping

Table-4(A): Family-Wise Classification of Displaced Households

Name of the village	No. Original Family	Total No. of extended family displaced	Total no. of displaced households
Bhadrak Tahasil			
Bhatatira	4	6	10
Bhagabanpur	1	4	5
Tentuligadia	2	5	7
Erein	2	4	6
Serpur	1	0	1
Tihidi Tahasil			
Musanga	1	2	3
Achak	6	5	11
Gajipur	2	2	4
Chandabali Tahasil			
Dosinga	64	103	167
Somapatia	2	4	6
Oramal	4	7	11
Narasinghaprasad	5	10	15
Narasinghapurdian	2	2	4
Balasahi	8	7	15
Manipur	8	10	18
Chhatrapada	12	23	35
Mahulia	1	0	1
17 Villages	**125**	**194**	**319**

Source: Special Land Acquisition Office, Dhamra Port, Bhadrak, 2015

Table-4(B): Tahasil-Wise Private Encroachers Displaced Households

Sl No.	Name of the villages	No. of the households	No. of households received ex-gratia (₹ 1 lakh)
Bhadrak Tahasil			
1	Tisalpur	18	18
Tihidi Tahasil			
2	Achak	6	6
Chandbali Tahasil			
3	Dosinga	3	3
4	Oramal	6	3
5	Chianipahi	9	9
Total		39	39

Source: SLAO, Dhamra port Project, Bhadrak

Table-4(C): Tahasil-Wise Government Encroachers Displaced Households

Sl. No	Name of the villages	No. of the households	No. of households received exgratia ₹ 1 lakh
Tihidi Tahasil			
1	Achak	7	7
2	Nuananda	1	1
Chandbali Tahasil			
1	Dosinga	12	12
2	Oramal	4	4
3	Narasingaprasad	3	3
4	Narasingaprdian	1	1
5	Mahulia	1	1
6	Balasahi	2	2
Total:-		31	31

Source: SLAO, Dhamra port Project, Bhadrak

Table-4 (D): Category-Wise Change in Occupation of the Sample Households (in number)

After Displacement / Before Displacement		**(A) Displaced Households**					
		Agriculture Labourer and fishing	Agriculture Labourer	Fishing	Cultivation	Working in DPCL	Others
Agriculture Labourer and fishing	25 (31.25)	5	2	5	3	8	2
Agriculture Labourer	12 (15)	4	3		1	4	0
Fishing	21 (26.25)	3	2	5		9	2
Cultivation	12 (15)	1	4		3	4	0
Working in DPCL	0	0	0	0	0	0	0
Others	10 (12.5)	1				5	4
Total	80	14	11	10	7	30	8

Source: Field Survey, 2015

After Displacement / Before Displacement		(B) Government encroachers					
		Agriculture Labourer and fishing	Agriculture Labourer	Fishing	Cultivation	Working in DPCL	Others
Agriculture Labourer and fishing	9 (45)	5	3	0	0	1	0
Agriculture Labourer	4 (20)		2		1	1	
Fishing	6 (30)		2	2	1	0	1
Cultivation	0						
Working in DPCL	0						
Others	1(5)					1	
Total	20 (100)	5 (25)	7 (35)	2 (10)	2 (10)	3 (15)	1 (5)

Source: Field Survey, 2015

After Displacement / Before Displacement		(C) Private encroachers					
		Agriculture Labourer and fishing	Agriculture Labourer	Fishing	Cultivation	Working in DPCL	Others
Agriculture Labourer and fishing	7 (35)	4	0	0	0	2	1
Agriculture Labourer	5 (25)	0	1			3	1
Fishing	4 (20)	1		2		0	1
Cultivation	2 (10)		1		1	0	
Working in DPCL	0						
Others	2 (10)		1	1			
Total	20 (100)	5 (25)	3 (15)	3 (15)	1 (5)	5 (25)	3 (15)

Source: Field Survey, 2015

After Displacement / Before Displacement		(D) Land Loser Households					
		Agriculture Labourer and fishing	Agriculture Labourer	Fishing	Cultivation	Working in DPCL	Others
Agriculture Labourer and fishing	12 (60)	5	1	1	0	4	1
Agriculture Labourer	2 (10)	1	1				0
Fishing	2 (10)			1		1	
Cultivation	2 (10)	0			1	1	
Working in DPCL	0	0	0	0	0		
Others	2 (10)		0	1			1
Total		6 (30)	2 (10)	3 (15)	1 (5)	6 (30)	2 (10)

