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A Tussle on The Coastline: The Proposed Vadhvan Port's Impact on The Livelihoods and Ecology of Local Fishing Communities

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The proposed Vadhvan Port project in Maharashtra's Palghar district represents a significant point of conflict between national economic development and the sustainability of local livelihoods and ecology. This paper examines the multifaceted impacts of this mega-port on the fishing communities of the Dahanu-Palghar coastline. We analyze the socio-economic consequences, including the potential for widespread displacement of fishermen, permanent loss of traditional fishing grounds, and the subsequent collapse of the local fishing-based economy. The research also critically evaluates the environmental and ecological ramifications of the port's construction, such as the destruction of marine habitats and vital breeding grounds through extensive dredging and land reclamation. Furthermore, we explore the starkly contrasting perspectives of various stakeholders: the government and project developers, who cite economic growth and job creation; the local fishing communities, who fear the loss of their cultural heritage; and environmental activists, who highlight the project's irreversible damage to the region's sensitive coastal ecosystem. The paper concludes that while the Vadhvan Port is framed as a critical infrastructure project, its potential costs to the environment and the socio-economic fabric of local communities are inadequately addressed by current mitigation plans.

Keywords: Vadhvan Port, Palghar, fishing communities, socio-economic impact, environmental impact, Dahanu, coastal ecology, dredging, land reclamation, sustainable development.

Introduction

The 21st century has witnessed an unprecedented surge in global trade, driving the expansion of maritime infrastructure worldwide. Mega-ports and deep-water terminals are being developed at an accelerating pace to accommodate the ever-growing size of container ships and facilitate international commerce. While these projects are often championed as catalysts for economic growth, job creation, and national development, they frequently ignite fierce debate and conflict, particularly in regions where traditional livelihoods and fragile ecosystems converge. The proposed Vadhvan Port project in Maharashtra, India, is a quintessential example of this global tension, pitting the aspirations of large-scale infrastructure development against the long-standing socio-economic and ecological foundations of a vibrant coastal community.

Located in the Palghar district of Maharashtra, approximately 150 kilometers north of Mumbai, the Vadhvan Port is an ambitious undertaking slated to become one of India's largest deep-water ports. Spearheaded by the Jawaharlal Nehru Port Authority (JNPA), the project is envisioned as a strategic asset that will alleviate congestion at the saturated Jawaharlal Nehru Port, enhance India's maritime trade capabilities, and position the country as a major player in global logistics. The project's scale is staggering, involving the reclamation of over 3,500 acres of seabed, extensive dredging, and the construction of a massive breakwater, all designed to create a port capable of handling the world's largest container vessels.

However, the proposed site for this industrial behemoth lies in the ecologically sensitive Dahanu taluka, a region protected under the Coastal Regulation Zone (CRZ) and governed by the Dahanu Taluka Environment Protection Authority (DTEPA) as an ecologically fragile area. This coastal stretch is also the lifeblood of a thriving, multi-generational fishing community. For thousands of families, fishing is not merely an occupation but a way of life, a cultural heritage passed down through generations. Their livelihoods are inextricably linked to the health of the marine ecosystem—the tides, the fish breeding grounds, and the intricate balance of the coastal environment.

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The fishermen of this region are highly dependent on the very waters and coastline that are now earmarked for radical transformation. This research paper, therefore, seeks to provide a comprehensive analysis of the multi-faceted conflict surrounding the Vadhvan Port project. The central problem statement guiding this study is: "How will the construction and operation of the Vadhvan Port impact the socio-economic fabric and environmental integrity of the local fishing communities in the Dahanu-Palghar region?" The paper will delve into the profound and potentially irreversible consequences of this development on a community that has coexisted with the sea for centuries.

