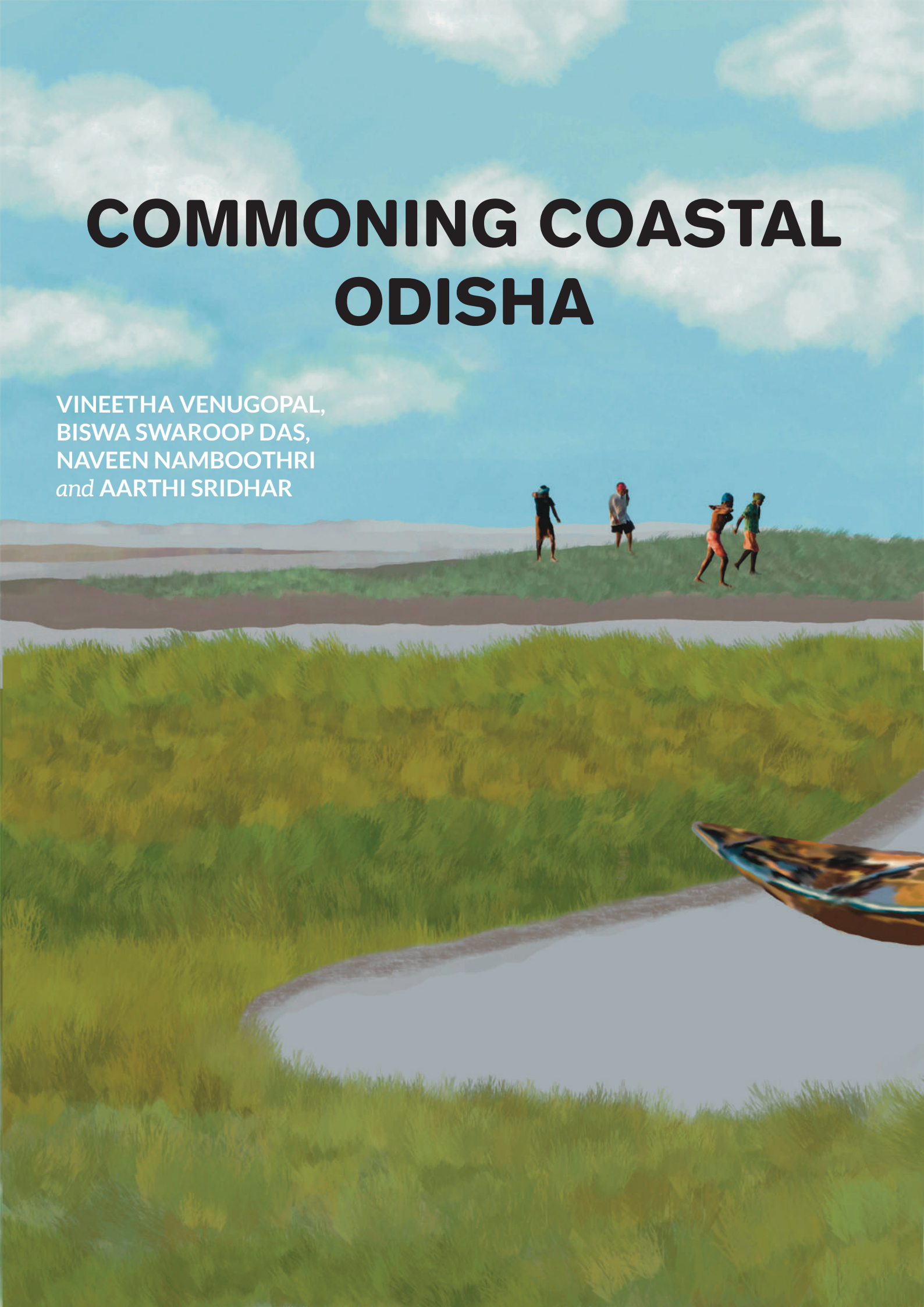


COMMONING COASTAL ODISHA

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1. The Kalinga Coast

The ancient maritime kingdom of Kalinga stretched from the mouth of Ganges to the estuary of river Godavari in the east (Tripathi, 1991). It consisted of ports such as Tamralipti in present day Midnapore of West Bengal, Konark, Puri, Kosambi in present day Balasore, Paluru in Ganjam District, and Kalinganagar in Srikakulam district in Andhra Pradesh (Tripathi, 1991). The Kalinga kingdom engaged in maritime trade with distant regions such as Ceylon (Sri Lanka), Burma (present day Myanmar), Java, Sumatra and China. The state of Odisha is considered as the historical successor to Kalinga kingdom as it retained the majority of regions that were under the maritime kingdom.

Odisha, the north eastern coastal state of India is located between 17°49' N and 22°34' N latitudes and 81°27' E and 87°29' E longitudes. It is one of the most resource rich states in India with abundant deposits of various minerals such as iron, coal, bauxite, manganese, nickel, chromite, limestone, dolomite, graphite, decorative stones, beach sand and China clay (Mines and Minerals, n.d.). Odisha has a coastline about 480.4 km spreading over six districts of Balasore, Bhadrak, Kendrapara, Jagatsinghpur, Puri and Ganjam. The coast is drained by eleven major rivers and their tributaries. Of these 11 rivers, nine meet Bay of Bengal and form estuaries and deltas (SANDRP, 2017). Odisha coastal plains is broadly divided into northern plain - deltas of Subarnarekha and the Budhabalanga, middle coastal plain - deltas of Baitarani, Brahmani and Mahanadi and southern coastal plain- Chilika lake plain and Rushikulya river delta (Topography, n.d.).

Coastal commons such as sand dunes, mud flats, inter-tidal zones, mangroves, estuaries and beaches play an important role in the lives and livelihoods of coastal communities. Fishing communities rely on these spaces for keeping boats and nets, mending and repairing them, drying and selling fish, etc. They also use these spaces for hosting community events, leisure activities and worshipping their deities. Mudflats and intertidal zones also supply mud crabs, clams and prawns seasonally. Moreover, observing the sea, surf and current conditions, indications of fish shoal movement and weather- using traditional knowledge is an essential part of the preparation and planning that Odisha's small scale fishers undertake for their fishing activities in contemporary times as well (Rao & Majumdar, 2018).

Coastal commons are also ecologically significant as beaches and sand dunes protect against rough winds, waves and prevent saltwater from entering into groundwater. Estuaries where fresh and saltwater meet are highly biodiverse and productive. Mangroves sequester carbon, protect against cyclones, stabilise the land mass against erosion and prevent saltwater ingress into freshwater reserves. Odisha's 672 km² Bhitarkanika Wildlife Sanctuary is an extensive mangrove forest and wetland. The largest brackish water lake in Asia, Chilika is also located in Odisha. The Odisha coast is home to mass nesting sites of olive

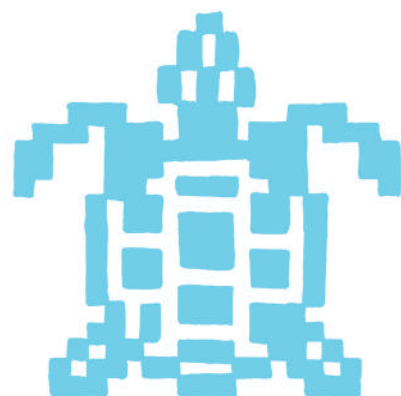


ridley sea turtles at the mouths of the rivers Dhamra, Devi and Rushikulya as well. Sharing borders and socio-cultural ties with West Bengal in the north east, Chhattisgarh in the west, Jharkhand in the north, Andhra Pradesh in the south and bounded by Bay of Bengal in the east, Odisha is socially and culturally diverse (Gochhayat, 2016). As per the 2011 census, Scheduled Tribes (ST) and Scheduled Castes (SC) constitute nearly 40% of the population with an ST population of 22.85% and SC population of 17.13% (Census of India, 2011).

This diversity is also reflected in coastal Odisha and it is home to a multitude of fishing communities belonging to diverse linguistic, cultural and caste groups. The northern coastal zone of Odisha is mostly occupied by marine fishers of Bengali origin while in the southern zone, most of the marine fishers are Telugu speaking Nolias whose ancestral roots go back to present-day Andhra. The central zone is occupied by fishers of both Bengali and Andhra origin. Fishers from traditional fishing castes of Odisha mostly fish in rivers and inland water bodies. However, Odia fishers also engage in marine fishing in Balasore, Bhadrak and Jagatsinghpur districts (OTFWU & Samudram, 2003).

