SECURE TENURE RIGHTS CAMPAIGN: ANDHRA PRADESH

Making Small-scale Artisanal Fishing Zones Work!

Research study on the tenure rights of the most vulnerable and marginalized fishers in Srikakulam, Visakhapatnam and East Godavari districts of Andhra Pradesh

International Collective in Support of Fishworkers (ICSF) Trust

An ICSF Campaign

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GLOSSARY

CCRF	Code of Conduct for Responsible Fisheries
Elements of Tenure	Includes gear usage, craft and gear combinations, species landed, fishing grounds and the patterns of these elements' interactions with each other across seasons
Encircling fishing	Fishing conducted with encircling gears, such as ring and purse seiners
Lean fishing months	Individually reported months during which fishing was the least productive and incomes from fishing were lowest across the year. Please see chart 9 for more information on lean seasons in Andhra Pradesh
Minimum Living Income	An estimation of monthly living income that is the minimum requirement needed to run their household and fishing operations. This estimate is made by the surveyed SSF fishers which includes expenses for household needs, fishing operations, education and healthcare, and credit repayments.
MFRA	Marine Fishing (Regulation) Act
Non-towed small-scale fishing	Fishing activities which are carried out using non-motorized craft ranging upto 24 ft in length and small motorized craft with motors upto 10 hp engines, which use motorization solely for propulsion and not for gear deployment or retrieval. It also refers to fishers who fish and gather without the use of any craft and rely only upon non-motorized or non-mechanized gear.
Peak fishing months	Individually reported months during which fishing was highly productive and incomes from fishing were highest across the year. Please see chart 9 for more information on peak seasons in Andhra Pradesh.
Respondent criterion	Fishers who engage in non-towed small-scale fishing, with fishing as their primary activity and limited to only one respondent per household
SDGs	Sustainable Development Goals
SFZ	A small-scale artisanal fishing zone, a customary or formally designated marine or coastal area, as distinguished from adjacent areas, where traditional men and women fishers, with or without craft, employing non-towed, compatible fishing gear, are granted preferential access rights to all commercial and/or subsistence fishery resources within it for a stipulated period of time, upholding the principles of equity, fairness and justice, safety, and conservation and sustainable use of marine living resources. It is, however, assumed that the fishery resources potentially accessible under a preferential access regime are not disproportionately taken away from waters beyond the zone.
SSF Guidelines	Voluntary Guidelines for Securing Sustainable Small-Scale Fisheries in the Context of Food Security and Poverty Eradication
Towed fishing	Mechanized trawling fishing operations, which includes beam trawl, demersal trawl, pelagic trawl, high-open bottom trawl, pair trawl, twin rig trawl and multi rig trawl
VGGT	Voluntary Guidelines on the Responsible Governance of Tenure of Land, Fisheries and Forests in the context of National Food Security

THE CAMPAIGN:
MAKING SMALL-SCALE ARTISANAL FISHING ZONES WORK!

The importance of establishing secure tenure rights to marine and coastal spaces and resources for the small-scale fishing community can be considered sine qua non for equity and justice. Secure tenure rights have the capacity to strengthen livelihood security, food security and nutrition, human rights, gender equity, cultural and generational identities, ecological sustainability, decentralized organizational structures, rights to coastal land and access to markets. Secure tenure rights also have the capacity to address multi-dimensional poverty, the impacts of climate change, concerns of a depleting fish stock, IUU (illegal, unreported and unregulated) fishing and may open alternative and new avenues of employment for coastal youth and women.

International instruments, including agreements and guidelines such as the Voluntary Guidelines on the Responsible Governance of Tenure of Land, Fisheries, Forests in the context of National Food Security (VGGT), the Sustainable Development Goals (SDGs), the Code of Conduct for Responsible Fisheries (CCRF) and the Voluntary Guidelines for Securing Sustainable Small-Scale Sustainable Fisheries in the Context of Food Security and Poverty Eradication (the SSF Guidelines) support the granting and protection of exclusive rights for the SSF community to marine resources, fishing grounds and adjacent lands. The exercise of these rights is essential to the realization of human rights, which operationalized, can contribute to improved nutrition, food security, poverty eradication, social development and conservation and sustainable use of biodiversity. Moreover, the SDG 14.b seeks to provide access to marine resources and markets for small-scale artisanal fishers.

The SSF Guidelines are aware that creating exclusive zones alone are meaningless for small-scale fishing communities for their equitable development, unless secure tenure rights to the fishing grounds and resources that form the basis for their social and cultural wellbeing are also granted. In addition, the SSF Guidelines recognize that granting tenure rights to the fishing grounds and resources would be incomplete, unless secure tenure rights of fishing communities to adjacent land are granted in the coastal areas to secure and facilitate their access to the fishery and accessory services. This is also consistent with the Tenure Guidelines that seek to provide secure tenure rights and equitable access to land resources and fisheries resources. In sum, integrating the tenure rights to the coast, the fishing grounds and fisheries resources into one coherent framework is required to secure equitable development of fishing communities.

Within the context of this campaign, a small-scale artisanal fishing zone or SFZ, means a customary or formally designated marine or coastal area, as distinguished from adjacent areas, where traditional men and women fishers, with or without craft, employing non-towed, compatible fishing gear, are granted preferential access rights to all commercial and/or subsistence fishery

resources within it for a stipulated period of time, upholding the principles of equity, fairness and justice, safety, and conservation and sustainable use of marine living resources. It is, however, assumed that the fishery resources potentially accessible under a preferential access regime are not disproportionately taken away from waters beyond the zone.

ICSF's campaign on secure tenure rights for small scale fishers is focused on the implementation and strengthening of existing policy and the drafting of new policy which supports the creation, implementation and expansion of SFZs in the coastal state of Andhra Pradesh. To improve access to resources for non-towed fishing communities and to reduce the destructive impact of towed gear we need to create and regulate effective protected spaces for non-towed fishers which will reverse the decreasing share of non-towed fishers' landings in total fish production and ensure theirs as well as future generations' participation in fishing in a way that will improve their livelihoods and conserve marine and coastal biodiversity.

Within the ambit of this campaign in India, non-towed small-scale fishing refers to fishing activities which are carried out using non-motorized craft ranging upto 24 ft in length and small motorized craft with motors upto 10 hp engines, which use motorization solely for propulsion and not for gear deployment or retrieval. It also refers to fishers who fish and gather without the use of any craft and rely only upon non-motorized or non-mechanized gear. Towed fishing essentially refers to mechanized trawling and includes beam trawl, demersal trawl, pelagic trawl, high-open bottom trawl, pair trawl, twin rig trawl and multi rig trawl. Encircling gear refers to ring and purse seiners.

The campaign will work with fishworker organizations (FWO) in Andhra Pradesh to understand their concerns with respect to SFZs, formulate contextualized solutions and collaboratively draw attention towards the issue to press for secure tenure rights. The campaign will focus on valorizing the fishing community by documenting and highlighting their fishing practices and techniques, community resource management systems, culture, and the importance for food and nutrition security and for conservation and sustainable use of marine living resources.

THE INDIAN FISHING FLEET

The Indian coastline of 8,448 km supports nearly four million people in the fishing community across nine coastal states, two union territories and two island territories. As per the most recent marine census, conducted in 2016 by the Central Marine Fisheries Research Institute (CMFRI), the Indian fishing fleet comprised 1,66,333 craft, of which 43,000 were mechanized (including 31,000 trawlers), 98,000 motorized and 26,000 non-motorized craft. Over the years since, the landings from the mechanized sector have continued to increase and the fleet composition has undergone some changes. The motorized sector has grown over the last decade as indicated by the 2016 census. Our study indicates that the motorized and non-motorized sector might even contain some overlap, as many vessels observed have been modified to temporarily attach and remove small 9-10 hp longtail motors. Despite these changes in the fleet composition, the small-scale fisheries (SSF) subsector and its non-towed approaches to fishing cannot be underestimated especially in terms of its environmental sustainability and socio-economic contributions.

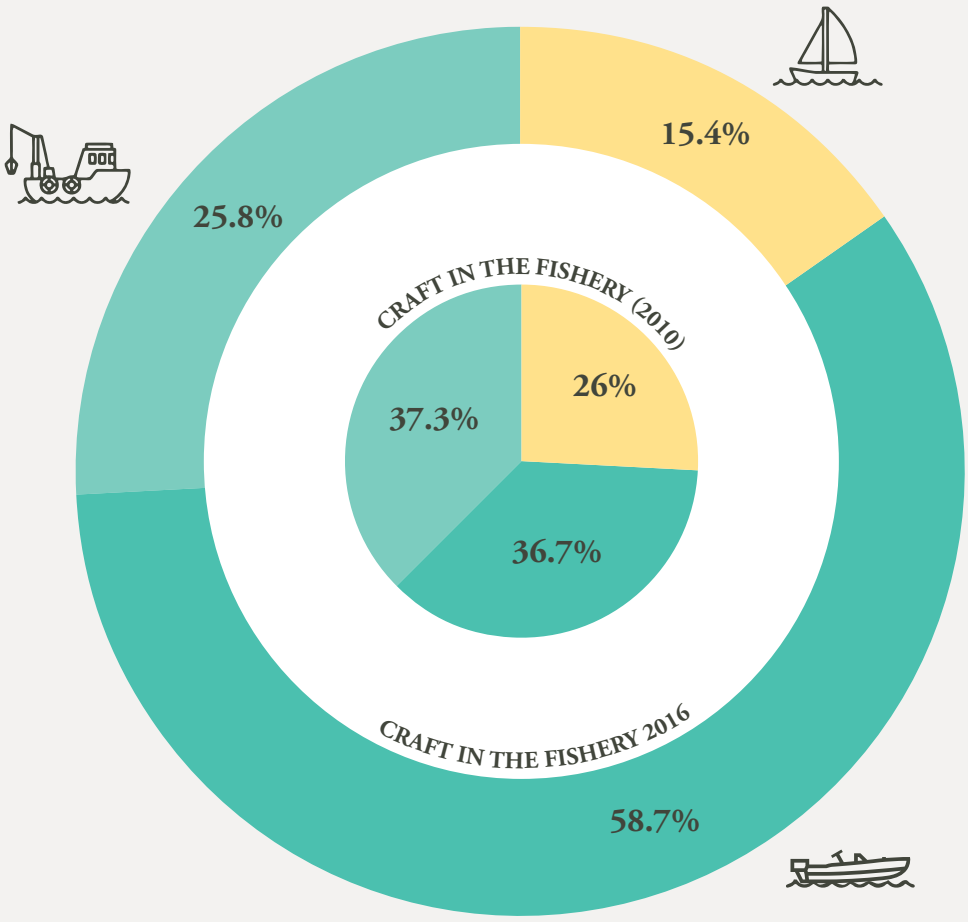


Chart 1 The Indian fishing fleet 2010 - 2016

Since the introduction of mechanized fishing in India during the 1970s and 80s, there has been a continual shift in the fleet with the mechanized sector increasing its share. This comprised primarily of trawl vessels and gear. During its introduction, the government encouraged this growth by investing in new harbors and processing facilities, providing impetus through subsidies, and introducing new technologies and techniques. This was followed by a rapid expansion of the motorized fishing vessels in the 1990s, leading to the fleet composition we see today.

SECTOR-WISE LANDINGS IN INDIA

1995	**13.5%**	**86.5%**	
2000	**8%**	**26%**	**66%**
2010	**2%**	**25%**	**73%**
2020	**1%**	**16%**	**83%**

Chart 2 Mechanized, motorized and non-motorized landings in India from 1995 - 2020

The marginalization that SSF experienced through the shifting of the fleet compositions, actualized in terms of their limited scope for agency in decision making, reduced economic opportunities and increased competition for space and resources. By the late 1970's and early 80's conflicts between small scale and trawl fishing were increasing. In India, by the late 70's fishworkers faced with declining productivity and hampered access to inshore waters due to towed gear operations, agitated in organized waves across several coastal states such as Kerala, Tamil Nadu and Goa under their state-level organizations and with the support of the National Forum for Catamaran and Country-boat Fishermen's Rights and Marine Wealth (now National Fishworkers' Forum).

From the early 1980's onwards each coastal state introduced their Marine Fishing Regulation Acts. Some important measures adopted under the Marine Fishing Regulation Acts (MFRAs) are prohibitions on certain fishing gear, regulations on mesh size and establishment of closed seasons and areas. Importantly, this legislation responded to the growing demands of small-scale fishers and created zones reserved for fishing with traditional gear to protect their livelihoods. These zones are designated based on distance from the coastline or depth. Kerala divided the coastline into 3 sectors - southern sector 1 (Kollengode to Paravoor Pozhikkara), southern sector 2 (Pozhikkara to Kovilthottam) and the northern sector (Kovilthottam to Manjeswaram), where fishing is reserved for traditional craft up to 25 fathoms, 18 fathoms and 12 fathoms respectively. Tamil Nadu designated up to 3 nautical miles (5.5 km) and Andhra Pradesh designated up to 8 km exclusively for traditional craft.

The creation of exclusive zones in Indian legislation, recognized the rights of small-scale fishers to this marine space, however, the failure to implement and monitor it hampered the holistic actualization of this right. The intent behind lobbying for this right in the 1970s and 1980s was for the protection of the fishing community's traditional livelihood and way of life. Considering the changes in the fleet composition and the poverty levels within the traditional fishing community - this objective was not met.

Changes in the fleet and workforce, from non-motorized fishing towards mechanized and towed fishing, which are motivated by pull factors such as improved quality of life, higher incomes and improved working conditions, when supported with checks and balances to manage precautionary and sustainable usage of these marine resources, can be considered sustainable development. However, changes motivated by push factors such as lack of employment opportunities, increasing costs of operation, reduction in availability of marine resources in nearshore waters, denial of access to traditional fishing grounds and coastal land and displacement, cannot be considered development in the right direction. Fishers ranging from those using the most rudimentary gear to those owning and working aboard larger vessels should have the right to choose a livelihood which satisfies their needs and wants. Small scale fisheries are fully supported when the rights of even the most vulnerable, marginalized and smallest fishworker in the community are protected. Their rights to coastal commons which sustain their choices and way of life should be recognized, protected and supported through the creation, implementation and management of SFZs, simultaneously, customary and traditional tenure rights should also be recognized by local and national governments and accorded due protection and support.

More recently the National Fisheries Policy, 2020 observes that the areas reserved for traditional fishers where mechanized fishing is not permitted will continue to be promoted (para 9 (v)).

The space for the promotion and protection of SFZs does exist within Indian law and policy. It is imperative that this is actualized and implemented for the benefit of small-scale fishworkers.

THE ELEMENTS OF TENURE

To develop contextualized and holistic solutions to protect the non-towed fishing sector and the priorities of the fishing community, it is essential to understand current tenure practices and conflicts. The elements of tenure include gear usage, craft and gear combinations, species landed, fishing grounds and the patterns of these elements' interactions with each other across seasons. A composite mapping of these elements and their interactions with each other creates an understanding of the tenure practices of a fisher and the fishing community.