Figure in parenthesis represents percentage of total sample households

Source: Field Survey, 2015

Table-4 (E) Change in income of Sample Displaced households and land Losers

Income Classifications	Displaced Households		Land Losers Households	
	Before Displacement	After Displacement	Before Displacement	After Displacement
0-3000	13 (16.25)	1 (1.25)	3 (15)	1 (5)
3000-6000	33 (41.25)	37 46.25)	2 (10)	3 (15)
6000-9000	12 (15)	18 (22.5)	8 (40)	12 (60)
9000-12000	12 (15)	14 (17.5)	3(15)	1 (5)
12000-15000	7 (8.75)	8 (10)	1 (5)	1 (5)
15000-18000	3 3.75)	2 (2.5)	3 (15)	2 (10)
Total	80 (100)	80 (100)	20 (100)	20 (100)

Figure in parenthesis represents the percentage of the households to total sample households.

Source: Field Survey, 2015

Table - 4 (F)-Change in income of the Govt. and Pvt. Encroacher Displaced households

	Government Encroacher Households		Private Encroacher Households	
Income Classifications	Before Displacement	After Displacement	Before Displacement	After Displacement
0-3000	5 (25)	0 (0)	3 (15)	2 (10)
3000-6000	9 (45)	13 (65)	8 (40)	4 (20)
6000-9000	4 (20)	6 (30)	7 (35)	10 (50)
9000-12000	2 (10)	1 (5)	2 (10)	4 (20)
12000-15000	0 (0)	0 (0)	0 (0)	0 (0)
15000-18000	0 (0)	0 (0)	0 (0)	0 (0)
Total	20 (100)	20 (100)	20 (100)	20 (100)

Figure in parenthesis represents the percentage of the households to total sample households.

Source: Field Survey, 2015

Figure 4(A): Present Condition of the Wall built by Dhamra port Company Limited

Field Survey, 2015

Table –5 (A): Country-Wise Imported Commodities in Dhamra Port

Imported Countries	Commodities	Imported Countries	Commodities
Australia	Coking coal, steam coal, iron ore fines, lime stone	South Africa	Coking coal, steam coal,
Canada	steam coal, Coking coal	UAE	Limestone, Coking coal
Indonesia	steam coal,	USA	Coking coal, steam coal,
New-zealand	Coking coal,	Virginia	Coking coal,
Oman	Limestone, pallets	Mozambique	steam coal,
		Baharain	Pallets

Source: Dhamra Port Company Limited, 2015

Table -5(B): Commodity-Wise Customers of Dhamra Port (in tonnes)

Import Customers	Cargo	Types of cargoes	2014-2015	2015-2016
			Total	Total
AEL – NTPC	Coal	NCC	1,828,651	730,047
AEL – Trading	Coal	NCC	1,791,263	1,499,687
APL	Thermal Coal	NCC	79,760	150,228
TSL	Coal & Iron Ore	CC	4,127,019	2,007,106
TSL	Limestone	Limestone	832,768	680,707
TSL	Coal	CC	148,223	32,344
TIL	Coal	CC	159,817	-
SAIL	Coal	CC	3,072,336	2,229,191
SAIL	Coal	CC	95,324	-
BSL	Coal	CC/NCC	247,250	743,783
Rungta	Coal	NCC	73,639	-
UML	Coal	CC/NCC	286,821	-
UML	Limestone	Limestone	50,800	-
UML	NC Coal	NC Coal		27,500
JSPL	Coal	CC		159,649
Others	Coal	CC	1,580,991	
Export Customers	Cargo		Total	
JSW-Dolvi	Iron Ore	Iron Ore	430,455	
JSW-Salem	Iron Ore	Iron Ore	267,980	
Jindal Saw	Iron Ore	Iron Ore	253,543	30,800
Rungta	Iron Ore	Iron Ore	59,900	
Bagadia	Iron Ore	Iron Ore		79,340
BSL	Slag	Slag		240,900
Others	Iron Ore	Iron Ore	-	103,224
Others	Iron Ore	Iron Ore	65,600	-

