

**A STUDY ON OPPORTUNITIES AND CHALLENGES OF
THE GREENFIELD PORT IN THE EASTERN REGION**

(With Special reference to Tajpur Port in West Bengal)

*Submitted to the School of Maritime Management, Indian Maritime University in
partial fulfilment for the award of degree in MBA Port and Shipping Management*

Submitted

By

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DECLARATION

I, **Arkadeep Saha (Reg. No. 2103304003)**, student of School of Maritime Management, Indian Maritime University –Chennai Campus, hereby declare that this Project report titled **A Study On Opportunities And Challenges Of The Greenfield Port In The Eastern Region (With Special Reference To Tajpur Port in West Bengal)** submitted in partial fulfilment of the requirement for the degree of Master of Business (MBA) in Port and Shipping Management is my original work carried under the guidance of my project guide. It has not formed the basis for the award of any Degree/Diploma of any University/Institution. The information submitted is true and original to the best of my knowledge.

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CERTIFICATE

This is to certify that the project report entitled '**A Study On Opportunities And Challenges Of The Greenfield Port In The Eastern Region (With Special Reference To Tajpur Port in West Bengal)**' submitted to the School of Maritime Management, Indian Maritime University, Chennai Campus., in partial fulfilment for the award of the degree of Master of Business Administration (MBA) in Port & Shipping Management, is a record of work carried out entirely by Arkadeep Saha, Reg. No. 2103304003.



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ABSTRACT

The Tajpur Port Project is a proposed seaport development located in the Indian state of West Bengal. This project report provides an overview of the proposed project's location, infrastructure, economic benefits, and potential impact on the local economy.

The report highlights that the proposed port will be developed in two phases and will have a capacity of handling 50 million tons of cargo per annum upon completion. The project's location, situated along the Bay of Bengal coast, is expected to provide significant advantages for the shipping industry and international trade. The report examines the current state of India's shipping industry and the potential economic benefits of developing a new seaport, such as increased trade, job creation, and enhanced economic growth.

Additionally, the report addresses the environmental impact of the Tajpur Port Project and the measures being taken to mitigate potential negative effects on the local ecosystem. These measures include the creation of artificial reefs, mangrove plantation, and other conservation activities.

The report also analyses of the potential impact of the Tajpur Port Project on the local economy, such as the creation of employment opportunities, increased trade, and improved infrastructure.

Overall, the Tajpur Port Project has the potential to significantly benefit the region's economy and India's shipping industry, while also promoting international trade and commerce. The report highlights the importance of considering environmental impacts when developing such large-scale infrastructure projects.

TABLE OF CONTENTS

Sr. No.	TITLE	Page No.
	DECLARATION	i
	CERTIFICATE	ii
	ACKNOWLEDGEMENTS	iii
	ABSTRACT	iv
1	CHAPTER I : INTRODUCTION	1-7
1.1	Background	1
1.2	Problem Statement	6
1.3	Scope and Objective of the Study	6
1.4	Research Questions	7
1.5	Chapterization	7
2	CHAPTER II: LITERATURE REVIEW	8-18
2.1	Scope And Purpose Of The Literature Review	8
2.2	Tracing The Evolution Of The Research Area	8
2.2.1	Historical Overview Of Port Development In India And The Role Of Ports In The Country's Economy	8
2.2.2	The Development Of Ports In The State Of West Bengal And The Current State Of Port Infrastructure In The Region	10
2.2.3	The Evolution Of Research On Port Development, Including Key Theories And Models That Have Influenced The Field	11
2.2.4	The Major Trends And Developments In Port Management And Operations That Have Emerged Over Time	13
2.3	Conceptualizing And Identifying Key Concepts	14
2.4	Research Gaps	16

2.5	Summary And Critique Of The Literature	17
3	CHAPTER III: THE BIDDING PROCESS	19-27
3.1	The Bidding Scenario	19
3.2	Introduction To Adani Ports And Sez	20
3.3	Strengths Of Adani Group	22
3.4	Overview Of One Of The Most Successful Ports In India- Mundra	24
3.5	Problem Faced By Adani On Developing A Greenfield Port- Vizhinjam	25
4	CHAPTER IV: CHALLENGES AND OPPORTUNITIES	28-42
4.1	Environmental And Social Challenges	28
4.2	Competition For The Port	30
4.3	Potential Hinterland And Connectivity	32
4.4	Benefits Of Tajpur Port For Steel Industry Supply Chain	34
4.5	Co-Operation With Kolkata Port	36
4.6	Potential Transportation Hub For North-East India	38
4.7	SWOC Analysis	40
5	CHAPTER V: CONCLUSION AND SUGGESTIONS	43-45
5.1	Conclusion	43
5.2	Suggestions	44
	Bibliography	46

LIST OF FIGURES

Sr. No.	TITLE	Page No.
1.1	Location of Tajpur port	3
1.2	Potential hinterland of Tajpur port	5
3.1	Adani ports presence in India	23
3.2	Port master plan, Vizhinjam	26
4.1	Concentration of steel plants in east India	36
4.2	Location of Kolkata and Tajpur port	37
4.3	National Waterway-1 connecting Tajpur port with North India	39
4.4	Indo-Bangladesh protocol route	40

LIST OF CHARTS

Sr. No.	TITLE	Page. No.
3.1	Increase in cargo handled(in metric tons) by APSEZ over the years	21
4.1	Percentage cargo share of east coast ports	32
4.2	Cargo Handled by Dhamra port	34
4.3	Cargo Handled by Paradip port	35

CHAPTER I

INTRODUCTION

1.1 Background

India has 12 major ports and 200 non-major ports. Haldia, Kolkata, Dhamra, Paradip and Gopalpur are the ports that serve the Eastern and North Eastern regions of India, comprising the states of West Bengal, Bihar, Chhattisgarh, Jharkhand, Odisha, and Assam. While Kolkata and Haldia ports are located in West Bengal, Dhamra, Paradip and Gopalpur are situated in Odisha. It is expected that there will be high demand for ports on Eastern coast, which have been handling around 35-40 per cent of the total sea-borne traffic of India (FY18). At present, the Syama Prasad Mookerjee Port (SMP) (erstwhile Kolkata Port) is the major seaport in West Bengal. Kolkata Port is the only riverine Port in India, having an existence of 150 years. The Port has twin dock systems, viz. Kolkata dock System (KDS) on the eastern bank and Haldia Dock Complex (HDC) on the western bank of river Hooghly. The Port has been handling the major share of trade and commerce of a vast hinterland comprising entire eastern India, including Bihar and eastern Uttar Pradesh and the two land-locked Himalayan Kingdoms of Nepal and Bhutan. SMP handled the highest traffic volume of 63.983 million tonnes (MT) in 2019-20. While KDS handled traffic of 17.3 MT, HDC recorded the highest ever traffic of 46.680 MT in 2019-20. During 2020-21, the SMP port handled 61.337 MT traffic, a fall of a nominal 4.14 per cent despite the outbreak of Pandemic Covid-19 and the severe Amphan cyclone.

The state of West Bengal is strategically placed as its hinterland comprises mineral-rich states of Chhattisgarh, Jharkhand and Odisha, and presents a strong cargo potential for bulk commodities. Combined with strategic location, the state has a 950 km long coastline for port operations, and navigable and potentially navigable waterways including Bay of Bengal and NW-1 (national waterway). Thus, growth in cargo handling at ports in West Bengal is expected. The economic activity in the region is expected to boost further with the commissioning of high-speed dedicated freight corridors like Eastern Dedicated Freight Corridor (EDFC), and the proposed East Coast DFC. Eastern India, especially West Bengal, is poised to become a hub for regional cargo distribution.

There is a strong opportunity for enhanced demand for cargo handling in West Bengal. According to a conservative estimate, the expected cargo at eastern ports would reach around

~ 340 MT by 2030 and around ~ 580 MT by 2040. However, the existing ports on the eastern side face natural restrictions like limited draft, higher maintenance dredging, tidal dependency for vessel transit etc., resulting in capacity constraints. Further, scope of expansion of existing ports in the state is limited. The expected increase in demand for cargo handling in the state, combined with capacity limitations faced by existing ports in the state, has created a need to develop a new deep-sea port in the region. The deep-draft Port at Tajpur is proposed to be located on the sea near the tourist destinations of Digha and Mandarmani beach, in Purba Medinipur district of West Bengal. The region is near the mineral belts in the states of West Bengal, Odisha, Chhattisgarh and Jharkhand. Further, these states house large power plants, steel manufacturing units, and other manufacturing facilities, which drive the demand for bulk commodities such as coal (coking and non-coking), iron ore, limestone and other containerised products in the region. The Tajpur site thus addresses the demand potential of hinterland and prevailing infrastructure challenges of existing ports in the state. The Port is proposed to be located near Tajpur, 5 km from NH-116B and around 170 km from the state capital, Kolkata. It is all-weather deep seaport with a draft of 12.1 m with 18 km channel and with tidal support of 3.9 m, leading to a net 16m draft facility enabling large cape size vessels of one lakh deadweight tonnage. The investment in the project involves Rs 15,000 crore while related port-led infrastructure development would involve another Rs 10,000 crore. It is expected to create 25,000 direct jobs and more than one lakh indirect jobs.

Tajpur port development is a proposed project in the Indian state of West Bengal. The project is aimed at developing a deep-sea port and a multi-product Special Economic Zone (SEZ) at Tajpur in the Purba Medinipur district of West Bengal.

The project is being developed by the West Bengal Industrial Development Corporation (WBIDC) in collaboration with the Kolkata Port Authority (KoPA) and the Sagarmala Development Company (SDC). The proposed port will be developed at an estimated cost of around Rs. 15,000 crores (approximately 1.6 billion USD) and is expected to generate employment opportunities for around 25,000 people.

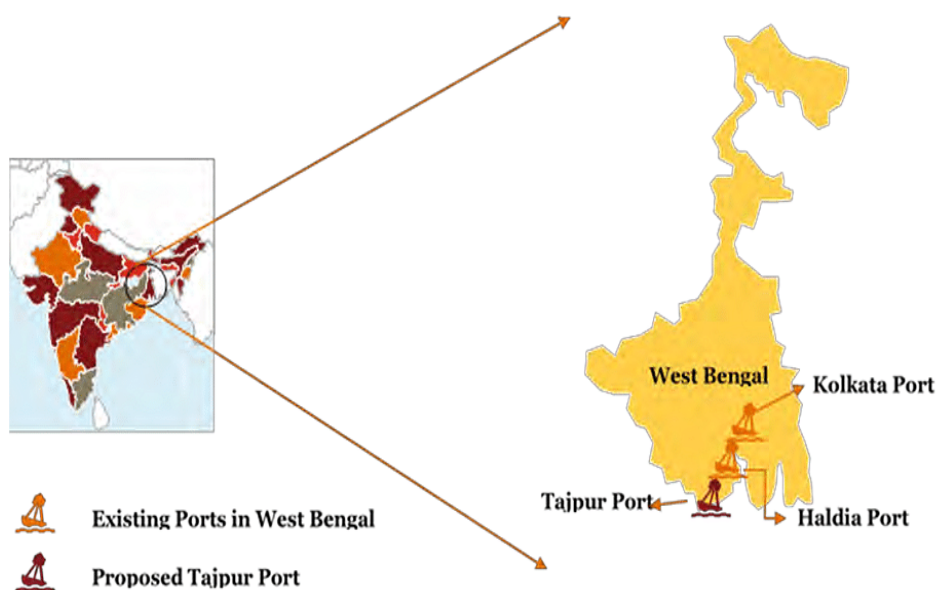
The Tajpur port is strategically located on the east coast of India and is expected to serve as a gateway for trade between India, ASEAN, and East Asian countries. The port is expected to have a handling capacity of around 70 million tonnes per annum (MTPA) and will cater to various sectors including containerized cargo, liquid cargo, dry bulk cargo, and automobile cargo.

The project has been facing several challenges related to land acquisition, environmental clearance, and funding. However, the Government of West Bengal is working towards resolving these issues and moving forward with the project. Once completed, the Tajpur port is expected to boost the economic growth of the region and enhance the maritime infrastructure of the country.