Undertaking this mapping is an essential process for several reasons. First and foremost, by recording and sharing these tenure practices, the non-towed sector is laying claim to and establishing their tenure rights. When these are recognized not only internally by the non-towed sector but also by other stakeholders, such as, competing groups, supporters and institutions - it fortifies their rights.

Demarcating their claim to tenure and drawing boundaries to protect their rights requires documenting and sharing evidence which supports them. Through the presentation of convincing evidence, not only of tenure rights but also of the social, cultural, ecological and economic contributions of the non-towed sector – supporters, potential supporters, competing groups and institutions will be compelled to recognize, respect and protect their rights and way of life. So, it becomes easier for the non-towed sector to exercise their rights and agency; and more challenging for competing groups to impinge upon them.

The role of institutions such as fishworker organizations, associations, support organizations like ICSF and the state is integral to this process. Fishworker organizations, associations and supporters have the responsibility to engage with state representatives on policy and legislation in order to integrate and formalize these tenure rights. In India, the state MFRAs have provisions to designate reserved zones for traditional fishers, as does the National Fisheries Policy 2020. We campaign to operationalize these provisions to protect tenure rights, conserve marine and coastal biodiversity and to create enabling conditions for the social development and well-being of fishing communities employing non-towed gear.

When governments recognize, understand, grant and defend tenure rights of the non-towed fishing community – they contribute to social protection - an essential component of social development. That also includes access to affordable and quality health care services; educational institutions and opportunities; adequate land and housing; safe water, sanitation and hygiene; clean energy; financial services; safe and decent work and skilling; and justice. An adequate standard of living in accordance with human rights requires social protection and social development. Where

non-towed fishing community's rights are protected, they have access to opportunities and are equipped with the tools they need to create aspirational and satisfactory lives in their perspectives.

This requires us to first understand the existing lacunae; second, the aspirations of the non-towed sector in addressing them and to then collaboratively develop potential solutions. This process will lay the groundwork for the non-towed sector, their organizations, supporters and ICSF to campaign effectively for social protection and development.

This preliminary study forms the foundation upon which our campaign is developed. Our understanding of Tenure Rights is drawn from the Voluntary Guidelines on the Responsible Governance of Tenure (VGGT), the Code of Conduct for Responsible Fisheries (CCRF), the SSF Guidelines and the SDGs.

In the ethos of the SSF Guidelines, our bottom-up approach is consultative and participatory with fishworker organizations, communities and representatives in the Indian coastal state with the highest ownership of non-towed craft and gear – Andhra Pradesh. Our campaign focuses on the tenure rights of non-towed fishers of this state.

STUDY ON SECURE TENURE RIGHTS IN ANDHRA PRADESH

Andhra Pradesh with a coastline of 974 km encompassing 9 coastal districts has had a long history of fishing. Starting with traditional fishing in ancient times to the modern, technology-intensive fishing, the marine fisheries sector of the state has grown tremendously reaching record landings of 342,000 tonnes in 2014. In 2020, the total marine fish production was 195,000 tonnes, which was 24.67% less when compared to that of 2019. However, these landing figures must be seen in the background of considerable reduction in the number of fishing days during March and April of the year due to COVID 19 pandemic and subsequent lockdown. The highest contribution was from the motorized sector (57.3%), followed by the mechanized sector (38.3%) and the artisanal/non-motorized sector (4.4%). The state has 555 marine fishing villages with 353 marine fish landing centres. There are two major fishing harbors at Visakhapatnam and Kakinada where bulk of total trawl catch (nearly 70%) is landed and three minor fishing harbors at Bhairavapalem, Machilipatnam and Nizamapatnam. The marine fishermen population of the state is more than 600,000 with roughly a quarter of them, being active in fishery-related activities throughout the year. There are 31,741 fishing craft in the marine fisheries of Andhra Pradesh, as per the CMFRI Marine Fisheries Census, 2010.

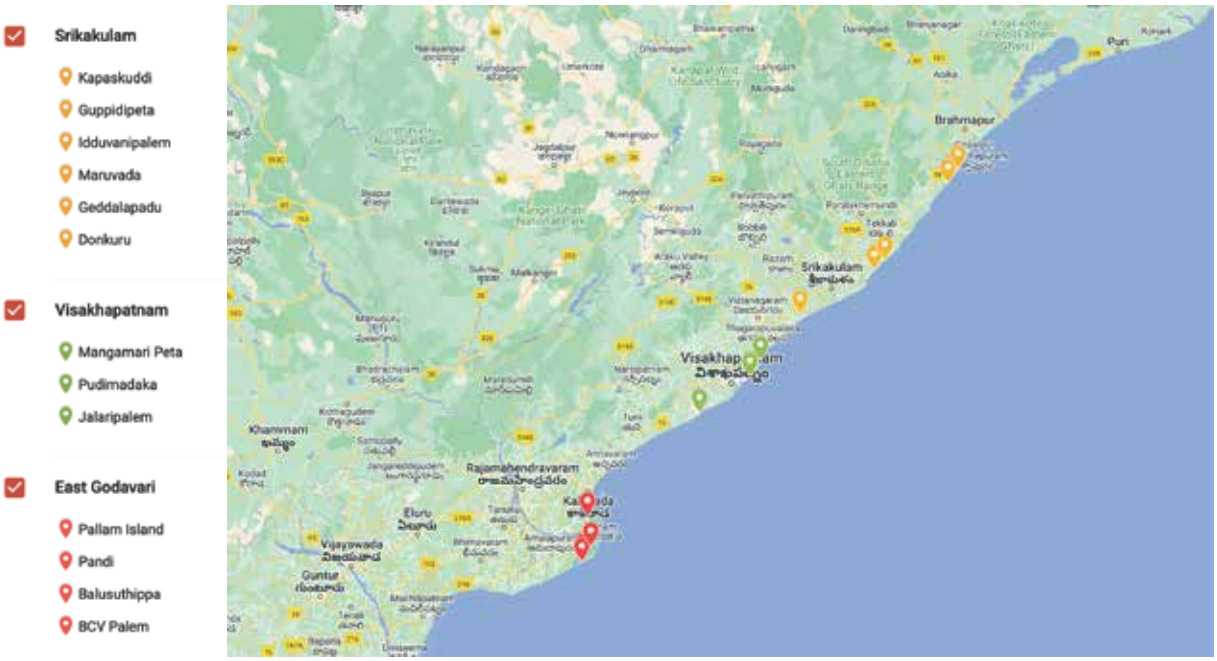


Chart 3 Site selection in Andhra Pradesh

SECTOR-WISE LANDINGS IN INDIA AND ANDHRA PRADESH IN 2020

	MECHANIZED	MOTORIZED	NON-MOTORIZED
India	83%	16.1%	1%
Andhra Pradesh	38%	57%	5%

Chart 4 A sectoral comparison of landings across India and Andhra Pradesh in 2020

In contrast to the national picture of mechanized fish landings at 83% in 2020 (mostly from trawl catch), the share of trawl catches in Andhra Pradesh was at 38% in 2020 and the share of motorized and non-motorized vessels were at 57% and 5%, respectively, in the same year. While this reduction in towed fishing seems beneficial for SSF communities, that isn't quite the case on ground for all craft gear combinations. The rapid rise of ring seine operations, especially within near shore waters, has grown to be a pressing threat for other craft-gear combinations of SSF.

Through this campaign we wanted to first engage with the SSF community to understand the operations of their fishery and tenure as it stands currently and investigate the degree to which their rights are upheld and needs are being met. On the basis of our findings, we aim to initiate discussions and dialogue geared towards strengthening the tenure rights of small-scale fishers.

To this end, the data collected focused on six elements of tenure – the gear used; the craft owned and/or operated; the combinations in which various craft and gear are deployed; the species caught; the variety of fishing grounds accessed and the mechanics of how these elements interact with each other and transition across seasons.

Through a highly detailed questionnaire we were able to capture this information as well as a few other important factors to further contextualize the data and help in the investigation of our primary research questions. These include details on the respondents themselves; some indications regarding their income and expenditure as related to fishing; competition; migration; time engaged in fishing; changes observed in the fishery, climate, water quality, and fishing grounds; and their perspectives on their future in fisheries.

SUMMARY OF THE STUDY FINDINGS

We explored the fishing practices of the most marginalized fishers using non-towed fishing gear and practices in the context of the selected geographies in Andhra Pradesh through the prism of the elements of their tenure rights to understand the relevance of the SFZ for their livelihoods and in their lives; and gauge whether the SFZ as it is currently managed – meets their needs and its obligation towards protecting their tenure rights. A summary of the findings follows here. A detailed analysis of the data collected through the study can be found below the summary.

In Andhra Pradesh, as per the Andhra Pradesh Marine Fishing (Regulation) Act (1994) and Rules (1995) – up to 8 kilometers from the shore is reserved solely for non-mechanized traditional fishing craft below 9 m in length. This covers non-motorized and small-motorized fishing vessels which use motorization solely for propulsion – in essence for traditional fishers engaged in non-towed fishing practices. Mechanized vessels below 15 m overall length are allowed to operate only beyond 20 km from shore; and those above 15 m in length are allowed to operate only beyond 50 km from shore. According to the Rules these regulations are in place to protect the interests of different sections engaged in fishing, particularly those of traditional fishers using country craft, catamarans or canoes; to conserve fish stocks and regulate sustainable fishing; to maintain law and order at sea and other matters the Fisheries Department might deem relevant.

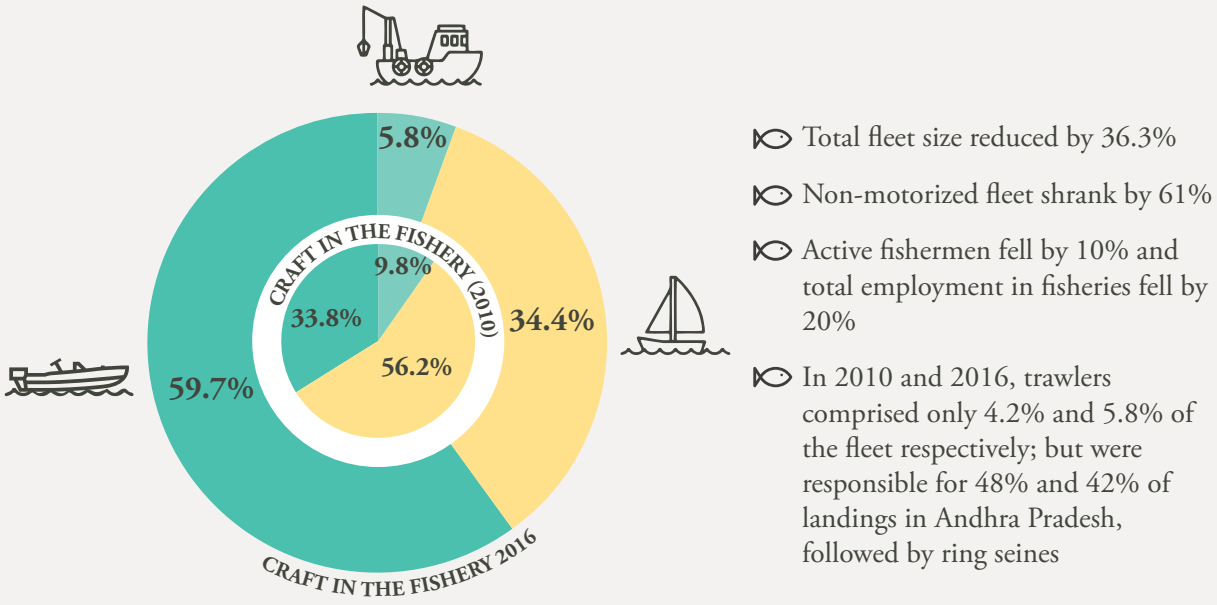


Chart 5 Changes in Andhra Pradesh fisheries from 2010 - 2016

This study brings to light the fact that the SFZ as it is currently managed is not sufficiently protecting the interests and rights of traditional fishing communities. The marginalized and vulnerable non-towed fishers we engaged with through this study, rely heavily upon the SFZ to meet their needs and earn a living income, however faced with several challenges and competitors - they struggle to do so.

Their tenure rights are unsupported and unprotected due to a range of factors – encroachment by and competition with other fisher groups; adaptation measures by fisher groups contributing to higher fishing pressures; the effects of climate change – coastal erosion and an increase in extreme weather conditions; industrialization along the coast; proliferation of aquaculture and processing plants; lack of support and infrastructure; as well as dynamic and unsteady market forces. Some of these factors play out tangibly within the designated space of the SFZ, others undermine traditional fishers' tenure rights along the coast and through the impacts they have on nearshore waters. The interplay and cumulative effect of these factors results in the erosion of these fishers' tenure rights; their compounded disenfranchisement is making fishing an increasingly untenable livelihood for them to support themselves. Furthermore, it deteriorates theirs and following generations engagement, aspirations and perspectives on their future in fisheries.

Competition with other fisher groups

In all three districts of Andhra Pradesh included in the study, fishers reported the incursion of highly efficient trawl fishing within 8 km from the shore and competing for the same resources – small pelagics and crustaceans. The trawlers were usually identified to be from another district, mostly from Visakhapatnam, Kakinada, and Uppada in Andhra Pradesh. Some fishers also noted the occasional trawler from the states of Tamil Nadu or Odisha fishing within their waters.

Not only are towed fishers able to fish in a highly intensive manner within this reserved zone, they also are often embroiled in conflicts with non-towed fishers over destroyed or damaged gear. Such conflicts were usually settled through negotiations facilitated by the caste panchayat and the boat owners' associations, where the non-towed fishers would receive some compensation for their damaged gear. However, they lost out not only on their catch but also the opportunity costs during the time for the negotiation to be settled and for their gear to be repaired or purchased anew. Such conflicts occur with enough regularity and little to no serious repercussions for the offending towed party - to be considered and accepted as a bitter part of fishing life for non-towed fishers.

Ring seine operations rose along the Indian coastline, in part, as a response to the threat of trawlers. With the introduction of large-scale, highly efficient mechanized towed fishing, smaller fishers found it increasingly difficult to remain competitive. In response to this threat, some small fishers with comparatively more social and economic capital, began ring seine operations. A scaled down version of purse-seine fishing - it is an efficient gear, capable of catching large hauls of commercially

important pelagic species and can operate nearer to shore – both within and beyond the SFZ. While motorized ring seine operations are mostly non-towed fishing, their rapid proliferation across the coast has grown to be a credible threat to small scale non-towed fishers.

GEAR-WISE (AND NON-MOTORIZED VESSELS) LANDINGS IN ANDHRA PRADESH 2010 - 2020

	TRAWL	RING SEINE	GILL NET	HOOK & LINE	NON-MOTORIZED
2010	48.3%	20.4%*	14.8%	2.4%	14.1%
2020	37.6%	31.9%	19.3%	5.2%	4.4%

**In 2009 the share of landings from ring seines was 14%, this rose significantly to 20.4% in 2010*

Chart 6 A comparison of gear-wise (and non-motorized vessels) landings in Andhra Pradesh 2010 - 2020

Small scale non-towed fishers are pushed to directly compete with motorized ring seines and trawl vessels for the same catch, often within the SFZ, where towed fishing is prohibited. Most ring seine operators and traditional fishers in the study area also belonged to the same caste or social group, further complicating the dynamics between them, and creating tension, strife, and resentments within the fishing communities as they competed over the same resources and grounds.