To address this central question, this research will be guided by the following key objectives:

1. **Socio-Economic Impact Assessment:** To analyze the direct and indirect socio-economic impacts on the fishing communities, including potential displacement, loss of fishing grounds, and the long-term financial consequences for both fishermen and allied industries.
2. **Environmental and Ecological Evaluation:** To critically evaluate the environmental and ecological ramifications of the port's construction activities, particularly dredging and land reclamation, on marine life, breeding grounds, and the overall coastal ecosystem.
3. **Stakeholder Perspectives:** To examine the differing perspectives of the primary stakeholders—the local fishing communities, the government and project developers, and environmental experts—in order to understand the complexities and points of contention in the debate.
4. **Mitigation and Alternatives:** To discuss the adequacy of the mitigation measures and compensation packages proposed by the authorities and to explore potential alternative development models that could achieve economic goals with less environmental and social disruption.

By synthesizing official project documents, legal frameworks, stakeholder reports, and academic literature, this paper aims to provide a nuanced and detailed examination of a critical issue at the intersection of economic development, environmental sustainability, and social justice. The findings will not only shed light on the specific case of Vadhvan Port but also contribute to a broader understanding of the challenges and trade-offs inherent in large-scale coastal infrastructure projects globally.

The Vadhvan Port Project: An Overview

The Vadhvan Port project is a cornerstone of the Indian government's "Sagarmala" program, a national initiative aimed at modernizing and expanding the country's port infrastructure. The project is a joint venture between the Jawaharlal Nehru Port Authority (JNPA), holding a 74% stake, and the Maharashtra Maritime Board (MMB), with a 26% share. The estimated cost of the project is a staggering ₹76,220 crore (approximately \$9.5 billion),

with core infrastructure development, including a breakwater, road and rail linkages, and other utilities, funded by the joint venture, while the terminals and commercial infrastructure will be developed through a public-private partnership (PPP) model.

Project Scope and Key Features

The Vadhvan Port is planned as an all-weather, deep-draft, greenfield port. Its most distinctive feature is its design as an offshore port, built on an artificial island created through extensive land reclamation. The key components of the project include:

- **Land Reclamation:** A massive 1,448 hectares (approximately 3,578 acres) of land will be reclaimed from the sea, primarily using sand extracted from an offshore borrow pit near the Daman coast, approximately 50 km away. This reclaimed area will serve as the foundation for the port's cargo handling and storage facilities.
- **Deep Draft:** The port benefits from a natural water depth of 20 meters, which is a significant advantage as it will allow the port to handle Ultra Large Container Vessels (ULCVs) with a capacity of 24,000 TEUs (twenty-foot equivalent units) or more. This capability is currently lacking in most major Indian ports, which often rely on expensive and continuous dredging to accommodate such vessels.
- **Infrastructure:** The master plan includes the construction of a 10.14 km offshore breakwater to protect the harbor, as well as the development of nine container terminals, four multipurpose berths, four liquid cargo berths, and a Roll-on/Roll-off (Ro-Ro) berth. The port is projected to have a cumulative cargo handling capacity of 298 million metric tons per annum (MTPA), including a container handling capacity of 23.2 million TEUs.
- **Connectivity:** The project includes plans for robust road and rail connectivity. A separate railway line will be built to connect the port to the existing Western Rail Link and the Dedicated Freight Corridor (DFC), while a new road network will link it to the Mumbai-Vadodara Expressway and National Highway 48. This enhanced connectivity is designed to ensure seamless cargo evacuation to the industrial hubs of Maharashtra, Gujarat, and the Northern hinterland.

Economic Rationale and Justification

The project's proponents, primarily the central and state governments, justify its development with a strong economic rationale. The core arguments are:

- **Decongestion of Existing Ports:** Jawaharlal Nehru Port (JNPT), India's premier container port, is operating at or near its saturation capacity. The Vadhvan Port is intended to serve as a satellite port to JNPT, absorbing the growing container traffic and reducing congestion.
- **Enhancing Global Competitiveness:** By accommodating ULCVs, the port aims to reduce

India's reliance on transshipment hubs like Colombo and Singapore. This will lower logistics costs, shorten transit times for both imports and exports, and make Indian goods more competitive on the international market.

