

Gauging the impacts of Port and ancillary construction on the ecology and the fishing community in the Sharavathi River Estuary

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Introduction

40% of the world's population lives near coastal areas and more than 3 billion people utilize the oceans for their livelihood. 80% of world trade is achieved using the seas (Source: <https://unric.org/en/blue-economy-oceans-as-the-next-great-economic-frontier/>). With the Blue Economy being promoted by International organizations and the market, progressively more funds are being directed to extra resources from oceans and for trade.

In this context, the development of infrastructure initiatives like ports plays a vital role in promoting economic growth and advancing global trade. The development of such massive establishments can present the communities with both opportunities and difficulties. On one hand, it can encourage economic growth, produce job opportunities, and enhance trade and commerce to generate income, and on the other hand these projects could have a significant negative impact on the communities that reside there and the fragile coastal ecosystem, leading to habitat loss, water pollution and biodiversity loss. Given that the current wave of developmental activities favor very specific and elite interest groups.

This report aims to understand how the development of a port will impact local communities and the ecology. Moreover, it illuminates that one size fits all approach to development often leads to disbenefits for a range of stakeholders who are not included in the decision-making process while also altering the ecology irreversibly. As a result, assessing how much the port's construction has impacted the community's general welfare and standard of living is critical. It is also important to bring in different lenses of interdisciplinarity i.e., to study the ecology, culture, and regulations for coastal ecosystems, to understand the current status of this ecosystem and its relationship with the local community along with future possibilities for development that are ecologically sound, just and participatory.

The report examines the impact of the port by adopting a comprehensive and evidence-based approach and analyzing the social aspects by investigating changes in employment patterns and community well-being. Moreover, it examines the ecological effects by studying biodiversity and ecosystem resilience changes.

Literature Review

Coastlines are a dynamic interface between the land, sea and socio-ecological systems. They are characterized by a huge diversity of social-ecological systems (SES) and the interdependent interactions and outcomes between social and ecological subsystems (Ostrom, 2009).

Coastal commons

Many resources at the land-sea interface and the property rights of those resources have characteristics of a commons, in the sense of being shared among many actors, ranging from a handful of fishers to the global community. A difference in the governance systems regulating the land and the sea is that the former have much more nuanced and diversified governance, where many aspects are institutionalized. Many more resources are becoming regulated by private property regimes on the continuum between open access and private property (Bromley 1991; Schlager 1992) or even anti-common property (Schluter_2008), despite the fact that many ecosystem services produced by those resources are common, due to their characteristic of excludability (Woelfle-Erskine, 2017).

Hence, the number of regulatory bodies governing marine ecosystems is fewer than terrestrial ecosystems. Moreover, this mechanism opens up space for private players and other actors with vested interests to bypass institutions for developmental activities.

Coastal Regulation Zones or CRZs

In order to have control over exploitation and check further continued deterioration of coastal resources, the Government of India promulgated a notification in 1990, based on the Environmental Protection Act (1986) and Environmental Protection Rules of 1986 declaring coastal stretches as Coastal Regulation Zones and imposing restriction on industries, operation and other activities in these Regulation Zones (Joseph, Balchand 2000)

However, a notification in 2018 by the Union government to clear the CRZ notification has had its set of challenges and environmentalists say it is opening up the shoreline to commercial activities and limited interests thereby, putting pressure on the fragile ecology and vulnerable coastal communities that are rapidly exposed to a warming world with sea level rise.

Moreover, Coastlines are fragile ecosystems that are already facing the brunt of climate change and erosion of the banks along their shorelines. Vinayaraj et al.(2011) investigated the coastal erosion and deposition at four stations of the study area: Karwar, Honnavar, Kundapura, and Malpe, covering a period of almost thirty years, along the Karnataka, west coast of India. Both erosion and deposition were observed at all four stations.

Bypassing Environmental Clearances and CRZs

A reporting analysis by Land Watch Conflict assessed the vulnerability of the fisher folk community as well as the regulations that were flouted while building the road in Honnavar. According to the report, “The development of the Honnavar port is likely to lead to the loss of local livelihoods and directly affect the health of the community. The construction of the road itself is likely to impact 2000 women of the fisher folk community living in the area. It will also affect the population of Olive Ridley turtles which use the beach as a nesting site”. (Land Watch Conflict report, Fisher folk protest illegal construction of road on coastal commons for Honnavar Port, Karnataka)

“This road is located in coastal regulation zone III, which is a ‘no development zone’ under India’s coastal regulatory framework. Designated as ‘unsurveyed’ land is part of the village coastal commons and has been used as a dry fish yard by the local community for generations. The plan for the road construction was not disclosed in the Honnavar port project proposal in its environmental clearance application” (Land Watch Conflict Report, Fisher folk protest illegal construction of road on coastal commons for Honnavar Port, Karnataka)

DPSIR Framework

A system has different horizontal components like ecological, environmental, social and economic aspects and the multiple stakeholders play a part in the working of a system. Systems Thinking Framework examines the relations between the stakeholders and interactions with different components which helps in understanding the problem better. One such systems thinking framework is Driving Forces - Pressures - States - Impacts - Response (DPSIR) Framework. The DPSIR framework has evolved as an interdisciplinary tool to provide and communicate knowledge on the state and causal factors regarding environmental issues. Though there are some critiques on the theoretical foundations of the DPSIR approach a presumed strength of the DPSIR framework is that it captures, in a simple manner, the key relationships between factors in society

and the environment, and therefore, can be used as a communication tool between researchers from different disciplines as well as between researchers, on the one hand, and policy makers and stakeholders on the other.(Svarstad et al.,2007).

Study Area

India boasts a vast coastline spanning approximately 7516.6km, where numerous rivers flow into the Arabian Sea and Bay of Bengal, forming estuaries. Among these rivers, the Sharavathi River stands out as a westward flowing river in the state of Karnataka. Its origin can be traced to Ambuthirtha near Kavaledurga in Thirthahalli. The river flows for about 128 kms and finally joins the Arabian Sea at Honnavar in the Uttara Kannada district.

Over the past century, the river has undergone significant transformations, primarily due to the construction of three major reservoirs: Madenur (Hirebhaskar) dam in 1932, Linganamakki in 1964, and Gerusoppa (Sharavathi TailRace Project) in 2001. These reservoirs have had an impact on water quality and have led to the intrusion of seawater in the estuary, resulting in crop failures in the region (ENVIS Technical Report:52, 2012).