During the time of our visit, tensions between these groups in Visakhapatnam had risen to such an extent that all ring seine fishing was made virtually impossible due to pressure from the small-scale non-towed community. They had initiated a strike and needed to bring most of their operations to a halt in order to build pressure on ring seine fishers, market forces and government authorities. At the same time, ring seine operators are faced with pressure from towed vessels. Competing with them over fishing grounds and resources and often losing out.

With trawlers on one hand and non-towed motorized large ring seine operations on the other – small scale non-towed fishers find themselves cornered into a tight spot, dealing with exacerbated poverty and the erosion of their opportunities and capabilities. There is a domino effect of pressures from towed fishing on encircling and non-towed fishing followed by the pressure from encircling and towed fishing on non-towed fishing. The dynamics between these different fishing groups culminates by cumulatively disenfranchising the fishers who are already the most marginalized and vulnerable – small-scale non-towed fishers.

Conflict over marine resources

Small-scale fishers target a variety of marine resources, using diverse combinations of fishing gear and craft. In a multi-species fishery like East Godavari fishers target high value crustaceans and other species. In Visakhapatnam, small-scale fishers target high value seer fish and yellowfin tuna, as well as mid and low-value shoaling species which are also targeted in Srikakulam.

Within the sample of small scale fishers, those who were able to fish beyond the SFZ were able to catch more high value species as compared to fishers who relied entirely on fishing within the SFZ. These are almost the same group of fishers who are able to earn a minimum living income during peak seasons. They are also more likely to earn sufficiently during lean fishing periods, despite fishing fewer days as compared to fishers who rely on the SFZ.

Considering these factors, it can be understood that more high and mid-value species are targeted and caught by small-motorized fishers beyond the SFZ in highly competitive and dynamic space; often in conflict with encircling and trawl fishers who additionally even target low-value shoaling species. As a result, marine resources are disproportionately caught by fishers beyond the SFZ; before small-scale fishers relying on the SFZ even have the opportunity to.

Small fishers in East Godavari, especially those fishing without craft consider the monsoon period and lean fishing periods to be their peak earning period. They target high value crustaceans and are able to sell them at a reasonable price, considering the changes in supply-demand dynamics during these periods when mechanized and motorized vessels are not operating. Small fishers target high value species for markets and a diverse variety of low value species for household consumption and for subsistence during lean periods. Ring seines disrupt the availability of and access to low-value species and trawlers do the same with high-value crustaceans. Ultimately the small-scale fisher is finding it progressively more challenging to fish for their livelihoods, their families and community.

Traditional management systems

Within the small-scale fishing community, local caste panchayats are looked towards for matters related to the management of the fishery. They also hold significant social and cultural power. Over the last few decades, the power of these panchayats has reduced and eroded. This is likely due to multiple factors such as the changes in Indian marine laws and policies; the influx of investors and owners into towed fishing, who are not from a traditional fishing background; as well as the dynamic globalization and industrialization of fishing.

Within the small-scale fishing community in the selected districts, the caste panchayats continued to operate with various levels of efficacy. In East Godavari, these panchayats continued to remain strong. They would make decisions on the elements of tenure and these are adhered to by the

fishing community. Failing to follow the lead of the caste panchayats leads to warnings and continued disregard results in social rejection.

The caste panchayats made decisions on fishing cycles and timings; the allocation of fishing grounds to families and the rotation of these grounds; and the gear and techniques to be allowed and those to be banned. In situations where conflict arises between non-towed fishers and towed or encircling fishers, they represent non-towed fishers in negotiations with the boat owners' association in order to secure reasonable compensation. This is usually in the case when non-towed fishers' gears are damaged or destroyed by other gear groups. Most decision-making processes will involve an open forum for fishers to speak and engage with other fishers and the panchayat. In East Godavari, the panchayats acted upon unanimous decisions, and so a meeting could continue for extended periods of time, until a consensus was reached.

In Srikakulam representatives from caste panchayats across 19 villages in the district came together to discuss the issue of night fishing with lights and decided to ban this technique of fishing in the interest of sustainable fishing for the whole community. This was decided upon by the representatives and enforced by fishers themselves across the Srikakulam coastline.

The caste panchayats have historically managed tenurial arrangements in fishing villages; prior to the establishment of the Department of Fisheries, we know today and well before the introduction of legal instruments such as the MFRA. These traditional systems were dynamic in nature and diverse, they were well contextualized to their geographies and cultures. The panchayats decisions and regulations prioritizes the small-scale fishing community and their fishery. They are embedded into the community and have a deep understanding of the fishing community itself and its complex relationships to the marine environment and coast. They also rely upon a wealth of local traditional knowledge of the fishery itself. These systems of management can thus be considered to be far more contextualized, equitable, responsive, approachable and sustainable for small-scale fishers.

The caste panchayats were an established system of marine fisheries management. With the economic, socio-cultural, legal and global changes the sector has experienced over the last several decades, the power and influence of these panchayats has declined. They continue to exist to different degrees and with various roles and responsibilities across coastal regions. Within this study geography, traditional systems of management were considerably strong and resilient.

The traditional systems of managing tenurial rights and arrangements through the caste panchayat certainly has its share of benefits. However, it is also a system of management where power is concentrated within a small and inherently exclusionary group. It is deeply entrenched within historical caste politics. Even today, membership to the panchayats is restricted to a small number of 'founding' families, so to say. A position on the panchayat is passed down through the men in these families and no women are allowed within the panchayat. While the panchayats might take

up some concerns affecting women; women are not engaged in these decision-making processes. Women are not even allowed to be members of the congregation and discussion and so are completely left out of this process.

Traditional methods of tenure management through caste panchayats need to be reimagined and adapted for the current generation. These systems have emerged from and are deeply embedded within the fishing community and thus come equipped with a wealth of traditional knowledge and long-standing support and adherence from the fishing community. These are invaluable aspects which have the potential to facilitate equitable and sustainable tenure arrangements. For the current and next generation's iterations of this system of management – inclusivity, diversity and democratization will be of utmost importance.

Minimum Living Income

The fishing community surveyed estimated a monthly living income that is the minimum requirement to cater to their household needs, fishing operations, education and healthcare, and credit repayments. During the respondents' peak seasons 46% of the fishers could comfortably earn enough, while another 20% incomes fluctuated and remained vulnerable. A third were unable to earn a minimum living income even during peak seasons, despite fishing for comparatively longer hours and more days.

During lean fishing periods, the situation becomes dire for non-towed fishers. Only a small fraction of fishers have been able to earn sufficiently – all of whom own motorized vessels and fish beyond the SFZ. The vast majority of fishers are unable to earn sufficiently during these months. Most of whom, fish primarily in the SFZ and 60% of whom are entirely reliant upon this protected zone.

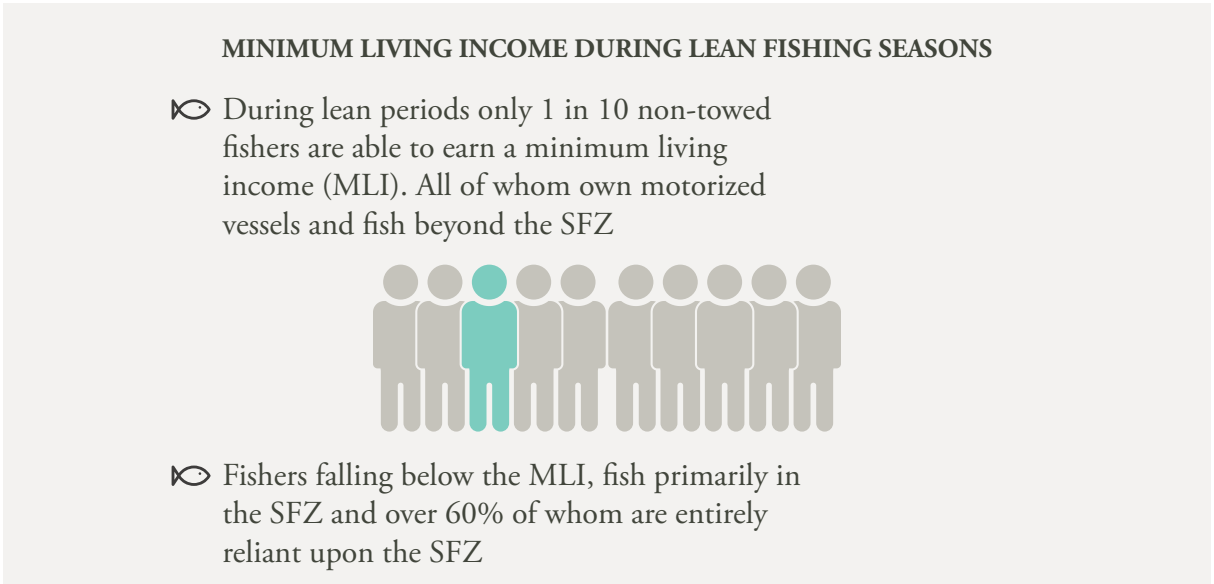


Chart 7 Minimum Living Incomes earned by respondents during lean fishing seasons

Alternative sources of income and migration

In response to these threats and constraints small-scale traditional fishers have found themselves pushed out of fishing and in need of alternative employment to sustain themselves. Some have stayed and found work in industries and shrimp processing plants which have flourished in the area. People from fishing communities are preferred for jobs at shrimp processing plants and some industries, such as garment producers in Pudimadaka, have hired from the fishing communities their operations have displaced. However, the working conditions in these industries and plants are dismal at best and abusive at worst.

Other fishers have resorted to migrating out, seasonally or even permanently. Fishers who migrate seasonally, do so alone, while those migrating out permanently usually do so with their families. Within Andhra Pradesh they travel to large ports like Visakhapatnam and Kakinada. Outside of the state they migrate to Tamil Nadu (Chennai), Gujarat (Veraval), Karnataka (Mangalore), Maharashtra (Mumbai), Goa, Kerala, Telengana (Hyderabad) and the Andaman Islands, returning occasionally during the monsoon ban. Many migrate out looking for work as crew members aboard trawlers. They are usually paid a share of the earnings from each trip. Fishers who are unable to find work aboard towed vessels, resort to working as wage labour in construction, brick kilns, cement factories, shrimp processing plants, and other work as unskilled labor. Despite perhaps being highly skilled fishers, their choices are whittled down by the circumstances in which they find themselves. Factors beyond their control and interest groups at the state, national and international level have shaped today's fishing industry into one which is untenable for small-scale fishers. Far from being protected by the state and industry, traditional fishers find themselves being pushed out of even the margins.

Adaptations made by small-scale non-towed fishers in Andhra Pradesh

Small-scale fishers who continue to engage in fishing to earn their livelihoods, whether by choice or the lack thereof, have needed to adapt to stay competitive with fishers who use towed or encircling gear. They've accessed advancements in technologies which they can afford. This includes motorizing their craft and purchasing sturdier and larger gear made of synthetics.

Traditional non-towed fishers have modified the rear of their craft to optionally attach outboard motors. These are often second-hand motors from small vehicles such as autos and tempos, which have been modified; by attaching a submersible propeller onto a pole, solely for propulsion – these are called longtails. Others have attached small outboard motors. A little more than half of the respondents in this study had motorized their craft with small engines, usually 9 – 10 hp in capacity. These modifications allow them to fish for longer durations and at further distances. During the 2010 Central Marine Fisheries Institute (CMFRI) Marine Fisheries Census, Andhra Pradesh had the highest number of non-motorized vessels. Over a short 5-year period, the

non-motorized fleet reduced by 61% and the motorized fleet increased to constitute 60% of the State's fishing fleet. This change in the composition of the small-scale fleet is a telling sign of the adaptations over the last decade to survive and compete.

Access, availability and quality of commercially important species

Over the last few decades, non-towed fishers have observed significant changes in the marine environment and resources available in their fishing grounds. They noted a marked fall in the availability of different species, as well as the reduction in size, quantity, and quality of fish such as sardines, seer fish, mackerel, anchovies, pomfret and hilsa and varieties of shrimp and crab. Fish that used to be abundant or at least sufficient in waters 1-3 kilometers beyond the coast, is now targeted by towed and encircling fishers at distances ranging upto 10-15 kilometers from shore and beyond. Non-towed fishers do not have the capacity to target marine resources at that distance. One of the aims of the designated 8 km zone in Andhra Pradesh, is to ensure that traditional small scale fishers have access to marine resources. However, with the changes in fleet composition, fishing efforts and technologies as well as the impacts of climate change and industrialisation – this aim is not being met. Regardless of the enforcement of the zone, which in and of itself is severely lacking, commercially important marine resources are being targeted and caught by towed and encircling fishers in areas beyond what non-towed fishers can comfortably access. The intensity of fishing and the capitalisation of the towed and encircling fleet has led to the expropriation of marine resources from non-towed traditional fishers. By their very nature, towed and encircling gear are indiscriminate in their landings, and can negatively effect juvenile and breedstock populations. Additionally, highly efficient synthetic gear and mechanized technologies allow towed and encircling fishers to operate for longer hours and more fishing days. Overfishing even in areas beyond the SFZ as well as inherently indiscriminate towed fishing practices has diminished the variety, quantity and quality of marine species available and accessible for non-towed fishers within the SFZ. In the spirit of the state's MFRA as well as the SSF Guidelines this inequity needs to be addressed as a part of protecting non-towed fishers tenure rights.

Non-towed fishers' perspectives on their future in fisheries and beyond

The domino effects of increasing fishing effort, overcapitalization of the fleet and changes in the fleet composition is felt cumulatively by traditional small-scale non-towed fishers. They have needed to respond and adapt to remain competitive over the years. Even so, they note that this effort too is becoming increasingly difficult to maintain. They need to fish for longer durations, further away from shore, with increasing input costs and efforts, in increasingly challenging and even dangerous weather conditions – all with diminishing returns. Many respondents stated that they do not want their future generations to be involved in fisheries. They would prefer for them to seek other sectors for employment which will be more stable, protected and hold the prospects for their children to grow and flourish.

Fishing communities accordingly have begun focusing on education, which the state of Andhra Pradesh supports by providing schemes and ensuring easy access to primary and secondary education. Higher education institutes are located at further distances in towns and cities. During focus group discussions, some young men commented that despite pursuing higher education, commensurate employment opportunities are very limited in their villages and nearby towns. They need to move away to larger cities to work and support themselves, where the cost of living is also higher and a stress that many were unable to sustain, especially since the COVID 19 pandemic in 2020. Many of those who migrated out needed to return home during the pandemic. In April 2021, some fishers had begun migrating out again in search of employment.