A project report on Tajpur Port could be beneficial for several reasons, including:

- **Feasibility Analysis:** A project report on Tajpur Port can help determine the feasibility of the proposed deep-sea port project. It can assess the technical, financial, economic, environmental, and social aspects of the project and help determine if it is viable.
- **Risk Assessment:** A project report can identify potential risks associated with the project and provide recommendations to mitigate them. It can also help stakeholders understand the potential impact of risks and make informed decisions about the project.

Figure 1.1- Location of Tajpur port



Source: swarajyamag.com

- **Resource Planning:** A project report can help in planning and allocating resources, such as funds, manpower, and materials, required for the project. It can also help identify potential sources of funding for the project and develop a financial plan.

- **Regulatory Compliance:** A project report can ensure that the project complies with regulatory requirements, such as environmental regulations, safety standards, and land use regulations. It can also help in obtaining necessary permits and approvals from relevant authorities.
- **Stakeholder Engagement:** A project report can facilitate stakeholder engagement and communication by providing information about the project's purpose, objectives, and potential benefits and risks. It can also help identify potential stakeholders and develop a stakeholder engagement plan.

Overall, a project report on Tajpur Port can help stakeholders make informed decisions about the proposed deep-sea port project and ensure that it is developed in a sustainable and responsible manner.

Need for Tajpur Port

- **Increasing cargo traffic:** The existing ports in the region, such as Kolkata and Haldia ports, are already operating at full capacity, and there is a growing demand for additional port facilities to handle the increasing volume of cargo traffic.
- **Strategic location:** Tajpur port is strategically located on the Bay of Bengal and is well connected to major cities and industrial centres in the eastern region. This makes it an ideal location for setting up new industries and for the export of goods.
- **Economic growth:** The development of Tajpur port is expected to boost economic growth in the region by providing employment opportunities and stimulating industrial activity.
- **Decongestion of existing ports:** The development of Tajpur port is expected to ease the pressure on existing ports in the region, which are facing issues related to congestion and delays in cargo handling.

Overall, Tajpur port is expected to play a crucial role in the economic development of the eastern region of India by providing modern and efficient port facilities to support its growing industries and trade.

The port is expected to be developed as a major hub for cargo shipping, primarily serving the eastern and north-eastern regions of India. This report provides an overview of the Tajpur port project, including its location, objectives, status, and potential impact.

Fig: 1.2 Potential hinterland of Tajpur port



Source: mapsofindia.com

Location: The proposed Tajpur port is located along the Bay of Bengal, in the Purba Medinipur district of West Bengal. The port site is situated approximately 12 km south of Digha and 15 km north of Mandarmani, two popular tourist destinations in the region. The port will be developed on a 1,000-acre site, with the potential to expand up to 2,000 acres in the future.

Objectives: The primary objective of the Tajpur port project is to provide a deep-water port facility for the eastern and north-eastern regions of India. The port is expected to handle a range of cargo, including containers, coal, iron ore, and other bulk cargo. The port will be developed with state-of-the-art infrastructure and equipment, including modern cargo handling facilities, berths, and jetties, to ensure efficient and cost-effective operations.

Status: The Tajpur port project was initially proposed in 2008 by the West Bengal government. The project has faced several delays and setbacks over the years, including issues related to land acquisition and environmental clearances. However, in 2021, the project received a major boost when the Ministry of Ports, Shipping, and Waterways granted in-principal approval for the development of the port. The project is now expected to move forward with the necessary clearances and approvals.

Potential Impact: The development of the Tajpur port is expected to have a significant impact on the economic growth and development of the region. The port will provide a major boost to the shipping and logistics industry, creating new job opportunities and attracting investments. The port will also help to decongest the existing ports in the region, such as Kolkata and Haldia,

and reduce transportation costs for businesses. Additionally, the port will enhance the connectivity of the region, facilitating trade and commerce with other parts of India and the world.

The Tajpur port project is a crucial infrastructure project for the eastern and north-eastern regions of India. The development of the port will provide a much-needed deep-water port facility, boost the economy, and improve connectivity in the region. The project has faced several challenges in the past, but with the recent in-principal approval from the Ministry of Ports, Shipping, and Waterways, it is expected to move forward and contribute to the growth and development of the region.

1.2 Problem Statement

The proposed greenfield port in Tajpur faces several challenges, including environmental concerns, infrastructure constraints, and regulatory frameworks. This project report aims to identify and address these challenges to ensure the successful implementation of the project.

1.3 Scope and Objective of the Study

The project on Tajpur port covers various aspects related to the development of the port and its impact on the surrounding regions. Here are some of the key areas that covered in the project on Tajpur port.

Technical aspects: The project covers the technical aspects of the development of Tajpur port, such as the design and construction of port facilities, dredging requirements, and the development of supporting infrastructure.

Economic impact: The project analyses the economic impact of Tajpur port on the region, including its contribution to the growth of industries, employment generation, and the overall economic development of the region.

Environmental impact: The project covers the environmental impact of the port development, including the assessment of potential environmental risks and the implementation of measures to mitigate such risks.

Social impact: The project also covers the social impact of the port development, including the impact on local communities and the development of social infrastructure such as housing, schools, and hospitals.

Policy and regulatory aspects: The project analyses the policy and regulatory aspects related to the development of Tajpur port, including the role of government policies and regulations in supporting the development of the port. The study does not cover other aspects of port operations, such as logistics and infrastructure. The limitations of this study include the availability of data, time constraints, and the scope of the research

Overall, this project on Tajpur port cover various aspects related to its development, impact, and sustainability. It provides insights into the challenges and opportunities associated with the development of a modern and efficient port infrastructure in the eastern region of India.

The objective of this study on Tajpur Port

1. To Assess the strategical location Advantage of Tajpur Port.
2. To identify opportunities and challenges for the development of Tajpur Port.
3. To assess the potential cargo traffic in the East/North East Region for the port.
4. To Suggest various measures to mitigate the challenges.

1.4 Research Questions

The research questions that guide this study are:

- What is the feasibility of the proposed greenfield port in Tajpur?
- What is the potential of the port in facilitating the state's international trade and economic growth?
- What are the challenges faced by the proposed greenfield port in Tajpur?
- What recommendations can be made to address these challenges and ensure the successful implementation of the project?

1.5 Chapterization

Chapter I Introduction

Chapter II Literature Review

Chapter III The Bidding Process

Chapter IV Challenges And Opportunities

Chapter V Conclusion and Suggestions

CHAPTER II

LITERATURE REVIEW

2.1 Scope and Purpose of the Literature Review

The purpose of this literature review is to examine the current state of new port building in Tajpur, India. Specifically, this review will explore the various aspects of port construction, management, and operations in Tajpur, as well as the challenges and opportunities associated with the development of a new port in the region.

2.2 Tracing the Evolution of the Research Area

Tracing the evolution of the research area is an important aspect of a literature review chapter, as it helps to provide context and background for the research topic. In the case of developing the Tajpur port, tracing the evolution of the research area would involve examining the historical and current state of port infrastructure in India, as well as the policies and initiatives that have been implemented to promote its growth and development.

2.2.1 Historical overview of port development in India and the role of ports in the country's economy

India's strategic location along the Indian Ocean and its vast coastline have made it a significant player in international trade for centuries. Ports have played a crucial role in facilitating this trade, and their development has been an essential part of India's economic growth story. In this section, we will provide a historical overview of port development in India and the role of ports in the country's economy.

India has a rich maritime history that dates back to ancient times. The Indus Valley Civilization, which flourished in the northwestern part of the Indian subcontinent between 2600 BCE and 1900 BCE, had a thriving maritime trade network with Mesopotamia and other regions in the Middle East. Similarly, the Mauryan Empire (322 BCE-185 BCE) under Emperor Ashoka had a vast navy that facilitated trade with Southeast Asia and other regions.

However, it was during the colonial era that India's ports saw significant development. The British East India Company, which established its first factory in Surat in 1613, realized the potential of India's ports and invested in their development. In the 18th and 19th centuries,

the British expanded their colonial rule over India and transformed the country's ports to serve their interests.

One of the earliest and most important ports developed by the British was Kolkata (then Calcutta), which was established in the 18th century. Kolkata became the gateway for British goods to enter the Indian market and for Indian goods to be exported to Britain and other parts of the world. The port played a crucial role in the industrialization of Britain and the economic exploitation of India.

The British also developed other ports along the Indian coastline, including Mumbai (then Bombay), Chennai (then Madras), and Visakhapatnam (then Waltair). These ports were primarily developed to transport raw materials from India to Britain and to facilitate trade with other countries. The ports were connected to the hinterland through a network of rail and road infrastructure, which further facilitated the movement of goods.

After India gained independence in 1947, the country's ports came under the control of the Indian government. The government realized the importance of ports in the country's economic growth and initiated several measures to improve their efficiency and productivity. The first major step was the establishment of the Tariff Authority for Major Ports (TAMP) in 1963, which aimed to regulate the tariffs charged by major ports and promote competition among them.

In the following years, the government undertook several measures to modernize and expand the country's ports. One of the most significant developments was the creation of the Jawaharlal Nehru Port Trust (JNPT) in 1989 near Mumbai. JNPT was India's first modern container port and was designed to handle the increasing volume of containerized cargo. It quickly became one of India's busiest ports and contributed significantly to the country's economic growth.

Since then, India has made significant progress in developing its ports and maritime infrastructure. The government has undertaken several initiatives to increase private sector participation in port development and improve the efficiency of port operations. The Sagarmala program, launched in 2015, is one such initiative aimed at promoting port-led development and increasing the share of coastal shipping and inland waterways in the country's transport mix.

Today, India has a vast network of ports that play a crucial role in the country's economy. The major ports include Mumbai, Chennai, Kolkata, Visakhapatnam, and Paradip, among others.

These ports handle a wide range of cargo, including crude oil, petroleum products, coal, iron ore, and containers. The ports are connected to the hinterland through a network of roads, rail, and inland waterways, which facilitates the movement of goods across the country.

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2. Nair, M. R. G., & Sreejith, V. A. (2014). Port infrastructure development in India: A review of recent trends and policies. *Journal of Shipping and Trade*, 5(1), 1-13.
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2.2.2 The development of ports in the state of West Bengal and the current state of port infrastructure in the region

West Bengal is a state in eastern India that has a long coastline along the Bay of Bengal, with a total length of approximately 158 km. The state has a strategic location, and its ports are an important gateway for international trade in eastern India, as well as the neighboring countries of Nepal, Bhutan, and Bangladesh. The development of ports in West Bengal can be traced back to the colonial era, when the British East India Company established several ports along the coast for the purpose of trade.

The first modern port in West Bengal was the Kolkata Port, which was established in 1870 by the British. The Kolkata Port was initially developed to handle jute exports from the state, which was a major cash crop at that time. Over the years, the port has undergone significant expansion and modernization, and today it is one of the major ports in India, handling a wide range of cargo, including containers, dry bulk, liquid bulk, and project cargo.

Apart from the Kolkata Port, there are several other ports in West Bengal that have been developed over the years. One of the important ports in the state is the Haldia Port, which was established in 1977. The Haldia Port is located approximately 125 km downstream of Kolkata and is well-connected to the hinterland through road, rail, and waterways. The port handles a variety of cargo, including dry bulk, liquid bulk, and containers.

In recent years, there has been a renewed focus on developing port infrastructure in West Bengal, as part of the government's efforts to promote the state as a hub for international trade. The state government has undertaken several initiatives to attract private investment in the

sector and has set up special economic zones (SEZs) and industrial parks near the ports to promote manufacturing and exports. Some of the recent developments in port infrastructure in West Bengal include the construction of a deep-sea port at Tajpur and the expansion of the Kolkata Port Trust's Haldia Dock Complex.

Despite these developments, the state of port infrastructure in West Bengal still faces several challenges. One of the major challenges is the inadequate capacity of the existing ports to handle the increasing volume of cargo. The ports in the state also face challenges in terms of connectivity, with poor road and rail infrastructure leading to delays and congestion. Additionally, there are issues related to regulatory approvals and environmental clearances, which often delay the implementation of new projects.

In conclusion, the development of ports in West Bengal has a rich history, with the Kolkata Port being the oldest and most well-established port in the state. Over the years, several other ports have been developed in the state, and there has been a renewed focus on developing port infrastructure in recent years. While there have been several initiatives to promote private investment in the sector, the state of port infrastructure in West Bengal still faces several challenges, which need to be addressed to unlock the full potential of the state's ports for international trade.