The convergence of the Arabian Sea and Sharavathi River creates an estuary which is highly productive and biodiverse, serving as crucial ecosystems that receive nutrients from both land and marine sources through tides and upwelling. This nutrient-rich environment fosters thriving fisheries and sustains a wide variety of aquatic life.

The river forms a depositional coastal landform called spit. A spit, also known as a sandspit, is a landform found along coastlines or lake shores where sediment accumulates and forms a narrow bar or beach.

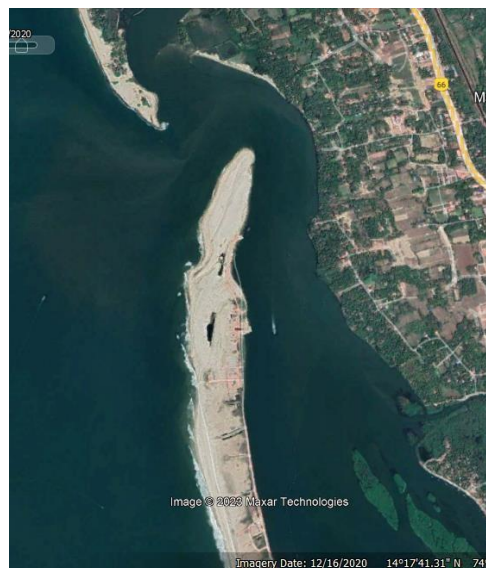


Figure 1: Sandspit

Recently, the Karnataka government proposed the construction of a port at Kasarkod Tonka in Honnavar, situated on the estuary of the Sharavathi River. However, this development has had an impact on the livelihoods of the local communities. The construction of a road connecting NH-66 to the port has disrupted common property areas where community members used to dry fish for consumption and sale.

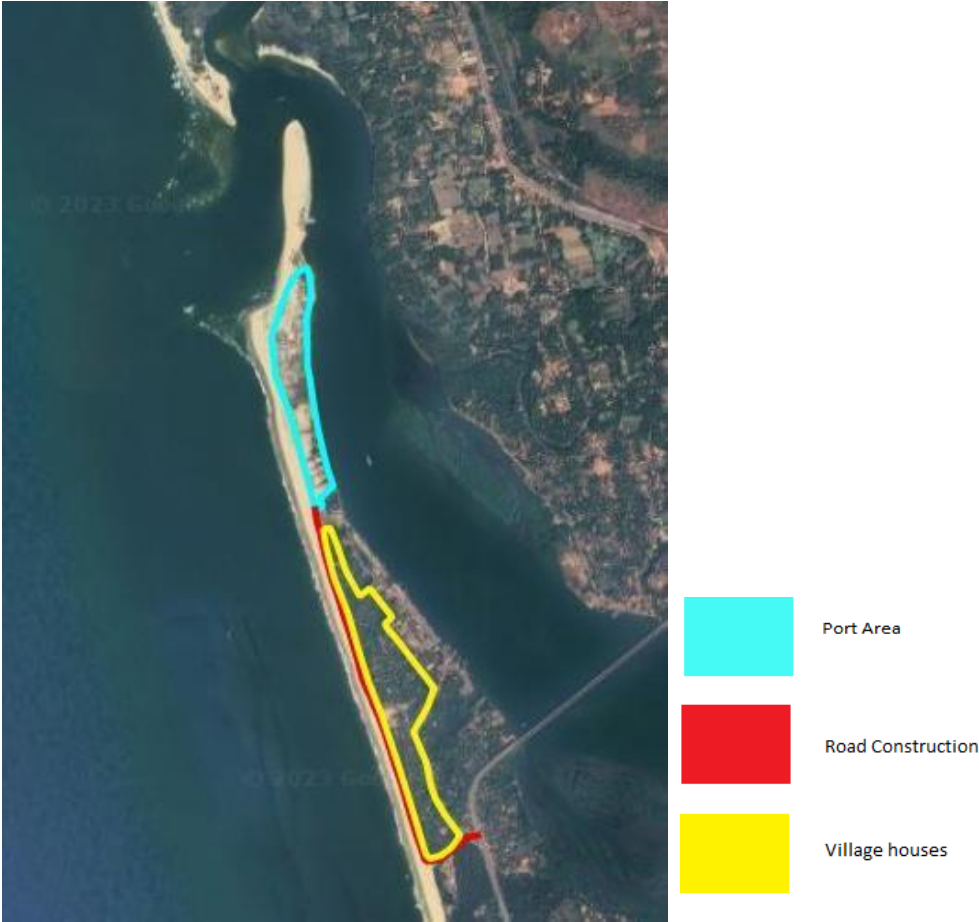


Figure 2: Kasarkod-Tonka beach satellite imagery

Problem Statement

The Karnataka government has been pushing for more development and infrastructure. Currently, the three districts of Uttar Kannada, Udupi and Dakshin Kannada have 12 minor ports and 1 major port at different stages of construction.

A new port is under construction in the village of Kasarkod, Honnavar, Uttar Kannada, Karnataka, India. This village is located on a sandspit within the estuary of the Sharavathi River. Despite the adverse effects of dams and various infrastructure projects on the Sharavathi River, it still supports a diverse range of biodiversity, including Olive Ridley turtles, fish, crabs, oysters etc. Due to the abundance of fish in the area, a significant number of people rely directly or indirectly on fishing for their livelihoods. We aim to examine the varying impacts experienced by different individuals and understand the reasons behind the significant protests against the port's development.

Gauging the impacts of a “developmental” project, in this case, a port, on the locals and the ecology

- Mapping the stakeholders
- How locals interact with the sea, estuary and the ecology
- Where does the port fit in the bigger picture and its impact on the locals, district, state and the nation.

Methods

To accurately gauge the impact, we have employed Qualitative research methodologies. It incorporates interviews, community consultations and Focused group discussions to capture the perceptions and experiences of the local population. Additionally, it utilises scientific data and satellite imagery to evaluate changes in the natural environment.

The DPSIR framework serves as a valuable tool for illustrating the important connections between society and the environment. It facilitates effective communication among researchers from various fields, including social and natural sciences, as well as between researchers, policymakers and stakeholders. It aids in fostering collaboration and understanding among these diverse groups to address environmental issues and make informed decisions.

The DPSIR framework is used in the report to analyse and understand the relationship between different stakeholders and components. It helps to clearly understand the drivers, pressures, state, impact and response of the project. The framework helps in identifying the causes and consequences of environmental changes and helps in developing strategies for sustainable development and environmental management.