Only 40% of the fisherfolk in Andhra Pradesh are literate – the lowest percentage across all coastal states and union territories. According to the 2016 Census, boys and girls are both well enrolled in primary education and most boys go on to receive secondary schooling. The number of girls receiving secondary schooling falls by a fourth. Only 7.4% of men and 3.6% of women fisherfolk receive higher secondary schooling. Only 3% of men and less than 1% of the women fisherfolk receive graduate or higher levels of education. These figures are a slight improvement as compared to the 2010 Census – however, there is still clearly a long way to go, especially considering the aspirations of the fishing communities in Andhra Pradesh.

We've discussed the pressures traditional non-towed fishers face within the SFZ; over and above that they are also subject to the transformations taking place on land and in the markets.

Aquaculture

Along the Andhra Pradesh coastline, there has been an increase in aquaculture farms. These are largely owned and operated by agricultural castes, who often purchase or rent smaller pieces of land some fishers own to consolidate their lands under aquaculture. Respondents from the districts of Srikakulam and East Godavari especially discussed the harmful impacts these have been having on their fishery. The untreated runoff from aquaculture farms harms wild shrimp and other species within the mangroves and affects the catch and quality of the wild species caught. As do the pesticides and fertilizers from agricultural farms which are drained into canals.

Waste materials from shrimp processing plants, chemical and pharmaceutical industries, garment industries and sugar factories also harm wild species, clog mangrove canals and gear and promote the rapid growth of algae and weeds. As a result, traditional non-towed fishers face reducing quality and quantity of catch and a diminishing of their fishing grounds. Poorly-managed aquaculture farms also impact potable ground water, which is especially alarming for fishing villages located in already low-lying areas, surrounded by mangroves and subject to coastal erosion and changeable weather conditions.

Households in the states fishing villages are largely electrified and respondents noted the expansion in the grid in line with aquaculture activities. However, while aquaculture farms are often supported by two or even three phases, fishing villages like Balasuthippa are supported by a single phase. So, while the households are technically electrified, and the proliferation of aquaculture farms has ostensibly been matched with an expansion of the electricity grid – fishing communities and households are often left in the dark due to limited and unreliable voltage and supply.

Land-based infrastructure

Supportive infrastructure on land is limited. In Srikakulam a district facing coastal erosion, extreme weather conditions, and limited connectivity, fishers spoke of the need for mini jetties to support their fishing practices. Markets were also identified as an unsupportive space in some instances. Traders would collectively set the prices and with little other choice, fishers had to sell at prices determined by the traders. This was especially challenging in areas with limited connectivity and choice of sales options. The influx of shrimp from aquaculture farms and other commercially important species from trawlers could also lead to a depression in the prices at accessible markets. A fisherwoman in East Godavari, who smokes and processes shrimp spoke of how she had turned to purchasing farmed shrimp as this was more affordable for her, while her husband's catch was sold in the same market. Much like employment opportunities in shrimp processing plants and other industries, this was an adaptation which supports her livelihood in the short term as she and her community struggle with the pressing urgency to continue earning a living income; even though it is likely to degrade the quality and viability of their livelihoods in fisheries in the longer term.

Coastal erosion and climate change

Coastal erosion has created various challenges across the coastline, (these are elucidated in detail in the report below). Fishing villages located on the shore face the brunt of dangerous weather patterns and regular cyclone systems. Their craft, gear and homes face damages during storms; and in some cases, fisherfolk are injured or can even lose their lives. Erosion has brought the ocean closer to their villages resulting in either villages being resettled further inland and restricting their access to the beach or results in flooding and damages. Loss of access to the beach has affected the livelihoods of both men and women. Small craft are usually beached, with the size of beaches reducing and access being restricted in some cases this is becoming increasingly difficult to manage for fishers. Women will usually process and dry fish on beaches. With space on beaches reducing for women to carry out this work their livelihoods and the incomes of the household are affected. As weather patterns have become more volatile, there are even cases where drying fish have been destroyed, washing away multiple days of work of both women and men.

The tenure rights of traditional non-towed fishers are clearly affected by a multitude of factors, those beyond the SFZ haven't been comprehensively captured in this study. The SFZ is a tool through which the State aims to secure the tenure rights and protect the livelihoods of traditional non-towed fishers. We explored the efficacy of this measure through this study and campaign and found that it is wanting. The zone as it is currently managed - fails in achieving its mandate. As outlined earlier in the introduction, there are several international guidelines and tools which promote the protection of small-scale fishers tenure rights. Securing these, would certainly require dialogue, understanding, cooperation, and imagination from all involved stakeholders.

RECOMMENDATIONS

Securing tenure rights of traditional small scale non-towed fishers will require the engagement of a range of stakeholders including – small-scale non-towed fishers; fish working women; fishworker organizations; boat owners' associations and towed fishers; encircling fishers; government officials from multiple relevant departments; government research institutions working with fisheries such as CMFRI; civil society organizations and researchers. Securing these rights, would certainly require sustained dialogue, understanding, cooperation, and imagination from all involved stakeholders.

The tenure of non-towed fishers is affected by a multitude of factors, as highlighted in the summary above. Securing their tenure rights, will also require a broad-based, multi-dimensional and holistic approach.

The findings of this study are to be shared with stakeholders in Andhra Pradesh through workshops, with the aim of generating awareness of the issue as well as ideating and engaging in dialogue with multiple stakeholders on possible sustainable and equitable solutions to address the challenge at hand.

Small scale non-towed fishers today are faced with challenges and pressures from a multitude of different directions. As we've detailed here, this includes competition from towed and encircling fishing groups; inconsiderate industrialization and construction; climate change and dangerous weather conditions; coastal erosion and changes in the coastal ecosystem; as well as the rapid proliferation of aquaculture farms and shrimp processing plants owned by agricultural and other commercial groups. The pressures of these are made starker due to the lack of support and protection that small-scale non-towed fishers receive.

Small scale non-towed fishers have been corralled into a hard corner. As the conditions to grow and thrive are lacking, these fishers have had little choice but to turn their eyes to opportunities outside of fisheries. Most of the responds were aged between 50 – 60 years of age, clearly their younger generations are choosing not to pick up this heavy mantle of fishing after witnessing their elders' struggle. Once this generation ages out and stops fishing, it is possible that small-scale non-towed fishing might collapse.

To prevent this from happening it is essential that precautionary measures be taken immediately to make the small-scale non-towed fisheries sector attractive for youth from local fishing communities. Respondents across all three districts expressed their preference for working in fisheries if they can. It is their traditional livelihood and deeply tied into their cultural practices. A secure livelihood and

income from fisheries will also protect them from the compulsion to migrate out of their villages to seek employment elsewhere whether in fisheries or as labour in other sectors.

It is imperative that measures be taken by government agencies to properly enforce the measures that exist in Indian legislation for the express purpose of protecting the livelihoods and tenure rights of small-scale non-towed fishers. In the case of Andhra Pradesh, that is the Marine Fishing (Regulation) Act and Rules, the Fisheries Policy 2020 as well as campaigns such as Atmanirbhar Bharat which encourages self-reliance, equity and efficient self-sustaining and self-generating production in India from the smallest to the largest scale. This is especially relevant in the context of food production and even more so for marine fisheries, which is a source of affordable and nutrient rich food that is much needed in a developing country like India.

Traditional systems of tenure management, like the caste panchayats in Andhra Pradesh need to be updated to cater to the needs of the current generation. It is a system of sustainable and equitable resource management, which does not enjoy legal recognition and protection. Despite this, traditional systems of managing tenure operate in fishing villages and command respect within the community and sector. These need to be recognized by the government and engaged in developing a collaborative system of management that reflects the context of small-scale fisheries today and actively protects them.

The democratic inclusion of women and youth in the decision-making processes is essential to ensure the continued longevity and robustness of these systems. It will be more egalitarian to break away from collectivizing around caste and instead to collectivize around gear groups and scale of fishing operations. Communities build upon shared interests, perspectives and priorities are likely to be more productive. Those defined not by exclusion but through their collective identities and shared vision of securing their livelihoods and community futures will create strong and resilient bonds.

Within the existing Indian legal framework, the provision for the decentralization of governance is made functional through the Panchayati Raj system. The MFRA created the SFZ with the purpose of protecting the interests of fishers who use traditional craft, to manage sustainable use and maintain law and order at sea. It can be understood that fishers using traditional craft to fish, are in fact traditional fishers. While their interests are protected through the MFRA, their rights to the SFZ are not formally recognized within it. These small scale fishers, have well established traditional systems of equitable and sustainable marine resource management in place. These panchayats need their due recognition and protection within the Indian legal framework.

For the devolution of rights to the SSF community wherein they have the mandate and power to manage and conserve marine resources – it is imperative that the Indian coastal states and the national government need to recognize the existence of these traditional systems. Leveraging this

formal recognition, the fishing community and their supporters can argue for the protection of tenure rights of the SSF community. This can be operationalized through the proper implementation of an exclusion zone and the active engagement of women, youth and men from the SSF community in decision-making processes regarding the use of marine resources.

Since the MFRAs first came into effect in Andhra Pradesh in the 1990s, the fishing fleet and industry have undergone significant transformations. These need to be taken into consideration to secure tenure rights in today's environment. For example, the proliferation of encircling gear operations along the coast and their interplay with towed and non-towed fishers has changed the sector. Beyond the radical enforcement of existing regulations, new regulations, restrictions and monitoring systems are needed to respond to the current scenario to protect the spaces, resources, and livelihoods of traditional non-towed fishing communities.

Development along the coast has been evolving, there is an increase in construction, infrastructure development, industries, ports and aquaculture farms along the Indian coastline. Coupled with some of the effects of climate change, such as coastal erosion, unpredictable and often dangerous weather conditions, the increasing frequency of natural disasters – fishers are struggling even on the landward side.

Small-scale and traditional fishers rights to adjacent coastal land needs to be established and protected. In an Indian fishing village, fishing and processing is a community activity that requires community spaces to function. Beaches are used as spaces to store, make and repair nets; beach fishing craft; sort and dry fish, auction and market spaces, dry seaweed and for other processing activities. Fishing villages need to be located next to beaches, so fishers and fish processors can continue to have easy access to community lands needed for their livelihoods.

Fishing villages are being resettled and relocated at distances from the shoreline. In Srikakulam, villages are located at a greater distance from the beach, one being even a kilometer away. Fishers in Idduvanipalem reported how this relocation has disrupted their livelihood as they need to travel longer distances to fish while fish processors cannot quickly respond to anything that might need their attention while processing. Even a short unpredictable weather event like rainfall can quickly ruin an entire catch.

Small-scale fishers need to have protected availability and access to the marine resources they need for their livelihoods and their households. These resources are currently disproportionately caught by trawl, encircling and other towed fisher groups in waters beyond the SFZ. The right to marine resources is an integral aspect of securing tenure rights for small-scale fishers.

Documenting the findings of this study and the traditional fishing practices through photographs and video to facilitate sharing these findings impactfully during the International Year of Artisanal

Fisheries and Aquaculture (IYAFA 2022) is important. This can help draw attention to the challenges non-towed fishers face, give them their due respect and campaign for measures to secure their tenure rights for this and future generations to come.

Commissioning studies to further explore the nuances and intricacies of securing tenure rights of non-towed fishers and their families by exploring employment, processing, and markets will be needed to ensure that these developments are evidence led and have the potential to create impactful change.

VOICES OF THE FISHING COMMUNITY

The quotes shared here have been made by the respondents while being interviewed by the DFYWA study team. No personal identifying details of the respondents have been shared here as the data was anonymized.

"Small fisherfolk like us are unable to compete with big boats, mechanized boats, ring seiners. Hence, many troubles. As much as I see, government should come up with a regulation that catamarans, small boats and mechanized and motorboats should have different fishing grounds."

"Depending upon the size of the craft there should be strict rules for fishing boats of each kind. Mechanized boats should fish at least 25 - 30 miles away from the shore. Government should provide us with various schemes."

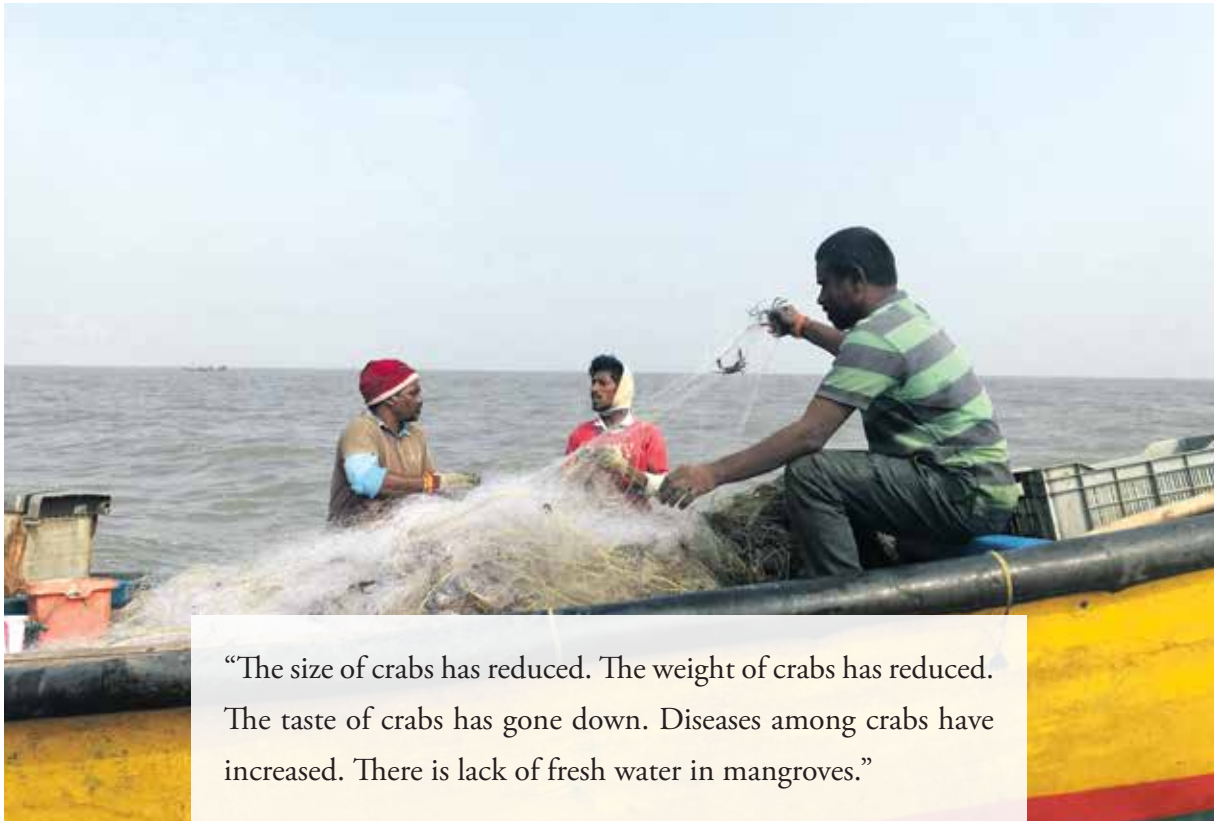
"Because of the ring seine gear our nets are unable to catch the fish. The quantity of the fish in the sea has reduced drastically. "

"Trawlers should only be allowed beyond 12 nautical miles and ring seiners should be restricted to beyond 8 nautical miles. Strict security should be used to implement this."