Traditionally, fishing was a caste-based occupation undertaken by those belonging to various fisher castes. Dominant non-fisher caste members also started venturing into fishing after the mechanisation of boats undertaken in phases through the 70s, 80s and 90s. Overall, the fish workers of Odisha belong to General, SC, ST and Other Backward Communities (OBC) categories with the majority belonging to the SC category (OTFWU & Samudram 2003). While the socio-cultural norms, practices and traditions are different among these communities we also see an amalgamation of various cultures.

Coastal Odisha is home to 3,878 fisher villages of which 813 are marine and 3,065 inland (Government of Odisha, 2015). The total fisher population in Odisha is 14,80,704 comprising 6,05,514 marine fishers (CMFRI census 2010) and 8,75,190 inland fishers. The literacy rate among fishers is 48.65 percent which is below the state average of 77.3% (Census of India, 2011). Women are quite active in the fishing allied activities such as curing, processing, peeling and marketing of fish. According to Odisha fisheries policy 2015, most of the fisher villages lack adequate drinking water, sanitation, electricity and health infrastructure.



2. Governing littoral Odisha

Across India, historically, the governance of the coastal commons overlapped with the governance of the fisheries commons and was undertaken by the village institutions in the fishing communities. Northern Kerala's 'kadakkodi' (sea court) is an example of such an institution. These institutions dispensed judicial, executive as well as legislative functions in the fishing communities (Foundation for Ecological Security, 2011). Such community institutions used to exist all over coastal India. However, mechanisation of the fisheries sector, subsequent entry of newcomers from non-fishing castes, increased centralisation of regulatory powers with the state, livelihood crisis and subsequent out-migration to other occupations and coasts have rendered many of them defunct and irrelevant.

At present, coastal spaces in India are governed by a combination of actors and institutions. At the local level, they are governed by traditional fisher institutions such as the kadakkodi and village committees, albeit nominally in some cases. At the higher level, they are governed by central laws like the Wild life Protection Act (WLPA) 1972, and laws under the Environment (Protection) Act, 1986, such as the Coastal Regulation Zone notification and the Environment Impact Assessment (EIA) notification, and national and state fisheries policies. Indian courts have also recognised the United Nations' norms of Sustainable Development, and other legal principles such as the Precautionary Principle, Polluter Pays Principle and the Public Trust Doctrine as parts of Indian environmental law. Additionally, the Supreme Court judgement on *Jagpal Singh vs State of Punjab* (SLP(C) NO.3109/2011) mandates conserving the village commons. In this landmark case, the Supreme Court ruled that common lands cannot be alienated by private parties.

In some cases, common lands are also governed by the Scheduled Tribes and other Traditional Forest Dwellers (Recognition of Forest Rights) act (FRA) 2006, the Panchayats Extension to Scheduled Areas (PESA) act 1996 and the Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement (RFCTLARR) Act 2013. Indian jurisprudence also recognises customary rights as evidenced in the case of *Ramdas Janardan Koli v. Secretary, Ministry of Environment, Forest & Climate Change*. In this case, the National Green Tribunal recognised the traditional rights of the fishing community to fish in and around the Jawaharlal Nehru port and to use that area for passage and also awarded them compensation for the loss of livelihood due to the expansion of the port (Jojan, 2020).

Some of the state laws also have a bearing on the common lands of Odisha. A report by CPR-Namati Environmental Justice Programme (2018) provides very useful details on these local laws. These are: Odisha Prevention of Land Encroachment Act 1972, Orissa Government Land Settlement (OGLS) Act, 1962 and Rules of 1983, Orissa Communal Forests and Private Lands (Prohibition of Alienation) Act 1948, Odisha Gram Panchayat act 1964, Orissa Irrigation Act 1959 and Odisha Land Grabbing (Prohibition) Act, 2015. The Odisha High Court has also given notable judgments such as *Tapan Kumar Das v. Cuttack Municipal Corporation* and *Parameswar Mohanty v. State of Orissa*. The institutions responsible for the administration of the common lands include the Revenue Department (District Collector, Tahasildar), Forest Department (Chief Conservator of Forests, Divisional Forest Officer), Irrigation Department and local self-government institutions such as gram panchayats and municipalities (CPR-Namati, 2018).

Diverse land forms of coastal Odisha



For the purposes of understanding the legal terms contained in these laws, we cite the terminology from the detailed CPR-Namati study:

Table 1: Common lands of Odisha , adapted from the 'Legal framework on protecting common lands in Odisha' (CPR-Namati, 2018).

(The revenue categories and ownerships details of land in Odisha can be accessed via the land record web portal Bhulekh)

Type of commons	Description / uses
<p>Rakhit Khata- Gramya Jungle (village forest), land reserved for the village by the Revenue Department, lands transferred to Gram Panchayats by the Revenue Department.</p>	<p>These lands are reserved by the Revenue Department for a variety of uses. Among these lands, the ones which are owned by the government are non-objectionable village land, which means that they can be given to the landless for homestead purposes.</p>
<p>Sarba Sadharana Khata- Dana (Road), Gochar land (Grazing land), Melania Padia and Hata-Pada (other communal lands) and Smasana (burial ground, graveyard etc), playground</p>	<p>These are used for communal purposes. They fall under the objectionable category of village land, and they cannot be encroached upon for either settlement or for cultivation.</p>
<p>Abada Ajogya Anabadi Khata- Tanks and water bodies, canals of varied size, sandhill, hillock, mountain, stone bed</p>	<p>These are classified as uncultivated wastelands which have been set aside for communal or public purposes. They fall under the objectionable category of village land, and they cannot be encroached upon for either settlement or for cultivation</p>
<p>Abad Jogya Anabadi Khata- Patita (grassy land), abandoned holdings, surrendered holdings and chot jungle (bushy land)</p>	<p>These are classified as cultivable wastelands and have either been left uncultivated or subsequently been acquired or purchased by the government. Among these types of land, the ones, which are owned by the government, are non-objectionable village land, which means that they can be given to the landless for homestead purposes.</p>



3. Shorelines of Odisha – Zones of conflict

Threats to the coastal commons in Odisha come mainly from alienation of rights and degradation of the physical commons.

3.1 Alienation

Alienation of coastal commons from the traditional custodians and conservators occurs due to a variety of reasons- industrial development by state and central governments or private entities, port expansion, fortress conservation, encroachment for livelihood expansion by non-fisher communities.

A well known instance of coastal alienation in Odisha concerns the ‘coastal grab’ in the Chilika Lake. Bavinck et al (2017) defines coastal grab as the contested appropriation of coastal (shore and inshore) spaces and resources by outside interests. They observe that coastal grab leads to effective exclusion of communities from resources and spaces they depend and also impacts their motivation and capacity to engage in conservation. Chilika lake is a Ramsar site with around 150 traditional caste-based fishing villages in its vicinity (Bavinck et al., 2017). Traditionally, fishing grounds in Chilika were divided based on the slope and depth of water. Different sub castes of fishers fished using different methods, in different grounds and caught different varieties of fish.

Community institutions such as village committees and jal panchayats ensured that these norms were followed. However, with the boom in global shrimp trade in the 1980s with increased demand for shrimps, the Odisha government began to lease Chilika to non-fishers for undertaking shrimp aquaculture. This was accompanied by encroachment by politically backed upper caste non-fishers on customary fishing grounds of traditional fishers (Bavinck et al., 2017).

Wildlife sanctuaries are another space of contention where traditional fishers face alienation from resources and spaces that they use. Gahirmatha Marine Sanctuary was notified in 1997 by the Odisha state government to protect the endangered olive ridley turtles that visit the sanctuary from December to March and nest *en masse* over the beach. Subsequently, a seven month fishing ban is imposed every year within 20 km from the coastline in the marine sanctuary (Chhotray, 2016). Similar bans are also present in the Bhitarkanika Wildlife Sanctuary. There, villagers lost access to the forests that they used to depend on for collection of fruits, leaves, fodder, honey and firewood as well. Banerjee (2016) observes that earlier villagers used to take care of the forest collectively. However, due to increased interference by the Forest Department, the community resource management has become less effective.

Push towards ‘Blue Economy’ paradigm via port expansion projects, other coastal infrastructure development projects and tourism projects such as ‘Blue Flag Certification’ has also led to dispossession of coastal commons in Odisha. Golden Beach in Puri was recently awarded the Blue Flag Certification by Foundation for Environmental Education (FEE), Denmark. The awarding of certification was celebrated as an achievement and Ministry of Environment, Forest and Climate Change (MoEFCC) amended CRZ notifications to allow construction of tourism infrastructure on the beach (Mitra, 2019). However, traditional fisher leaders are apprehensive that the search for aesthetic standards that are oriented towards attracting tourists, will lead to privatisation of commons and loss of access for the community (Mohanty, 2021).