Stakeholders

Community

Fisher communities are very diverse and their demographic changes drastically along the Indian coast. Fishers were recognised and identified by the species of fish they catch and the type of fishing they do. Fishers were paid as per the importance of their work. Caste, class and religion also plays a major role. Gender plays a critical role in fisheries, women play an important role pre and post-fishing. Women sell fish in the market which is either bought from the harbour or caught by their family members. Women also do value-added services like drying, sorting, making pickles etc.

Honnavar foundation

Honnavar Foundation, a prominent NGO founded by Mr Sandeep Hegde, is dedicated to the welfare and well-being of the local population in the Honnavar region, this foundation majorly focuses on the conservation of Olive Ridley Turtles with the fisherman community. A semi-structured interview was conducted with the founder and valuable insights were gathered.

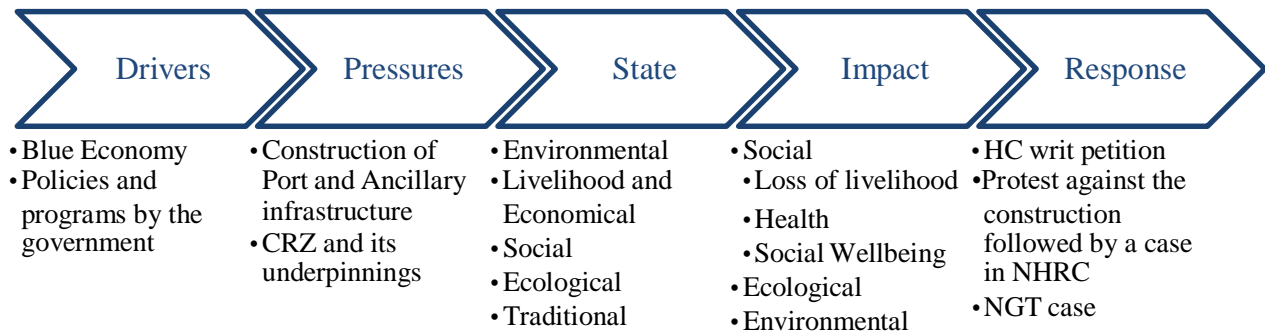
Scientists

Dr. Prakash Mesta, a respected scientist actively involved in this field, is an unofficial member of the Karnataka Biodiversity Board and he serves as a research associate at the Centre for Ecological Sciences, IISC, Kumta. His primary area of focus is Marine ecology and systematics, Zoology and Botany. His expertise and knowledge regarding this project have been highly regarded and revered by the community, as he has played an important role in guiding the community. We conducted a semi-structured interview with him and gathered a great deal of information.

DPSIR Framework- Result and Analysis

Driving Forces

Driving Forces are the factors that motivate human activities that have a direct impact on the environment.



Blue Economy: Sustainable Use of the Oceans and its Pitfalls

The term 'Blue Economy' was coined by Gunter Pauli in his book "The Blue Economy" in 2012. The concept appeared on international platforms during the Rio +20 conference, simultaneously with the rise of the "green economy". In 2015, a development policy focusing on sustainability was unanimously embraced by all Member States of the United Nations. The policy revolves around 17 sustainable development goals or SDGs which are to be achieved by 2030. The 14th Goal is labelled as 'Life Below Water' which seeks to conserve and sustainably use ocean resources.

The term Blue Economy is an economic term interchangeably used with 'sustainable ocean based economy'. It encapsulates the nexus between the ocean, sustainability, and economics. The UN specifies a range of economic activities for the seas, oceans and coastal areas that are sustainable and socially equitable. An important challenge of the blue economy is to understand and better manage the many aspects of oceanic sustainability, ranging from sustainable fisheries to ecosystem health to preventing pollution

Blue Economy in the Indian Context – Given that 40,56,213 people from the traditional fishing community (Marine Fisheries Census, 2010 survey) live along India's immense 8118 km coastline, the government recognises that there is enormous potential for fishing operations along with ports and shipping facilities for the ease of opening trade-routes. In December 2015, the Cabinet Committee on Economic Affairs (CCEA) approved an integrated scheme for the

development and management of fisheries under the 'Blue Revolution' and gave 3000 crore rupees for a period of 5 years. The scheme was aimed at covering multi-dimensional activities for the development and management of inland fisheries, aquaculture and marine fisheries.

Along with aquaculture, inland fisheries and support to fishery farmers under the Pradhan Mantri Matsya Sampada Yojana, the Blue economy also prioritises the construction of shipping ports, ocean-based tourism and deep sea mining. According to the Ministry of New and Renewable Energy, a potential of 12455 MW of Tidal Energy and 40,000 MW of wave energy has been identified. Moreover, the Deep Ocean Mission which is an initiative by India to undertake deep ocean extraction plans to mine metals such as Copper, Nickel, Cobalt, and Manganese estimated at \$110 billion.

The Blue Economy however, creates two competing interests – one that favors economic growth and development and one which preserves the oceans biodiversity and marine life that depends on it.

A paper by the Observer Research Foundation titled "Blue Economy in the Indian Ocean: Governance Perspectives in the Indian Ocean" by Aparna Roy argues that we need a more encompassing definition of the Blue Economy (BE) and its multi-sectors. BE should take into account all the ecological and human costs that are associated with resource extraction. Therefore, it is a shift from the old brown-based economic model which treats the ocean as a free-extraction resource base to a greener blue economy which views development for livelihoods, food security and marine conservation as imperative as infrastructure development.

Since 2014, The State Government of Karnataka has been pushing for more infrastructure and industrial development. Under the backdrop of Sagarmala which is a central government initiative for nationwide port development, Karnataka has been pushing for building coastal infrastructure through ports, roads, highways, and railways for unlocking the full potential of India's waterways. Currently, the three districts of Uttar Kannada, Udupi and Dakshin Kannada have 12 minor ports and 1 major port at different stages of construction. Moreover, Karnataka's Industrial policy from 2020-2025 incentivises faster land acquisition, exempting private players from any hindrances in acquiring port clearances and higher investment from private players.

One of the major criticisms of these 'big growth' models through port development, highways, roads etc. is the loss of biodiversity of these vulnerable coastal ecosystems, livelihood, and the ways in which 'common land' or in this case coastal commons are taken away from local

communities without due process and consideration. The port at Kasarkod-Tonka in Honnavar faced resistance from the local community for the same reason and shows how regional marine biodiversity and livelihoods are often interconnected.

Pressures

Pressures are actions carried out by humans and are a result of the operation of driving forces, which bring about alterations in the state. The term "state" encompasses not just the environment but also includes ecological, social, and economic dimensions.