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2. Mohapatra, S. K., & Mishra, R. K. (2015). State of the art: port infrastructure development in India. *Journal of Transportation Engineering*, 141(10), 04015028.
3. Bhatia, S., & Soni, S. (2018). Port Development in West Bengal: A Study on the Gap between Capacity and Utilization. *International Journal of Research and Analytical Reviews*, 5(4), 755-763.

2.2.3. The evolution of research on port development, including key theories and models that have influenced the field

The study of port development has a long history, with research on this topic dating back several decades. Over time, various theories and models have emerged that have shaped the field and influenced the direction of research. In this section, we will trace the evolution of research on port development, highlighting key theories and models that have contributed to the field.

The early research on port development primarily focused on the physical aspects of ports, such as their location, size, and capacity. This research was driven by the need to improve the efficiency of port operations and increase the capacity of ports to handle increasing trade volumes. Key theories that emerged during this period included the gravity model and the location quotient model.

The gravity model, which was first proposed by John Quincy Adams in 1911, assumes that the volume of trade between two countries is proportional to the product of their respective sizes and inversely proportional to the distance between them. This model provided a useful framework for understanding the flow of goods between ports and helped to inform decisions about the location and capacity of ports.

The location quotient model, on the other hand, was developed in the 1950s and 1960s and is based on the idea that the specialization of regions in specific industries can be measured by comparing the local employment in each industry to the national employment in that industry. This model was particularly useful in identifying the key industries and sectors that were driving the growth of ports.

In the 1970s and 1980s, there was a shift in research focus towards the economic and social aspects of port development. This shift was driven by the recognition that ports were not just physical infrastructure, but also played a crucial role in shaping the economic and social development of their surrounding regions. Key theories that emerged during this period included the Porter diamond model and the network governance model.

The Porter diamond model, which was developed by Michael Porter in 1990, is based on the idea that the competitiveness of a region or industry is determined by a combination of four factors: factor conditions, demand conditions, related and supporting industries, and firm strategy, structure, and rivalry. This model provided a useful framework for understanding the factors that drive the competitiveness of ports and their surrounding regions.

The network governance model, on the other hand, emphasizes the importance of collaboration and coordination between different actors involved in port development, including port authorities, terminal operators, shipping lines, and local communities. This model provided a useful framework for understanding the complex relationships between different actors involved in port development and the importance of effective governance mechanisms to ensure the sustainable development of ports.

In recent years, there has been a growing recognition of the need to take a more holistic and integrated approach to port development, one that considers not just the physical, economic, and social aspects of port development, but also the environmental and sustainability

dimensions. Key theories and models that have emerged in this context include the triple bottom line model and the sustainable port development framework.

The triple bottom line model, which was first proposed by John Elkington in 1994, emphasizes the importance of balancing economic, social, and environmental considerations in decision-making. This model has provided a useful framework for understanding the need to balance the economic benefits of port development with the social and environmental costs.

The sustainable port development framework, on the other hand, provides a more comprehensive and integrated approach to port development that considers the economic, social, environmental, and institutional dimensions of sustainability. This framework has been adopted by several port authorities around the world as a guide for sustainable port development.

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1. Casaca, S. (2017). Port Governance Models: A Historical and Institutional Analysis. In *Handbook of Ocean Container Transport Logistics* (pp. 1-18). Springer.
2. Notteboom, T., & Rodrigue, J. P. (2005). Port regionalization: towards a new phase in port development. *Maritime policy & management*, 32(3), 297-313.
3. Brooks, M. R., Pallis, A. A., & van der Lugt, L. (2015). Port governance and policy issues in Asia. *Journal of Transport Economics and Policy*, 49(2), 238-252.

2.2.4 The major trends and developments in port management and operations that have emerged over time

Over time, several trends and developments have emerged in port management and operations. Some of the major ones are discussed below:

- Automation and digitalization: Ports have been adopting automation and digitalization technologies to increase efficiency, reduce turnaround times, and enhance safety. This includes the use of automated cranes, electronic data interchange systems, and the implementation of smart port concepts.
- Sustainable practices: Ports have started to adopt sustainable practices such as energy-efficient lighting, use of renewable energy, and adoption of green technologies. They are also implementing measures to reduce emissions and manage waste.
- Supply chain integration: Ports have been working towards integrating supply chains to enhance visibility and optimize processes. This includes the development of inland logistics networks and the integration of digital technologies.

- Increasing size of vessels: Ports have had to adapt to larger vessels that require deeper drafts and wider berths. This has led to the need for dredging and expansion of ports.
- Port security: Security has become a major concern for ports in recent years. Ports are implementing security measures such as access control, surveillance systems, and cybersecurity protocols.
- Shift towards port-centric logistics: There has been a shift towards port-centric logistics where goods are stored and distributed directly from the port. This helps to reduce transportation costs and increase efficiency.
- Public-private partnerships: Many ports are partnering with private entities to finance and manage infrastructure development. This helps to share the financial burden and expertise.
- Shift towards data-driven decision making: Ports are increasingly using data analytics to make informed decisions about operations and investments. This includes predictive maintenance, demand forecasting, and optimization of resource allocation.

These trends and developments have shaped the modern port industry and are expected to continue to influence it in the future.

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1. Slack, B., & Wang, Y. (2019). *Port management: cases in port geography, operations and policy*. Routledge.
2. Notteboom, T., & Rodrigue, J. P. (2018). *Port economics, management and policy*. Routledge.
3. Brooks, M. R., & Pallis, A. A. (Eds.). (2016). *The new era of the seaport economy: A supply chain perspective*. Edward Elgar Publishing.

2.3 Conceptualizing and Identifying Key Concepts

Conceptualizing and identifying key concepts involves breaking down complex ideas into smaller, more manageable parts that can be easily understood and analyzed. It is important to do this in order to create a shared understanding among researchers, stakeholders, and policymakers involved in the development of a new port.

One key concept related to port development is "port efficiency." This refers to the ability of a port to handle cargo and vessels in an effective and timely manner. Efficiency is a critical factor in port management, as it directly impacts the competitiveness and profitability of a port.

Efficiency can be influenced by various factors, such as infrastructure, technology, management practices, and government policies.

Another key concept is "port governance." This refers to the set of rules, regulations, and institutional arrangements that govern the operation and management of ports. Port governance is a critical factor in port development, as it can impact the efficiency, competitiveness, and sustainability of ports. Effective port governance requires collaboration and coordination among various stakeholders, including port authorities, terminal operators, shipping lines, and government agencies.

"Port hinterland connectivity" is another key concept related to port development. This refers to the connectivity between the port and the hinterland (the area surrounding the port). Efficient and effective hinterland connectivity is critical for the success of a port, as it enables the smooth flow of goods and people between the port and the rest of the economy. Factors that impact hinterland connectivity include road, rail, and waterway infrastructure, as well as government policies and regulations.

"Port competition" is another important concept in the field of port development. Competition among ports can be both domestic and international and can impact the growth and development of ports. Factors that impact port competition include location, infrastructure, technology, management practices, and government policies.

"Port sustainability" is also a key concept in the field of port development. Sustainable port development refers to the ability of a port to meet the needs of the present without compromising the ability of future generations to meet their own needs. Sustainable port development requires a focus on environmental, social, and economic sustainability, and requires collaboration among various stakeholders.

In summary, conceptualizing and identifying key concepts is an important step in any research, particularly in the field of port development. Key concepts related to port development include port efficiency, port governance, port hinterland connectivity, port competition, and port sustainability. These concepts help to provide a shared understanding among stakeholders and enable researchers to analyze and evaluate the development and management of ports in a systematic and comprehensive manner.

References:

1. Brooks, M. R. (2015). Handbook of research on port business management and economics. Edward Elgar Publishing.
2. Notteboom, T. (2010). Theories of port development. In *The Routledge Companion to Maritime Transport* (pp. 118-132). Routledge.

3. World Bank. (2007). Port Reform Toolkit: Effective Decision Support for Policymakers. World Bank Publications.

2.4 Research Gaps

Despite the vast amount of research on port development and management, there are still some gaps in the literature that need to be addressed. Identifying these research gaps is important because it helps to guide future research efforts and contributes to the overall advancement of the field. Some of the research gaps in the context of developing Tajpur port are discussed below:

- Environmental Impact Assessment (EIA) studies: One of the major gaps in the literature is the lack of detailed Environmental Impact Assessment (EIA) studies for port development projects. Although there are many studies that have looked at the environmental impacts of ports, they tend to be broad and not specific to a particular project. EIA studies are critical to assess the impact of port development on the environment, including the impact on the surrounding ecosystems, air quality, and water quality. In the context of developing Tajpur port, an EIA study should be conducted to assess the potential impact of the project on the nearby beaches, mangrove forests, and marine life.
- Port Governance and Regulatory Frameworks: Another research gap in the literature is the lack of attention to port governance and regulatory frameworks in the context of developing countries. In particular, the literature lacks studies that examine the impact of governance structures and regulatory frameworks on port performance and development in these countries. In the case of Tajpur port, it is important to examine the existing governance and regulatory frameworks in the state of West Bengal and assess how they may impact the development of the port.
- Infrastructure and Technology: The literature on port development tends to focus on traditional infrastructure, such as ports, terminals, and warehouses. However, with the increasing emphasis on technology in the logistics and transportation industry, there is a need to study the impact of technology on port development. In particular, there is a need to examine how emerging technologies, such as blockchain, the Internet of Things (IoT), and automation, can be integrated into port operations and management to improve efficiency and reduce costs. In the context of developing Tajpur port, it is

important to explore how technology can be leveraged to improve the efficiency and competitiveness of the port.

- **Stakeholder Engagement:** Effective stakeholder engagement is critical for the success of any port development project. However, there is a lack of research on the best practices for stakeholder engagement in the context of port development projects in developing countries. In the case of Tajpur port, it is important to examine the stakeholder engagement process and identify strategies for engaging with stakeholders, including local communities, environmental groups, and industry associations.
- **Port-city interface:** The relationship between ports and the cities in which they are located is complex and multifaceted. However, there is a lack of research on the port-city interface in the context of developing countries. There is a need to examine how port development can contribute to the economic development of the surrounding cities and regions, and how to mitigate the negative impacts of port activities on local communities. In the context of developing Tajpur port, it is important to examine the potential impact of the port on the local economy and identify strategies to ensure that the benefits of port development are shared equitably.
- **Risk Management:** Port development projects are often complex and involve a variety of risks, including financial, operational, and environmental risks. However, there is a lack of research on risk management in the context of developing countries. There is a need to examine the effectiveness of risk management strategies in mitigating the potential risks associated with port development projects. In the context of developing Tajpur port, it is important to examine the potential risks associated with the project and identify strategies to manage those risks.

In summary, while there has been significant research on port development and management, there are still several research gaps that need to be addressed.

2.5 Summary and Critique of the Literature

One of the key strengths of the literature on Tajpur Port development is the comprehensive coverage of various aspects of port development, including planning, financing, and construction. For instance, Das and Sahoo (2017) provide a detailed analysis of the various issues involved in the development of the port, including the need for strategic planning, infrastructure development, and stakeholder engagement. The authors also discuss the challenges faced by port developers in India, such as delays in land acquisition, environmental

clearance, and regulatory approvals. Similarly, Ghosh and Das (2017) provide a critical review of the financing options available for port development, including public-private partnerships (PPPs) and foreign direct investment (FDI). The authors argue that while PPPs can be an effective mechanism for financing port development, they also pose significant risks and challenges.

Another strength of the literature on Tajpur Port development is the focus on the potential economic benefits of the port, both for the local economy and the wider region. For instance, Banerjee and Sinha (2017) argue that the development of Tajpur Port has the potential to create employment opportunities and stimulate economic growth in the region. The authors also highlight the importance of integrating the port with the wider transport infrastructure, such as roads, railways, and airports, to maximize the economic benefits. Similarly, Das and Mukherjee (2019) provide a comprehensive analysis of the potential impact of the port on the local economy, including the creation of direct and indirect employment, the development of ancillary industries, and the generation of revenue for the state government.