- **Job Creation and Economic Growth:** The project's developers forecast the creation of an estimated 12 lakh (1.2 million) direct and indirect jobs. The port is expected to act as a magnet for industrial development, stimulating growth in sectors such as logistics, warehousing, and manufacturing in the surrounding region.
- **Strategic Location:** Its location on the Arabian Sea coast is strategically advantageous, providing a direct gateway to key global trade routes, including the International North-South Transportation Corridor (INSTC) and the India-Middle East-Europe Economic Corridor (IMEC). This positioning is considered vital for India's geopolitical and economic ambitions.

The development of the Vadhvan Port is thus presented as a game-changer for India's maritime trade; a project designed to modernize the country's logistics backbone and secure its place in the global economy. However, as the subsequent sections of this paper will detail, this vision of progress is fiercely contested by those who believe its costs—both environmental and social—are too high.

The Fishing Community and Its Livelihood

The coastal stretch of the Dahanu-Palghar region is home to a vibrant and deeply rooted fishing community, whose history and economy are intrinsically tied to the Arabian Sea. This area is not just a geographical location but a cultural and economic hub for thousands of families belonging to various fishing castes, such as the **Kolis** and **Vanshis**. Their way of life is a testament to a sustainable, traditional relationship with the ocean, which is now facing an existential threat from the proposed Vadhvan Port.

The Socio-Economic Fabric

For the local population, fishing is the **primary source of income and employment**. The fishing economy is multi-layered, supporting not just the fishermen themselves but also a wide network of allied industries. This includes boat builders and mechanics, net weavers, ice factories, cold storage operators, and, most notably, thousands of women involved in fish vending and processing. These women play a crucial role in the local economy, managing the sale of the day's catch in nearby markets and even as far away as Mumbai, ensuring that the income generated sustains their families.

The fishing practices in this region are diverse, ranging from small-scale traditional methods to more modern, mechanized approaches. The fishermen use various types of boats, from small, non-mechanized crafts for near-shore fishing to larger, mechanized trawlers and gillnetters that venture further out to sea. The choice of boat and gear depends on the season, the target species, and the depth of the water.

Marine Resources and Ecosystem

The waters off the coast of Dahanu are particularly rich in marine biodiversity, making them an ideal fishing ground. This area is known for a variety of commercially important fish species, including pomfret, shrimp, squid, and Bombay Duck. However, the most prized catch in this region is the **Ghol fish** (*Protonibea diacanthus*). Known as the "sea gold" due to its high market value, particularly for its swim bladder which is used in pharmaceutical and cosmetic industries, the Ghol fish is a key economic driver for many families.

The entire ecosystem, from the shallow inter-tidal zones to the deeper sea, serves as crucial breeding grounds and nurseries for these fish species. The coastal environment, with its unique blend of sandbars, estuaries, and a relatively unpolluted coastline, provides the perfect habitat for marine life to flourish. The fishermen's knowledge of these breeding cycles and migration patterns is a form of traditional ecological knowledge passed down through generations, allowing them to fish sustainably without depleting the stock.

Existing Challenges

While the fishing community has a strong connection to its livelihood, it is not without its challenges. Over the years, they have faced increasing pressures from various sources:

- **Environmental degradation:** Despite the Dahanu area being protected, industrial pollution from nearby areas and the occasional oil spill still pose a threat to the marine ecosystem.
- **Competition:** The rise of large-scale trawlers from other states has led to increased competition for fishing grounds and a decline in catch for local fishermen.
- **Climate change:** Unpredictable weather patterns and rising sea temperatures have begun to affect fish migration and breeding cycles, adding another layer of uncertainty to their lives.

In this context of existing vulnerabilities, the Vadhvan Port project is not just another challenge but a monumental threat that promises to fundamentally alter their way of life. The construction activities, including dredging and reclamation, are feared to destroy the very marine habitats that form the basis of their existence, pushing an already vulnerable community to the brink.

The construction of the Vadhvan Port poses a grave threat to the socio-economic fabric of the local fishing communities in the Dahanu-Palghar region. The project's massive scale and location directly conflict with the traditional livelihoods of thousands of people, leading to significant concerns about displacement, economic loss, and cultural disruption.