Unintended uses of human made structures can lead to commoning practices such as the collection of bivalves from bunding rocks as seen here.

3.2 Contestations between coastal communities

In addition to contending with the state and private capital, fishers' rights to conserve and govern coastal spaces are at times also contested by non-fishing communities in the vicinity. In most coastal villages, fishing communities live in close proximity to non-fishing communities. While these non-fishing communities are not primarily dependent on the beach spaces for their livelihood, they also access and use it in multiple ways for leisure, salt farming, agriculture, cattle grazing or undertaking commercial activities. The private ownership of the beach space is also distributed between diverse coastal communities, not just fishers.

Some of these activities result in the privatisation and consequent alienation of coastal commons of the fishing community. During our field visit, we observed that the encroachment of beach spaces by planting casuarina plants was rampant in coastal villages. Villagers alleged that encroachers deliberately plant the saplings a few inches towards the seashore with every passing year. We were told by the local fishers that some of the encroachments were regularised by the Revenue Department despite the customary rights of the traditional fishing communities over the commons.

Interestingly, some of the well-to-do members of the fishing community have also started privatising the beach spaces via this mode of casuarina plantation. The lack of clarity regarding the ownership of the commons among the community has also contributed to the alienation of their commons. Fishing communities do not think they have any claims to these lands because of the perception that it belongs to either the "government" or "forest department". These factors embolden the outsiders who claim ownership and use the coastal lands for commercial ventures such as cashew plantations or shrimp aquaculture farms. With increased coastal erosion on one side and encroachment on the other side, fishers are left with little space to meet their livelihood and wellbeing needs. The caste dynamics of Odisha exacerbates this

situation of alienation. Fishers belonging to mostly SC / ST categories and lack political, economic and social power compared to upper castes. In the fishing villages of Arakhuda and Sanapattna in Chilika, villagers spoke of encroachment of their land by upper caste community members. They highlighted inadequate government support for the small-scale aquaculture initiatives by the traditional fishers.

In the case of small Telugu fisher settlements, they are at times intimidated by surrounding Odia majority communities. For example, the fishers in Prayagi felt they were sidelined in the management of the village forest. The conflicts with non-fishing communities and non-recognition of the customary rights of fishers to govern and conserve the spaces also threaten the safety, security and livelihood of the fishing communities.

In Purnabandha, Ganjam, the fishers informed us that miscreants from neighbouring non-fishing communities often use beach space for consuming alcohol and other intoxicants. This has created a situation of fear for the safety and security of fishing implements and assets among the fishing community, and more generally, their access to the space.

**Coastal
erosion eats
into common
beach spaces,
as seen in the
village of
Arijpalli**



Box 1: Conflict over the use of commons The fishermen in Purnabandha usually keep their boats besides the jetty house which is one of their fish landing sites. Since this place is near the river, it's easier for them to go fishing at early hours. Recently two fibre boats and one shore net belonging to two fishers were burnt down by some of the miscreants at night. The fishers estimate the loss to be around two lakhs. This incident has resulted in the fishing community keeping boats near their residential areas even though it is inconvenient to them. They no longer consider the jetty area as safe. They suspect the crime is committed by youth from nearby non fishing communities with whom they had a difference of opinion over uses of intoxicants in the beach. This incident also highlights the need for expanding insurance coverage for crafts and gears. The local police investigated the case, but no one was charged. The tahasildar also did not issue any compensation despite multiple appeals by the fishers.

Source: Interviews with the fishers whose boats were burned

3.3 Degradation

The main causes of degradation of coastal commons in Odisha are climate change and periodic natural disasters, intensive aquaculture, infrastructure development and disposal of industrial and municipal waste.

Indian National Centre for Ocean Information Services (INCOIS) has classified 297 kilometres of the Odisha coast as 'medium' on the Coastal Vulnerability Index (CVI) and another 107 kilometres, covering northern Puri, parts of Jagatsinghpur, Kendrapara, northern and southern Bhadrak, and southern Balasore as 'high' on the CVI (Kumar et al., 2010). According to Naik et al (2013), 128 tropical cyclones struck Odisha during 1804 to 1999. Odisha was also hit by the Super Cyclone of 1999, Phalin in 2013, Titli in 2018 and Fani in 2019. Coastal Odisha is vulnerable to floods and climate change induced sea level rise as well. As per long time shore analysis undertaken by National Centre for Coastal Research (NCCR) from 1990 to 2016, 28% of Odisha coast is eroding. These studies indicate a loss of 153.8 kilometres off the Odia coastline between 1999 and 2016 (Kankara et al., 2018). Additionally, regular intrusion of sea water has led to contamination of ground water and shortage of drinking water.

In the fishing hamlet of Podampetta in Ganjam, 120 households were relocated to a new settlement around four km away due to coastal erosion in 2012. In the fishing hamlets of Sana Aryapalli and Gokhurkuda also, villagers reported losing the space used for social gatherings and other activities due to coastal erosion. In Aryapalli, villagers attribute erosion to the dredging activities undertaken by Indian Rare Earths Limited (IRE) and Gopalpur port authorities. The fishers lose access to their old commons when they are resettled due to cyclones and have to contend with existing users in new commons. Additionally, being resettled far from the shore deprives them of the much-needed visibility required for making decisions about fishing trips. Another factor that contributes to the degradation of coastal commons in Odisha is unregulated industrial aquaculture. Intensive culture fisheries carry environmental risks due to the use of nutrients and antibiotics, open disposal of waste, accidental release of alien species and transmission of disease to wild stocks. They can also cause over-harvesting of wild stock and forage fish to meet the demands

of 'fish meal' which is a key input in aquaculture farms (Namboothri et al., 2010). Traditional fishers often lack the resources to invest in capital and technology intensive culture fisheries, resulting in their exclusion from these activities. Despite the Supreme Court's famous judgement in the S. Jagannath vs Union of India 1996 that prohibited the conversion of agricultural lands, salt panes, mangroves, wetlands and common village property land for shrimp cultures, illegal aquaculture activities have continued. During our field visits we could see many defunct shrimp farms that were abandoned after a minimum meter buffer zone of 50 meters was mandated around rain fed water bodies like lakes and ponds.

Most fishing villages also lack adequate waste management facilities often leading to littering in the areas. Most old settlements lack drainages and all the villages we visited lacked adequate waste disposal facilities. Jayashree chemicals in Ganjam had one time deposited chemical waste on the common areas in Purnabandha leading to outrage and protest from the community. This practice has since stopped. The Corporate Social Responsibility (CSR) head of Jayashree chemicals informed us that they have switched to safer production methods for caustic soda and chlorine. According to him, they also treat the wastewater before discharging it to the river.

Illegal dumping of garbage on the commons of the village of Purnabandha was challenged and stopped by the village committee.



Box 2: Municipal waste dumping in Purnabandha One night in December 2019, Ganjam municipality dumped the municipal waste at Purnabandha, where women fishers dry fish throughout the year, without informing or consulting the community. The municipal authorities also planned to construct a waste processing plant there.

The village committee then wrote to the concerned authorities to stop these activities. They also reached out to Dakshin researchers for support. By analysing the Coastal Zone Management Plan (CZMP) maps, researchers at Dakshin were able to identify the proposed waste dumping zones in Purnabandha as falling under CRZ 3B where waste dumping is not permissible under CRZ notification 2019 unless with the prior approval of the pollution control board. Using this information, the community leaders were able to stop the waste dumping and construction at a meeting at the district Collectorate in Ganjam (Das, 2020).

3.4 Absence of legal recognition for seasonal and multiple land uses

One of the most defining aspects of coastal commons is their dynamic nature. The cyclones, currents and the wind movement cause rapid changes in the coastal commons. For example, the course of the Rushikulya River at its mouth keeps on changing due to natural phenomena as a result of which the spaces used by the fishing community in Purnabandha keeps on changing. The fish market, landing sites, boat keeping sites and the passage change along with the change in the river mouth.

“The places where we used to keep boats a few years back are no longer existing and have been submerged in the river. Five years from now this place where we keep our boats now won’t be there,” said an elderly fisherman during our transect walk.

Thus, the uses of coastal spaces keep changing along with the location of the river mouth and the changing seasons. However, this adds to the already dominant narrative of assuming fisher's lands as unproductive and unused land. Some of the encroachments and even construction activities take place in the coastal commons when they are not used due to river mouth change. But such encroachments and subsequent regularisations make it difficult for the fishers to reclaim these spaces when river mouth changes again.