"Till a couple of years back, we used to fish with traditional craft and gear. There used to be specific timings for fishing. The availability of catch used to be good. Now, with synthetic gear and mechanized craft there is no specific time to fish and therefore the availability of catch has dwindled. The availability of species such as pomfret, hilsa, mackerel, sardine, and tiger shrimp has reduced."

"Around 20 years back, we used to have abundant catch of anchovies, seer fish, sardines, grouper, etc. As time went on because of the changes in the fishing practices and because of modern equipment the fish we used to get within 1-2 km is now available beyond 15 km for mechanized boats. It is impossible for traditional fisherfolk to go on their traditional craft for such long distances and as a result there is extreme poverty in households."

"The traders have formed syndicates and are buying at very low prices. Cold storage and transportation is limited so we have no option but to sell at these low prices."



"The size of crabs has reduced. The weight of crabs has reduced. The taste of crabs has gone down. Diseases among crabs have increased. There is lack of fresh water in mangroves."

"A mini jetty should be constructed here (Srikakulam). It will reduce the migration as there will be year long fishing."

"There are too many crab, fish and shrimp aqua ponds. Waste from these creates adverse conditions for wild crab and shrimp."

"The mangrove canals are blocked because of waste from industries and factories. Algae creepers and weeds have expanded rapidly. Dredging is also causing clogging. Government should take measures keeping in mind the plight of us fisherfolk."

"During cyclones and tsunamis, because of the big waves, houses are being submerged under water. Our craft are getting destroyed and gears are getting lost in the sea. During that time the sea water penetrates into the streets in the village and in houses. The fish being dried on the beach is getting soaked and as a result we are losing thousands of rupees of income. As the waves during that time are high we cannot go to fishing for a week to 10 days and because of sea erosion it is becoming difficult for our craft to get into the sea."

"There are no toilets for women. During menstruation, we have no choice but to stop working for 5-6 days."

"Today we have to go to farther distances. Workload has increased and income has reduced. Have to depend on multiple gears depending on the time of fishing. Youth are not joining fishing so are not available to help in this work."

"During the time of cyclones the fishing is taking a hit. The craft and gear on the beach are getting washed away during cyclones. The water level is rising during cyclones and our houses are being submerged. Sometimes fishers even lose their lives. Coast erosion is there and we are not having space to park our craft and gear."

ANNEX: A STUDY ON SECURE TENURE RIGHTS IN ANDHRA PRADESH

Study sites

Three districts were selected in Andhra Pradesh – Srikakulam, Visakhapatnam and East Godavari. Srikakulam is the northernmost coastal district in the state where fishing villages deal with the challenges of disconnection. Villages are located a distance from the shore, from each other and from highways and other lines of transport. Higher education and employment opportunities outside of fishing are limited, resulting in fishworkers migrating to other parts of the country to work aboard mechanized fishing vessels and in other non-fishing sectors. The district also faces rough weather conditions, coastal erosion and increasing industrialization.

Visakhapatnam is an urban district of the state capital. It also includes the largest fishing harbours in the state. Small scale fishers here compete fiercely with mechanized vessels in dynamic markets. Visakhapatnam also has several industrial complexes such as oil, power, pharmaceuticals, garments and construction materials amongst others; many of which are located along the coast.

East Godavari is located further south at the mouth of the river Godavari and has a large mangrove forest. Fishing is done in marine waters, the estuary and within mangrove creeks. The traditional systems of governance which are managed by the caste panchayat are very well established and continue to remain strong.

These districts were selected due to the high number of non-towed fishers operating there and to better understand the varying complexities faced by non-towed fishers within these different environments and stressors. The respondent criterion included fishers who engage in non-towed fishing, with fishing as their primary economic activity and limited to only one respondent per household. The villages included in the research study were selected in consultation with DFYWA – the criterion being - fishing villages with a high number of fishers who meet the respondent criterion.

Respondent Profile

Age and gender

We engaged with a total of 54 respondents who met the criterion. As we were focusing on only the marine fishing aspect of this fishery – all the respondents happen to be men, as women in this community are not involved in active marine fishing activities. While the average age of these fishers is 46, it is important to note that a little more than 40% of them are aged between 50 – 59.

The oldest being a 65-year-old fisher in Srikakulam, who shares ownership of a small 9 hp FRP boat and one of the youngest being a 21-year-old crew member on a Katla Teppa in the same district.

Households and minimum living incomes

84% of the respondents have households comprising of 4 or more members. With 7%, having households as large as 8-9 members.

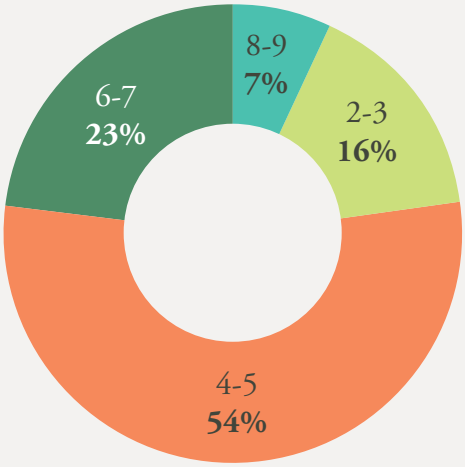


Figure 1 Household sizes (number of members, percentage of such households)

Our study partner DFYWA in consultation with local fishworkers, identified that a minimum living income (MLI) would be an average of Rs. 20, 000 to 30,000 a month. This would cater for their household expenses and bills, fishing inputs, education, medical care, transport, energy consumption and any other average living expenses. This estimate is for a household of 4-5 members. Which as we can see here is the bulk of the households in this study.

During peak fishing months, 61% of the respondents earned enough to be within the MLI or comfortably above it. During lean fishing months however, that percentage falls dismally to 11%. While 83% of the respondents fell severely below the MLI or hovered dangerously around the mark in a vulnerable condition. Four respondents could engage only in subsistence fishing during their lean fishing months.

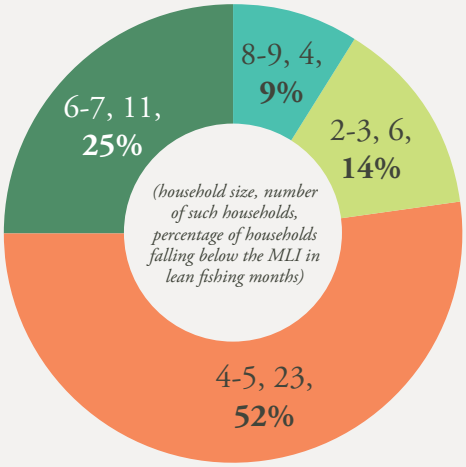


Figure 2 Vulnerable households and those falling below the MLI during lean fishing months.

93% of the respondents held residential land, however only 22% of them held pattas to the residential land they live on. 7 households shared residential land with their families.

5 households owned agricultural land and 3 households shared agricultural land with their families. Only 3 of these owned pattas to their land. The agricultural land owned ranges from .3 to .5 acre. If being used for agricultural purposes they would be considered marginal farmers. With the rapid growth of aquaculture farms along the coastline, it is likely they might be renting their land out to larger farmers at the rate of approximately Rs. 200,000 per acre per annum. Larger farmers try to consolidate land to set up aquaculture ponds which are larger and more profitable.

FWO membership

A little over 70% of fishers were members of FWOs. Through these their access to government support schemes is potentially possible. 25% of the respondents were not a part of any FWO or community support organizations.

The Elements of Tenure

Types of Craft

Over the last few decades the craft composition in Indian fisheries has changed dramatically.

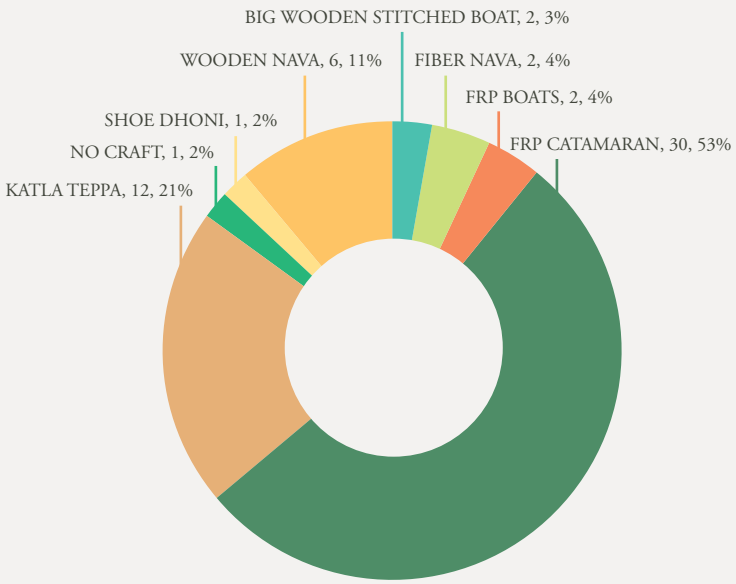


Figure 3 Craft composition of respondents (type of craft, no. of craft, percentage of the respondents)

The number of mechanized and motorized vessels have risen across the country, crowding out and surpassing non-motorized craft. Our focus here is on those fishers within this larger tapestry who are considered the most marginalized within their local contexts. Within this sample the most common craft is the FRP catamaran – making up 53% of the fleet, 84% of which are motorized. 46% of the entire sample engages in non-motorized fishing. Of which 80% fish primarily within the SFZ and 50% of whom are completely reliant upon the SFZ as the exclusive fishing grounds they access. The relevance of the SFZ and their rights to it is thus crucial for their livelihoods.

Within the study, there were a total of eight different kinds of craft owned by fishers and those who fished using only gear. Smaller vessels include the Katla teppa, small stitched wooden boats, wooden navas and fiber navas and shoe dhonis. The teppa is a stitched wooden boat ranging from 15 – 24 ft in length and 3 - 5 ft at its widest point. These are usually made of wood and/or FRP. They might also be filled with sheets of thermocol for improved buoyancy.

Non-motorized katla teppa shored on the beach in Guppidipeta, Srikakulam

These non-motorized vessels are also operated with a single sail. In the picture above the furled sail can be seen in the second from left craft. The picture below is from the beach at Pudimadaka, Visakhapatnam. Here fishers are using FRP Catamarans and teppas, with sails. These vessels ranged from 12 – 30 ft in length and were operated by a crew of 2–5 members.

Navas are comparatively broader and flatter bottomed vessels. These are primarily used for near shore fishing and not to access distant fishing grounds. Shoe dhonis are named such because the shape resembles a shoe. They are used in the mangrove, estuarine and riverine systems around East Godavari. Beyond being used to fish, these vessels are floating homes for the entire household including women and children.

Larger vessels include big stitched wooden boats, FRP catamarans and FRP boats. Big stitched

wooden boats are essentially used for shore seine operations. These are owned by groups of 25-30 people. FRP catamarans and boats are usually motorized with 9 - 10 hp engines and being larger and longer they are able to fish further from the coastline. Teppas and catamarans as well as some boats and navas have a modified rear where an outboard motor can be temporarily attached. These are often repurposed engines from autos, vans and other small vehicles, which are attached to a submersed propellor – they're then called longtails.

Fishers on the right have just landed their catch and are carrying their catamaran up the beach. Fishers on the left are preparing to head out to sea and visible in the background a catamaran is using their yellow sail to manoeuver their catamaran and guide themselves into the beach.

Interior of the big stitched wooden boat which is used for shore seine fishing. In the image here, the stitching between planks is visible. These are lined with a coastal grass that is water resistant and supports the buoyancy of the craft. There are currently only a handful of boat makers who have the knowledge and know-how to build this type of craft.

FRP catamaran with a modified rear to optionally attach an outboard motor

A fisher operating his long tail FRP catamaran in East Godavari

Challenges faced in operating and managing craft

Like other parts of the world, this coastline too has increasingly felt the damaging effects of climate change. For our respondents the most threatening of which was unpredictable and extreme weather events. While the Bay of Bengal has always hosted tropical storms; fishers attest to the fact that these have become more chaotic and intense over time.

All the villages surveyed have access to a cyclone shelter, and if the government provides warning in time, they are able to safely shelter there. This is the case for most storms, though fishers out at sea who are caught in the storm run the risk of injury or death. Almost every village surveyed shared some incident where fishers lost their lives due to a storm in the last decade or sustained severe injuries.

Respondents in Srikakulam and Visakhapatnam expressed concern for the safety of their craft as well. Increasingly storms have resulted in damage to their means of livelihood – from small katla teppas to larger motorized vessels. Furthermore, storms often result in water ingression into villages and flooding in homes. Increasingly unpredictable and violent storms threaten their lives, livelihoods and their homes.

Coastal erosion is also a major source of concern. Certainly, for security and protection during extreme weather. Over the last few years, with the degradation of the beach – it is also becoming challenging for fishers to securely beach their craft. Along the coast there have been increasing efforts to establish industrial ventures. One of which is beach sand mining; Srikakulam beaches are rich sources of Ilmenite, Rutile, Zircon, Garnet, and Monazite among other minerals. Different state governments in AP have attempted to take advantage of these natural resources over the years, with varying levels of success and controversy. Illegal mining of beach sands has also been a rampant issue in recent years.

As a fisher in Icchapuram explained it – the sand along their shores has a heavy and strong quality to it because of the metals and minerals in it. As they have seen this sand being mined, the beach has correspondingly degraded in sync - leaving them increasingly at the mercy of changeable weather conditions.

Due to these changes in the coastal topography, fishers report a 'wall' of sand and silt that has accumulated over time, at a short distance from the shoreline, which is likely a sand spit. As this sand spit grows it becomes more difficult for fishers to move their craft and gear across it and around it.

Villages in Srikakulam have also moved further away from beaches over time. This has happened because of several reasons including rough weather conditions, rehabilitation, resettlements, industrialization, forest department restrictions and other government processes. Now villages

could be as far as a few kilometers from the beach, resulting in further challenges accessing beaches and difficulties in maintaining their tenure rights to these beaches. Several respondents noted the need for mini jetties in Srikakulam to address some of these concerns and promote more regular fishing activities across the year.

In Visakhapatnam coastal erosion has resulted in a beach reducing 1 – 1.5 km in breadth over the last decade. Pudimadaka lies 40 kilometers south of Visakhapatnam. Industrial setups have flourished around the city, including oil refineries, pharmaceutical industries, chemical processing plants, garment industries and shrimp processing plants amongst others. Pudimadaka lies next to a Special Economic Zone (SEZ), and so is subjected to the effects of a number of industries which have been established in the neighbourhood.

Mineral rich sands of Srikakulam

The village lies along a cove and has a narrow beach. The fishers spoke of the beach's reduction in size and subsequent flooding within the village. During stormy weather and cyclones, water floods the village with houses closer to the beach being flooded up to a few feet. Fishers struggle with the challenge of safely shoring their catamarans and teppas. In the first photo below, the crew is carrying their teppa to shore it behind the wall of the village. Sails are stored and being dried towards the left. Sanitation, waste and garbage disposal is also a challenge in the village. The wall between the village and the beach consists significantly of plastic waste materials.