However, there are also some weaknesses in the literature on Tajpur Port development. One of the key weaknesses is the lack of empirical evidence to support some of the claims made in the literature. For instance, while many authors argue that the development of the port will create significant employment opportunities and stimulate economic growth, there is little empirical evidence to support these claims. Similarly, while there is a significant focus on the potential economic benefits of the port, there is relatively little discussion of the potential environmental and social costs associated with port development. For instance, there is little discussion of the impact of the port on local communities, or the potential environmental risks associated with the development of large-scale port infrastructure.

In conclusion, the literature on the development of Tajpur Port provides a comprehensive analysis of various aspects of port development, including planning, financing, and construction. The literature highlights the potential economic benefits of the port, both for the local economy and the wider region, and discusses the various challenges and risks associated with port development. However, there are also some weaknesses in the literature, such as the lack of empirical evidence to support some of the claims made in the literature and the relatively little discussion of the potential environmental and social costs associated with port development. Overall, the literature provides a valuable foundation for further research into the development of Tajpur Port and highlights the need for further empirical research to support some of the claims made in the literature.

CHAPTER III

THE BIDDING PROCESS

In this Chapter we will discuss about the bidding scenario of the Tajpur Port. We will also discuss about the overview of Adani ports and SEZ(APSEZ) which is the private party to the PPP contract. This chapter also provides a brief discussion about the strengths of the Adani group and their strong presence in the Indian port sector. We will conclude the chapter with 2 case studies about the success of Adani group operating a port(Mundra) and challenges faced by the Adani group developing a greenfield port(Vizhinjam).

3.1 The Bidding Scenario

In March 2022, APSEZ emerged as the highest bidder in a public tender floated by West Bengal Industrial Development Corporation (WBIDC) for the greenfield development of Tajpur port. Sajjan Jindal-led JSW Group also participated in the bid.

While JSW Infrastructure Ltd reportedly offered to pay 0.23 per cent of the gross revenue realised from the port, APSEZ offered to pay a modestly higher amount — 0.25 per cent of the gross revenue — to the government. In October 2021, the West Bengal government invited bids for developing a greenfield, private deep sea port at Tajpur in East Midnapore district of the state on design-build-finance-operate-and-transfer basis. The port is proposed to be developed on a straight beach front and will be located very close to mineral-rich belts of West Bengal, Jharkhand and Odisha. The identified site is located 180 km from Kolkata and 10 km from Digha.

After a tepid response during a previous round of bid, the state government offered "better" conditions such as 1000 acres of encumbrance-free land to attract investors. The state is also offering a concession period of 99 years against the usual 30-35 years in such projects, the WBIDC official said. WBIDC serves as state's nodal body for industrialisation. The state government is also proposing to invest Rs.4,200 crore on this project. In December 2020, the West Bengal Maritime Board called for letters of intent from firms interested in developing the proposed port but the response was lukewarm.

Previously, the state government had proposed that the port be built on reclaimed land as it is against forcible land acquisition for industry. "Now, the state government is offering 1000 acres

of encumbrance-free land. The government is also flexible on the quantum of land to be reclaimed," the official said. The reclamation has to be done by the port developer. A land swap deal between the West Bengal Industrial Development Corporation (WBIDC) and the West Bengal State Electricity Distribution Company (WBSEDCL) also significantly brightened the prospects for the proposed port. 1000 acres at Dadan Patra Bar near Tajpur was earmarked for solar project under WBSEDCL will be swapped with land earmarked for building industrial parks by WBIDC.

Several port developers, who had shown initial interest in the Tajpur project, later expressed certain reservations, compelling the government to invite fresh bids offering relaxed norms. Besides presenting a concession period of 99 years, the state government is freeing the prospective investor from the cost of connectivity infrastructure like roads and railways which will help it reduce capex. Tajpur will be the second port project that the Adani Group is set to manage in Bengal. It recently took up modernisation and operation of a berth in Haldia.

3.2 Introduction to Adani Ports and SEZ (APSEZ)

Adani Ports and Special Economic Zone (APSEZ) is India's largest multi-port operator, owning and operating 12 ports across the country. The company is a subsidiary of the Adani Group, one of India's largest conglomerates, and is focused on the development and management of ports, logistics, and related infrastructure. In this essay, we will explore the history and growth of Adani Ports and SEZ, as well as its impact on the Indian economy.

➤ History and Growth of Adani Ports and SEZ

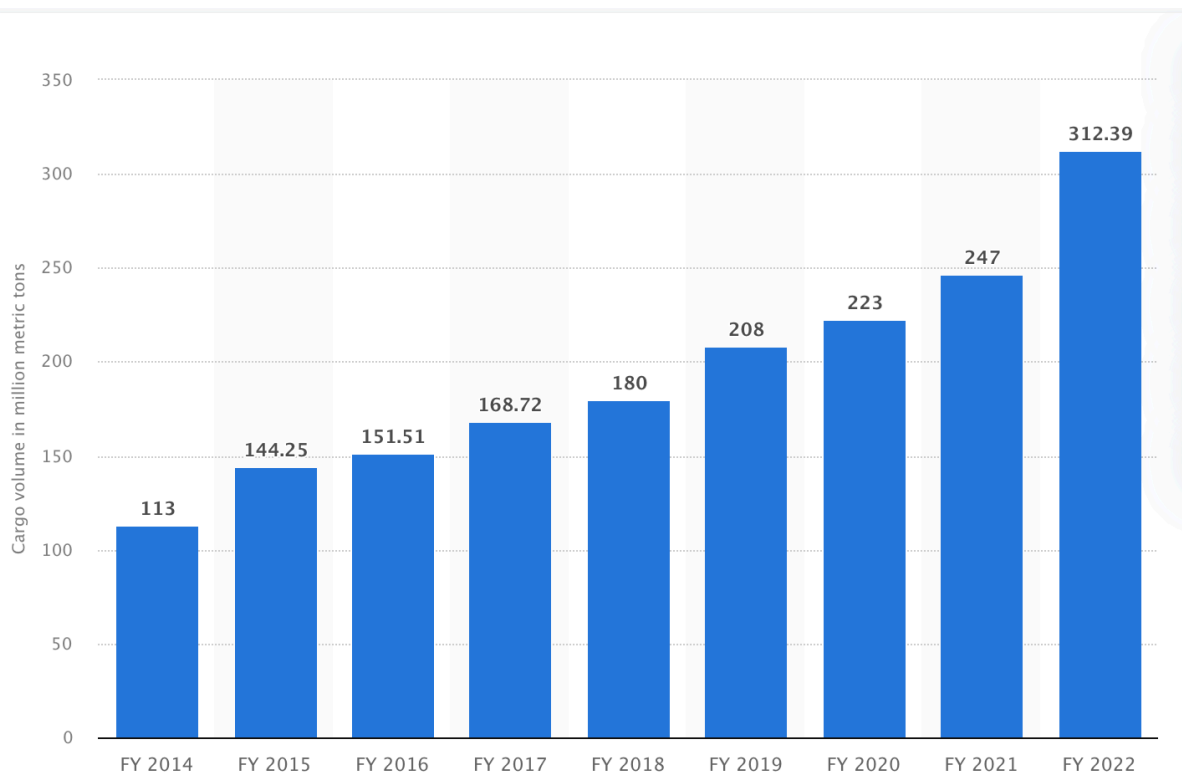
Adani Ports and SEZ was established in 1998 with the acquisition of the Mundra Port in Gujarat. At the time, Mundra Port was a small, single-berth facility that primarily handled salt and timber exports. However, with the vision and leadership of Gautam Adani, the company transformed the port into a world-class facility with 48 berths and a handling capacity of over 220 million tonnes per annum. Since then, Adani Ports and SEZ has expanded rapidly, acquiring and developing ports across India's coastline. Today, the company operates ports in Gujarat, Maharashtra, Odisha, Tamil Nadu, Andhra Pradesh, and Goa, with plans to expand further. In addition to ports, Adani Ports and SEZ has also diversified into logistics and related infrastructure, including container terminals, inland container depots, rail and road connectivity, and cold storage facilities.

➤ Impact on Indian Economy

Adani Ports and SEZ has played a significant role in driving economic growth in India. The company's ports are critical gateways for India's international trade, handling a wide range of cargo including coal, crude oil, containers, and agricultural products. In addition, Adani Ports and SEZ's logistics and infrastructure facilities have helped to improve connectivity and reduce logistics costs for businesses across the country. The company's impact on the Indian economy can be seen in a number of ways. For example, Adani Ports and SEZ's ports are major sources of employment, directly and indirectly providing jobs for thousands of people across the country. The company's investment in infrastructure has also helped to attract foreign investment and boost overall economic growth in India.

In addition, Adani Ports and SEZ has contributed to the development of Special Economic Zones (SEZs) in India. SEZs are designated areas with special economic policies that promote export-oriented manufacturing and other economic activities. Adani Ports and SEZ has developed several SEZs across the country, including in Gujarat, Maharashtra, and Tamil Nadu, which have helped to boost exports and create jobs in these regions.

Chart 3.1- Increase in cargo handled(in metric tons) by APSEZ over the years



Source: statista.com

➤ Challenges and Controversies

Despite its impressive growth and impact on the Indian economy, Adani Ports and SEZ has also faced its fair share of challenges and controversies. One of the biggest challenges the company has faced is environmental concerns related to its port and infrastructure projects. Adani Ports and SEZ has been accused of environmental violations, including destruction of mangrove forests and damage to marine ecosystems, which has led to protests and legal battles. In addition, the company has been criticized for its close ties to the Indian government and allegations of crony capitalism. Critics have accused the company of receiving preferential treatment and subsidies from the government, as well as engaging in corrupt practices to win contracts and land acquisitions.

Adani Ports and SEZ is a major player in India's ports and logistics sector, with a significant impact on the Indian economy. It has emerged as a major player in the Indian port sector with a strong focus on expansion and modernization. Despite facing some controversies and challenges, the company has managed to continue its growth trajectory and maintain its position as the largest private port operator in India. With its strategic location advantage and efficient operations, Adani Ports and SEZ is well-positioned to capitalize on the increasing demand for maritime trade in India and emerge as a key player in the global maritime industry.

3.3 Strengths of Adani Group

The Adani Group has several strengths and competitive advantages in the context of private participation in Indian ports. Some of these are:

- a) **Early mover advantage:** The Adani Group was an early entrant into the Indian port sector, with the establishment of Mundra Port in 1998. This has given the group a head start over its competitors and has enabled it to build a strong presence in the sector over the years.
- b) **Scale and scope:** The Adani Group has a portfolio of 10 ports in India, which gives it a large scale and scope of operations. This enables the group to offer end-to-end logistics solutions to its customers, which is a key competitive advantage.
- c) **Operational efficiency:** The Adani Group is known for its operational efficiency and has invested heavily in modernizing and expanding its port infrastructure. This has

helped the group to improve its operational efficiency and increase cargo throughput, which is a key competitive advantage.

d) Integrated logistics network: The Adani Group has built an extensive network of inland logistics infrastructure, including rail, road, and container terminal facilities, which has helped it to efficiently transport cargo to and from its ports. This integrated logistics network is a key competitive advantage.

Fig 3.1- Adani Ports presence in India



Source: projectstoday.com

- e) **Financial strength:** The Adani Group has a strong balance sheet and has access to capital markets, which has enabled it to fund its expansion plans and invest in new projects. This financial strength is a key competitive advantage, as it enables the group to acquire distressed assets and turn them around, and to invest in new projects.
- f) **Technology and innovation:** The Adani Group has embraced technology and innovation in its port operations, which has helped it to improve its operational efficiency and customer service. For example, the group has implemented advanced cargo-handling systems, which enable it to handle a diverse range of cargo.
- g) **Government support:** The Adani Group has enjoyed support from the government, which has helped it to obtain clearances and approvals for its port development projects. This government support is a key competitive advantage, as it enables the group to accelerate its port development plans.

Overall, the Adani Group's strengths and competitive advantages in the Indian port sector are based on its scale, scope, operational efficiency, integrated logistics network, financial strength, technology and innovation, and government support. These advantages have enabled the group to expand rapidly in the sector and establish itself as one of the leading private sector port operators in India.