Construction of Port and ancillary infrastructure

Honnavar Barrel/Vessel Loading facility of total cargo carrying capacity of 4.9 MTPA. The plan is to handle products like coal, iron ore, and general cargo like granite, fertilizer, and molasses with agro products, steel products, sugar etc.



Figure 3: Halted Port Construction

Development of the Loading facility will be carried out in 44 Ha of land. The land proposed to be developed is mostly between LTL (Low Tide Line) and HTL (High Tide Line). A dedicated road corridor is being built to provide port connectivity from the Honnavar Port project of M/s Honnavar Port Private Limited (HPPL) at Kasargod Tonka to National Highway-66. The road is 4-lane, 4km and 25-40m wide.



Figure 4: Halted Road Construction

Allegations of the villagers is that the ongoing construction of the road is spilling over the CRZ areas of Kasarkod village which has impacted the livelihood of fisherwomen who are traditionally engaged in drying and processing fish.

Understanding CRZs and its underpinnings

Coastal Regulation Zone or CRZ is a notification which is part of a legal framework to manage the coastal space, issued first in 1991 under the Environment Protection Act, 1986. It can be traced back to Indira Gandhi first directing a letter in 1981 to state governments in Coastal areas to better manage their spaces in order to protect them.

The Ministry of Environment and Forests (MOEF) issued the 1991 CRZ notification where for the first time there was a demarcation between the coastal stretch of 500 meters from the landward side to the High Tide Line (HTL) for regulated development along this region. The Notification segregated coastal land into a) CRZ 1 which is fragile ecologically and used as a nesting ground for marine life b) CRZ 2 which include urban spaces, cities towns along the coastlines and c) CRZ3 which covers rural areas along the Coast. A 2006 Notification also added CRZ4 which covers territorial waters along the Low Tide Line, 12 nautical miles into the sea.

Coastal Zone Management Authorities (CZMAs)

The CRZ mandates that a regulatory body also known as Coastal Zone Management Authorities (CZMAs) act as a state-level body for giving prior approval for activities such as construction/infrastructure, roads and tourism, power generation along the Coast Zone. The CRZ Notification along with the Environmental Impact Assessment notification (EIA), 1994 enables gathering information about the impact of a project, public participation, and decision-making tools to include a range of stakeholders and assessing the project by experts.

The CRZ 2011 notification was a negotiated piece of regulation between the MoEF, Scientists, industry representatives, fishing unions, International Financial Institutions (IFIs) like the World Bank, coastal protection networks as well as environmental groups (Centre for Environment Education (CEE) and MOEF 2010; Menon and Kohli 2010). It recognised CZMAs as the formal institution to implement the executive CRZ law and offers protection and ensures livelihood security for the local communities while helping them safeguard their marine biodiversity. The notification also formalised setting up the Coastal Zone Management Plans (CZMPs) and demarcation of High Tide Zones and Low Tide Zones. Another inclusion has been of the Critical Vulnerable Coastal Areas (CVCAs) which are to be managed by the local coastal communities including the fishing folk. Therefore, the 2011 notification targets to move away from a Protected Area (PA) kind of governance system to a more democratic decision-making-based process while ensuring the protection of critical coastal habitats as well the interests of the local coastal community.

In 2019 however, the CRZ notification with its last few amendments was put in place, and criticized for diluting protective provisions and putting both the ecology of the coastline and their vulnerable communities at risk. The new amendments lifted prohibitions on construction, real estate, and exploratory drilling without consultation of the local communities and the general public. Moreover, the CZMAs that were responsible for giving clearances for development and infrastructure projects were kept out of the review process while framing the law. Environmentalists have criticised the notification for promoting interests of economic growth and pitting them against processes of democratic participation and conservation of coastal habitats including estuaries, mangroves and intertidal zones.

In Honnavar, the road connecting Honnavar port to National Highway 66 which passes through Kasarkod Tonka Beach is located on Coastal Regulation Zone 3 which is a 'no development

zone'. The village area through which the road cuts is also unsurveyed and is part of the coastal commons which is used for drying fish by the local community for generations. Since there was no clearance granted for this road, the implementation of CRZ regulations seems to be different in practice due to competing interests.

Even though conservation is a key part of the CRZMA's mandate, only two SCZMAs addressed conservation, and that too, for less than 5% of the time period of the authorities' meetings. In almost all states, the majority of the time in meetings is focused on project approvals (Menon et. al. 2015).

Altering of CZMP maps

After the CRZ 2019 notification, Coastal Zone Management (CZMP) needs to be revised or updated by all coastal States and UTs by engaging reputed and experienced scientific institution(s) or agencies such as including the National Centre for Sustainable Coastal Management (NCSCM). Further the CZMP must be submitted to the Ministry of Environment, Forest and Climate Change (MoEFCC) for approval.