The photo above is taken from where the teppas are shored. The beach is rather narrow, with perhaps a distance of 60-80 ft between the water and where the craft is shored. Women vendors have gathered around the disembarking fishers to purchase the fresh seer fish, which they will then market in local markets and Visakhapatnam city.

In East Godavari fishers detailed changes in mangroves, canal, estuarine waters and underwater landscape which has limited the operations of their craft. Within the canals, increased siltation and growth of weeds has affected their ability to access some fishing grounds using traditional craft. The activities of the Forest Department from digging trenches to planting mangroves in different patterns; as well as dredging by oil companies has led to changes in the underwater landscape. Respondents spoke about how these activities have affected tidal action and currents within the canals and in turn have negatively affected their fishing practices.

Women vendors negotiating with the fishers at the beach in Pudimadaka

Fishing days, peak and lean seasons, and minimum living incomes

Respondents fished an average of 18 days a month, with some fishing as many as 26 days during peak months and as low as 5-10 days during lean months (we have included the monsoon ban period in these calculations as traditional fishers are allowed to fish during this period within the SFZ, however they might not due to weather conditions or any other considerations). For this study, peak and lean months were individually reported by each fisher depending on their practices, landings and earnings. Please refer to the table below for a broad understanding of the peak and lean months across the different districts.

		EAST GODAVARI	VISAKHAPATNAM	SRIKAKULAM
Peak Season	**Small Motorized**	Sep - Dec	Oct - Feb	Oct - Jan
	Non-motorized	Nov - Jan & May - Jul	Jan - Mar	Feb - Mar & Sep - Nov
Lean Season	**Small Motorized**	Jan - Jun	Mar & Sep	Oct - Jan
	Non-motorized	Mar - Jun	No data	Jun - Aug & Nov - Dec

Chart 8 Lean and peak fishing seasons as reported by small motorized and non-motorized fishers in East Godavari, Visakhapatnam and Srikakulam

Those who earned MLI or above during peak months, fished an average of 15 days per peak month. During these productive months, small-motorized vessels were able to fish on average a day and half more than those with non-motorized vessels. It is important to note that respondents who were unable to earn a MLI or were vulnerable to falling below, spent significantly more time and effort fishing. Despite fishing an average of 21 days, they remained unable to earn enough even during peak seasons. Of these the non-motorized fishers were heavily dependent on fishing within the SFZ; while motorized fishers, despite being able to fish beyond the SFZ were also unable to earn sufficient income.

During lean fishing periods, the interplay between fishing days, MLI and the SFZ becomes incredibly stark. Only 13% of the respondents were able to earn a MLI or above, all of whom owned motorized vessels and mostly fished an average of 18 days beyond the SFZ. On the other hand, 87% of respondents fell below the MLI, they fished primarily within the SFZ and intertidal zones for an average of 17 days.

The dynamics of MLI, peak and lean seasons, and fishing grounds was reflective of the differences in the districts. During peak seasons fishers in Srikakulam worked primarily within the SFZ; those in Visakhapatnam worked equally within and beyond the SFZ; in East Godavari they relied heavily upon the intertidal zone and to a much smaller extent fishing beyond the SFZ. Again, when we look at lean fishing periods, the dependence on the SFZ becomes starker. In Srikakulam only a single respondent lay within the MLI and almost 90% of the respondents falling below the MLI depended on the SFZ entirely. In Visakhapatnam every respondent fell below the MLI and relied almost equally on fishing within and beyond the SFZ up to 78 km from the coast.

During lean periods, the fishers who earned more than the MLI were only from the district of East Godavari. While this area does include a large mangrove forest and a multi-species fishery; it is also important to note that it is the district with the strongest community systems. The Caste Panchayat manages the governance of the fishers. They have clear delineated understandings regarding – fishing periods, grounds, gear and species, as well strong and deep-rooted systems of community

governance and social protection. Even in the case of conflicts with mechanized or motorized fishers, it is this panchayat which represents small and marginal fishers.

Gears operated

Gill Nets

The type of gear most used is the simple gill net. There are, however, many different types of gill nets used in these geographies, ranging from bag nets and drift nets to lift nets.

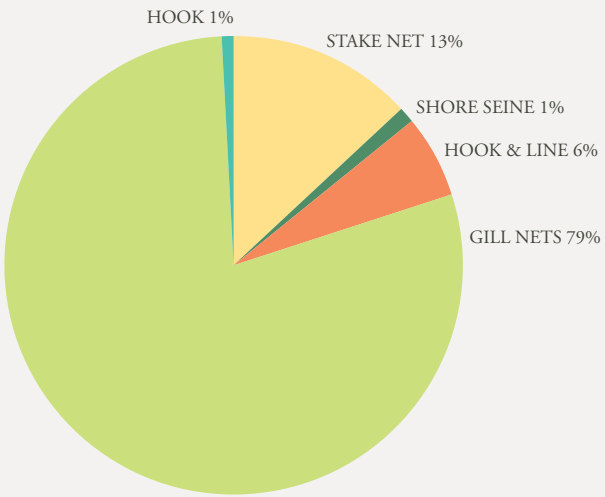


Figure 4 Gears operated by respondents in the study

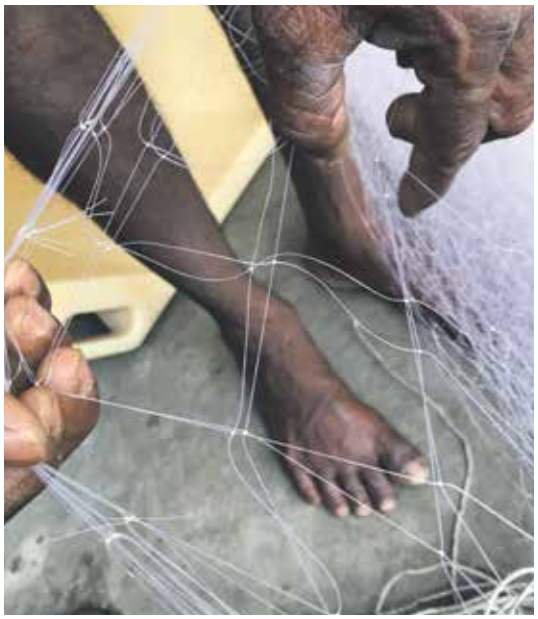
East Godavari contained a wide variety of such nets. In CVB Palem, 40 families operated small dip/lift nets from small catamarans or teppas. These are operated by 2-3 people from each family. The caste panchayat managed the regular rotation of fishing grounds considering all the families operating this gear as well as the sustainability of the catch. Over time the usage of this gear has reduced, with fishers identifying increasing siltation and reducing depth of water in the lagoons as the cause for this decline.

Fishers also operated a drift nets. Several families would connect their smaller drift nets to create a larger one, then share the resulting catch. The use of this net has also declined in recent times due increasingly frequent damage caused by motorized and mechanized craft operating in the same waters, usually within the SFZ.

One of the most common gill nets used is a trammel net, locally called a disco net. These are made of three layers of very fine filament nets. The inner and outer mesh are larger in size, while the innermost net has a much smaller mesh size. When submerged these nets are almost invisible and are thus preferred by fishers. These nets have a shorter life span due to their delicate construction. While fishing they are easily tangled and require a significant amount of time and effort to disentangle and repair for the next fishing expedition. After being used several times, once fishers regard them beyond repair, they are usually sold at very low prices or given to even smaller fishers to use.

A disco net being prepared

Prepared disco net ready to be deployed



Inner and outer mesh

Innermost net mesh

A freshly hauled disco net in the estaurine waters of East Godavari

These fishers will collect the catch and deploy the net again before heading back to the market. Some fishers also deploy the net upto 3-4 times in one fishing trip.

A seasonal temporary village set up by shoe dhoni fishers from the nearby Balasuthippa. These stakes are used to set up stake nets around the mouth of the river Godavari.

In Ichapuram, Srikakulam, a crew landed a catch of tunnies around noon. At the time of our visit, they were the only such crew. As they carried their catch from the beach towards their village and the waiting trader to be weighted and sold – several people stepped forward to help and some more gathered around while the fishers and vendors evaluated the catch. As they reached an agreement a flurry of activity broke out – the older women and men gathered there were given a fish from the remaining pile, others picked up smaller fish, children weaved between their elders, picked up a fish and ran gleefully. In a matter of a few minutes the fish was sold, the fishers held their catch and earnings and people around them who helped; others who they may have relations with; and members of the village who happened to be there - all left with a fresh fish ready to cook, just in time for lunch.

Tunnies catch being brought in at Ichapuram in Srikakulam

Fishers carrying their teppa back up the beach, with some help from their community

In near proximity of most kuppams, will be fishers who fish using only gear in the waters around. Within the mangroves, the coast and inlets around East Godavari and Srikakulam, fishers used crab hooks, crab nets and small push nets. Their catch for commercial purposes consists largely of crustaceans – crab and shrimp as well as some small fish which is often also dried and consumed.

A fisher making his way into the mangroves with a small push net

Small fish and shrimp being dried in Balusuthippa, East Godavari

Hook and line

In Visakhapatnam and Srikakulam, 18% of the respondents engaged in hook and line fishing. These were fishers operating FRP Catamarans and FRP Boats whose fishing grounds were primarily beyond the SFZ, though they also engaged in fishing within the SFZ, especially during the monsoon months.

These fishers targeted large pelagic high value species like tuna and seer fish. In Pudimadaka, a significant number of fishers use hook-and- line to target yellowfin tuna. Their landings are significant enough that Japanese exporters have invested in the landing center at this small village near Visakhapatnam, improving facilities and regularly exporting their catch.

Yellowfin tuna being taken from the beach to the landing center at Pudimadaka, Visakhapatnam

Yellowfin tuna at the landing center in Pudimadaka

Tuna is prepared at sea to retain freshness and quality as long as possible. The crew removes the gills and innards and packs the fish with ice soon after catching it on board. This helps them earn better prices from the traders at landing centers.

Motorized FRP catamarans ranging 20-30 ft in length with 10 - 20 hp engines, conduct shorter trips, ranging from 1-3 days. In peak seasons, they would fish for 6-7 days followed by a short break then repeat the cycle.

There are two different types of hooks used. A larger one which targets species like tuna and shark. The smaller hooks target seer fish. Fishers will usually use a combination of both these varieties.

The crew are getting their gear ready for the next fishing trip. Here they are laying out, measuring and preparing the long lines.

Every few feet on the long line, a short and finer line and hook is attached. This fisher is in the process of preparing these shorter lines. He is using the blue filament to create loops with which the short line will be attached to the long one and attaching the hooks onto the other end.

The tools used by the crew to prepare the lines and hooks

Left: The next step in the process is to attach the shorter lines to the long one using the loops made above.

Centre: The hooks are then attached to the other end of the shorter lines and kept organized by hooking them between two pieces of wood or bamboo tied together. These hooks are used to target tuna. They are larger and prepared using the technique described through these pictures. This is a very labour-intensive process and it takes a few days to prepare for each fishing trip.

Right: These are the smaller hooks used for seer fishes and other smaller-sized pelagic species.

Bottom: Small FRP catamarans preparing their lines for fishing. These lines are used to target seer fish.

Competition and conflicts between different gear users

In all three districts, fishers spoke of challenges they've faced due to other fishing groups using competing gear. The dynamics and inter-play between these groups and even the fishers themselves is quite complex and couldn't be comprehensively teased out through the rather straightforward tools used in this study. The team's time in the field and the conversations with fishworker organizations and representatives gives some dimension to the issues faced.

Damage and destruction of small-scale gear

Within the SFZs in all three districts, fishers reported facing large motorized and mechanized vessels fishing using ring seines, large purse seines and trawl gear. In East Godavari some fishers reported trawlers fishing as close as 500 m from the mangroves.

The most common issue that emerged from these encounters was the damage or in some cases the destruction of fishing gear deployed by small-scale fishers. These cases would be taken up by the caste panchayats or FWOs who would engage with the relevant boat owner's association to come to a resolution. Which is usually compensation given to the fishers whose gear had been damaged. In East Godavari, situations like this and resolutions were considered almost routine and didn't often cause strife. Even so, it's interesting to note that not only is the reserved SFZ being used by other fishing groups; it is occurring with enough regularity and little to no serious repercussions for the offending party - to be considered and accepted as a bitter part of fishing life.

Competition over resources

Ring seines have gained traction and have been used increasingly over time across both Indian coastlines. It is an efficient gear, capable of generating large commercially good catches and operates closer to the coast, on occasion within the SFZ and beyond as well. The small and marginal fishers who were a part of this study, identified these gears as impediments to their own fishing practices. Trawlers fishing within the SFZ and overfishing beyond due to their greater technical capacities, were also seen as problematic. The trawlers were usually identified to be from another district, mostly from Visakhapatnam, Kakinada, and Uppada in Andhra Pradesh. Some fishers also noted the occasional trawler from the states of Tamil Nadu or Odisha fishing within these waters. The respondents largely drew clear distinctions between themselves and the 'vilified', so to say – trawlers.

The dynamics are more complex when it comes to ring seine fishers. These gears have the capacity to catch large shoals of commercially viable pelagic species. These are not fishers from another town or state or those from a very different socio-economic stratosphere; they are local fishers. Usually those with a little more economic and social capital, especially in comparison to the respondents. Both sets of fishers are also usually a part of the same social group. This can create tension and strife within communities as they compete for marine resources and spaces.

Ring seine operations rose along the east coast of India, in part, as a response to trawl and purse seine fishing. The introduction of these technologies put pressure on small-scale fishers who found it impossible to compete with the large-scale efficiency of mechanized fishing methods. To stay competitive, they began ring seine operations, which are a scaled down version of purse seining. In Cuddalore, Tamil Nadu, fishers who vehemently opposed ring seine operations, ultimately began fishing using this technique themselves. The interplay between these different gear groups - considering the challenges they face; the support offered to them by the government, FWOs and CSOs; their social, political, and economic capital; and their needs, constraints and aspirations – is a rather complex tapestry woven with myriad shades of grey.

During the time of our visit, tensions between these groups in Visakhapatnam had risen to such an extent that all ring seine fishing was made virtually impossible due to pressure from the small-scale community. They had initiated a strike and needed to bring most of their operations also to a halt in order build pressure on ring seine fishers, market forces and government authorities.

At the same time, ring seine operators faced challenges with trawler vessels. Competing with them over fishing grounds and resources and often losing out. Almost like a chain of pressures which culminates by further disenfranchising the fishers who are already the most marginalized and vulnerable.

Securing the tenure rights of these fishers, would certainly require dialogue, understanding, cooperation, and imagination from all involved stakeholders.

Species in the fishery

The eastern coast of India has a very narrow shelf and deeper waters closer to shore; as compared to the western coast which has a wide continental shelf and shallower waters closer to shore.