Displacement and Loss of Fishing Grounds

The most immediate and severe impact is the **loss of traditional fishing grounds**. A study by the Central Marine Fisheries Research Institute (CMFRI) revealed that the project would render

approximately 72 sq km of current fishing area inaccessible to fisherfolk. The port's construction and operation, which includes a breakwater and shipping channels, will effectively cordon off these areas. The land reclamation of over 3,500 acres will permanently destroy the inter-tidal zones and other crucial coastal habitats that serve as vital breeding grounds and nurseries for many fish species.

- **Impacted Villages:** The CMFRI report indicates that at least 16 fishing villages will be directly impacted. Five of these villages—Tadiyale, Gungwada, Dhakti-Dahanu, Vadhvan, and Varore—are considered to be within the port's immediate premises and will face the most severe consequences.
- **Physical and Economic Displacement:** While port authorities claim that no one will be physically displaced from their homes, the project will effectively displace fishermen from their source of income. This economic displacement is arguably more damaging, as it removes the very foundation of their livelihood without a clear path to sustainable alternatives. The project's critics argue that this effectively amounts to permanent displacement, even if the villages themselves remain.

Economic Consequences

The direct impact on fishing grounds translates into severe economic fallout for the community. The local fishing economy, valued in crores, is at risk of being wiped out.

- **Decline in Catch:** The destruction of breeding grounds and the disruption of marine ecosystems will inevitably lead to a drastic decline in the fish catch. The Dahanu-Palghar coast is known as the "golden belt" for fishing and is particularly famous for the highly valuable **Ghol fish**. The loss of this key species alone would be a devastating blow to the local economy.
- **Inadequate Compensation:** The fishing community has consistently rejected the notion of one-time financial compensation. They argue that a single payout, no matter how large, cannot replace a **generational livelihood** and the continuous income it provides. The fear is that the compensation will be quickly exhausted, leaving future generations without any means of sustenance.
- **Ripple Effect on Allied Industries:** The fishing industry supports a vast network of allied businesses, including net weavers, boat mechanics, fish vendors, and transporters. The collapse of the fishing sector would cause a cascading effect, leading to unemployment and economic hardship for thousands of people indirectly dependent on it. Women, who are heavily involved in the marketing and processing of fish, would be particularly affected.

Social and Cultural Impact

The port project threatens more than just the economic well-being of the community; it poses a risk to their social cohesion and cultural identity.

- **Loss of a Way of Life:** For the Koli and Vanshi communities, fishing is not just a job; it is their heritage. Their traditions, festivals, and social structures are all centered around the sea. The port's development would sever this deep-rooted connection, leading to a loss of cultural identity and traditional ecological knowledge.
- **Protests and Community Mobilization:** The project has faced staunch and continuous opposition for decades, with the local community, under the banner of the **Vadhvan Bandar Virodhi Sangharsh Samiti** (Anti-Vadhvan Port Struggle Committee), staging numerous protests. This ongoing resistance highlights the community's resolve to protect their land and sea. The protests have even led to political action, with villagers boycotting elections to voice their dissent. The Vadhvan Port project presents a stark example of the conflict between national development goals and the rights of local communities. The socio-economic impacts on the fishing community are profound, irreversible, and, according to a significant portion of the population, inadequately addressed by the project's proponents.

The proposed Vadhvan Port project is situated in the Dahanu taluka, a region with a rich and sensitive marine ecosystem. The project's construction and operation are anticipated to have a range of severe and potentially irreversible environmental impacts. These impacts are a major source of concern for local communities and environmental experts, who argue that the project's development could permanently alter the coastal ecology of the region.

Dredging and Land Reclamation

The most significant environmental impact stems from the project's need for extensive **dredging and land reclamation**. To create the port on an artificial island, an estimated 1,448 hectares (approximately 3,578 acres) of seabed will be reclaimed. This process will require the excavation and movement of millions of cubic meters of sand.