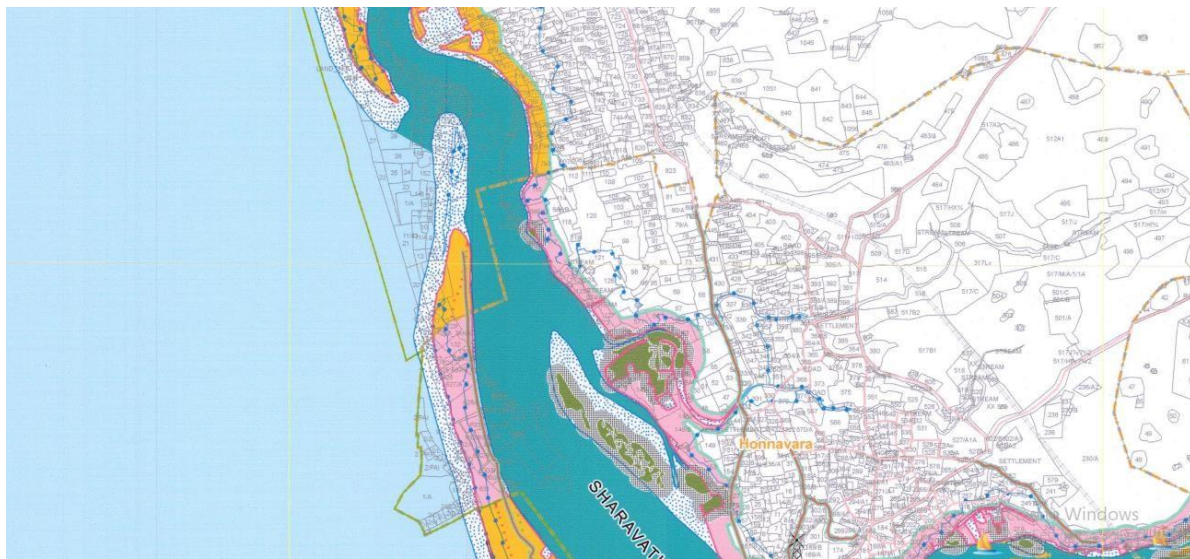


Figure 5: 2011 CRZ Notification Map



Figure 6: 2019 CRZ Notification map

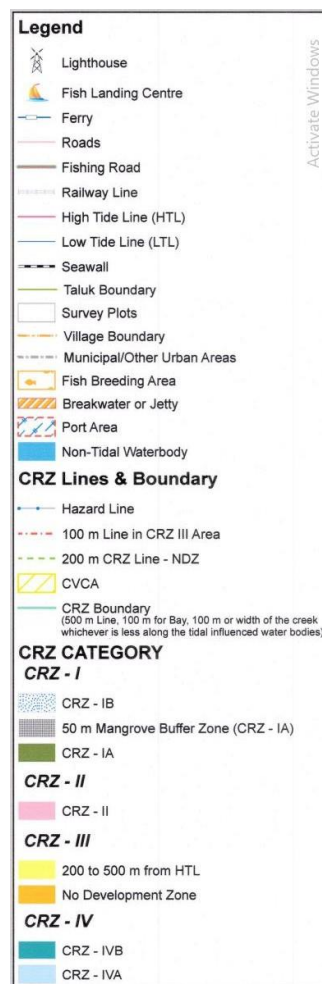


Figure 7: Legend for CRZ maps

In the 2019 notification map, Karnataka Coastal Zone Management Authority has put port limits in and around Honnavar. Port limits refer to the designated areas within which fishing activities are regulated and controlled by port authorities. These limits are established to ensure the safety and efficient management of maritime traffic, as well as to protect the marine ecosystem and resources.

Restricted fishing areas within port limits aim to protect shipping lanes, prevent conflicts, and conserve marine habitats. However, they can limit fishers' access to traditional grounds, potentially reducing their catch and livelihoods. Limited fishing areas may increase competition and overcrowding among fishers, impacting profitability. Port limits enhance safety and security but may result in increased surveillance and administrative burden for fishers. Fishing within port limits offers advantages such as proximity to infrastructure and services, including landing facilities and markets. Compliance with regulations and licensing requirements ensures sustainable practices but adds administrative processes and costs for fishers. Balancing these factors is crucial for sustainable fishing and the well-being of fishers.

The actual impact of port limits on fishers in India will depend on how these limits are defined, enforced, and integrated into broader fisheries management strategies. The effectiveness of these measures is influenced by factors such as community participation, stakeholder consultation, and the availability of alternative fishing grounds or livelihood opportunities for affected fishers.

The pressures cause alteration in the state's initial condition. The changes in the state are covered in the impact of the framework.

State

Honnavar is a historical estuarine port town in the Uttara Kannada district of Karnataka. It has a population of 23,500 fishers. The Sharavathi, a westward flowing river joins the Arabian sea at Honnavar, forming an ever-shifting river mouth in the region. The old port was constructed on the left side of the Sharavathi bank in Honnavar town. It was an active port town and once the trading headquarters for Canara district. Over time, the Sharavathi estuary silted, and the port became commercially unviable. Locals say that a bridge construction changed the dynamics of the land, causing the river mouth to shift four kilometers north.

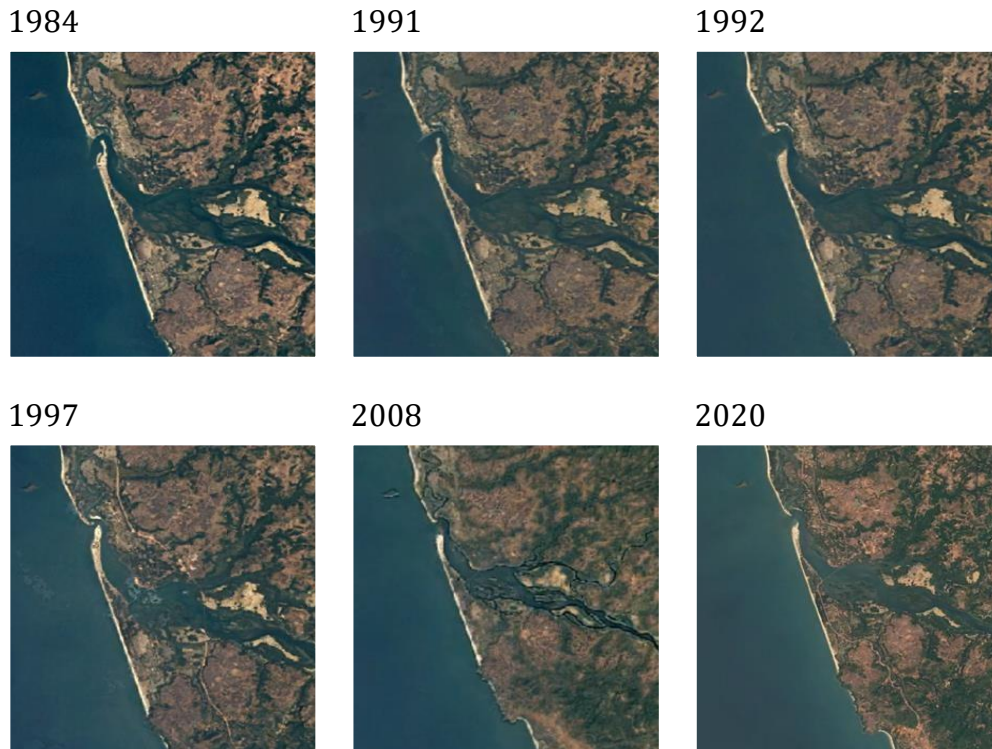


Figure 8: Satellite Imagery of Sandspit

During the rainy season, the coastal areas experience a surge in river flow, leading to the washing away of soil and valuable minerals. The powerful currents and increased volume of water result in erosion along the coastline, and depletion of essential minerals that play a crucial role in maintaining the ecological balance of coastal ecosystems. The erosion of soil and the loss of minerals pose significant challenges to coastal communities, impacting their livelihoods and the overall sustainability of the region.