4. Scoping study on coastal commons

Despite the efforts of Odisha Traditional Fish Workers Union (OTFWU) and fisher women's collectives such as Samudram, there is still a lack of formal recognition of the rights of fishing communities over marine and coastal commons. Subsequently, their uses of these spaces are often rendered invisible in the mainstream discourse. This places local communities squarely at a disadvantage in taking responsibility and control over oceanic and coastal conservation, a role that is enshrined by several global agreements including the SDGs. The present study was undertaken as a pilot study towards generating basic information that would enable the design of a more detailed study for generating knowledge on coastal and marine commons using trans-disciplinary approaches. The aims of this pilot action-research study were:

- a) to document local governance traditions, knowledge and practices in relation to coastal commons and their uses in our study sites.
- b) to create a participatory coastal map of the commons

4.1 Site selection and profile

We chose Ganjam district as the overall research site for this pilot study since it has been a site of long-term study and intervention for Dakshin Foundation and our research team has long years of association with several actors in this space. Ganjam is one of the six coastal districts of Odisha and is also home to the mass nesting rookery of olive ridley sea turtles at Rushikulya River estuary. It has a coastline of 60 km and the River Rushikulya meets the Bay of Bengal at Purnabandha village in the north. The Saheb canal (also known as Palur Canal) connects Rushikulya estuary with Chilika Lake and flows parallel to the villages north of Rushikulya. Compared to other coastal districts, fishers in Ganjam mostly use traditional crafts and gears for fishing. It has just been a decade since motorised boats became widely used in Ganjam coast.

The marine fishing villages in Ganjam fall under four coastal blocks- Ganjam, Chatrapur, Rangeilunda and Chikiti. According to the CMFRI 2010 census report, Ganjam has 26 marine fishing villages comprising 8601 fisher families of which 8583 are traditional fisher families. This amounts to a fisher population of 35263. Of the 8601 marine fisher families, 3421 are under Below Poverty Line (BPL). The head count ratio (percentage of population below poverty line) of fishers is 39.77% and similar to the overall head count ratio of Ganjam at 40%. Of the 35263-fisher population, 68.37% lacked access to formal education (CMFRI, 2012). After the scoping exercise undertaken at the Ganjam district level, we decided to initiate an action research pilot in Purnabandha to map the coastal commons. Purnabandha was chosen as Dakshin had a good rapport with the fishing community there due to our ongoing project on the long-term monitoring of sea turtles at Rushikulya mass nesting rookery. Three members of our turtle monitoring team had just been elected to the village committee as well.

4.2 Methodology

The research team comprised of a field team and an overall supervisory team. The field team consisted of a non-Odia speaking social scientist and a social ecologist born and brought up in Odisha. Another Odia colleague and a Telugu speaking colleague also pitched in from time to time and supported us with the research. The supervisory team consisted of a social scientist and marine biologist. The study was divided into a preliminary scoping exercise followed by a participatory mapping exercise. We began with a scoping exercise in June 2019 which aimed to document the local governance, knowledge and practices related to coastal commons. We decided to focus on the coastal villages of Purnabandha, Gokhurkuda, Podampetta, Sana Nolia Nuagaon, Sana Aryapalli and New Golabandha and Prayagi. These villages were chosen due to the presence of specific institutions and actors like Gopalpur port, army camp, proposed reserved forest that influenced the usage and ownership of the commons. Thus, these villages highlighted different complexities associated with the governance of the commons. For instance, the presence of an army camp in New Golabandha has severely restricted their access to the coastal and marine commons. Similarly, the proposed reserve forest in Prayagi is governed by a joint forest management committee (Vana Samrakshana Samithi) where fishing communities are not represented.

We started off by interacting with some of our known contacts who were our key informants and we undertook a snowballing approach thereon, to draw into our conversations more key informants from the communities. We conducted semi structured interviews with village committee leaders, ward members, fishing committee leaders and undertook group interviews with community members.

We also met activists, scholars and government officials from various departments such as fisheries, forests, revenue and local self-government institutions, to develop an understanding about the tenure systems, regulations and institutions governing the commons. We also went for transect walks to identify the spaces that are considered as commons by the community.

Our participatory mapping exercise in Purnabandha was inspired by the mapping done by fishers of Chennai, Tamil Nadu, who documented their local knowledge on customary uses of commons and used this to counter coastal grab (Kumar et al., 2014). They also successfully campaigned to have these uses recognised in Coastal Zone Management Plans (CZMP). However, legal recognition is only one of the aims of participatory mapping. Community self-mapping can politicise and empower the community. It makes alternate imaginations of land use and development possible and presents a counter to the dominant narratives. Thus, the process of mapping itself is an act of claiming rights over a space (Gessa et al., 2008). One of the highlights from our mapping process was when a fisher who participated in the mapping, began to refer to the commons as “their land”, as a departure from the standard appellation of “government land”.

We held meetings with the community leaders in Purnabandha to discuss the proposal in detail. The leaders rigorously questioned us on the process and potential impacts as they did not want to be accused of partisan behaviour due to their association with Dakshin. Finally, they approved the proposal, and it was agreed that the map produced would be the common property of the villagers of Purnabandha. We also fine-tuned the prompts for the transect walks through discussions with the community

members. The prompts aimed to understand the uses (past, present and seasonal) of common spaces, the norms and regulations related to them and their implementation. Once the prompts were ready, we met again with the community leaders to plan the mapping. Subsequently, the community members accompanied us to the field, pointed out areas that are significant to them and their uses. The mapping team, consisting of three of the village committee members and the two Dakshin researchers, marked these areas using Global Positioning System (GPS) devices. We undertook a total of seven transect walks with the community members. We had planned for separate transect walks with women, children and members of non-fishing communities living nearby. The designing of the map was also planned to be participatory with the fishers suggesting the symbols. However, due to COVID related restrictions, we were forced to wind up the field work earlier than planned and had to conduct some interactions via phone calls and Google meet.

Once back in Bangalore, we worked on the Geographic Information System (GIS) map during the lockdown. We returned to the field for a four day visit in March 2021 when it appeared it was safe to travel. We met a few community leaders and shared the Odia and English versions of the draft map. The leaders are planning to verify the map with the fishing village, nearby communities and authenticate it from the panchayat and the municipality authorities.

Despite having a good relationship with most members of the community, we found it difficult to engage with the fisherwomen of Purnabandha. They buy fish from nearby fish landing sites and sell it in Ganjam, Humma and Chatrapur markets. The fisher women also go out for days to sell dry fish, pickles and paper plates in nearby markets of Humma, Balugaon, Khordha and Puri. They travel together in groups of 4-5 women and these travels can take up to 3-4 days. In addition to carrying out fish marketing and household tasks, they are also part of multiple Self Help Groups. This time poverty made it difficult for us to have quality interactions with them. As such, we could only get an overview of their uses of the common spaces.

4.3 Mapping the commons of Purnabandha – methods

The map of coastal commons of Purnabandha was derived by combining three different map layers and satellite imagery. The three different layers are: Coastal Commons layer generated by participatory mapping, Revenue /Cadastral map layer and Coastal Zone Management Plan map layer. Superimposing the revenue layer was necessary as the CZMP maps of Odisha do not contain revenue details.

a) To begin with, we purchased cadastral maps of revenue survey of the revenue village Palibandha from the Map and Survey Publications office in Cuttack in January 2020. The publicly available revenue map of the Palibandha panchayat (the fishing village Purnabandha is a part of the revenue village Palibandha. The agrarian settlement next to Purnabandha is also referred to as Palibandha) was last updated in 1976 after the last revenue survey. On discussing the map with revenue officials, we realised that periodic updations are done on a copy of the physical map kept in the revenue office. They also informed us that the updation of the digital database has been going on for the last two years but is yet to be completed. We were able to take a look at the physical copy of the updated revenue map and understand and incorporate the changes made after 1976. However, this lack of up-to-date revenue information in the public domain and the lack of periodic revenue surveys can enhance corruption. These deficiencies are specially concerning in the context of the allegations made by fishing communities where encroachments into commons are regularised by the revenue officials.

b) These cadastral maps were digitised in the Tag Image File (TIF) format and then were geo referenced using satellite imagery in ArcGIS. The mapping team verified them by checking for the outline of geographical features of the study area in Google Earth Pro imagery as well. Since the geographical extent was large, maps were divided into four sheets, a combination of sheets was created using Google Earth Pro application and then exported as a layer from Keyhole Markup Language (KML) format.

c) For the CZMP layer, we downloaded CZMP maps of the geographical area from Odisha State Coastal Zone Management (OSZMA) website. These maps were created in 2017 according to the CRZ 2011 legislations. As per a notice in the OSZMA website, draft CZMP maps as per CRZ 2019 legislation were created in December 2019. However, draft CZMP maps as per CRZ 2019 were not available on the website as of January 2021.