Source: Dhamra Port Company Limited, 2015; * CC=coking coal, **NCC= non-coking coal

Table-5(C): Contractor wise manpower employment in Dhamra Port									
Contractors	Displaced	Land Loser	Others	Grand total	Contractors	Displaced	Land Loser	Others	Grand total
DPCL –on roll	-	-	110	110	Bigyan Roy	-	1	70	71
DPCL- off roll	1	6	96	103	Hotel DFC	-	-	27	27
Fortune Group	-	-	84	84	Ion Exchange	-	2	5	7
Randstad-FLS	28	-	68	96	Star delta	-	-	12	12
Agniseva Kendra	-	-	26	26	Lift & Shift	32	51	148	231
Subudhi Agency	-	2	3	5	FLS	-	12	98	110
DAV school	3	1	-	4	Muji Alli Khan	-	4	108	112
Dharittri Enterprises	-	-	9	9	PSM	10	-	4	14
Rojalin Hospitality	-	1	153	154	SIS	-	-	160	160
Shree Equipments	-	14	223	237	ESSPL	-	-	99	99
Priyanka Engineering	-	-	56	56	**Grand total**	**74**	**94**	**1564**	**1733**
J.D. construction	-	-	6	6					

Source: Dhamra Port Company Limited

Table-5(D): Contractors according to the Different Activities Engaged in the Port

Name of the contractors	Nature of the jobs	Name of the contractors	Nature of the jobs
DPCL Randstad	Manpower in sourcing-Executives	ESSPL	Supply of security manpower
FLS Randstad	Manpower in sourcing-Executives	PSM	Mooring maintenance
Ion Exchange	Maintenance of water treatment plant	SIS	Supply of security manpower
Fortune Group	Mechanical maintenance work	Velcro	132 KV transmission line
Agniseva Kendra	Fire fighting services	Shivakruti	Railway augmentation work
Shree Equipments	Housekeeping & Muck cleaning	Windsore Inn	Catering services
Dharittri Enterprises	Gardening	BRK	Fabrication and Errection work
Priyanka Engineering	Mechanical maintenance work	PMC	DPCL project department
J.D. construction	Maintenance of 132KV switch yard	Dredging	DPCL dredging department
Krushak	Fabrication and Errection work	FLS	O&M of BMH
Soham foundation	Survey	Star delta	Electrical maintenance
J.D. construction	Supply of operators manpower	GDCL	Civil maintenance work
Shree sai enterprise	Catering services	ISS	Security service
Eastern piling	Civil work	Lift & Shift	Railway operation
Subudhi Agency	Vehicle washing point	Simplex	Civil maintenance work
Muji Alli Khan	Jetty & vessel cleaning	DAV school	School
Mahavir construction	Civil & minor construction	Hotel DFC	Catering services

Source: Dhamra Port Company Limited, 2015

Appendix-1: Fixation of the Market Value of Physical Assets

The Revenue department of government of Odisha had notified to acquire some private lands to the extent of an area of 199.42 acres in Dosinga village for the construction of railway corridor from Bhadrak to Dhamra on 16th August, 2005 vide Notification No. 33293/R and it was presented in the localities (the concerned village from which land would be acquired) on 8th September, 2005. Plot to plot field enquiry were made by the field staff of this office and found that there are trees and structures of houses existing over the lands to be acquired in respect of this Dosinga village and therefore, the concerned line department officers were intimated for valuation of the properties standing over the lands. Accordingly the valuations of trees and structures have been received from the concerned department. The valuation of the ponds was executed on the basis of length, breadth and depth of the ponds concerned. When they were given compensation, it was not specified to the beneficiary that how much money is paid to each type of tree but they have been given a bulk amount. 20% of the households have responded that cocoanut tree (with fruit) is ₹ 5000 and without fruits is ₹ 2500. Mango tree is ₹ 3500 and so on. Apart from these trees, the compensation for other assets has also been given.

Considering the agricultural lands, the price of it was fixed as 1 lakh per acre. Apart from land price of ₹ 1 lakh, solatium 30% and rate of interest 12% of ₹1 lakh was also given. In this way total 1.38 lakh was given as compensation for per acre of land. The calculation of the amount to be paid as solatium does not in any way reflect the losses incurred, or the destruction of livelihood. This solatium it is merely linked to the market value attributed to the land being acquired. Total areas of 199.42 acres of land have been acquired from Dosinga village for the port and railway corridor. In the local languages, there are different nomenclatures for different kinds of lands acquired for Dhamra port. These 199.42 acres of land have been fall into different classifications. They are mentioned in the table below.