3.4 Overview of One of the most Successful Port of India(Mundra)

Mundra Port, located in the state of Gujarat, is one of the major ports operated by Adani Ports and Special Economic Zone (APSEZ), which is part of the Adani Group. The port is strategically located on the west coast of India, near the Gulf of Kutch and is well-connected to major highways and rail networks, making it an important gateway for trade and commerce.

Mundra Port was commissioned in 1998 as a greenfield port, with the objective of providing a cost-effective and efficient alternative to existing ports in the region. The port initially started with a capacity of 10 million metric tonnes per annum (MMTPA) and has since undergone several expansion projects, with the current capacity at 200 MMTPA. One of the major challenges faced by Mundra Port in its initial years of operation was the lack of infrastructure and connectivity in the region. To address this, the Adani Group invested heavily in the development of road and rail networks, and also established an Inland Container Depot (ICD) at Mundra to improve connectivity and facilitate the movement of cargo. Another challenge faced by Mundra Port was competition from existing ports in the region, such as Kandla Port

and the port at Pipavav. However, Mundra Port was able to gain a competitive advantage by offering superior infrastructure, services, and efficiency, as well as a strategic location advantage.

The efficiency of Mundra Port is evident from its record-breaking productivity levels. In 2020, Mundra Port set a new record by handling 228,000 metric tonnes of cargo in 24 hours, surpassing its own previous record of 209,000 metric tonnes. This was made possible by the use of advanced technologies, such as automated stacking cranes and remote-controlled rubber-tired gantry cranes, which help optimize operations and reduce turnaround time.

In addition to its core business of handling cargo, Mundra Port has also diversified into other areas such as marine logistics, ship repair, and shipbuilding. The port has established a shipyard and dry dock facility, which provides repair and maintenance services to vessels. The shipyard has been successful in attracting customers from across the globe, and has emerged as a major player in the ship repair and shipbuilding industry. Mundra Port has also been proactive in adopting sustainable practices and minimizing its impact on the environment. The port has implemented several initiatives to reduce its carbon footprint, including the use of renewable energy sources, such as wind and solar power, and the adoption of green technologies, such as electric cranes and LED lighting.

In conclusion, Mundra Port is a prime example of a successful greenfield port project in India. Despite facing initial challenges related to infrastructure and competition, Mundra Port has been able to leverage its strategic location advantage, superior infrastructure, and efficiency to emerge as one of the largest and most efficient ports in India. With its focus on innovation, diversification, and sustainability, Mundra Port is well-positioned to continue its growth trajectory and contribute to the development of the Indian maritime industry.

3.5 Problem faced by Adani on developing a Greenfield Port (Vizhinjam)

Adani's plans to develop a Deepwater port at Vizhinjam, Kerala, have been facing several challenges and controversies. Here are some of the key problems faced by Adani in developing Vizhinjam port:

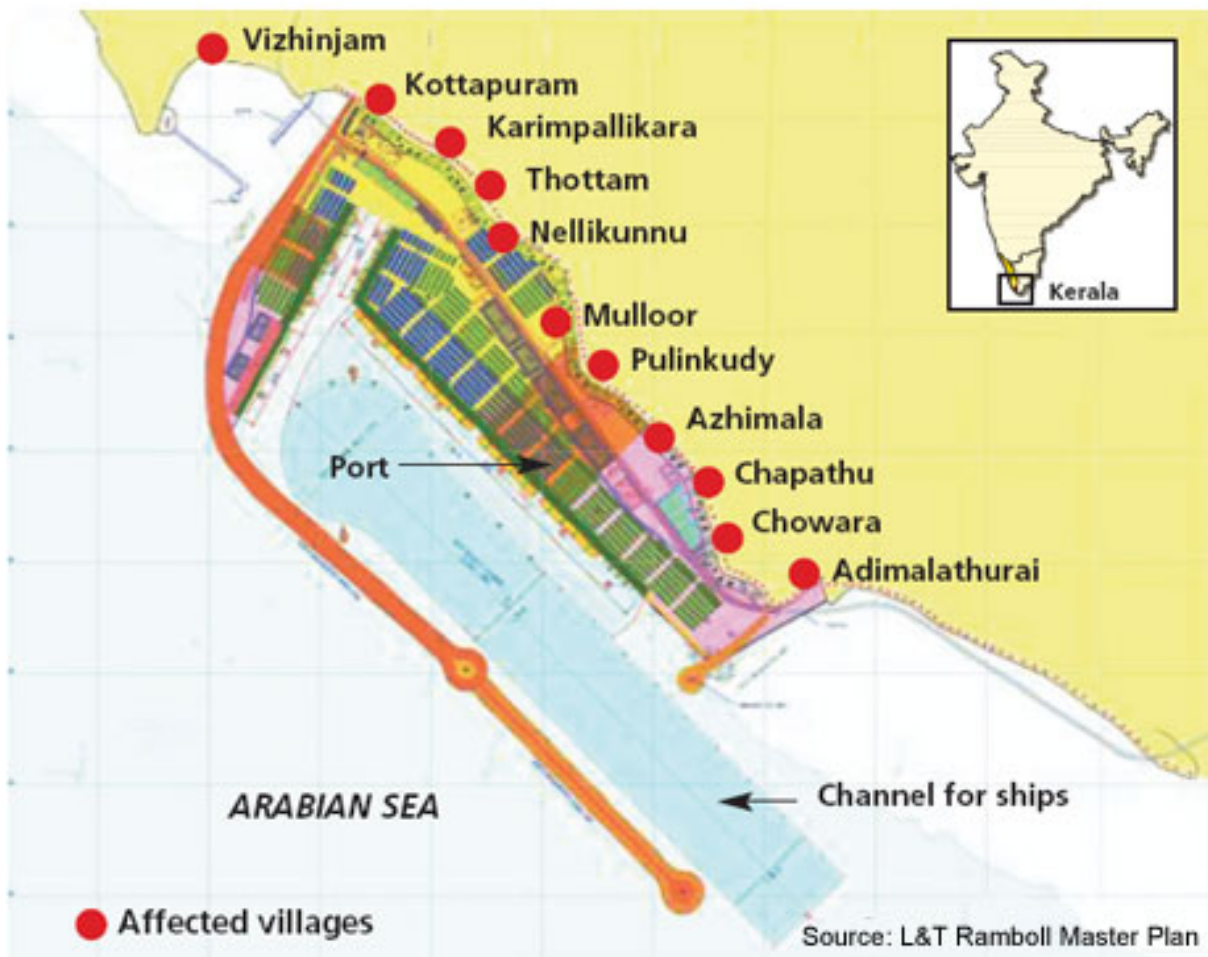
- a) **Land Acquisition:** Land acquisition has been a significant issue for Adani at Vizhinjam. The project requires around 800 acres of land, and Adani had initially sought to acquire

it through a direct purchase from the landowners. However, the landowners, who are mostly fishermen and farmers, refused to sell their land to Adani, citing concerns over livelihood loss and environmental impact. The situation led to protests and strikes, and the state government had to intervene to negotiate a deal with the landowners.

- b) Environmental Concerns: The Vizhinjam project site is ecologically sensitive, and the port's construction is likely to have significant environmental impacts, including the destruction of mangroves and marine ecosystems. Environmental activists and local communities have been opposing the project, citing concerns over the potential damage to the environment and livelihoods of fishing communities.

Fig 3.2- Port Master Plan, Vizhinjam

PORT MASTER PLAN



Source: L&T Ramboll Master Plan

- c) Financial Challenges: The Vizhinjam project is a significant investment for Adani, with an estimated cost of over Rs 7,500 crores. The company has faced financial challenges

in securing funding for the project, given the uncertainty over its viability and profitability. Adani had initially planned to finance the project through a mix of equity and debt, but has struggled to attract investors and lenders.

- d) **Political Opposition:** The Vizhinjam project has also faced political opposition from various parties, including the Left Democratic Front (LDF) government in Kerala. The LDF government had initially supported the project but later withdrew its support, citing concerns over the state's sovereignty and the port's potential impact on the fishing communities.
- e) **Legal Challenges:** Adani has faced legal challenges in developing the Vizhinjam port, with several cases filed against the project in various courts. One of the key legal challenges is related to the award of the project contract to Adani by the previous Congress-led government in Kerala. The opposition parties have alleged that the contract was awarded without following the due process and transparency.

There is a possibility that Adani may face similar challenges in developing the Tajpur port as it did in the case of the Vizhinjam port. The primary challenge that Adani faced in Vizhinjam was the delay in environmental clearance due to protests from local fishermen and environmentalists. Similarly, in Tajpur, Adani may face resistance from local communities and environmentalists who are concerned about the impact of the port on the fragile ecosystem of the region. Adani may also face challenges in acquiring land for the project, as the area around Tajpur is densely populated and has a high agricultural value. Additionally, the port's success may depend on the development of the inland waterways and the availability of sufficient transportation infrastructure to move goods from the port to the industrial belt in Jharkhand and West Bengal. Therefore, Adani may need to adopt a comprehensive approach to address these challenges and ensure the sustainable development of the port.

CHAPTER IV CHALLENGES AND OPPORTUNITIES

4.1 Environmental and Social Challenges

➤ Marine ecosystem

Tajpur port is located in close proximity to the Bay of Bengal, and therefore, it is situated within a marine ecosystem. The Bay of Bengal is known for its rich biodiversity, including a diverse range of marine species, coral reefs, and other habitats. The marine ecosystem around Tajpur port is also known for its commercial fisheries, which provide livelihoods for the local communities.

The construction and operation of Tajpur port may have several potential impacts on the marine ecosystem. Some of these impacts may include:

- **Habitat loss:** The construction of the port may result in the loss of critical marine habitats such as coral reefs, seagrass beds, and mangroves, which are important breeding and feeding grounds for many marine species.
- **Disruption of marine life:** The dredging and excavation activities required for the construction of the port may disrupt the natural movement of sediments and water currents, which may have adverse impacts on the marine life.
- **Pollution:** The discharge of wastewater, ballast water, and oil spills from the port activities may cause pollution and have adverse impacts on the marine life and their habitats.
- **Noise pollution:** The construction and operation of the port may generate noise that may affect the behaviour and communication of marine species.
- **Introduction of invasive species:** The ballast water discharge from the ships calling at the port may introduce invasive species that can have negative impacts on the marine ecosystem.

To mitigate these impacts, the port authorities should take measures such as:

- Conducting a detailed environmental impact assessment to identify the potential impacts on the marine ecosystem and developing a plan to mitigate these impacts.
- Implementing measures to minimize habitat loss, such as relocating corals and seagrass beds.
- Ensuring proper waste management and implementing pollution prevention measures.

- Implementing noise mitigation measures, such as installing underwater sound barriers.
- Implementing ballast water management practices to prevent the introduction of invasive species.

➤ Impact on tourism

- Tajpur has the potential to be developed as a tourist destination, with its beautiful beaches and natural attractions. However, the development of Tajpur Port could potentially impact the tourism industry in the area, and it would be important to carefully plan and manage the development to minimize negative impacts on the tourist experience.

Some of the key attractions in Tajpur that could be developed for tourism include:

- Beaches: Tajpur is known for its beautiful beaches, which offer opportunities for swimming, sunbathing, and water sports. The beaches could be developed with facilities such as beachside cafes, resorts, and beach sports centers to attract tourists.
- Waterfalls: There are several waterfalls in the surrounding areas of Tajpur, including Ramnagar and Kaalijai, which could be developed as tourist attractions.
- Adventure tourism: The natural terrain and forests surrounding Tajpur offer opportunities for adventure tourism, such as trekking, camping, and rock climbing.
- Historical and cultural attractions: The nearby town of Digha has several historical and cultural attractions, including temples and museums, which could be promoted as part of the tourism offerings in Tajpur.
- Wildlife sanctuaries: The nearby wildlife sanctuaries, such as Sundarbans National Park and Sajnakhali Wildlife Sanctuary, could be promoted as part of the tourism offerings in Tajpur.

Some potential negative impacts of the port on the nearby beaches and tourism industry include:

- a) Pollution: Increased shipping activities and industrial activities at the port could lead to water and air pollution, which could harm the nearby beaches and negatively impact tourism.
- b) Noise pollution: The operation of the port and related transportation activities could create noise pollution, which could negatively impact the beach environment and tourist experience.
- c) Visual impact: The development of the port infrastructure could negatively impact the visual aesthetics of the surrounding areas, which could affect the tourism industry.