d) We geo referenced the downloaded CZMP map using ArcGIS. For better clarity, polygons and polylines of the various CRZ zones, High Tide Line (HTL), Low Tide Line (LTL) and hazard lines were redrawn on the original CZMP map. Shape files of each of the CRZ zones and other features were made and then polygons and polylines were drawn on the original map which was digitised before so as to get the exact shape and location of the zones which were present on the original map. After the shape files of the various CRZ zones and features were created, they were coloured differently as keys.

e) The coastal common layer was drawn as polygons on satellite imagery. We tried multiple times to contact Indian Remote Sensing Centre (IRS) to get the base satellite images. However, they were not responsive, and we used Google Pro images instead. The polygons were derived from the multiple transect walks conducted with the community during March 2020. The mapping team recorded the tracks and waypoints in the GPS and uploaded them to the Google Earth Pro application and created polygons out of them. These were then exported as a layer from KML format using ArcToolbox in ArcMap. These were then cross-checked with satellite imagery in ArcMap. The incident where municipal officials dumped waste on Purnabandha had generated an urgent impetus among the community to get their uses and claims legally recognised. As such, we decided to prioritise creating a map that was likely to be accepted by CZMP using the scale (1:4000), legends and format preferred by them. However, we hope to make another map with the legends and formats of the community's choice.

f) Finally, the revenue map layer was superimposed on the CZMP zones and then the commons map layer on top of that. Some features like village roads and panchayat roads were also added by drawing polylines on the satellite imagery in ArcGIS. To obtain clearer resolution for smaller areas, the map was divided into four grids (each 1:2000 resolution) using the grid index tool in the cartography toolbar in ArcToolbox. Legends were added and the maps were renamed according to their grid columns.



Fishers of Nolia Nuagaon, Ganjam share their insights into the operation of coastal commons

Table 2: Villages of Ganjam district – key features

Fishing village	Brief profile	Preliminary observations
Podampetta	<ul style="list-style-type: none"> • Telugu marine fishing hamlet. • In 2012, some houses were damaged due to sea erosion and 120 households were relocated to Siddhant Nagar near Prayagi in the Indian Rare Earths Limited (IRE) land. This settlement called New Podampetta is around four km away from the original settlement. • Kantiagada Podampetta: In 2013, cyclonic storm Phalin damaged many houses and around 300 households were resettled in 2016 in newly made Odisha Disaster Recovery Project (ODRP) houses. This settlement is near to the old settlement but 800 meters away from the seashore. • Around 20-30 families are still present in the old settlement. 	<ul style="list-style-type: none"> • Kantiagada Podampetta and Old Podampetta share same traditional institutions • New Podampetta has developed new community institutions • In old Podampetta, fishers are restricted from drying fish on beaches during turtle nesting season. This along with lack of cold storage forces them to sell fishes cheaply and quickly. • In resettled areas fishers reported difficulties as the settlements were far from the sea.
Prayagi	<ul style="list-style-type: none"> • Northern most coastal village of Ganjam • Small 90-100 households strong Telugu marine fishing hamlet near 200 strong Odia agrarian settlement. • Of these, around 44 fisher households were settled in new ODRP houses at about 700 meters away from the seashore after Phalin in 2013. • The proposed reserve forest in Prayagi is managed by Van Suraksha Samithi (VSS) comprised mostly of Odias. 	<ul style="list-style-type: none"> • Sense of marginalisation and Odia domination in access to resources and services among Telugu fishers • Difficulties in accessing the village forest for firewood collection

<p>Sana Nolia Nuagaon</p>	<ul style="list-style-type: none"> • Part of 1600 strong large Telugu marine fishing hamlet Nolia Nuagaon • Nolia Nuagaon is divided into Bada Nolia Nuagaon and Sana Nolia Nuagaon. 	<ul style="list-style-type: none"> • The community has good cohesion and is led by a strong village committee president.
<p>Sana Aryapalli</p>	<ul style="list-style-type: none"> • Previously a part of the larger 2000 strong Telugu marine fishing hamlet of Aryapalli that later split into Bada Aryapalli and Sana Aryapalli. • The village is near to the Gopalpur port and the IRE Limited. • Multiple small temples on the beach where fishers pray before fishing trip. 	<ul style="list-style-type: none"> • Aryapalli beach has undergone massive erosion. Fishers attribute this to the ongoing sand dredging in the Gopalpur port. • Fishing harbour built by IRE where fishers dock the boats is quite far from the hamlet
<p>Nua Golabandha</p>	<ul style="list-style-type: none"> • Large Telugu speaking marine fishing hamlet around 900 households strong • Near to Gopalpur port and an army cantonment • No political representation as ward level elections were not carried out. • Large scale migration to other states due to livelihood crisis and stunted development due to ongoing impasse. 	<ul style="list-style-type: none"> • Around 14-15 years back the army had asked them to relocate and a few households have relocated to new ODRP houses in Garampetta • The army had paid a compensation amount for the relocation to the state government in 1983. The villagers felt that the compensation amount offered by the state government was too small. • Fishers are frequently restricted from going to the sea during firing trainings in the army camp. • Complaints of harassment by the army when villagers collect firewood from nearby casuarina plantations.
<p>Purnabandha</p>	<ul style="list-style-type: none"> • Riverine fishing village situated near the mouth of the River Rushikulya • Odia fishers and Telugu allied fishing / agrarian / small trade households • Mass nesting site for olive ridley turtles 	<ul style="list-style-type: none"> • Lack of space for infrastructure development in the fishing village • Separate Odia and Telugu village committees • Total 200-230 households
<p>Gokhurkuda</p>	<ul style="list-style-type: none"> • Lies to the immediate north of Purnabandha • Mass turtle nesting site with an artificial hatchery run by the forest department. • Around 200 households strong Telugu marine fisher households and 100 Odia agrarian households. 	<ul style="list-style-type: none"> • Encroachment by non-fishing communities by planting casuarina trees • Share spaces with Purnabandha fishers to keep nets and boats • Separate Telugu and Odia village committees

5. Findings and insights

5.1 Role of community institutions in the governance of the 'commons'

Spaces and resources are considered as commons if there is a community of users who are bound by shared usage and obligations and who have set up norms for governing the spaces and resources (De Angelis, 2010). In this section, we discuss how the fishing communities in Ganjam govern their commons. Traditional caste institutions of fishers play a major role in conserving and governing their coastal commons. The most important community institution in the fishing villages of coastal Ganjam is the village committee.

Village committee: Village committee is the traditional community level institution that deals with day-to-day affairs of the community. It is also the first interface between the fishing village and other formal institutions. The village committee works closely with the ward members of the village for implementing various welfare projects. It decides on issues related to marriage, divorce, eloping and conflicts among fishers. Village committees also interact with government officials such as the forest department and the fisheries department for coordinating awareness programs and schemes. They also hold meetings with the *Sarpanch* of the Panchayat from time to time. It is the duty of the village committee to collect the funds required to maintain the temples and celebrate the festivals.

The village committee is chaired by the president who is considered as the village head. The membership of the village committee is usually hereditary but in some cases like the New Podampetta where the fishers were relocated quite far from the original settlement, the entire village committee was newly selected by the community. In mixed settlements with both Odia and Telugu speaking populations, separate village committees exist for each community. However, both committees come together and decide when common concerns are involved. The elected ward member in the fishing village acts as a mediator between the village committee and the panchayat. Funds sanctioned under National Rural Employment Guarantee Act (NREGS), Panchayat Samithi (PS) and District Rural Development Agency (DRDA) are routed by the ward members. The ward member also interacts with the Block Development Officer (BDO) as and when required. Interestingly, by incorporating the ward member as a member of the village committee, the village committee has ensured that it continues to be politically relevant. In the absence of an elected ward member (eg: Nua Golabandha), the village committee members directly interact with other formal institutions.

Fishing committee: Another community institution present in Purnabandha, Gokhurkuda and Nolia Nuagaon is the fishing committee. Fishing committee usually presents the grievances of the fishing community to the fisheries department, seeks compensation for damage of boats and nets and conducts meetings with fisheries department officials regarding relevant schemes. It also holds meetings with the forest department before the turtle breeding season. In villages without a fishing committee, livelihood and fisheries related grievances are addressed by the village committee members themselves.