- **Habitat Destruction:** Land reclamation will directly destroy the shallow-water inter-tidal zones, which are vital **breeding grounds and nurseries** for numerous fish species, including the commercially important Ghol fish. This will eliminate critical habitats for a wide variety of marine flora and fauna, including mangroves, corals, mollusks, and various crustaceans.
- **Changes in Ocean Currents and Sedimentation:** The large-scale dredging and the construction of a 10.14 km breakwater will fundamentally alter the natural flow of ocean currents in the region. This change can lead to increased coastal erosion in some areas and excessive sedimentation in others, negatively impacting coastal stability and marine life.

Marine Pollution

The operation of a mega-port brings with it a high risk of marine pollution, which can have long-term consequences for the entire ecosystem.

- **Oil Spills and Waste Disposal:** Increased vessel traffic, including large container ships and tankers, raises the risk of oil spills. Even minor spills can be devastating to marine life and coastal birds. Additionally, the port's operations will generate a significant amount of waste, and improper disposal could lead to the contamination of seawater.
- **Noise Pollution:** The constant noise from port machinery, vessels, and related industrial activity can disrupt marine organisms, affecting their communication, migration, and breeding patterns.
- **Contaminant Release:** Dredging activities can stir up heavy metals and other pollutants that have settled on the seabed over many years. This can release toxins into the water column, posing a serious threat to fish and other marine life.

Impact on Sensitive Ecological Zones

The Vadhvan Port's location is particularly contentious because the Dahanu taluka has been designated as an "ecologically fragile area" since 1991. The region is governed by the Dahanu Taluka Environment Protection Authority (DTEPA), a quasi-judicial body specifically created to protect the area's natural resources.

- **Threat to Biodiversity:** The area is known to be a habitat for a variety of marine species, some of which are listed under Schedule I of the Wildlife Protection Act. The port's construction and operation threaten to destroy these habitats, impacting the overall biodiversity of the region.
- **Weakening of Regulatory Frameworks:** Critics of the project argue that the port's environmental clearance, despite the area's "ecologically fragile" status, sets a dangerous precedent. They believe it undermines the authority of the DTEPA and the very legal protections put in place to safeguard such sensitive zones.

The Vadhvan Port project is a textbook example of a development-versus-environment conflict, with various stakeholders holding sharply divergent views. The ongoing struggle is characterized by a deep distrust between the project's proponents and the local communities, leading to a long history of protests, legal challenges, and political maneuvering.

Views of the Fishing Community

The local fishing communities, particularly those from the **16 villages directly impacted**, are a unified front against the port. Their opposition is led by organizations like the **Vadhvan Bandar Virodhi Sangharsh Samiti** (Anti-Vadhvan Port Struggle Committee) and the **Akhil Maharashtra Machhimar Kriti Samiti**. Their primary concerns are:

- **Livelihood Destruction:** The communities believe the port will permanently destroy their traditional fishing grounds, which are vital for their income and sustenance. They argue that the

promised jobs and one-time compensation are insufficient and cannot replace a generational livelihood.

- **Environmental Devastation:** They fear the project will cause irreversible damage to the marine ecosystem, including the destruction of breeding grounds for valuable fish like the Ghol. They point to the area's designation as an ecologically fragile zone and question how such a large-scale industrial project can be built without massive environmental consequences.
- **Disregard for Consultation:** The community alleges that the environmental public hearings held were inadequate and did not genuinely address their concerns. They claim the process has been rushed and that authorities have consistently downplayed the project's negative impacts. Their protests have been ongoing for decades, showing their unwavering resolve.

Government and Developer Perspective

The central and state governments, along with the Jawaharlal Nehru Port Authority (JNPA), present a different narrative. They justify the port's construction based on a national interest perspective.

- **Economic Growth:** The government emphasizes that the port is essential for India's economic growth, aiming to boost trade, create a global maritime hub, and generate **over 12 lakh (1.2 million) direct and indirect jobs**. They argue that the port will benefit the region by attracting investment and industrial development.
- **Minimal Environmental Impact:** Developers maintain that the port has been designed as a "**green port**" with minimal environmental impact. They claim that the project's offshore location and advanced design will protect the coastal ecology. They have also pointed to various skill development programs and partnerships with local NGOs to train the youth for jobs at the port, suggesting a pathway to alternative livelihoods.
- **Mitigation Measures:** Authorities have offered compensation and rehabilitation packages to the affected families. However, these offers have been widely rejected by the communities, who view them as inadequate and a one-time solution to a permanent problem.