Table-Classification of Land Acquired form Dosinga Village

Classification of lands	Area of Land	Price Per acre of land (in ₹)	Classification of lands	Area of Land	Price Per acre of land (in ₹)
Sarada-I	31.27	100,000	Bagayat-II	0.47	95,000
Sarada-II	140.58	100,000	Bagayat-III	0.22	63,000
Sarada-III	8.96	100,000	Rasta	0.33	50,000
Jalasaya –I	0.12	50,000	Adi	0.79	50,000
Jalasaya –II	3.47	70,000	Gharabari	11.59	200,000
Bajefasal-I	0.23	126,000	Total	199.42	
Bajefasal-II	1.39	63,000			

Source: Sub-Registrar Office, Chandbali, Bhadrak

The method which was adopted to fix the price of different classification of lands per acre is mentioned as follow.

Sarada-I

The sale statistics of land under classification of Sarada-I were obtained from the Sub-Registrar office, Chandbali for the preceding last three years. This category of land is relatively superior agricultural land. It was found that land was sold at ₹ 50,000 per acre in the year 2003 and ₹ 100000 per acre in the year 2004. The last transaction bearing the plot No. 394 measuring an area of 1.5 acre was sold at 1 lakh per acre and this transacted plot existed over the proposed land to be acquired for construction of railway corridor from Bhadrak to Dhamra. Therefore, this transacted per acre was taken into consideration for assessment of market value. Therefore the land under classification of Sarada-I was suggested to be fixed 1 lakh per acre only.

Sarada-II

This classification of land is relatively inferior quality of land. The sale statistics of land under classification of Sarada-II were collected from the Sub-Registrar office, Chandbali for the preceding three years for the Dosinga village. It was found that all transactions in the year 2003, 2004 and 2005 were executed at 1 lakh per acre of land. So the land under classification of Sarada-II acquired for construction of railway corridor from Bhadrak to Dhamra was suggested to be fixed 1 lakh per acres of land.

Sarada-III

This is inferior quality of agricultural land. It is inferior to the Sarada-II. The sale statistics of land under classification of Sarada-III were collected from the Sub-Registrar office, Chandbali for the preceding last three years for the Dosinga village and it was found that only two transactions took place in the last three year. First transaction was 35000 per acre and second transaction was 1 lakh per acre and the last transaction rate per acre was considered for the assessment of market value because sold area was bulk in size. Therefore, the land price of Sarada-III type was fixed at 1 lakh per acre.

Jalasaya-I

This is a kind of land where pond exists. Jalasaya-I is relatively superior quality than Jalasaya-II. Only one transaction of land under classification of Jalasaya-I was happened in the preceding last three years for the Dosinga value. It was found that the last transacted plot existed over the proposed land to be acquired. Therefore, that transacted rate per acre was taken into consideration for assessment of market value and it was fixed at ₹50000 per acre.

Jalasaya-II

For the land classification namely Jalasaya-II, there was only one transaction for the preceding last three years for the Dosinga village. Taking into consideration of that one transaction which was sold 70 000.

Bajefasala-I

Bajefasala-I is one classification of land where different kinds of crops are cultivated and this is relatively superior in nature. No sale data are available for the preceding last three year for the classification of land under Bajefasala-I. So market value of land was determined on the basis of annual rent of land. The annual rent of land under classification of Bajefasal-I was ₹ 4 and land classification of Bajefasala-II was ₹ 2 per acre only. As per sale data the land under classification of Bajefasal has been sold at ₹ 62,308/- (or ₹ 63,000) being its annual rent of ₹ 2 per acre only. Accordingly, since the annual rent of Bajefasal-I was ₹ 4, the market value of land under classification of Bajefasal-I was suggested to be fixed at the rate of ₹ 63,000 × 2 = 126000 per acre of land.