Cooperative societies and Self Help Groups (SHGs): Currently, there are 17 marine fishing societies registered in Ganjam. Purnabandha has a fishing society named as Jahnavi Prathamika Matsyajibi Samabaya Samithi which was formed

way back in 1977 and has 200 active and allied fishers as members. Similarly, Ganjam also has multiple women SHGs that receive funding and support from the fishing department. These SHGs mostly engage in fish vending, fish drying and making fish pickles. Earlier, the pickles used to be marketed by a fisher women cooperative called Samudram. However, they have scaled down their operations after the shift to the new Goods and Services Tax (GST) regime.

Some of the villages have also come together to form umbrella fishing societies. For instance, Purnabandha, Gokhurkuda, Podampetta (both old and Kantiagada Podampetta), Nolia Nuagaon, Damodarpur, Kainchapur and Sanabajar are part of a larger fishing society known as the Maa Ganga Devi Fishing Society. This fishing society resolves conflicts between fishing villages over fishing grounds, crafts and gears. All these seven villages are artisanal fishing villages and do not use ring seine.

Temple Trusts: Temples are an important part of the socio-cultural fabric of the coastal villages in Ganjam. People use temple spaces to hold meetings and social functions such as marriages and feasts. Temples also serve as a binding factor in villages with linguistically different communities like Purnabandha and Gokhurkuda. In Gokhurkuda, the Odia and the Telugu Village Committees meet at the temple periodically to discuss issues relevant to the entire settlement. Temple trusts also serve as custodians of common property. In Purnabandha, the fishing community reclaimed the encroached land in the name of Maa Gangadevi temple trust and marked its boundaries by planting Casuarina saplings. Natural disasters and livelihood crises have led to fragmentation of these institutions in some villages. For example, in Kantiagada Podampetta, the president of the village committee, the secretary and the ward member have migrated outside of the state leaving a leadership vacuum behind. Similarly, when fishers from old Podampetta were relocated to a new far away settlement, they formed new community institutions.

5.2 Norm setting for the commons

Community institutions regulate the use of commons by setting certain norms and rules. For example, in Ganjam, fishing is usually not done during Sankranti and when there is an ongoing conflict in the community. As Bavinck (2001) observed during his study on governance of fisheries in the coromandel coast, the norm of fishing ban during conflict must have been set to ensure maximum attendance for the village meetings during conflict resolution phase. This norm also converts conflict resolution into a pressing common concern. Those who don't obey these rules are levied fines. Any internal grievance should be first taken to the village committee before involving outsiders. For example, in Arakhuda in Chilika, there is a marine police station nearby. However, villagers are fined by the village committee if they approach the police station without consulting the committee.

The norms regarding fishing are set by both village committees and fishing committees. In Purnabandha, when there were conflicts about use of fishing grounds among the community, the village committee intervened and set hourly usage norms. However, it was the fishing committee that was delegated to engage with officials when a boat was set on fire by unknown miscreants.

The larger level norm setting is done by the umbrella fishing society. For example, Maa Ganga Devi fishing society has banned the use of ring seines as they catch juvenile fishes. However, ring seines are still used in Nua Golabandha and Aryapalli villages that are not a part of this fishing society.

There are no conflicts among fishers of different villages over sharing of spaces for keeping boats or fish landing sites. Nolia Nuagaon fishers also make use of Purnabandha's landing sites. Similarly, fishers from Gokhurkuda and Purnabandha share the common spaces for keeping boats and nets.

5.3. Local ecological knowledge among the fishers of Ganjam

The norms and rules governing commons are often formed based on the knowledge that communities gather over time about their local environments. This knowledge, handed down through generations include observational knowledge, resource use practices and belief about the relationship between ecosystem and community (Berkes et al., 1994). However, this Local Ecological Knowledge (LEK) is continuously evolving and changes with introduction of new technologies and the changing relationship with the ecosystem.

Patterns of change in the crafts and gears

Traditional fishers in Odisha used to have knowledge of many varieties of nets used for capturing different fish species. By using specific nets for specific fishes, they made sure that bycatch was minimum and juvenile fishes were not caught, assuring sustainability. Some of these nets required around 40-50 people to use. Thus, fishing used to be a community-based livelihood. However, fishing today has evolved from community based to family based and individual livelihood.

According to the community elders, earlier the nets were made of cotton and jute and net making was a labour-intensive process. Currently with factory made nylon nets, the net making process is both faster and cheaper. Also, most of the fishers have shifted to nets that would require a smaller number of people such as *Cherra jaal*, *Khainga jaal*, *Kabala jaal* and *Kankada jaal*. Use of nets like the *Alimb jaal* (river shore seine), *marala jaal*, *gada jaal* which require large groups of fishers to catch fish has diminished now.

Livelihood crisis has also caused deterioration in the local Ecological Knowledge with more and more people leaving traditional artisanal fisheries and migrating to work in trawl boats or construction industries in Kerala, Tamil Nadu and Goa. Thus, the knowledge of traditional crafts and gears is not passed to the younger generation. Many nets like *bada jaal* (beach seine), *irrigali jaal*, *kaathi jaal* are not used anymore in villages like Gokhurkuda and Podampetta.

The decline in the use of *bada jaal* has also led to decline in the use of *Padhuva*, a type of boat that was used exclusively for fishing with *bada jaal*. Similarly, the use of *Oula danga* or wooden *teppa* declined after the introduction of fibre boats. However, wooden boats are still used by some fishers in rough weather as the cost of replacement is quite low when compared to the fibre boats and it is relatively easier to tow down the wooden boat during rough weather.

According to some fishers we spoke with, after motorisation of boats, many fishes like *saala* that were earlier seen near the shore are not seen any more due to the sound produced by motors. Even eels that were caught in the mouth of the river with baits and hooks, are not very common anymore.

The fishers also opined that intensive coastal aquaculture contributes to fish catch decline. The fishers of Purnabandha used to practice a form of sustainable aquaculture. Around October there would be a mixture of sweet and salty water in the river mouth and many prawn seedlings would come to the riverbed. After a period of two months,

around the month of January, prawns would go back into the sea during low tides usually six days after *Amavasya* and *Purnami*. The fishers in Purnabandha used to catch prawns from muddy river beds using *kaathi jaals* during this time. Currently, most of the seedlings are caught for aquaculture using zero nets and this practice has declined.



Local knowledge of the coastal commons and their uses

During the mapping, we aimed to capture the local knowledge of the uses of the coastal commons as evidence of their historic and continued uses and subsequent rights over the coastal spaces. The community members identified the following spaces and resources as their commons. We have kept the same terms used by the fishers in this description and in the maps produced.

Built space as commons

- ICZMP fish drying house: It houses the electrical machines for drying fish. This building is also used for community feasts at times. Currently, the machines are lying unused due to lack of regular electricity supply and adequate know-how on using them. There are cold storage rooms for women Self Help Groups nearby. These rooms are used by the fisher women for SHG meetings and storing their products.
- Primary school: The primary school of the village of Purnabandha.

Ward member and other village committee members examine the co-produced map of Purnabandha's commons

- Multi-purpose cyclone shelter: Built for shelter during natural disasters. This space is also used for formal meetings with authorities

- Jetty house: The main fish landing centre of Purnabandha. This building is used throughout the year. When not used by fishermen, fisherwomen from Purnabandha and Nolia Nuagaon use this space to dry their fish on the floor. This house also serves as a meeting and resting point for all the fishers before and after their fishing trips. However, the fishers also face issues here as some anti-social elements from outside the village who frequent this space pose a threat to the fishers and their assets.

- Maa Gangadevi Temple and the nearby land: The temple of the village deity. Also used for conducting marriages, community meetings, leisure activities and celebrating festivals. The land is owned by the temple trust known as Maa Gangadevi Temple Trust. Small *melas* are organised during the Dussehra festival in this plot. This site is also historically used for keeping boats and nets.

- Jagannath Temple and the nearby land: Jagannath Temple was established by a group of farmers of Telugu and Odia origin who used to live in Purnabandha. Currently, most of them have left the village. The temple is now maintained jointly by the villages of Purnabandha and Palibandha.

- UNDP Fish Drying Hall: This hall was constructed using the funds from United Nations Development Programme (UNDP) as space for drying fish. But the fishers do not dry their fish here as they find the hall to be too small. They also consider this space to be too far from shore and their dwellings. This space is currently used for keeping nets and for conducting the occasional religious ceremonies.

While the turtle interpretation centre is also marked in the map, it is a public property whose construction had a de-commoning impact on the community. The centre was built on common land by the forest department for monitoring of olive ridley Turtles during the nesting season. The fishers used to collect fuelwood from the nearby smaller patch of forest which no longer exists and their access to this space is restricted now.