Role of NGOs and Environmental Activists

Non-governmental organizations (NGOs) and environmental activists have played a crucial role in amplifying the concerns of the fishing communities and scrutinizing the project's environmental clearance process.

- **Scrutinizing EIA Reports:** Activists have challenged the Environmental Impact Assessment (EIA) reports, alleging that they contain inaccuracies, such as claims of no corals in the project area, which have been refuted by marine researchers.
- **Legal Challenges:** Several NGOs and community groups have taken the legal route, filing petitions in courts like the Bombay High

Court and the Supreme Court. These legal battles aim to challenge the project's approvals and ensure that the legal and environmental protections for the Dahanu eco-sensitive zone are upheld.

- **Documenting and Advocacy:** Organizations have been instrumental in documenting the potential impacts and raising public awareness about the project, both locally and nationally. They provide a scientific and legal backing to the grassroots protests, highlighting the potential long-term damage to the region.

The conflict over the Vadhvan Port is a complex and ongoing struggle, where economic imperatives are at odds with social and environmental justice.

The debate over the Vadhvan Port project centers heavily on the **mitigation measures** proposed by the port authorities and the potential for **alternative development models** that could achieve economic goals with less environmental and social disruption. The fishing communities and their supporters argue that the proposed mitigation is inadequate, while the government maintains it is a key component of the project's "green port" vision.

Proposed Mitigation Measures

The Jawaharlal Nehru Port Authority (JNPA) and the government have outlined several measures to address the concerns of the fishing community and environmentalists:

- **Compensation and Resettlement:** The JNPA has stated its commitment to a **Fisher-folks Compensation Policy (FCP)**, which is being designed in consultation with all stakeholders. The policy aims to provide financial compensation for the loss of fishing grounds and livelihoods. There is also a proposed allocation of approximately **₹300 crore for the construction of two new fishing harbors** to provide a new base for the displaced fishermen.
- **Skill Development:** To address the issue of job loss, the **Vadhvan Port Project Ltd (VPPL)** has launched a skilling program in partnership with institutions like the Yashwantrao Chavan Maharashtra Open University (YCMOU) and the Directorate General of Shipping. These programs aim to train local youth and project-affected people for jobs in the maritime sector, such as mechanics, heavy vehicle drivers, and other port-related roles.
- **Environmental Safeguards:** The project's **Environmental Impact Assessment (EIA) report** claims that the port will be constructed in a way that minimizes environmental impact. This includes a commitment to developing a "green port" with renewable energy, efficient waste management, and the use of green technologies like **cold ironing/shore power supply** to reduce vessel emissions while at berth.

Criticism of Mitigation Measures

Opponents of the port project are highly critical of these mitigation efforts, arguing that they are superficial and fail to address the core issues.

- **Inadequate Compensation:** The fishing community has consistently rejected the idea of one-time financial compensation, arguing that it can't replace a **generational livelihood**. They fear that the compensation would be quickly spent, leaving future generations with nothing.
- **Misguided Skill Development:** The skilling programs are viewed with skepticism. Critics contend that a short-term training program cannot transform a traditional fisherman into a port employee and that the promised jobs may not be permanent or sufficient for the thousands of people affected.
- **Irreversible Environmental Damage:** Environmental experts argue that no amount of mitigation can reverse the fundamental damage caused by **dredging and land reclamation**. The destruction of critical marine habitats and the alteration of coastal currents are considered irreversible, making the "green port" label a contradiction.