Livelihood and Economic aspects

The study area, Kasarkod, comprises a population of 8,036, with 3,958 males and 4,078 females (source:<https://villageinfo.in/karnataka/uttara-kannada/honavar/kasarkod.html>). The primary livelihood in this area revolves around fish drying, predominantly carried out by women. Men engage in fishing activities, while women undertake the drying and selling of the fish in the local market. Some residents are self-employed, while others work under traders who own large fishing boats called Trawlers and Persians. The harvested fish are auctioned and exported to various states and cities. Notably, women play a significant role as earners in this village. Moreover, a

few individuals have acquired skills in preparing fish products such as Prawn pickles and ready-to-eat dried fish, initiating their own businesses.

Fishing does not have a retirement age, unlike conventional jobs, therefore those who fish can do so for the rest of their lives. Because of this, the coastal economy has a distinctive character because the labor force is kept busy and engaged for a long time.



Figure 9: Fish Drying

Incentives such as offering Rs. 1000 for the identification of nests further encourage the involvement of coastal communities in conservation efforts, enhancing both the ecological and economic aspects of the coastal regions. Despite the lack of incentives given over the past three years, few fishers have remained undeterred and continue to exert their efforts in conserving the turtles.

Dredging activities in coastal areas bring indirect income through the extraction of the purest form of calcium carbonate. This valuable resource has various commercial applications, contributing to the economic growth and development of the coastal regions.

The disparity in wealth between fishers in the west and east coasts can be attributed to the higher diversity of fish species and the presence of upwelling coasts in the west. These factors provide richer fishing grounds, resulting in higher earning potential for fishers and prompting labor migration to these prosperous regions.

The availability of high-paid labor opportunities in coastal areas also drives migration from other regions, further contributing to the economic dynamics of coastal communities and strengthening the overall coastal economy.

Low literacy rates are common among coastal fishermen, who frequently choose fishing since it provides quick and simple revenue prospects. They are able to start working at a young age and support themselves and their family through skillful work of harvesting clams and crabs.

However, the lack of education poses a challenge for the fisherfolk. Despite this, they display entrepreneurial skills, employing targeted fishing methods to focus on specific species. If any unintended catch occurs, they discard it and utilise it for poultry, earning around 100-150 rupees per kilogram for the discarded fish.



Figure 10: Dried and processed fish for export

The European countries are the primary importers of dried fish, and the drying process takes place on the same road where the community resides. During the rainy season, they shift to selling river fish. Although rain poses occasional challenges, they adapt by using tarpaulins for protection, although some losses were incurred last year.

The coastal region is widely loved and visited for the magnificent Sea. Due to its intrinsic natural beauty and recreational appeal, coastal land has great value for the tourism industry. Because of this, booming tourist industries have grown along the coast, making a considerable contribution to the local economy.

A significant portion of Kasarkod Beach has been designated as the Eco Beach, recognised as a certified 'Blue Flag' beach. This distinction is the result of a collaborative endeavor involving the Tourism and Forest Departments, together with the Kasarkod Village Forest Committee. The

primary aim of establishing the Eco Beach was to promote eco-tourism in the region and draw tourists to Karnataka. Notably, this section of the beach is meticulously guarded and well-maintained, reflecting the commitment to preserving its ecological value. There are no Water sports activities conducted here.

Social Aspect

The community comprises approximately 45% Hindus, 45% Muslims, and the remaining 10% are Christians, showcasing religious diversity within the community.

The community has grown stronger as they have embraced advancements and opportunities provided through government schemes, such as the Fisherman's scheme, which has facilitated their progress and improved their businesses.

Ecological aspects

In addition to the vibrant human population, the study area is also home to diverse marine life. One notable visitor to the area is the Olive Ridley turtle, known for its nesting ritual. Every year a bale of turtle's journey to the beach to lay their eggs after 16 years and then return to the sea. The presence of Olive Ridley turtles holds great cultural significance for the local community, who reverently worship these majestic creatures. Turtles are also important as they keep the jellyfish population under control. If the jellyfish population is more, the fish population is affected, impacting their productivity.



Figure 11: Olive Ridley Turtle Hatchling

Alongside the Olive Ridley turtles, the surrounding waters boast a rich variety of fish species. These include both commercially important fish and those that contribute to the ecological balance of the marine ecosystem. The specific types of fish found in the study area vary but commonly include species like mackerel, sardines, seer fish, pomfret, and prawns. These fish play a crucial role in sustaining the livelihoods of the local fishing community and supporting the coastal economy.

The presence of both Olive Ridley turtles and a wide variety of fish in this study area highlights the significant ecological value of the region. It demonstrates the intricate relationship between marine biodiversity and the cultural heritage cherished by the local community. Remarkably, the locals have actively undertaken successful conservation efforts to safeguard these species, particularly in the face of potential threats posed by port construction. They have effectively protected the turtles' nesting sites, ensuring the continued survival of these remarkable creatures.

Traditional aspects

Fishing plays a crucial role in the livelihoods of coastal communities, providing them with a complete and nutritious food source. The conservation of these fishing communities goes hand in hand with the preservation of the ecological balance. Fishing is not just a job but an ancestral occupation passed down through generations. From childhood, community members actively engage in fish drying, a traditional practice that has been carried out since their grandfather's time. The healthy environment and reliance on fish as a staple food contribute to their overall well-being, making them content without the need for additional developments like ports.

Impact

Changes in the condition of the environment, due to pressures such as Infrastructure development, may impact Social (Economic prosperity, Health, Social well-being), Ecological and Environmental components.

Social Impact

Loss of livelihood for fisherwomen

Complex dynamics of infrastructure development projects and their impact on local communities, while such projects can bring economic benefits and employment opportunities, they can also disrupt traditional livelihoods and lead to the displacement of certain groups.

The ongoing construction of the Honnavar port, road spilling over No Development Zone of the Coastal Regulation Zone (CRZ) areas has impacted the livelihoods of fisherwomen in the Kasarkod village who were traditionally involved in drying and processing fish. Their main source of income is from drying fish, around 1000 people who were engaged in drying fishes in the coastal commons land, half of them lost their jobs.

During the focused group discussion, the women expressed their concerns about the loss of employment due to their inability to dry fish. Ever since the road came up, fishers say they have witnessed at least 15-20 trucks going up and down every day. The process of drying fish can get tricky if not exposed to the right elements. It needs to be spread on nets or mats so that it doesn't get dirty. It needs to retain the right amount of moisture (15-20 per cent) and colour, which indicates good quality. The colour indicates the presence of dust or high salt content and reduces the quality of the fish. "Even a speck of dust will reduce the rate of the fish by half. It needs to be completely white.", said Rekha Tandel, a fisherwoman who dries fish. "And today we get nothing but dust, thanks to the road", she added.