Bajefasala-II

This types of land is relatively inferior to Bajefasala-I. This kind of land are also used to cultivate varieties of crops. The sale statistics of land under classification of Bajefasal-II were collected from the Sub-Registrar office, Chandbali for the preceding last three years for the Dosinga village showed that two plots were sold. One plot was sold at ₹50000 per acre and another plot was sold at ₹62, 308 per acre. The highest transaction rate per acre was taken into consideration for assessment of market value and therefore land under classification of Bajefasal-II was fixed at ₹ 62, 308 or 63000 per acre of land.

Bagayat-II and Bagayat-III

These categories of land are those lands where varieties of vegetables are cultivated. As there was no sale statistics available for the land under classification of Bagayat-II and Bagayat-III for the preceding last three years for the Dosinga village, the land price was determined by the procedure followed in case of Bajefasal –I (i.e. the market value on the basis of annual rent) and the land price was as equal as land under classification of Bajefasal-II. Here the market value was fixed on the basis of the annual rent comparing the land under classification of Bajefasal. The annual rent of land under the classification of Bagayat-II and Bagayat-III were ₹ 3 and ₹ 2 per acre compared to ₹ 4 and ₹2 of land under classification of Bajefasal-I and Bajefasal-II. As per calculation on the basis of land under classification of Bagayat-II is ₹94, 500 and of Bagayat-III is ₹63, 000 acre.

Rasta and Adi

Rasta is that kind of land where road has passed through this kinds of land and Adi is kind of land close to sea shore where they build one adi (embankment to stop the flow of water). For the land classification of Rasta and Adi, there is no sale statistics for the preceding three years. Here the market value of land was determined like that of Jalasaya-I. As the land under classification of Jalasaya was ₹ 50,000 per acre, the land classification under Rasta and Adi were fixed at ₹ 50,000 per acre.

Gharabari (homestead land)

Gharabari is homestead land. The sale statistics for the Gharabari classification for the preceding three years suggested that all transactions were made at ₹ 2 lakh per acre. Therefore, this transaction rate per acre was taken into consideration for fixing the market value of the land under classification of Gharabari.

All the above classifications have been made by the government. In view of the aforesaid facts, the market value against each of the classification of lands was determined. The company determined price of agriculture land (Sarada classification) as 1 lakh per acre. At that time price of land was 30, 000 and 40,000 per one acre and people had enough land. Therefore, they agreed to sell their land with the motivation of getting bulk amount of money even if price of land is 1 lakh per acre. However, when the company acquired the land, the land price started inflating more and more in the surrounding area, then the households realised that have sacrificed their land at very meagre compensation. Apart from agricultural land, the compensation paid to them for other physical assets was significantly less (Field Survey, 2015).

Questionnaire- 1: Displaced Household

1. Name of the respondent:

Size of the family	No. Of earning member	Age	Gender	Education	Occupation	Others

2. How did you know about the project and what was your response when you heard about the location of the port?
3. What expectation you had from the location of the port?
4. When did you vacate the land and when did you get compensation? Was there any delay? If yes, what is the reason?
5. What was your occupation and income (per month) before port came into existence?
   a) From agriculture
   b) Non-agriculture
   c) Fishing
   d) Others
6. What is present occupation and source of earning (per month)?
   a) From agriculture
   b) Non-agriculture
   c) Fishing
   d) Others
   e) Employee in a port
7. How many days of employment did you have in a month before and after the port location.
8. Whether port has enhanced or supported your occupation in some way?
9. Are you an employee/worker of the port? If you are an employee in the company? What kind of employment (regular or temporary)? How much is your salary? How many hours of work do you perform?
10. On what basis now the company is recruiting the people of both displaced families and others? What are the reasons for those who have not yet recruited? Whether company has promised them to recruit later or they won't provide because of lack of some skill? If they do not provide employment then what is the alternative?
11. Is company recruiting people in some higher post (if qualified) or lower post like peon and tea maker, sweeper or any other and so on?
12. Are you feeling any discrimination in the wages given by the port authority? Is outside wage is better than wage provided by the port authority?
13. How much land did you lose in the location of port? Which kind of land? Please categorise them?
    a) Homestead land
    b) Agricultural land
    c) Any other kinds of land
14. How much compensation did you receive? Who decided this price? Whether compensation is different for different kind of land?