Alternative Development Models

The conflict over the Vadhvan Port has sparked a broader conversation about alternative and more sustainable models for coastal development in India. Instead of building a massive new port, some experts and activists have suggested:

- **Modernizing Existing Ports:** Instead of building a new port from scratch in an ecologically sensitive zone, the government could invest more in modernizing and expanding existing ports like the **Mumbai Port Authority** to handle more cargo efficiently. This could involve using advanced technologies and optimizing land use to increase capacity.
 - **Focus on Local Industries:** An alternative model could prioritize supporting and enhancing the existing local economy, rather than replacing it. This could include investing in sustainable fishing infrastructure, developing eco-tourism, and promoting local small-scale industries that are in harmony with the coastal environment.
 - **Decentralized Port Strategy:** Instead of one mega-port, a more decentralized strategy could involve developing smaller, more specialized ports along the coastline. This would spread the environmental and social impact, making it more manageable while still supporting economic growth.
- The Vadhvan Port project's mitigation strategies are seen by many as a weak attempt to justify a project that is fundamentally incompatible with the region's ecology and traditional way of life. The debate highlights the need for a more holistic approach to development that genuinely balances economic progress with environmental and social sustainability.

Conclusion And Recommendations

The Vadhvan Port project, while touted as a catalyst for national economic growth, stands in stark contrast to the principles of sustainable development. This research paper has meticulously detailed the

profound and multi-faceted impacts that the project is poised to have on the fishing communities of the Dahanu-Palghar region. The central finding is that the port's development is fundamentally incompatible with the existing socio-economic and environmental fabric of the area.

From a **socio-economic perspective**, the port threatens to dismantle a generational livelihood. The project's extensive land reclamation and dredging will destroy vital fishing grounds, leading to a drastic decline in fish catch and the economic collapse of a community that has thrived on the sea for centuries. The one-time compensation and job promises offered by authorities are viewed as inadequate substitutes for a sustainable and culturally significant way of life. The fear of economic and cultural displacement is not a hypothetical concern but a deeply felt reality for thousands of families.

Environmentally, the project poses an existential threat to an ecologically fragile zone. The destruction of marine habitats, alteration of ocean currents, and heightened risk of pollution from port operations will lead to a significant loss of biodiversity and a long-term degradation of the coastal ecosystem. The "green port" label attached to the project appears contradictory in light of these anticipated ecological damages.

The conflict in Vadhvan, therefore, is not merely a local dispute but a critical case study of the trade-offs involved in large-scale infrastructure projects. It underscores the urgent need for a more balanced approach to development that genuinely prioritizes the well-being of local communities and the preservation of natural resources.

Recommendations

Based on this comprehensive analysis, the following recommendations are proposed to address the conflict and guide a more sustainable path forward:

1. **Rethink the Project's Scale and Location:** The government and project developers should reconsider the mega-port's scale and its location within an ecologically fragile area. A thorough re-evaluation should explore alternative sites or a more decentralized port strategy that minimizes the environmental and social footprint.
2. **Ensure Genuine Community Participation:** The process of stakeholder consultation must be transparent, inclusive, and built on trust. Authorities should engage in a genuine dialogue with the fishing communities, allowing their concerns to be a central part of the decision-making process. The community should be treated as partners in development, not as obstacles.
3. **Implement Robust and Sustainable Compensation:** The compensation model must move beyond a one-time payment. A sustainable and long-term rehabilitation plan is needed, which could include investing in new, non-disruptive economic opportunities for the community, such as eco-tourism or small-scale fish processing industries, that are in harmony with their existing way of life.

4. **Enforce Stricter Environmental Safeguards:** The regulatory bodies, including the Dahanu Taluka Environment Protection Authority (DTEPA), must be empowered to enforce stricter environmental norms. An independent and transparent monitoring body should be established to oversee the project's environmental impact, with a clear mandate to halt construction if irreversible damage is observed.
5. **Prioritize Alternative Development Models:** Policy efforts should explore and invest in alternative development models, such as modernizing existing ports or supporting local industries, that can achieve economic goals without compromising the ecological integrity and social harmony of coastal communities.

The Vadhvan Port project presents a crucial opportunity for India to demonstrate its commitment to a development paradigm that is both progressive and sensitive to its people and environment. The path chosen here will have far-reaching implications for future coastal development projects across the country.

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I. Official Project Documents and Reports

This category includes primary source materials directly from the project's proponents and government bodies. These are essential for understanding the project's scope, rationale, and official environmental and social assessments.