Figure 12: Fish drying on under construction road

Port promised to offer employment, out of the 1000 fishers who have lost their jobs only 74 members (mostly men) have been offered employment as security guards and clerks. These positions appear to require specific degrees, which may limit the opportunities for the fishers to transition into these roles.

It not only affects drying, it affects other fisherman activities as well as they have to pass through the port to the harbor. The restriction on timing and movement through the port area can indeed impact their freedom of movement and their ability to carry out their fishing activities effectively.

Health Impact

Local communities expressed their concerns regarding the construction of a road near the port and its impacting on their health. Dust generated from construction activities cause discomfort and health issues, for children with allergies or respiratory conditions. Additionally, if the port carries cargo like iron, coal and other fertilizers, they are concerned about the health effects on exposure to these materials.

Impact on Social wellbeing

The construction of the port has triggered protests among the villagers, and there have been incidents where the villagers have faced mistreatment from the port authorities. False accusations have been made against the villagers to intimidate them, leading to distress within the community. Additionally, the villagers are concerned that the port construction may restrict their ability to fish freely in the future, which could have negative implications for their health since fish is considered a complete source of nutrition. Furthermore, the construction of the port has resulted in the loss of coastal commons, which were previously used by children for socialising and playing. The community has experienced divisions, with some individuals accepting compensation and being supportive of the port construction, while others continue to protest and struggle to make ends meet.

Ecological Impact

Turtles nest and hatch across the stretch of the beach and the upcoming port is threatening the survival of these turtles. The community complains that the port authorities have “misguided” the state on the impact the project would have on biodiversity, among many other impacts. Around eight turtles have died in the last year and no FIR has been filed by the authorities. Multiple

stakeholders have mentioned that the cause of the death can be determined by seeing the photo. It appears to be human inflicted harm and not natural death, which makes the Forest department answerable, yet there is no redressal.

Sea turtles nest on sandy tropical beaches and when the hatchlings emerge, they head towards the brightest and lowest horizon. On undeveloped beaches this is usually the waterline; however, on developed beaches, artificial lights can cause hatchlings to crawl towards the source of light or in random directions making them more vulnerable to prey attacks. Olive Ridley turtles rely on undisturbed beaches to lay their eggs, road construction can become barriers for nesting, preventing them from reaching their preferred nesting sites.

The local community observed, people from outside the community who have come to build the port have been disturbing the turtle habitat. "They have thrown mud on them; flashed lights at them; But for us, the turtles are like god. They are the avatar of Vishnu. Every child in the community knows that turtles visit us at certain times of the year and we look out for them." said a fisherman.

The presence of a rocky shoreline on the coastline and towards north there is Karwar naval base and towards south Mangalore port on both sides restricts the turtle's choices for nesting. This is the one of the last remaining protected sites that provides nesting areas crucial for sustaining the turtle population. The data indicates that the number of turtle nests has been increasing over the years. The press report mentioned that there were 4,000 hatchlings last year, and approximately 2,000 of those turtles may return to the same spot to nest, following the earth's magnetic field to lay eggs. This highlights the importance of preserving the nesting sites and ensuring suitable conditions for the turtles to continue their life cycle.

Environmental Impact

"There is an environmental impact as well, the port will require continuous dredging, and will completely change the topography of the river mouth, and fish will not come to breed here. The big breeding center will be lost, and the beaches will be lost", explained Dr Praksh Mesta, a marine biologist and non-official Member at Karnataka Biodiversity Board, while emphasizing that the sand spit is a sandy shore, dynamic, unstable, and therefore unfit for construction.

Response

HC writ petition

In February 2021, the Honnavar Taluk Hasimeenu Vyparastara Sangha filed a case against M/s Honnavar Port Pvt Ltd regarding the construction of a road. The villagers raised several concerns, including questioning the validity of the Environment Clearance granted in September 2012, their exclusion from a public consultation, the construction of a port in a prohibited area near CRZ-I and the issue of destruction of houses. However, during a conversation with the villagers, we learned that the primary loss was the fish drying area and a few kaccha houses. The fact that the project area is a turtle nesting ground, which was only disclosed after the clearance was granted. Additionally, they claimed that the location of the project had changed from what was originally stated in the clearance.

The respondent, HPPL, argued that it was too late to challenge the project based on the legality of the 2012 clearance. They stated that the prohibited activity was port and harbour projects in high-eroding coastal stretches, which they claimed the project area was not a part of according to the Coastal Zone Management Plan (CZMP). The High Court (HC) dismissed some points, stating that they could not be addressed in a Public Interest Litigation (PIL) and suggested that affected owners seek individual remedies.

The government had allocated 5 acres of land as compensation to the community members. Nevertheless, the villagers found the allocation comparatively lesser in size compared to the land previously owned by individuals within the community.

The HC appointed the National Centre for Sustainable Coastal Management (NCSCM) to survey the 45-hectare project area. The Deputy Commissioner also conducted a survey to examine any changes in the project location. In August, NCSCM reported that there had been a change in the coastline village border and the project's location. They also alleged violations of constitutional provisions and false environmental information provided by HPPL. However, they stated that no turtle nests or carcasses were observed during the survey, which was conducted in a non-breeding season for Olive Ridley Turtles.

The Deputy Commissioner's survey in August 2021 found no land being used for construction beyond the leased area for the port. On November 24, 2021, the HC disposed of the writ petition,

allowing the petitioner to raise their concerns before other authorities who could address them according to the law.

Protest against the construction

Following the dismissal of the case, the port authorities accelerated the construction of the road, prompting a protest by people from the Kasarkod Tonka fishing community. They gathered outside their homes on January 24, 2022, to oppose the construction of the illegal road by Honnavar Port Private Limited. However, around 600-700 policemen arrived and physically and verbally abused the protesters, forcefully loading them into vehicles without disclosing their destination. The detained women were required to fill out a form labeled "prisoners' details," where they were instructed not to mention the injuries they sustained during the police's intervention. Among the 27 detained women, one was pregnant and tragically lost her unborn child two days after the detention. The women were released later that evening after significant progress was made on the road construction.