- d) Disruption of local ecosystems: The port development and operations could potentially disrupt local ecosystems, including the beach ecosystem, which could negatively impact marine life and harm the tourist experience.
- e) Traffic congestion: Increased transportation activities related to the port could potentially lead to traffic congestion in the surrounding areas, which could negatively impact the tourist experience.

➤ Effects on Fishermen

Tajpur port is located in the state of West Bengal in India, and the surrounding areas are home to a significant number of fishing communities. These communities rely on fishing as their primary source of livelihood, and the construction of the port has raised concerns about the potential impact on their livelihoods and the marine ecology. Local fishermen have expressed concerns about the potential loss of fishing grounds, destruction of marine habitats, and pollution of the coastal waters due to increased shipping activity associated with the port.

There have been reports of protests from local fishing communities and environmental groups against the construction of Tajpur port. These protests are primarily concerned with the potential negative impact of the port on the marine ecology and the livelihoods of local fishermen. The protests have been mainly peaceful, with fishermen and activists organizing rallies and demonstrations to voice their concerns. The government and port authorities have been engaging with local communities and environmental groups to address their concerns and ensure that the port is developed in an environmentally sustainable and socially responsible manner. It remains to be seen how the concerns of local fishermen will be addressed and how the port will be developed in a way that is sensitive to the needs and concerns of local communities.

4.2 Competition for the Port

Tajpur port is expected to have a handling capacity of around 50 million tonnes per annum (MTPA) of cargo and is expected to cater to the needs of industries in the eastern and northeastern regions of India. The port is expected to be a game-changer in the region's logistics sector and is likely to face competition from existing ports in the region.

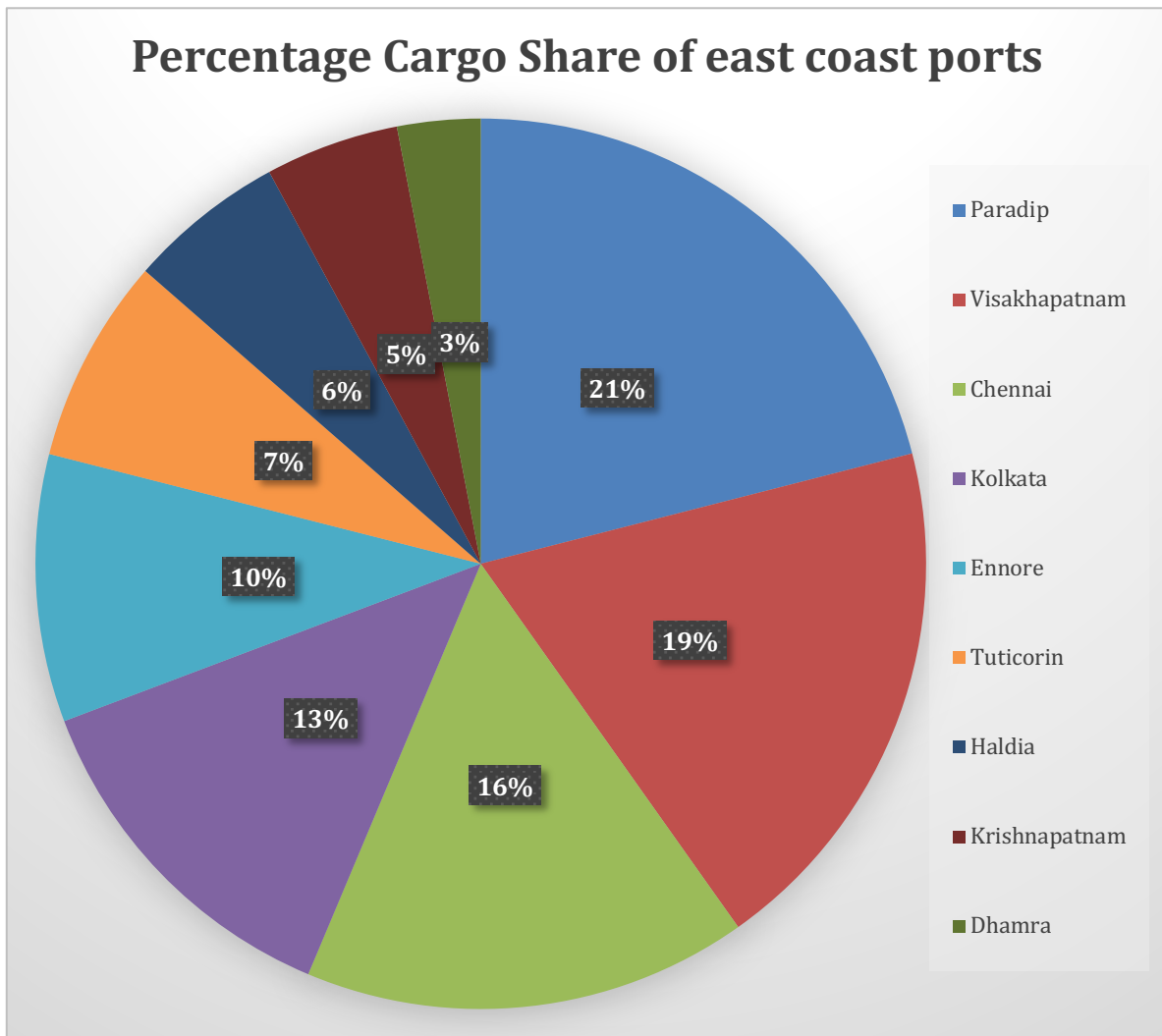
The ports that Tajpur Port is likely to face competition from are as follows:

- Kolkata Port: Kolkata Port is the oldest operating port in India and has been handling cargo since 1870. It is located in the heart of the city and is a major gateway for trade

to and from the eastern and northeastern regions of India. The port has a handling capacity of around 66 MTPA and is expected to increase to 114 MTPA after the completion of the Kolkata Dock System (KDS) project. The KDS project is aimed at upgrading the infrastructure of the Kolkata Port and making it more competitive.

- Haldia Port: Haldia Port is located about 50 km downstream from Kolkata Port and is a major industrial port in the region. The port has a handling capacity of around 43 MTPA and handles a variety of cargo, including coal, iron ore, petroleum products, and containers. The port has excellent rail and road connectivity and is expected to be a major competitor for Tajpur Port.
- Paradip Port: Paradip Port is located in the state of Odisha and is one of the major ports on the east coast of India. The port has a handling capacity of around 143 MTPA and is expected to increase to 325 MTPA after the completion of the expansion project. The port handles a variety of cargo, including iron ore, coal, and crude oil. The port has excellent rail and road connectivity and is likely to be a major competitor for Tajpur Port in the eastern region.
- Dhamra Port: Dhamra Port is in the state of Odisha and is a major all-weather, deep-water port in the region. The port has a handling capacity of around 100 MTPA and is expected to increase to 314 MTPA after the completion of the expansion project. The port handles a variety of cargo, including coal, iron ore, and other dry bulk cargo. The port has excellent rail and road connectivity and is likely to be a major competitor for Tajpur Port.
- Vizag Port: Vizag Port is located in the state of Andhra Pradesh and is one of the major ports on the east coast of India. The port has a handling capacity of around 126 MTPA and handles a variety of cargo, including iron ore, coal, and other dry bulk cargo. The port has excellent rail and road connectivity and is likely to be a major competitor for Tajpur Port in the northeastern region. Tajpur Port is likely to face tough competition from these existing ports in the region. The success of Tajpur Port will depend on its ability to offer superior infrastructure, better connectivity, and competitive tariffs to attract customers.

Chart 4.1-Percentage Cargo Share of east coast ports



Source: Shipmin.gov.in

Tajpur Port will also have to focus on developing its hinterland connectivity by improving rail and road infrastructure to connect with major industrial hubs in the region. The port will have to work closely with the government and private sector to ensure that it is well-positioned to take advantage of the growing trade and economic opportunities in the region.

In conclusion, Tajpur Port is likely to face intense competition from existing ports in the region. However, the port has the potential to become a major player in the logistics sector in the eastern and northeastern regions of India.

4.3 Potential Hinterland and Connectivity

Tajpur port has the potential to serve as a gateway to a vast extended hinterland, including the North-Eastern states and Uttar Pradesh/Bihar. The port has been proposed to be connected

through the National Waterway 1, which would provide a seamless inland waterway connectivity to the North-Eastern states through the Brahmaputra river system. This would provide a significant advantage for the port, as it would not only reduce transportation costs but also provide a much faster and efficient mode of transportation.

Moreover, Tajpur port is strategically located near the Golden Quadrilateral, which is a network of highways connecting major cities across India. The port has proposed to be connected through NH-116B, which would connect it to the NH-19 (old NH-2), providing connectivity to Uttar Pradesh and Bihar. This would open up a large market for the port, as these states are major industrial hubs and have a high demand for raw materials such as coal and iron ore.

Furthermore, the proposed East-West Industrial Corridor connecting Kharagpur to Siliguri would pass through the Tajpur port, providing it with a direct link to the North-Eastern states. The corridor is aimed at promoting industrial growth in the region and would connect the port to major cities such as Kolkata, Jamshedpur, and Siliguri. This would provide a significant boost to the port's hinterland, as it would be able to cater to the needs of these major industrial centres.

In addition to these, the proposed Dedicated Freight Corridor (DFC) connecting Kolkata to Ludhiana would also provide a direct rail link to the port, further improving its connectivity to the northern parts of the country. The DFC is aimed at decongesting the existing rail network and providing a faster and efficient mode of transportation for freight.

➤ Potential cargo mix for Tajpur port

The Tajpur Port Project, once completed, is expected to handle a diverse range of cargo types. The cargo mix for the port will depend on various factors such as the region's industrial and agricultural production, the demands of the domestic and international markets, and the transport infrastructure connecting the port to the hinterland.

Some of the potential cargo types that Tajpur Port may handle include bulk cargo such as iron ore, coal, cement, and fertilizers. These cargoes are sourced from mines, cement plants, and fertilizer factories located in the eastern and central regions of India. The iron ore is expected to be sourced from the mineral-rich states of Odisha, Jharkhand, and Chhattisgarh. Coal, on the other hand, may be sourced from the coalfields of Jharkhand and West Bengal. Similarly, cement and fertilizer may be sourced from the manufacturing units located in West Bengal, Bihar, and Jharkhand. The port may also handle containerized cargo,

including finished goods, machinery, and electronics. The containerized cargo is expected to be sourced from various regions across India, including the manufacturing hubs of Northern India, such as Delhi and NCR, and the eastern region, such as Kolkata and Howrah.

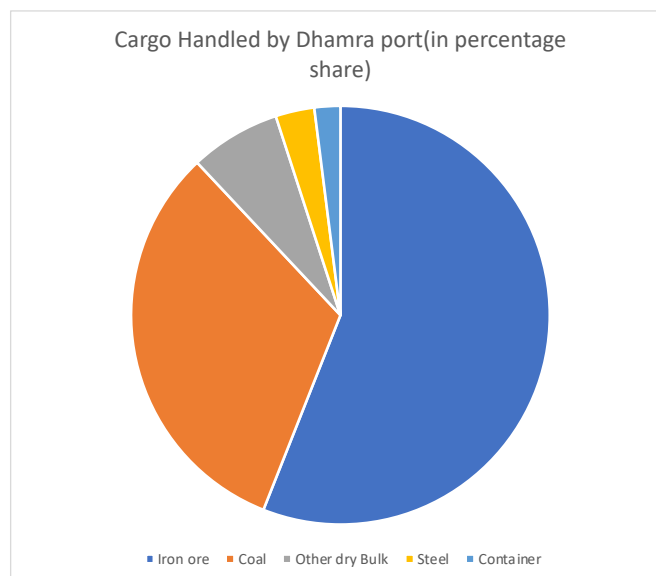
The destination for the cargo handled at the Tajpur Port may include both domestic and international markets. The port's proximity to the Bay of Bengal provides an advantage for exports to Southeast Asian countries. Additionally, the port's location along the National Waterway-5 connecting the Haldia Port to Allahabad provides connectivity to the northern hinterland of India. This will enable the port to serve the markets in Northern India and neighbouring countries such as Nepal and Bhutan.