- **Jawaharlal Nehru Port Authority (JNPA).** *Environmental Impact Assessment (EIA) Report for the Vadhvan Port Project.* (While specific, publicly available EIA reports may vary in their titles, this would be a key document to cite. You would need to find the most recent version, such as the one submitted for environmental clearance).
- **Government of India, Ministry of Ports, Shipping and Waterways.** *Sagarmala Programme: A Vision for India's Maritime Sector.* (This document provides the broader context for the Vadhvan Port project within a national strategy).
- **Vadhvan Port Project Limited (VPPL).** *Socio-Economic Impact Assessment (SIA) Report.* (A report detailing the project's projected social and economic impacts, often prepared by a third-party consultant for the project developers).
- **Central Marine Fisheries Research Institute (CMFRI).** *"Impact Study on Proposed Vadhavan Port on Coastal Fisheries."* (This is a crucial report commissioned by JNPA itself, which documents the number of affected fisherfolk and villages. It's a key source for the socio-economic impact on fishing).
- **AECOM India Private Limited.** *"Techno-Economic Feasibility Report for Development of Port at Vadhavan - Final."* (A foundational report that outlines the technical and economic viability of the project).
- **Maharashtra Pollution Control Board (MPCB).** *Public Hearing Documents and Executive Summaries related to Vadhvan Port.* (These documents contain summaries of public feedback, expert opinions, and the project's response to these concerns).

II. Journal Articles and Academic Research

This category would include scholarly papers that analyze the environmental, social, and policy aspects of port development, both globally and in the Indian context. While specific peer-reviewed articles on the Vadhvan Port itself might be limited due to its status

as a proposed project, you would draw on related studies.

- **Goenka, Debi.** (2024). *"Vadhvan Port faces backlash over environmental and social impact."* *Mongabay-India.* (This type of article from a reputable environmental news outlet often includes analysis from marine biologists and environmental activists, providing an alternative perspective to official reports).
- **Tembhekar, Chittaranjan.** (2025). *"Vadhvan port: 3.5k acres to be reclaimed, greens flag threats."* *The Times of India.* (News articles from major newspapers are crucial for tracking the latest developments, including protests, legal challenges, and new official statements).
- **Tandel, Devendra.** (various). Publications and statements from the *Akhil Maharashtra Machhimar Kruti Samiti (AMMKS).* (As a key leader of the opposition, Tandel's statements and reports from his organization are essential for representing the fishing community's perspective).
- **General articles on port development impacts:** Look for academic papers with titles like "The socio-economic impacts of port expansion on coastal communities" or "Environmental consequences of dredging and reclamation on marine ecosystems" to provide a theoretical and comparative framework.

III. News Reports and Media Coverage

These sources are vital for tracking the timeline of the conflict, the public discourse, and the actions of various stakeholders. A good research paper will cite a wide range of news outlets to provide a balanced view.

- *Hindustan Times.* (2024). *"Maharashtra: Vadhavan Port to impact 20,809 fisherfolk in 16 villages."* (Reports that cite specific figures from official documents, like the CMFRI study, are highly valuable).
- *The Indian Express.* (2025). *"Pre-feasibility study begins for proposed greenfield airport near Maharashtra's Vadhavan Port."* (This shows the project's ongoing evolution and its broader infrastructural implications).
- *Maritime Gateway / Sagar Sandesh.* (2025). *"Vadhvan port faces backlash over environmental and social impact."* (Industry-specific news portals often provide insights into the technical and economic rationale, as well as the industry's response to the criticism).

IV. Legal Documents and Public Records

Citing legal challenges and official government notifications adds a layer of authority and factual basis to the paper.

- **National Green Tribunal (NGT) / Bombay High Court / Supreme Court of India.** Petitions, orders, and case files related to legal challenges against the Vadhvan Port. (These documents provide insight into the legal arguments and the status of the project's environmental clearance).

- **Ministry of Environment, Forest and Climate Change (MoEF&CC).** *Terms of Reference (ToR)* for the Vadhvan Port project. (These documents lay out the specific studies required for the environmental clearance process and can be found on the MoEF&CC website).