Types of land	Compensation amount (per acre)	Total amount	Present price per acre of land	

15. How much land do you possess now? How did you acquire this land for staying?
    Purchase (price per acre and quantity)
    Own land (quantity)
    Government land (quantity)
    Any other (quantity)
16. What was the basis to fix the price of the land? Was there a different price for different kinds land or not? Give your opinion how far is it justified? Did you oppose it and propose any other criteria to fix the prices of land?
17. What are the causes of change in land price? Whether prices depend upon the distance from the market? What are the factors that determine price of various lands?
18. Apart from land what other assets did you lose? And what are compensation amounts?

	Compensation (per unit)	Total
House		
Tube well		
Boat		
Kinds of Tree		
Any other		

19. Did you get compensation for aforementioned things? If No, state the reason. If yes, who decided the prices of above assets and what are the criteria to fix this price?
20. Was that compensation fair? Did you protest for this unfair compensation? What was the result? How many days did the company take to give compensation amount?
21. Have you opposed or protested for the location of port? If yes, why and how many time you have been for strike? What were the consequences of this?
22. Was there any court case against location of the port? Who and why the case was filed. What was the result of it? Whether final judgement has been declared and when?
23. Have you received any support from Government authorities?
24. What was the response of local political leaders?
25. Compare the following facilities before and after the location of the port.
    a) Transport and communication
    b) Market
    c) Educational institution
    d) Health facilities
    e) Others
26. Which kind of facilities and benefits you are getting from above facilities?
27. What are the other benefits you are accruing from the location of the port?
28. Do you think the location of port has done something good for you and others? Please narrate?
29. Share your comment about port and what steps would have been taken by the company for the welfare of you and for others.
30. Is there any way the location of port is helping people in general? Any other comments and experience do you want share?
31. What will be the important negative aspect of this project?
32. What will be the most important positive aspect of this project?

Questionnaire-2: Encroached Household

1. Name of the respondent:

Size of the family	No. Of earning member	Age	Gender	Education	Occupation	Others

2. How did you know about the project and what was your response when you heard about the location of the port?
3. What expectation you had from the location of the port?
4. Did you have fear of being a land encroacher when the port was planned to be located?
5. What is the reason of being an encroacher and narrate the history of it?
6. What were the reasons for not having entitlement over land?
7. Are you government encroacher or private encroacher? What is the difference between government encroacher and private encroacher?
8. Did you encroach both homestead land and agricultural land or any one of them?
9. Were you paying the tax before you lost your land for port location?
10. When did you vacate the land and when did you get compensation? Was there any delay? If yes, what is the reason?
11. What was your occupation and income (per month) before port came into existence?
    e) From agriculture
    f) Non-agriculture
    g) Fishing
    h) Others
12. What is present occupation and source of earning (per month)?
    f) From agriculture
    g) Non-agriculture
    h) Fishing
    i) Others
    j) Employee in a port
13. Did the company promise to provide employment to the encroached families?
14. How many days of employment did you have in a month before and after the port location.
15. Whether port has enhanced or supported your occupation in some way?
16. Did company promise to provide employment to encroached families? Are you an employee/worker of the port? If yes, on what basis did you get employment? What kind of employment (regular or temporary)? How much is your salary? How many hours of work do you perform?
17. Is company recruiting people in some higher post (if qualified) or lower post like peon and tea maker, sweeper or any other and so on?
18. Are you feeling any discrimination in the wages given by the port authority? Is outside wage is better than wage provided by the port authority?
19. How much land did you lose in the location of port? Which kind of land? Please categorise them?
    d) Homestead land

e) Agricultural land
f) Any other kinds of land

20. How much compensation did you receive? Who decided this price? Whether compensation is different for different kind of land?

Types of land	Compensation amount (per acre)	Total amount	Present price per acre of land	

21. Whether compensation was given you ex-gratia 1 lakh per acre of land or per household or per families (each person who is above certain year according to the R&R Policy, 2006?
22. How much land do you possess now? How did you acquire this land for staying?
    Purchase (price per acre and quantity)
    Own land (quantity)
    Government land (quantity)
    Any other (quantity)
23. If you are staying in government land now, are you paying tax? If yes, how much? Who allotted you this piece of government land? On what basis certain amount of land was allotted? They allotted only for staying or for cultivation of land also?
24. What was the basis to fix the price of the land? Was there a different price for different kinds land or not? Give your opinion how far is it justified? Did you oppose it and propose any other criteria to fix the prices of land?
25. Apart from land what other assets did you lose? And what are compensation amounts?