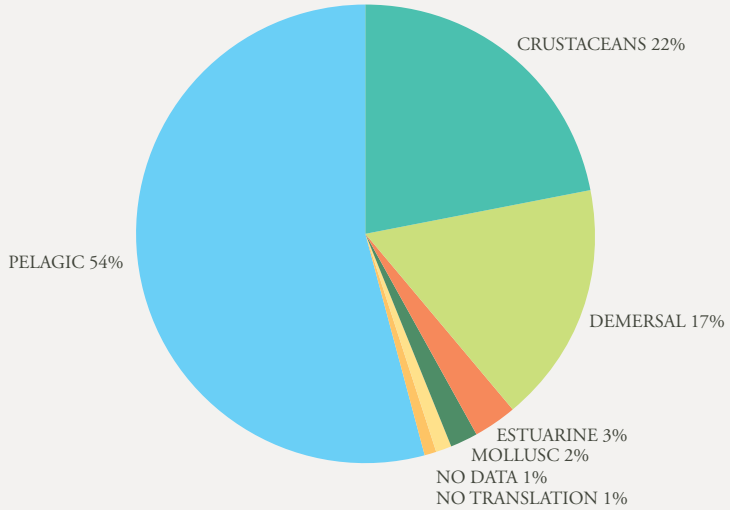


Figure 5 A species wise breakdown of landings caught by respondents across the year

This pie chart shows the composition of the species caught by the fishers in this study across the year. This composition remains fairly similar across both non-motorized and small motorized fishers. With the non-motorized fishers' landings of demersal, estuarine and crustaceans species seeing a slight increase in comparison.

Across the districts the changes in the composition are more significant and reflective of the fishing environment and supporting infrastructure.

COMPOSITION OF LANDINGS ACROSS SRIKAKULAM, VISAKHAPATNAM AND EAST GODAVARI

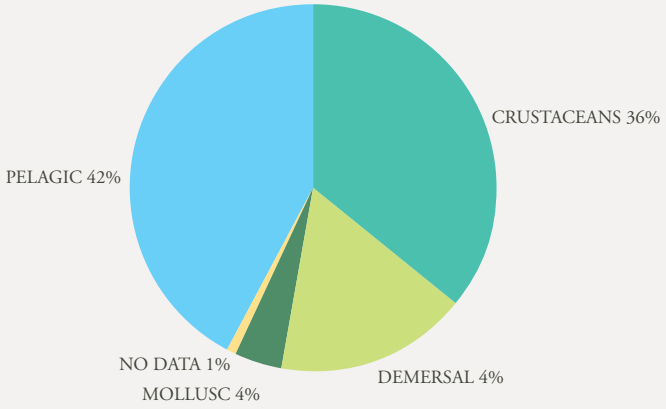


Figure 6 Species caught by respondents across the year in East Godavari

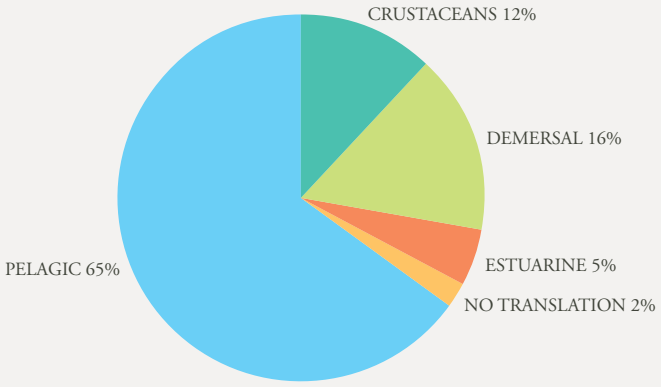


Figure 7 Species caught by respondents in Visakhapatnam across the year

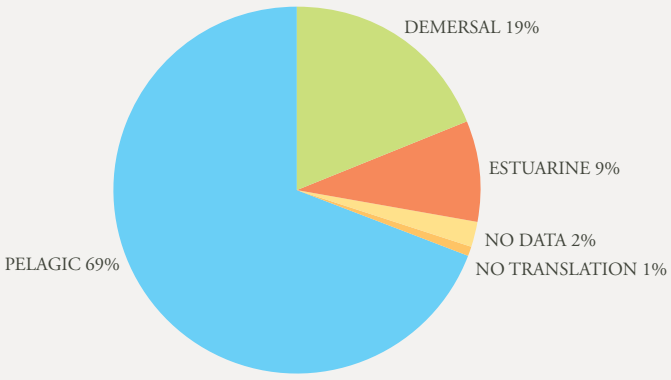


Figure 8 Species caught by respondents in Srikakulam across the year

In Srikakulam and East Godavari, the composition remains similar for both non-motorized and small motorized fishers who can earn sufficiently during peak months. During peak months, every respondent from Srikakulam was able to earn sufficiently, as were most from East Godavari. In Visakhapatnam however the differences are more dramatic. Only motorized vessels landing a larger number of pelagic species could earn enough during their peak fishing seasons.

During lean months, no fisher was able to earn enough in Visakhapatnam, only motorized fishers in East Godavari could, and a single motorized fisher in Srikakulam was able to meet the minimum needs of their households. In lean months the landings are comprised primarily of pelagic species, with an increase in demersal and crustacean catch, reflecting the imperative role the SFZ plays especially during tougher times.

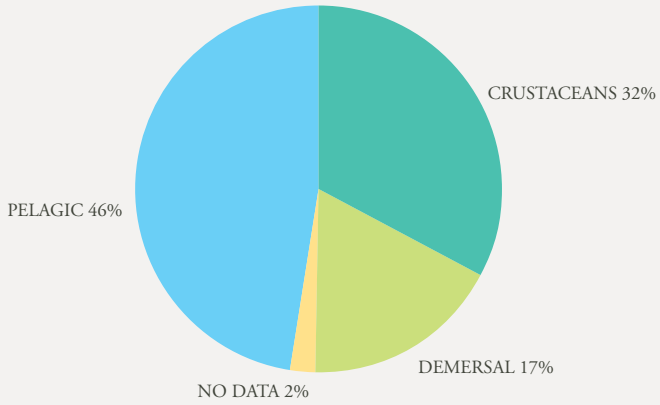


Figure 9 Species landed by fishers who usually access fishing grounds within the SFZ, during their lean months

Fishers in East Godavari particularly rely upon high value crustacean species during lean periods. It is interesting to note that for fishers fishing without craft the monsoon ban period is considered their peak season. In the mangroves of East Godavari, their catch consists primarily of crab and some shrimp. They would receive better prices during these lean months when mechanized and large motorized fishing activities are banned.

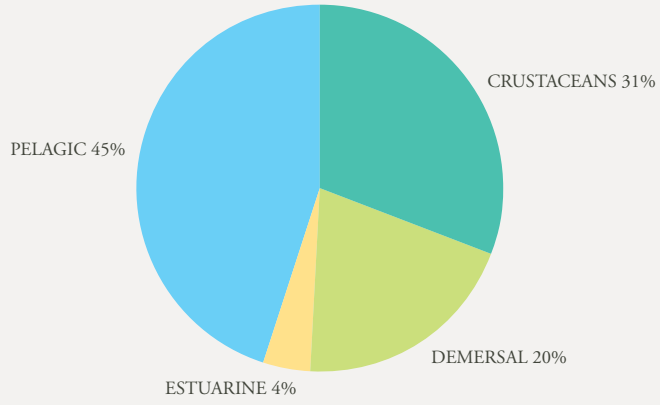


Figure 10 Species landed by fishers who usually access fishing grounds within the SFZ during peak months and are able to earn a minimum living income

Equal parts of the catch consisted of high value and mid value species – 39%, with low value catch making up the remaining 22%. A closer inspection of where high value species are fished and by whom is quite illuminating.

50% of the catch by fishers using the intertidal zone was high value. This consists of crab and shrimp caught primarily in the mangroves of East Godavari.

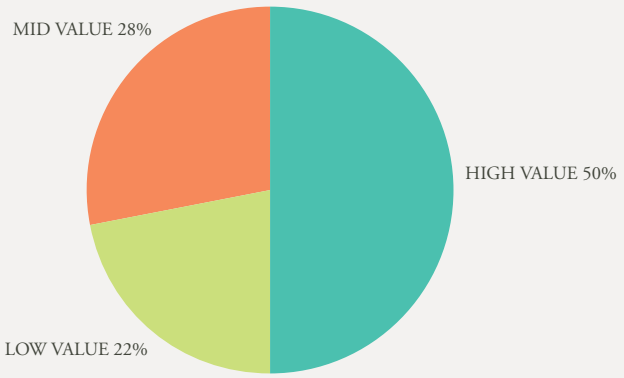


Figure 11 Value of landings - fishers who usually fish within the intertidal zone

For those who fished primarily beyond the SFZ, 42% of their catch consisted of high value species such as shrimp, crab, seer fish, tuna, shark, squid and pomfret. Figure 11 shows a break down of all the species caught by fishers beyond the SFZ and figure 12 zooms in on details of the high value species.

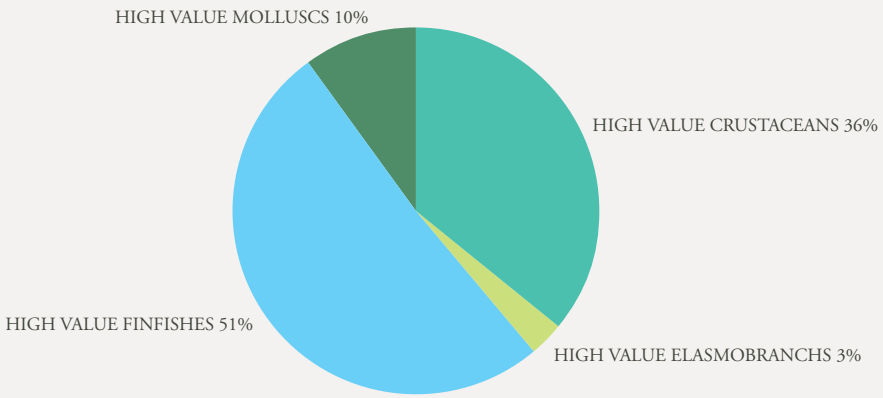


Figure 12 High value species caught by fishers who usually fish beyond the SFZ

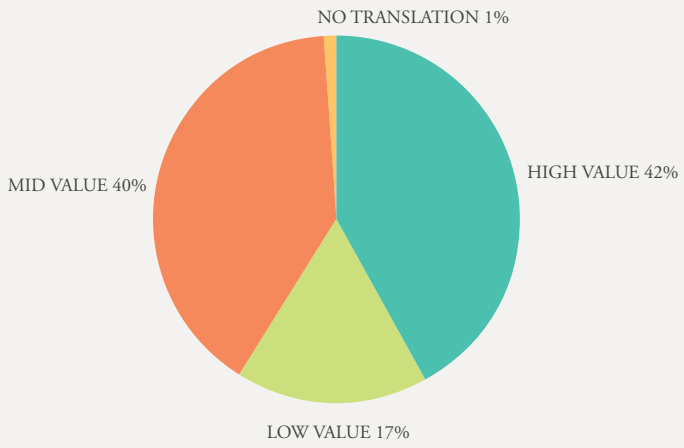


Figure 13 Value of landings caught by fishers who usually fish beyond the SFZ

For fishers who rely primarily on the SFZ, who cannot fish in further distances or depend on mangrove forests and breeding grounds - the value distribution is telling and represents the changes in the fishery reported anecdotally by the fishers. Only 22% of their catch consists of high value species. Not only do they catch fewer high value species but also fewer varieties of species and smaller amounts in comparison even to the other groups within this study.

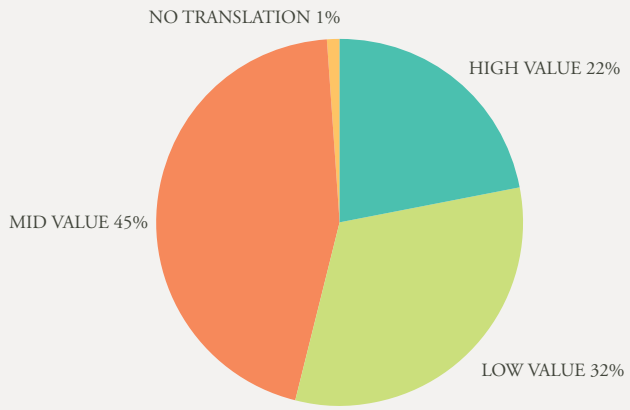


Figure 14 Value of landings caught by fishers who usually fished within the SFZ

A large number of respondents noted the decline in the variety, size, quantity and quality of fish available within the SFZ. They specially noted changes in seer fish, pomfret, barracuda, snappers, hilsa, anchovies, mackerel, shrimp and crab. The reasons they noted for these changes ranged from pollution and effluent from shrimp processing plants, sugar plants, pharmaceutical companies, oil rigs and drilling; to increasing industrialisation along the coast and changes in topography; and overfishing by other competing groups of mechanized and motorized fishers over marine resources. A few respondents even noted their own increased fishing activities as gears have changed from natural fibers to nylon and other synthetic materials and craft have become motorized. They added that this increased fishing effort often came about due to pressure or other push factors where they cannot afford to lose out to other groups. Fish that used to be abundant or at least sufficient in waters 1-3 km beyond the coast, is now availble to mechanized fishers 10-15 km beyond. Distances their craft simply cannot manage. The dwindling and dissapointing catch availble in nearshore waters, makes stability of income and employment a constantly moving target.

East Godavari thrives on a multi-species fishery. There are a wide variety of species caught and market facilities to support and absorb them. Proximity to the Kakinada port and market helps secure prices for the fishers. Comparatively, respondents in both Srikakulam and Visakhapatnam rely largely upon a few species. Fishers in Vishakhapatnam are pushed to venture further out and target shoaling species such as sardines and mackerel or high value species like tuna and seer fish. Respondents in Srikakulam fish predominantly within the SFZ, here they target shoaling species like anchovies, mackerel and sardines.

In both these districts (Srikakulam and Visakhapatnam) respondents target shoaling pelagic species. And so, small and marginalized fishers are in direct competition with ring seine operators in these districts for the same marine resources. Several fishers have modified their teppas and catamarans to optionally attach longtails or OBMs to their craft, ostensibly in their attempts to remain competitive.