Additionally, Section 144 of the CrPC was imposed on the residents of Kasarkod-Tonka, severely restricting their mobility and impacting their livelihoods as daily wage workers. The human rights violations perpetrated on the fishing community of Kasarkod for fighting for their legitimate right to pursue their ancestral occupation have drawn condemnation from human rights defenders in India and across the world. A letter to the National Human Rights Commission, New Delhi, from Henri Tiphagne, National Working Secretary, Human Rights Defenders Alert – India, took note of January 24, 2022, police violence. It highlighted the way in which the local police verbally and physically abused people from the community. (Source: Human Rights report/ letter)

Case in NGT

In January 2022, the villagers sought assistance from environmental lawyer Sreeja Chakraborty regarding the construction of a 4 km long road in violation of Coastal Regulation Zone (CRZ) regulations. A case was filed in the Chennai National Green Tribunal (NGT) on June 9, 2022, addressing the construction of a "No Development Zone" of CRZ-III and forest land.

As a result of the case, the State Environmental Impact Assessment Authority (SEIAA) and Coastal Zone Management Authority (CZMA) clarified that they have not authorized the project proponent to construct the road along the indicated route, which leads to Honnavar Port. The

NGT has directed the authorities to ensure that no further construction takes place either in accordance with the Environmental Clearance or in violation of it.

Meanwhile, private players have approached the Karnataka Coastal Zone Management Authority (KCZME) and SEIAA to seek approval for a National Highway connecting the port to the highway. The case is still ongoing in the NGT.

NGO in response to conserving turtles and preserving habitats.

NGOs play a particular role in conservation and creating awareness. NGOs such as Honnavar Foundation are actively engaged in afforestation projects and working towards revitalizing underground water resources. Semi-structured interview was conducted with the founder of Honnavar Foundation, Sandeep Hegde who has a decade of experience in the IT sector and majorly he is self-funding the NGO. While they were aware of the port construction, they became aware of its potential impact on turtles last year. From last year onwards they have been working together with the local community. The foundation actively engages with researchers, institutes and other external partners to support their initiatives. Additionally, they are filming a documentary to raise awareness about conservation issues.

With increase in turtle nesting, the foundation has initiated a community-led turtle register, where local fishermen collect data on nesting activities which helps in gathering important information about nesting patterns, hatchling success rates, and the overall health of the turtle population. The foundation focuses on capacity building within the community by providing advanced GPS devices (Garmin GPS device) to mark the exact location of the turtle nests. Efforts are being made to raise awareness about turtle issues through platforms like Telegram and WhatsApp. It actively advocates for conservation through various means by sending postcards to the Prime Minister to express public opinion and raise awareness about the impact on turtles and to garner support.

The NGO has faced several challenges and made necessary adjustments over time. One of these challenges is the difficulty in consistently locating turtle hatchlings for nature education and awareness programs, which sets limitations on conducting such activities. Another challenge involves navigating the complexities of working with government institutions, which differs from other aspects of their work.

Conclusion

This report has examined the issue of insufficient rigor in granting clearances for the infrastructure project. It meticulously examines the various stakeholders involved in the process and assesses the direct impact on the villagers residing near the construction of port and ancillary infrastructure. Additionally, the report explores the response of the local community to the project and the measures they have taken to safeguard their culture, livelihoods, and the environment.

Most of the port construction projects have faced resistance and they all have one concern in common — threat to livelihood, displacement, and threat to biodiversity. This is not just limited to Karnataka. Under Sagarmala, multiple port projects are coming up and they are facing opposition from the locals. This scenario is playing out in every coastal state of the country.

Large infrastructure projects transform ecosystems to produce material benefits (electricity, irrigation water, coal, or metallic ores) — the instrumental value of a (transformed) nature for (typically) distant consumers. In contrast, local communities face most of the impacts, whether related to their instrumental (material) or relational (cultural) values associated with the ecosystem to be transformed. The communities that are most negatively affected by such projects are the local and usually socioeconomically marginalized (often indigenous) communities. Thus, the overall picture is that the political economy within which EAs are conducted does not care about the values of marginalized people whether they be for better

livelihoods and health or for their cultural relationship with the ecosystem, rather than specifically ignoring certain (possibly marginalized) values such as relational values of nature. What is sacrificed primarily is the value for distributive justice or fairness and the value for democratic decision-making or procedural justice. [Lele 2023_Environmental_Values].

Considering Theories of value

By considering values, environmental values and social values. Environmental assessment processes designed to support infrastructure decisions should consider relational values explicitly. Environmental impacts are deeply socially situated, and relational values are important for understanding environmental impacts.

If they won't consider FPIC (free prior informed consent)and doesn't involves local community in decision making then protection action begins and the Protest action is crucial for local

communities to ensure that they have an appropriate level of participation in the decision making processes that affect their lives. We suggest that Companies and governments need to engage with local communities very early in the project implementation process, and has to take FPIC (free prior informed consent) and have an ongoing processes of engagement. For the project to be perceived as legitimate (i.e. free from protest and having a social licence to operate), developers must be willing to modify (and even potentially to cancel) a project in response to local community input. Protest is a form of community feedback which occurs when normal engagement and grievance mechanisms are not working effectively. Companies Would be well advised to listen carefully to protest actions, and establish genuine dialogue procedures before protest escalates and conflict occurs. Rather than the defensive strategy typically adopted, companies should realize the protest signals that they should enhance their community engagement approach.

We recommend conducting site-specific research, ensuring transparent and thorough site selection, and engaging stakeholders inclusively to prevent long-lasting challenges for port operations and the environment. As The concept of estuarine ports is gone. They have a problem of siltation, and money goes into dredging them all the time. They are non-profitable ports and disturb the entire ecosystem of fisheries and ecology, has to conduct site specific research before planning. They should consider long term consequences and do site specific approach. As new karnataka government is focusing more on schemes like women empowerment they should also recheck what the previous government approved to such infrastructure projects without any consent from the local community which again leads to loss of employment for many other women who primarily depend on dry fishing.

Improvement of healthcare infrastructure has to be a vital step in promoting social progress, as there is no super speciality hospital in the whole district; they have to go to other districts during emergencies. To improve the economy of Honnavar, which relies heavily on dried fish, it is suggested to enhance the export of dried fish by providing the necessary infrastructure and capacity building. Fishers should be supported in developing better marketing strategies and creating more opportunities for their products. Encouraging the establishment of small-scale industries and equipping them with the required skills and tools is recommended. Additionally, promoting ecotourism with sustainable and local practices that prioritize the conservation of the natural environment and biodiversity is advised. Creating awareness about the conservation of Olive Ridley Turtles is important not only for their preservation but also for instilling a sense of environmental stewardship among residents and visitors.

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