Open beach spaces are crucial for the maintenance of fishing nets



Open common spaces

- Boat Anchor Area: Relatively safe and calm spaces where the fishers keep their boats, gears and nets. In the early mornings, they take the boats from these areas to go fishing.
- Purnabandha habitation spaces: The habitations of the village also consist of some newly built ODRP houses. Traditionally, fishers did not possess any *pattas* (land ownership certificate) over their lands. But recently they have started making *pattas* over the new land where they built their ODRP houses.
- Net and small boat storage area: This place is used to keep nets and smaller boats. Earlier this place was used for bathing during monsoons due to the formation of rain fed ponds. This space is now used for drying fish, keeping nets and repair small boats
- Palibandha Nala: Purnabandha fishers used to catch fish here. Later Palibandha panchayat took over the place for farming and the fishing was discontinued. Currently, this place is barren and unfit for agriculture. The fishers now use this space to catch shrimps, crabs and small fishes during monsoon
- Fish Drying Area: This area is used for drying fish. It is also used for keeping boats anchored during most times of the year. This place is also used as a fish landing centre during the monsoons when other landing centres get flooded.
- Balipokhari: This is a community pond used by people from both Palibandha and Purnabandha settlements.
- Community Forest land: Some of the areas in this patch has been encroached by non-fishing communities and thus the fishers feel they should demarcate this area as their commons for future use. Most of the encroachment was done by planting shrubs and laying claims to it. The encroachers have regularised the ownership of some of these plots with the support of the revenue officials. These areas were used by the fishers 50 years ago as a passage while going to fish as the river mouth was in this area then. Many fisherwomen catch prawns and crabs in the nearby canal as well.
- Lanka Pahada: This area is being used as a market now. Earlier this was a passage to the river as the river mouth was near to this area. People used to catch fish here as well. This place is open for all fishers belonging to the seven fishing villages that come under Maa Gangadevi Fishing Society.
- Masani: Community grave. This land belonged to the ancestors of the fishing community. Currently, the village committee is considering undertaking some infrastructure development works there.
- Nala Tatora: Used to keep boats and nets along the canal. Some of the speed boats of the forest department are also kept here. Sunari Pokhari: Community Lake that was earlier used to grow vegetables and wheat. After it became barren, a lake was built for the use of both the people of Purnabandha and Pallibandha.
- UNDP Fish drying Commons: The land adjacent to the UNDP fish drying hall and used as a place to keep boats during the low tidal current. Also used to dry fish during the summer.
- Cricket playground: Used as a playground during summers. Now mostly used as a passage to the river and as a place of gathering during evenings for women, children and youth.

- Market and Fish Drying Area: Fishers from both Purnabandha and Nolia Nuagaon use this place for auctioning, landing fish and resting at night before commencing fishing trips. Fishers from other fishing villages also use this space occasionally. Women and children use this space for leisure as well. Occasionally, boats are anchored here during low tidal current.
- Some of the common areas, especially casuarina plantations are also used for open defecation in the absence of adequate sanitation facilities in the fishing village.

As we can see, most of the spaces have multiple uses that vary according to the season. Some spaces are also shared with the non-fishing community in Pallibandha. The coastal commons of Purnabandha are used by the fishers of the nearby Nolia Nuagaon hamlet as well. Interestingly, the fishers of Purnabandha consider some parts of their coastal commons as common to the seven fishing hamlets. For example, the area called Lanka Pahada is considered as common to all villages under the Maa Gangadevi Fishing Society. To quote an elderly fisher “*Everyone can use this area, but no one can claim it as theirs*”

Fishing jetty was a common aspiration we came across in all the fishing villages we visited. The fishers believe that the presence of a fishing jetty will enable them to fish even in rough weather. It has even led to a conflict between the fishers of Nolia Nuagaon and Purnabandha. The fishers of Nolia Nuagaon wanted a jetty near the mouth of Rushikulya River in Purnabandha. However, the fishers of Purnabandha felt that dredging for the jetty would damage the ecology of the river.

5.4 Women and the commons

The presence of women in beach spaces was much less compared to that of men. However, we met women who were engaged in selling the fish catch, helping with anchoring the boat, bringing refreshments to the fishermen who were returning from the sea and collecting seashells. Women and children also engage in catching mud crabs, shellfish and shrimps. They use the common spaces for engaging in worship during Nag Panchami and Boita Bandana as well.

Women and men relate to the commons (such as beach spaces) differently



The women were very visible in the vibrant Humma market where they bought and sold dry and salted fish. While they mostly dry fish in front of their houses, shrinking of the common spaces has impacted the overall space available for drying. In general, there is no conflict over common drying spaces, and they follow First-Come-First-Serve (FCFS) basis.

Our community meetings in Purnabandha were attended by women SHG leaders. However, we were told that the previous village president was opposed to this. Despite the fisher women multitasking housework, fish vending and participation in SHGs- and contributing significantly to the welfare of the community, their presence in public spaces and in decision making is considered undesirable.

5.5 Sharing the shore: Uses of coastal commons by the non-fishers

We found the following uses by non-fishing communities across the coastal villages of Ganjam that we visited: cattle grazing, collecting firewood from casuarina plantations, cultivating cashew plantations, shrimp farming, salt farming and leisure.

In the village of Mayurpada, non-fishing communities lease plots from the government for salt farming. Jayshree Chemicals Limited (JCL) used to buy salt from these local salt farmers for production of caustic soda and chlorine but recently JCL shifted from mercury-based production technology to membrane-based technology and has started importing highly purified salt from Gujarat. This has led to the collapse of Humma Salt Society which used to collect salt from these farmers and sell to JCL. Most of these salt farmers are now opting to engage in aquaculture as the land cannot be used for any other purposes. This in turn has the potential to render the groundwater unfit for consumption.

In Purnabandha, Odia fishers seemed to have a cordial relationship with the Telugu non fishing community who lived in the same settlement but in different lanes (*sahi*). Their relationship with the non-fishing Pallibandha settlement is more complex and involved grievances regarding anti-social activities of some miscreants. However, overall, they seemed to share a good relationship with each other. For example, the Purnabandha community leader is generally invited as a community representative to attend major festivals in Pallibandha. Additionally, the leaders of Pallibandha extended their support to the village committee of Purnabandha when municipal waste was dumped in their commons without their consent.

However, it is difficult to get a comprehensive picture just from Purnabandha as it is an Odia fisher settlement. The limited insights we obtained from visits to Telugu fisher settlements in Prayagi and Chilika indicate that the presence of linguistic differences adds more complexity to the relationships.



6. Official land categories and uses

We analysed the land categories; both CRZ and revenue and the uses of the corresponding land to understand the impact of land category on use. A summary of the findings is given below:

Land use	Land categories of different plots (listed as a combination of revenue category and CRZ- if it falls under)
Purnabandha main residential settlement	Abada Jogya Ananbadi, Rakshita Anabadi and Sarba Sadharana
ODRP settlement	Sarba Sadharana, No Development Zone (NDZ)
Volleyball field	Abada Jogya Ananbadi
Net Storage and Related Use	Abada Jogya Ananbadi (NDZ)
Pallibandha Nala	Abada Ajogya Anabadi (NDZ)
Fish Drying Area	Abada Ajogya Anabadi (NDZ,CRZ-IVB)
Jagannath Temple Land	Abada Jogya Ananbadi, Sarba Sadharana
Balipokhari	Rakshita Anabadi
Community Forest Land	Abada Jogya Ananbadi (NDZ), Abada Jogya Ananbadi (CRZ1A), Sarba Sadharana, Abada Ajogya Anabadi (CRZ IVB), NDZ,CRZ 1A.
Gangadevi Temple Land	Abada Jogya Ananbadi (NDZ) ; Sarba Sadharana (NDZ), Abada Jogya Ananbadi (NDZ), NDZ
Lanka Pahada	Rakshita Anabadi (NDZ), Abada Jogya Ananbadi (NDZ)
Masani	Sarba Sadharana(NDZ), Abada Ajogya Anabadi (CRZIVB)
Nala Tatora	Abada Jogya Ananbadi (NDZ), Abada Ajogya Anabadi (CRZIVB)
Sunari Pokhari:	Rakshita Anabadi
UNDP fish drying commons	Abada Ajogya Anabadi (CRZIVB)
Cricket Playground:	NDZ
Market and Fish Drying Area	Rakshita Anabadi (NDZ, CRZIA, CRZIB)

Some of the common spaces also have multiple plots with neither revenue category information in Bhulekh nor classified as a coastal regulation zone.

Of these land categories, Abada Ajogya Anabadi and Sarba Sadharana are objectionable village lands - implying they cannot be set aside for cultivation and settlement purposes. Similarly, coastal regulation zones are governed by CRZ norms. This understanding of both revenue information and coastal regulation zones can empower fishing communities to better protect their commons.