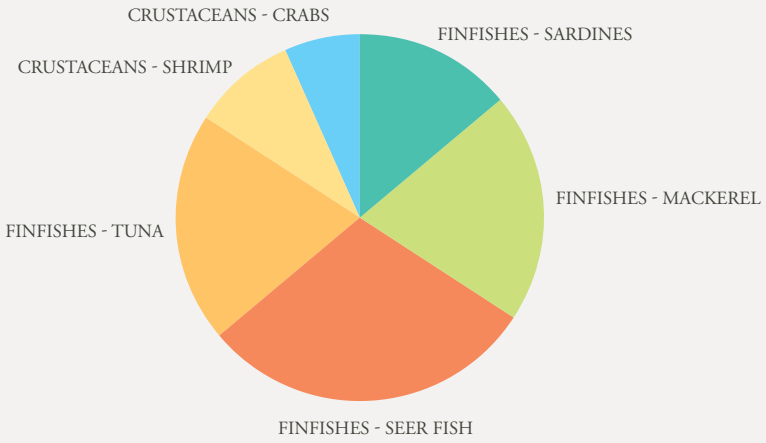


Figure 15 Species caught in significant quantities by small-scale fishers in Vishakhapatnam

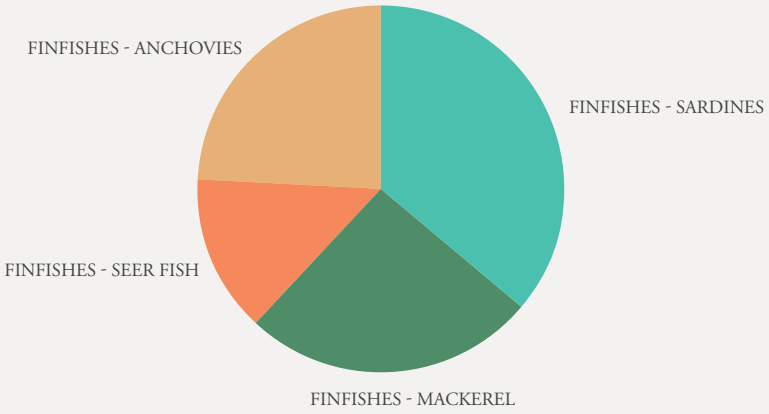


Figure 16 Species caught in significant quantities by small-scale fishers in Srikakulam

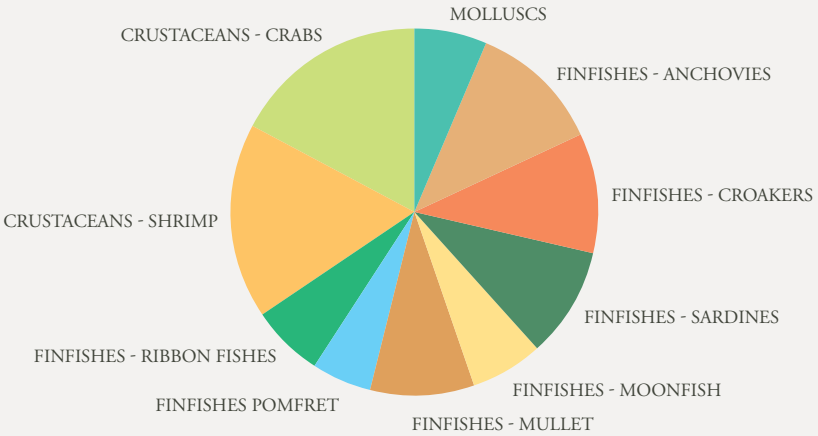


Figure 17 Species caught in significant quantities by small-scale fishers in East Godavari

East Godavari supports a multi-species fishery and fishers bring in a diverse catch. Most commercially relevant of which are crustaceans – varieties of crab and shrimp. Here these are caught within the mangrove ecosystem and estuarine waters. Respondents and FGD participants reported that mechanized trawlers do fish within the SFZ, even occasionally coming as close as 500 m from the mangrove forest line. They also spoke of conflicts over gear which have been discussed in detail earlier. Mechanized and motorized vessels damage or destroy the gear of small fishers leading to losses not only of that catch, but also of the opportunity costs of the time it takes for fishers to recover the costs of damages and/or purchase or repair their gear and return to fishing.

For small-scale fishers in East Godavari, perhaps a more potent threat to their tenure emerges from the landward side – the rapid proliferation of aquaculture farms and shrimp processing plants.

Fishing Grounds

The most marginalized and vulnerable fishers in these geographies, fish predominantly within the SFZ, including in the intertidal zone. Only 31% of the fishers regularly access fishing grounds beyond 8 km. 88% of the respondents who operate non-motorized craft, rely upon the SFZ as do 51% of those operating motorized craft.

A deeper dive into the district level adds nuanced layers to this initial picture.

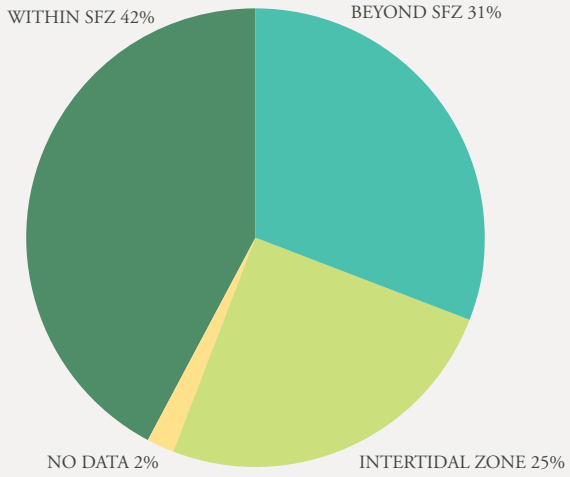


Figure 18 Fishing grounds most regularly accessed by small-scale fishers

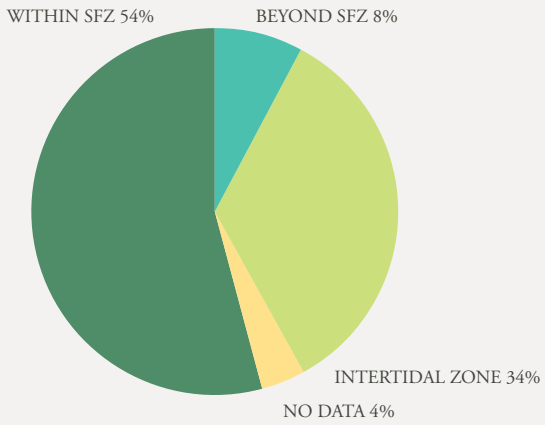


Figure 19 Fishing grounds most regularly accessed by non-motorized small-scale fishers

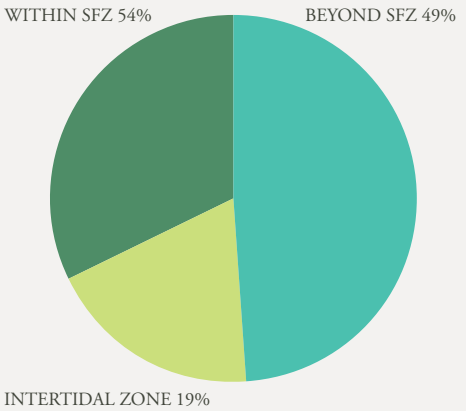


Figure 20 Fishing grounds most regularly accessed by small motorized fishers

Srikakulam

In Srikakulam, 88% of all respondents, both non-motorized and motorized, primarily fish within the SFZ. A single respondent with a motorized vessel fishes most regularly beyond the SFZ. Interestingly, during peak months, all the respondents in Srikakulam could earn MLI or higher. However, during lean months, this crashed to 94% of the fishers falling below the MLI. Significantly so in some cases and almost a third of these fishers could engage in only subsistence fishing.

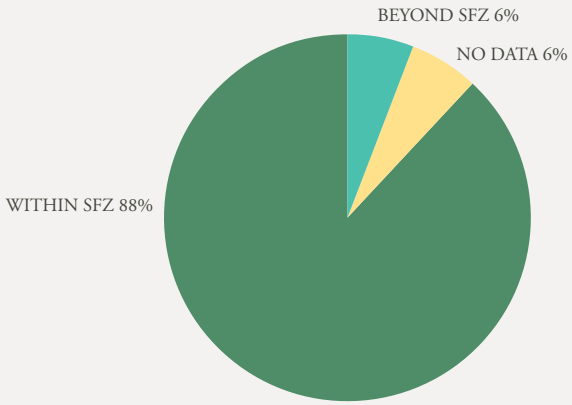


Figure 21 Fishing grounds most regularly accessed by small-scale fishers in Srikakulam

Visakhapatnam

In Visakhapatnam district, the situation was bleak not only during lean months, but during peak periods as well. 58% of the respondents fished most regularly beyond the SFZ and 42% within it. 67% of non-motorized fishers depended on the SFZ and 31% of the motorized fishers. During lean periods, all the respondents in Visakhapatnam fell below the MLI, regardless of where they fished and with or without motorization. During peak periods, more than half of the respondents still fell below the MLI. Only 22% of the fishers could earn sufficiently – half of whom fished within the SFZ and half beyond; however, all these fishers needed to fish further out than they usually did.

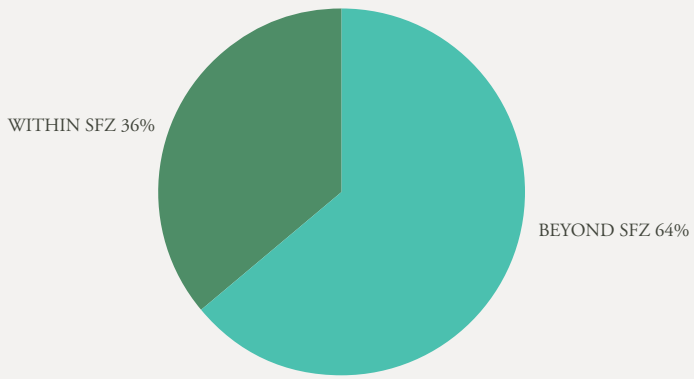


Figure 22 Fishing grounds most regularly accessed by small-scale fishers in Visakhapatnam, who fell below the MLI even during peak fishing seasons

East Godavari

74% of the fishers fished in the intertidal zone and 26% beyond the SFZ. All non-motorized fishers relied upon the intertidal zone as their primary fishing ground as did more than half of the motorized fishers - 55% of motorized fishers' primary fishing grounds are the intertidal zones. During peak months, 84% of the fishers in East Godavari earned sufficient income through fishing. Those who were unable to, relied exclusively on the SFZ and intertidal zone. During the lean months, 68% of the fishers fell below the MLI. Those who were able to earn enough during lean months, were all motorized fishers, all fishing primarily beyond the SFZ.

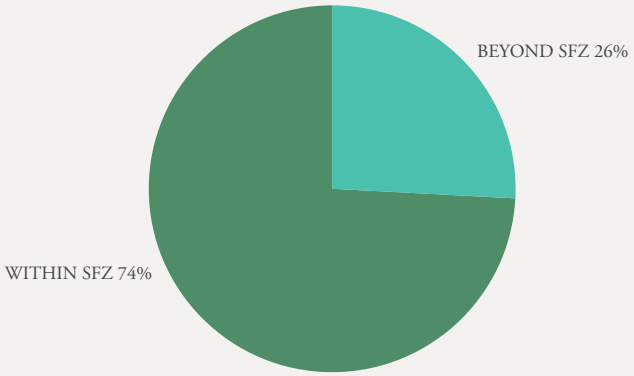


Figure 23 Most regularly accessed fishing grounds by small-scale fishers in East Godavari

The summary, conclusion and recommendations for this study can be found above the analysis of the data collected.

METHODOLOGY

In February 2021, the ICSF team facilitated a training session with the District Fishermen's Youth Welfare Association (DFYWA) field study team. The session oriented the study team on the non-towed fishing zones campaign and trained them to collect data from respondents through individual interviews using the questionnaire that had been developed in collaboration with the study team. The data was collected in February and March 2021 and translated from Telegu to English and shared with the ICSF team for further analysis.

During the data collection, the ICSF team was also able to engage with other fishworkers, vendors, processors and fishworker representatives and leaders in the field, while adhering to COVID 19 restrictions. These conversations ranged across a wide number of themes and issues, such as - the social structures, decision making processes, complexities of market operations, conflicts between fishers, challenges faced by women processors and vendors, effects of increasing industrialization along the coast and shifts in employment opportunities. The ICSF team was also able to gain some perspective on social conditions such as community and household energy access, healthcare, education, housing, water and sanitation, nutrition and disaster responses and safety. These focus group discussions, conversations and interviews were crucial in developing a nuanced perspective. They helped shape our understanding and ideate on the next steps of the campaign.

Each respondent shared approximately 350-400 data points on their fishing practices and 5 qualitative responses on their practice – competition and challenges they face from fishing and non-fishing sectors, climate change and marine pollution and the effects on them and opportunities and perspectives on their future in fisheries. With 54 respondents, we had a little over 20,000 data points, as well as qualitative information and insight.

To codify the data set, we used Microsoft Excel and utilized the software's processing tools, pivot tables, charts, and slicers. This method allowed us to cross-reference the elements of tenure and sort and filter the data according to a variety of criteria to analyze the information.

Limitations of the study

The study's purpose is to build a base upon which the campaign will operate, to generate and engage in further discussions and solutions to strengthen the tenure rights of the small-scale fishing communities. It was designed in collaboration with the communities and stakeholders we are engaging with for our work on this campaign.

The methodology and study tools used were developed in collaboration with the DFYWA study team. It was designed to be easily accessible for the study team and geared to be relatable for the

respondents to engage with, while obtaining the information we needed to investigate our research questions.

Respondents were asked to self-report information related to their fishing practice across the year during a single interaction. Due to COVID 19 concerns the data collection needed to be postponed several times and was ultimately undertaken by the team in the field. This was the first time the study team was taking on the role of enumerators. To help equip them for this task, the ICSF team trained and supported them in this capacity building process.

The tools were intentionally designed in a flexible way that catered towards the respondents and the study team. The information and analysis can therefore be considered sound, providing a rich and insightful picture of tenure practices of the most small and marginalized fishers in the selected geography.

At this point our focus was on active fishing practices and related tenure rights. Accordingly, the respondents are men, as women work predominantly in processing, marketing and as labour. As a part of the next steps in this campaign we will further explore tenure rights and engage with women in the processing and marketing side of fishery operations.

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ABOUT THE AUTHOR

Vishakha Gupta *(she/her)* was previously a Programme Associate at ICSF. Her work focused on the complex and nuanced relationships between coastal communities and marine spaces and resources; including marine protected areas and reserved small-scale fishing zones in India. She explores these relationships through the lens of fishing and coastal communities' rights, responsibilities and decision-making powers to create and maintain equitable and sustainable fisheries.

She is now an independent social researcher and artist, who lives and works out of coastal Goa, with her cat, Nilla.

SECURE TENURE RIGHTS CAMPAIGN: ANDHRA PRADESH

Making Small-scale Artisanal Fishing Zones Work!

Research study on the tenure rights of the most vulnerable and marginalized fishers in Srikakulam, Visakhapatnam and East Godavari districts of Andhra Pradesh

Under Indian legislation, i.e. various state Marine Fishing (Regulation) Act (MFRAs), small-scale traditional fishers are granted exclusive rights to near-shore marine waters, ostensibly to protect their rights and livelihoods. However, failures in implementation, management and monitoring of these exclusive small-scale artisanal fishing zones (SFZs), has hampered the holistic actualization of these protections.

The most marginalized and vulnerable small-scale traditional fishers rely heavily upon SFZs for their livelihood security, food and nutrition security, poverty eradication, social development and the sustainable use of marine resources. This study documents the relationship between small-scale non-towed fishers and the SFZ and the integral role the SFZ plays in the lives of the small-scale fishing community.

Establishing secure tenure rights to marine and coastal spaces and resources can be considered sine qua non for equity and justice. It is essential to rejuvenate existing mechanisms and bolster them through the principles of human rights and the SSF Guidelines to protect and support small-scale fisheries in our future.

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