Overall, the Tajpur Port has the potential to handle a diverse range of cargo types, serving both domestic and international markets. The cargo mix for the port will depend on the region's industrial and agricultural production and the demands of the market.

4.4 Benefits of Tajpur Port for Steel Industry Supply Chain

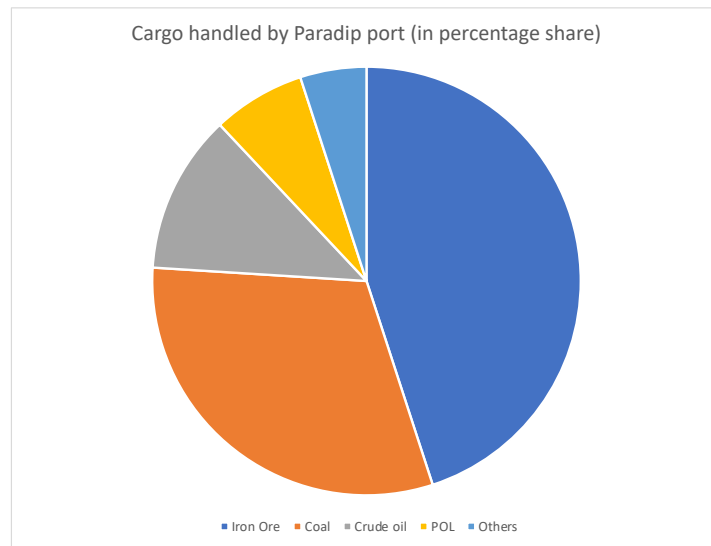
Dhamra and Paradip ports in India are heavily handling coal and iron ore for various industries such as steel, power, cement, and other related industries. The ports serve as key gateways for the import and export of coal and iron ore. The industries in the eastern region of India, including Jharkhand and West Bengal, heavily rely on these ports for their raw material requirements.

Chart 4.2- Cargo Handled by Dhamra port



Source: adaniports.com

Chart 4.3- Cargo Handled by Paradip port



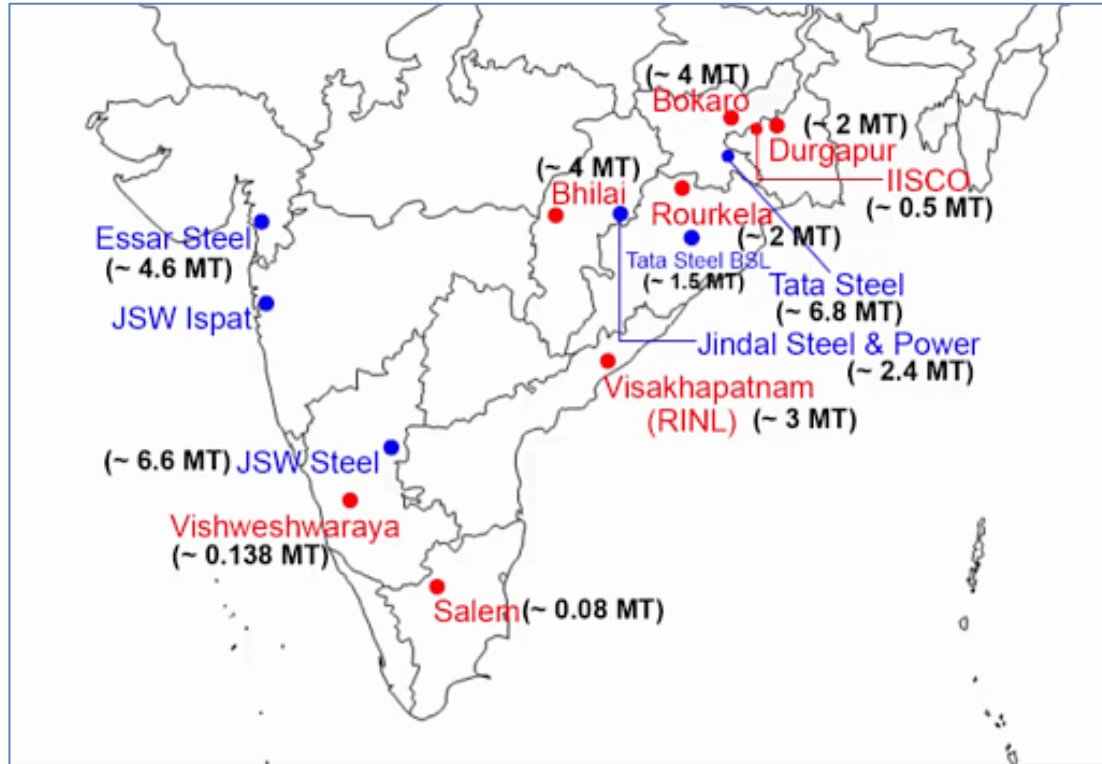
Source: paradipport.gov.in

Tajpur port has several location-wise advantages over Dhamra and Paradip ports to provide iron ore and coal to steel factories in Jharkhand and West Bengal. The following are some of the advantages of Tajpur port:

1. Proximity to Jharkhand and West Bengal: Tajpur port is located in the Purba Medinipur district of West Bengal, which is closer to the steel factories in Jharkhand and West Bengal than Dhamra and Paradip ports. This reduces the transportation time and cost of transporting iron ore and coal to these factories.
2. Access to National Waterway 1: Tajpur port is connected to National Waterway 1 (NW-1), which provides a cost-effective and efficient mode of transportation for bulk cargo such as coal and iron ore. NW-1 connects to the major industrial centres in Jharkhand and West Bengal, such as Durgapur, Jamshedpur, and Asansol, which are major consumers of iron ore and coal.
3. Proximity to coal mines: Tajpur port is located closer to the coal mines in Jharkhand and West Bengal than Dhamra and Paradip ports. This reduces the transportation time and cost of transporting coal from the mines to the port.
4. Proximity to iron ore reserves: Tajpur port is located near iron ore reserves in West Bengal and Jharkhand. This reduces the transportation time and cost of transporting iron ore from the mines to the port.
5. Access to multi-modal transport: Tajpur port is well-connected to the road and rail networks, which provides multi-modal transport connectivity to the hinterland. This

makes it easier to transport iron ore and coal from the port to the steel factories using road and rail transport.

Fig 4.1- Concentration of steel plant in East India



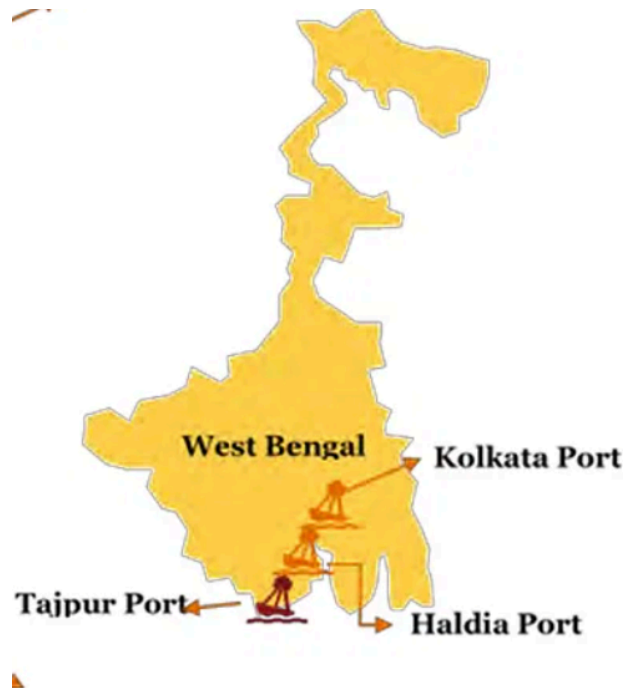
Source: lotusarise.com

Overall, Tajpur port's proximity to the major steel factories in Jharkhand and West Bengal, access to National Waterway 1, proximity to coal mines and iron ore reserves, and multi-modal transport connectivity make it a more advantageous location for providing iron ore and coal to the steel factories in the region than Dhamra and Paradip ports.

4.5 Co-Operation With Kolkata Port

Tajpur port has the potential to become a hub port for Kolkata port and complement it rather than compete. This is because both ports have different strategic advantages and can cater to different types of cargo and markets.

Fig 4.2- Location of Kolkata and Tajpur port



Source: swarajyamag.com

1. Location advantage: Tajpur port is located in the Purba Medinipur district of West Bengal, which is closer to the industrial areas of West Bengal and Jharkhand. On the other hand, Kolkata port is located in the heart of Kolkata city and has better connectivity to the hinterland areas of eastern India. Tajpur port can leverage its location advantage to serve as a hub port for cargo that is destined for the industrial areas of West Bengal and Jharkhand.
2. Cargo specialization: Tajpur port is being developed as a deep-sea port that can handle large vessels and bulk cargo. It has a natural draft of 18 meters, which makes it suitable for handling coal, iron ore, and other raw materials that are required by the steel industry. Kolkata port, on the other hand, is a multipurpose port that handles a variety of cargo, including containers, dry bulk, and liquid bulk. Tajpur port can complement Kolkata port by specializing in handling bulk cargo and serving as a feeder port for cargo that is destined for other ports in the region.
3. Capacity augmentation: Kolkata port is currently operating at near capacity and is facing congestion issues. Tajpur port can serve as a relief valve for Kolkata port by handling some of the excess cargo and reducing the pressure on Kolkata port. This can help Kolkata port to operate more efficiently and cater to its existing customer base.

4. Synergies with inland waterways: Both Tajpur and Kolkata ports are connected to the National Waterway 1 (NW-1), which runs from Haldia in West Bengal to Prayagraj (formerly known as Allahabad) in Uttar Pradesh. Tajpur port can leverage its inland waterway connectivity to serve as a hub for cargo that is transported via the inland waterways network. Kolkata port can complement Tajpur port by serving as a hub for cargo that is transported via the sea routes.

In conclusion, Tajpur port and Kolkata port have different strategic advantages and can complement each other rather than compete. Tajpur port has the potential to become a hub port for Kolkata port by specializing in handling bulk cargo, serving as a relief valve for Kolkata port, and leveraging its inland waterway connectivity. This can help to improve the overall efficiency and competitiveness of the port sector in eastern India.

4.6 Potential Transportation Hub for North-East India

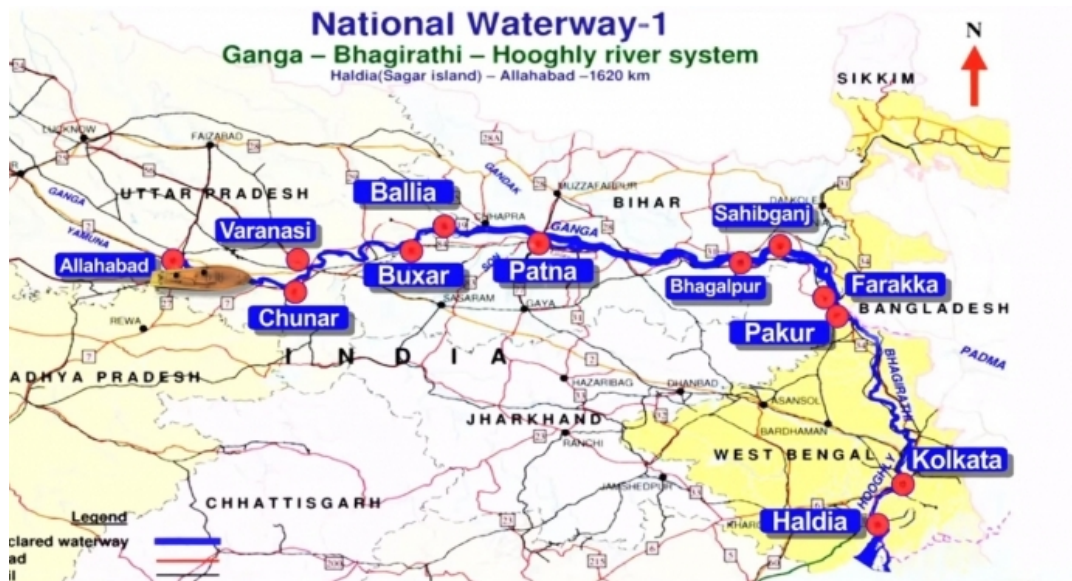
Tajpur port is strategically located in the Purba Medinipur district of West Bengal, which is close to the Bangladesh border. This location provides several advantages for being a transportation hub to North East India through inland waterways via Bangladesh.