Final map of Purnabandha's commons



7. Developmental concerns

7.1 Lack of adequate participation in polity

The mapping process also highlighted the standard issues of top-to-down development when marginalised communities do not have adequate participation in the decision-making process. While mapping the areas, the team came across unused fish drying machines. These were installed as a part of the World Bank Funded Integrated Coastal Zone Management Plan (ICZMP). While it has some 7-8 electric ovens for drying fish, these are not used due to lack of regular electricity and lack of adequate training on using them. Similarly, the fish drying hall built by UNDP to dry fish is used for storing nets and to conduct occasional religious ceremonies as the place is considered too small to dry fish.

Each coastal district has a CRZ committee chaired by the Collector and consisting of representatives of all the line departments including forest, fisheries, revenue, electricity, pollution control board, etc. This committee meets once annually in the Collectorate. However, none of the village committee leaders we interacted had heard of these meetings. They were also not consulted during the creation of the CZMP maps.

7.2 Livelihood crisis

The artisanal fishers attribute decline in fish catch to the presence of trawlers and continued use of ring seines. Local activists we met opined that many local politicians have a share in the ring seine making industry. Ring seine manufacture is considered as a profitable industry as ring nets are quite expensive and cost around three lakh rupees. Some of the politicians even lend money to the fishers to purchase the ring nets. While the fisheries officials acknowledged the continued use of ring seines as a problem, they did not consider trawlers to be a problem. They opined that the major reason for individual fish catch decline is the entry of more fishers to the sector.

The fishing sector is also high on occupational hazards leading to increased health care expenditure. The existing insurance schemes do not adequately address the needs of the fishing communities. For example, deaths due to boat toppling are quite common among the fishers. But to receive the insurance amount, the family has to wait the stipulated seven years for person missing cases under the Indian insurance norms. Also, the Odisha government does not have any scheme for compensation for accidental loss or damage of crafts. The Group Accidental Insurance Scheme (GIAS) under the central government only covers accidental injuries and death of fishers and their families. Even the compensation available for loss of boats and nets during natural calamities like cyclones is limited to the owner of the boat and there are no provisions for the crew who are dependent on these for their livelihood. The fishers also find it difficult to get loans due to lack of assets and ownership documents.

The elderly fishers we met considered the increasing unpredictability of weather as another stress inducing factor. Additionally, the loss of fish drying areas during turtle breeding season and the lack of cold storage forces the fishers to sell the fish immediately, at times at a loss.

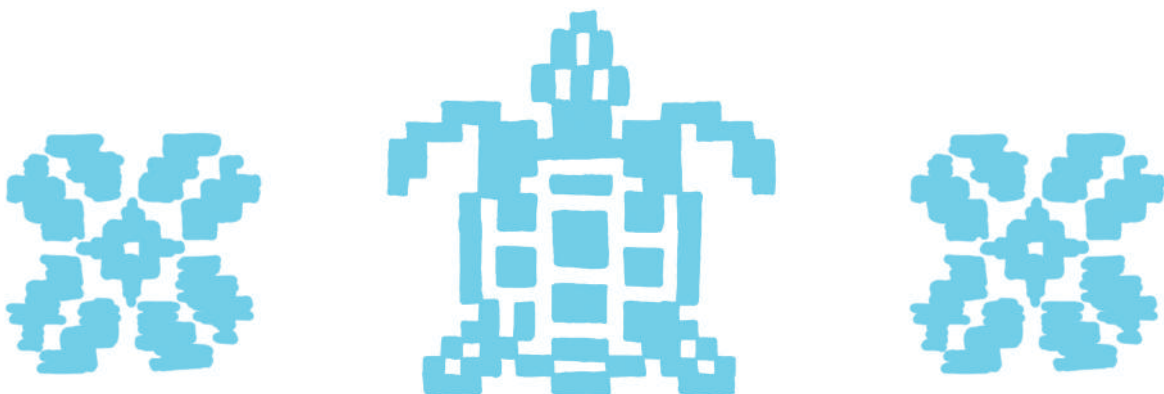
7.3 Conflicts with conservation

Regulations on fishing during turtle breeding seasons is another point of contention between fishers and authorities. During this time period, motorised boats are banned for a period of seven months up to a radius of 10kms from the shore and trawlers are banned till 20kms from the shore. As the main fishing season and turtle breeding season coincide, fishers lose their profit over the period. The fishers in Purnabandha also felt that riverine fishers were neglected in comparison to marine fishers. They pointed out not getting compensation during turtle breeding season as an example of this discrimination. However, according to the fisheries officials we spoke, this was because the ban was applicable only for motorised vehicles and Purnabandha had very few motorised boats.

7.4 Out migration

With declining share of fish catch and increased uncertainty of income from fishing, more and more artisanal fishers are migrating outside of the state in search of better incomes. They migrate to Kerala, Tamil Nadu, Kanyakumari, Maharashtra and Goa to mostly work in trawl boats or in construction sites. Working as a trawl boat crew is considered as lucrative but the working conditions are quite harsh and adversely impacts their physical and mental wellbeing.

Most of the young fishers who don't migrate, take up jobs in the construction sector or undertake Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGA) works. They find it difficult to find employment with local industries. According to the fisher leaders of Aryapalli, the Gopalpur port authorities do not provide much job opportunities to the local fishers and mostly employ labourers from other districts such as Bhadrak and Cuttack. Thus, the fishers lose access to commons and experience decline in fish catch due to ports but are not compensated adequately for this loss of livelihood.



8. Way Forward



8.1 Current legislative landscape on coastal commons

Law making and decision making with regard to coastal commons are increasingly getting centralised; excluding fishing communities who are custodians of the commons and the local ecological knowledge associated with them. Not translating the legislations / policies to regional languages, violating pre legislative consultation policy, diluting public consultation, making significant changes to legislations after closing for public inputs are quickly becoming the norms (Kapoor, 2020). Subsequently, protections offered to coastal commons and communities are sharply eroding in some of the recent legislations such as draft National Fisheries policy 2020, Coastal Regulation Zone 2019 and draft Environment Impact Assessment 2020 (Vohra, 2020; Kukreti, 2019). Recent policy formulations also propose a problematic push towards culture fisheries without adequate social and environmental safeguards. The privatisation and alienation of coastal and marine commons resulting from the proposed shift have not been acknowledged either. As fisher leaders point out, there is no mention of incorporating traditional uses and claims of coastal communities over coastal and marine lands and seascapes, nor has the local ecological knowledge of the fishing communities found any meaningful mention in the framework for fisheries management which is, again, a major lapse (Kumar, 2020).



8.2 Recommendations for securing coastal commons in Odisha

- The participatory mapping of coastal commons in all the fishing villages is vital to securing coastal commons officially. Such mapping must be done collaboratively with civil society bodies, participatory mapping experts, customary governance institutions and fisher unions and associations. These uses must be incorporated into CZMP maps of respective districts/states.
- Land revenue details must be incorporated into CZMP maps. For ensuring transparency and accountability, the land revenue details on the Bhulekh and Bhunaksha Odisha portals must be updated regularly as well.
- In addition to existing uses (including seasonal and overlapping uses), the developmental aspirations of the fishing community must also be recorded and mapped. During our field visits we noted that most of the villages lacked adequate sanitation and waste management facilities. Some villages were also in need of better roads, easy to maintain and repair fish drying facilities, better lighting to the beach, etc. CZMP and other land use plans such as municipal development plan, village development plan and district development plan must take these needs and aspirations into consideration.
- For culture fisheries, low tech, low investment community-owned initiatives must be encouraged. There must be proper technology transfer to the local communities from officials and experts. There must also be adequate safeguards to ensure that common property resources are not privatised.
- Fishers must be compensated for the loss of livelihood due to existing diversion of the coastal commons. Any development activity in the coastal commons must only be conducted with the free, informed and recorded consent of the fishing community. The type of compensation and amount can be set by hamlet meetings.
- Fisheries schemes must prioritise members of traditional fisher caste and other small scale artisanal fishers over members of non-fishing communities.
- The primary stewardship of the coastal commons should lie with the fishing community as they are the most impacted, and most dependent on the ecological health of these spaces. However, a **community-based model for sustainable governance of coastal commons** should involve all the communities living in the vicinity and dependent on the resources.
- Such a governance model must incorporate local ecological knowledge of the communities into the management of marine and coastal spaces. There must be a shift from centralised EIA regime to governance by the local natural resource-dependent communities using a nested commons governance model. As we can see, fishing communities are in effect, practicing such mechanisms via hamlet level village committees and larger fishing societies.

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