	Compensation (per unit)	Total
House		
Tube well		
Boat		
Kinds of Tree		
a)		
b)		
c)		
Any other		

26. Did you get compensation for aforementioned things? If No, state the reason. If yes, who decided the prices of above assets and what are the criteria to fix this price?
27. Was that compensation fair? Did you protest for this unfair compensation? What was the result? How many days did the company take to give compensation amount?
28. Have you opposed or protested for the location of port? If yes, why and how many time you have been for strike? What were the consequences of this?
29. Have you received any support from Government authorities as encroached households?
30. What are the other benefits you are accruing from the location of the port?

31. Do you think the location of port has done something good for you and others? Please narrate?
32. Are you aware of R&R, 2006 policy? Do you think that you have been compensated as Displaced households were compensated.
33. Is there some way the location of port is helping encroached families and people in general? Any other comments (both positive and negative) and experience do you want share?

Questionnaire-3: Land Loser Household

1. Name of the respondent:

Size of the family	No. Of earning member	Age	Gender	Education	Occupation	Others

2. Have you opposed or protested for the location of port and in what form? What were the consequences of this?
3. What was your occupation and income (per month) before port came into existence?

a) From agriculture
b) Non-agriculture
c) Fishing
d) Others

4. What is present occupation and source of earning (per month)?

a) From agriculture
b) Non-agriculture
c) Fishing
d) Others
e) Employee in a port

5. How many days of employment did you have in a month before and after the port location.
6. How much land did you lose for the location of port? Which kind of land? Please categorise them?

a) Homestead land
b) Agricultural land
c) Any other kinds of land

7. How much land do you possess now?
   Purchase (price per acre and quantity)
   Own land (quantity)
   Government land (quantity)
   Any other (quantity)
8. How price of land was determined? Was there a different price for different kinds land? Did you support criteria to fix the prices of land? What was your opinion to fix the price of land?
9. What are the causes of change in land price? What are the factors that determine price of various lands?
10. Apart from land what other assets did you lose? And what are compensation amounts for those assets? Was that compensation fair? If it is unfair, did you protest for this unfair compensation? What was the result? How many days did the company take to give compensation amount?
11. Are you an employee/worker of the port? If you are an employee in the company? What kind of employment (regular or temporary)? How much is your salary? How many hours of work do you perform?

12. On what basis now the company is recruiting the people of both displaced families and others? What are the reasons for those who have not yet recruited? Whether company has promised them to recruit the land loser? If they do not provide employment then what is the alternative?
13. What is the nature of employment you get in the company?
14. What are the other benefits or disadvantages you are accruing from the location of the port?

Questionnaire-4: Non- Displaced Household

1. What expectation you had from the location of the port?
2. What was your occupation and income (per month) before port came into existence?
3. From agriculture b) Non-agriculture c) Fishing d) Other
4. What is present occupation and source of earning (per month)?
5. From agriculture b) Non-agriculture c) Fishing d) Others e) Traders f) Employee in a port
6. Are you a employee now in port. If yes, what is the nature of work? How did you get there?
7. How many days of employment did you have in a month before and after the port?
8. Even if you have not lost your land, but did the location of port affect your activities, occupation or life style in some such way?
9. If you are a trader or business man, how did the port support or help to your occupation (from before to after location of the port).
10. Do you think the port has adversely affected the life of the displaced households or not. so much because compensation has been reasonable enough for their loss?
11. Give your comment that establishment of port has developed the local economy or/and will develop in the coming future. Please narrate different aspects of this. In which way, do you envision that it will help to develop this area. E.g. forthcoming establishment of industry and employment opportunities and so on.
12. What has company has done for the development of the local area which is beneficial all people in general.
13. What are the adverse effects of you perceive of the location of the port for you or for any other communities beginning with fishermen, displaced households?
14. Share your experience from the construction of port to operation and have you become part of any aspect of port location.
15. Do you support such kind of infrastructure and its consequences (both positive and negative) in future?
16. Share your viewpoint to improve the mechanism to be followed for such kind of infrastructure or what could have done from the company side of from the government side to make it favourable for people in general and affected households in particular.