- Inland waterway connectivity: Tajpur port is connected to the Haldi river, which is a tributary of the Ganges river. This provides direct access to the National Waterway 1 (NW-1), which runs from Haldia in West Bengal to Prayagraj (formerly known as Allahabad) in Uttar Pradesh. NW-1 is part of the larger Indo-Bangladesh Protocol Route, which connects the ports of Kolkata and Haldia in India to the ports of Mongla and Chittagong in Bangladesh. This makes Tajpur port a key node in the inland waterway network for transportation to North East India through Bangladesh.

The proposed route involves the following components:

Kolkata/Haldia Port: The route starts at the port of Kolkata/Haldia in West Bengal, which is connected to the National Waterway 1 (NW-1). NW-1 runs from Haldia to Prayagraj (formerly known as Allahabad) in Uttar Pradesh and provides access to the Ganges river.

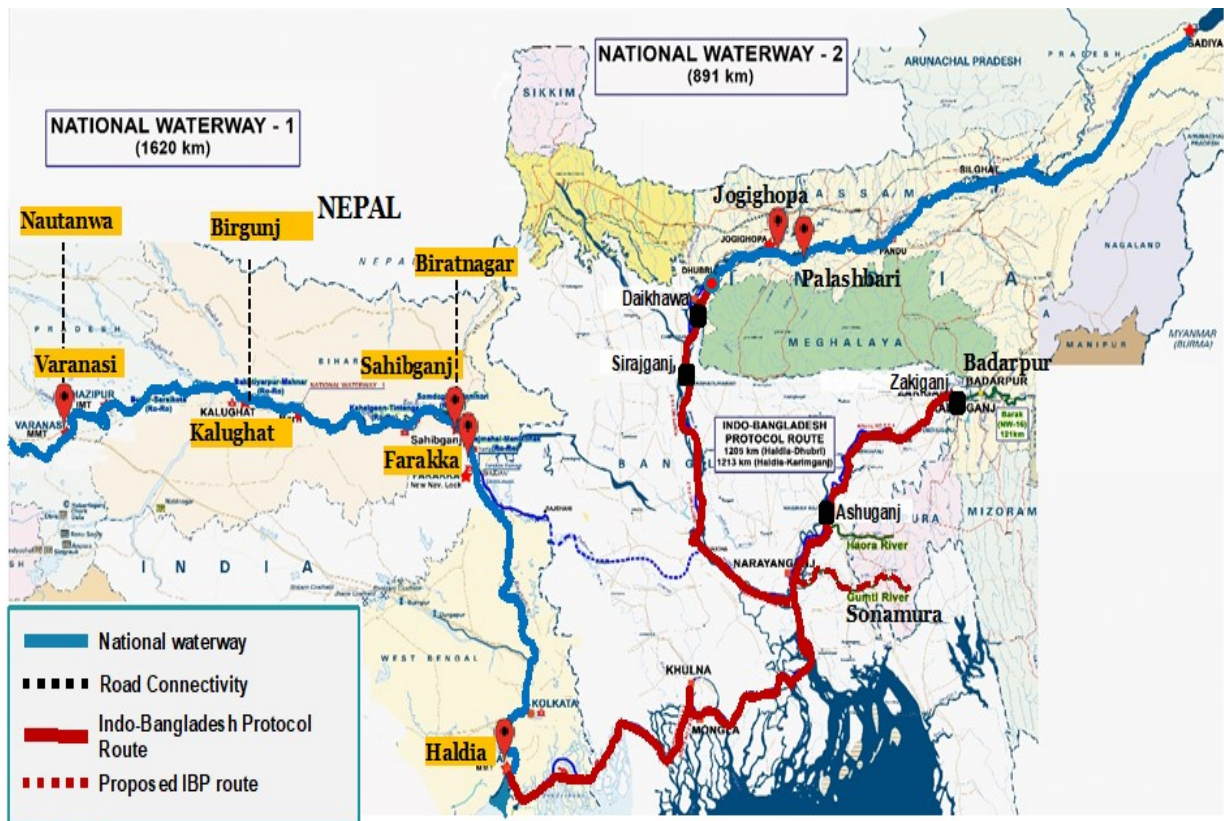
Fig 4.3- National Waterway-1 connecting Tajpur port with North India



Source: itln.in

- a) Inland Waterway 2: From Kolkata/Haldia, the route continues along Inland Waterway 2 (IW-2), which runs through the Sundarbans delta region and connects to the Brahmaputra river in Bangladesh. IW-2 is a recently developed waterway and has been dredged and improved to facilitate larger vessels.
- b) Pangaon Inland Container Terminal: At the end of IW-2, the route connects to the Pangaon Inland Container Terminal in Bangladesh, which is located near the capital city of Dhaka. The terminal has been developed to facilitate the transshipment of goods to and from India and other countries in the region.
- c) Ashuganj River Port: From Pangaon, the route continues along the Meghna river to the Ashuganj river port in Bangladesh. Ashuganj is one of the major river ports in Bangladesh and is equipped with modern facilities for cargo handling and storage.
- d) Akhaura Land Port: From Ashuganj, the route connects to the Akhaura land port on the India-Bangladesh border. The land port has been developed to facilitate the transshipment of goods between India and Bangladesh and is equipped with modern facilities for cargo handling and customs clearance.
- e) Northeast India: From Akhaura, the route enters Northeast India through the state of Tripura and connects to the National Waterway 8 (NW-8), which runs through the Brahmaputra river system. NW-8 provides access to the states of Assam, Arunachal Pradesh, and Meghalaya.

Fig 4.4- Indo-Bangladesh Protocol Route



Source: blogs.worldbank.org

Overall, the proposed inland waterways route to Northeast India via Bangladesh provides an alternate mode of transportation that can be more cost-effective and efficient than traditional road and rail transport. The route has the potential to transform the transportation landscape of the Northeast region and improve the connectivity of the region with the rest of the country and the region.

4.7 SWOC Analysis

Strengths

- a) Strategic Location: Tajpur Port is strategically located along the Bay of Bengal, which provides it with easy access to the industrial areas of Jharkhand, West Bengal, and Odisha. This makes it an ideal location for companies looking to transport goods to these regions.
- b) Modern Infrastructure: Tajpur Port is being developed as a modern port with state-of-the-art facilities, including a deep draft, multi-purpose berths, and advanced cargo

handling equipment. This will make it a preferred choice for shipping lines and cargo owners.

- c) **Inland Waterways Connectivity:** Tajpur Port has the potential to become a logistics hub for the North East region of India, as it is well-connected to the National Waterways-1 via Bangladesh. This will provide an alternate mode of transportation, which is cost-effective and eco-friendly.
- d) **Large Hinterland:** Tajpur Port has access to a large hinterland, including the states of Jharkhand, West Bengal, Bihar, Uttar Pradesh, and the North East region. This will provide a vast market for the port to serve, making it more attractive to shipping lines and cargo owners.

Weaknesses

- a) **Environmental Concerns:** The development of Tajpur Port has faced opposition from local fishermen, who fear that the port will damage the marine ecosystem and their livelihoods. Addressing these concerns will be a challenge for the port authority.
- b) **Limited Experience:** Tajpur Port is a new project, and the Adani Group does not have much experience in operating ports in the region. This lack of experience may impact the efficiency of the port operations in the initial years.

Opportunities

- a) **Growing Economy:** The Indian economy is growing, and this is driving the demand for infrastructure, including ports. Tajpur Port can leverage this opportunity to attract more business.
- b) **Government Support:** The Indian government is focusing on developing the infrastructure of the country, and the port sector is one of its priorities. Tajpur Port can benefit from government support, including funding and policy support.

Challenges

- a) **Competition from Other Ports:** Tajpur Port will face competition from other ports in the region, including Dhamra Port and Paradip Port. These ports have a head start and may have already established relationships with shipping lines and cargo owners.
- b) **Geopolitical Risks:** Tajpur Port is located close to Bangladesh, which may pose geopolitical risks in case of any tensions between the two countries. This could impact the operations of the port and may impact its attractiveness to investors.

CHAPTER V

CONCLUSION AND SUGGESTIONS

5.1 Conclusion

- Tajpur Port is strategically located and has the potential to become a major logistics hub for the eastern region of India, particularly for West Bengal and Jharkhand.
- The port's location at the end of National Waterway 1 provides significant advantages for inland waterway connectivity to other parts of India, including the Northeast region and Uttar Pradesh/Bihar.
- The hinterland potential for Tajpur Port is vast and includes a variety of cargo types, including iron ore, coal, petroleum products, containerized cargo, and more.
- Adani Group's involvement in the development of Tajpur Port adds significant credibility and expertise, given their track record in developing and operating some of India's most successful ports.
- However, there are potential challenges to the development of Tajpur Port, including environmental concerns and the need for proper resettlement and compensation for local communities, particularly fishermen.
- To address these challenges, a comprehensive environmental and social impact assessment must be carried out, and appropriate mitigation measures should be put in place to ensure sustainable development and responsible operation of the port.
- The development of Tajpur Port should also be part of a broader transportation and logistics plan for the eastern region of India, including the development of road and rail infrastructure to support the efficient movement of cargo to and from the port.
- Additionally, the government should provide support and incentives to encourage private investment in the development of port-related infrastructure, such as warehouses and cold storages, to enhance the port's competitiveness and facilitate the growth of ancillary industries.
- Tajpur Port has the potential to become a game-changer for the eastern region of India, providing a significant boost to trade and commerce and creating new employment opportunities. However, it is crucial that the development of the port is carried out in a responsible and sustainable manner, with due consideration given to the interests of all stakeholders, particularly local communities and the environment.

5.2 Suggestions

- **Enhance connectivity:** Tajpur Port needs to improve its connectivity with other parts of the country. This can be achieved by improving road and rail infrastructure around the port. Additionally, the development of inland waterways can provide a cost-effective and eco-friendly alternative to road and rail transport.
- **Create a favourable business environment:** The port authorities should create a business-friendly environment to attract investments from various stakeholders. This can be done by providing incentives to industries and investors, simplifying administrative procedures, and reducing bureaucratic red tape.
- **Leverage technology:** The use of technology can enhance the efficiency of port operations and reduce the turnaround time of vessels. The implementation of a port community system (PCS) can help to integrate various stakeholders and provide a seamless and efficient port experience.
- **Develop the hinterland:** The port should focus on developing its hinterland to increase cargo volumes. The development of multi-modal logistics parks and industrial clusters can attract industries and improve cargo flows to and from the port.
- **Address environmental concerns:** The port authorities must address environmental concerns and ensure sustainable development of the port. This can be achieved by implementing measures to reduce air and water pollution, promoting eco-friendly transport, and encouraging the use of renewable energy sources.
- **Foster public-private partnerships:** The government and the private sector should work together to develop the port. The government should provide policy support, while the private sector should bring in investment and expertise. Public-private partnerships can help to accelerate the development of the port and improve its competitiveness.
- **Promote tourism:** Tajpur Port is located in a region with immense tourism potential. The port authorities should work with the local government and tourism industry to promote tourism in the region. The development of cruise tourism can bring in additional revenue and create employment opportunities.
- **Emphasize on safety and security:** The port authorities should prioritize safety and security measures to protect the port, its personnel, and the cargo. This can be achieved by implementing state-of-the-art security systems, conducting regular safety audits, and providing training to port personnel.

- Foster a skilled workforce: The port authorities should focus on developing a skilled workforce to operate and manage the port. This can be done by providing training and skill development programs to port personnel, partnering with educational institutions, and promoting vocational education.

In conclusion, the development of Tajpur Port can bring in significant economic and social benefits to the region. The port has immense potential to become a major hub port for the eastern region of India. The recommendations mentioned above can help to accelerate the development of the port and improve its competitiveness. The successful development of the port will require the cooperation and support of various stakeholders, including the government, private sector, local communities, and the workforce.

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