

Review on the Post-Disaster Rehabilitation of Fishing Communities and Fisheries-based Livelihoods in Kerala

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Abstract

The state of Kerala located in the south-western corner of India, is increasingly vulnerable to extreme weather conditions that disproportionately affect its coastal fishing community. Fishing community accounts to approximately 3.03 of the state's total population. The community remains socially and economically marginalized. Significant number of people from fishing community faced the threat of displacement due to coastal erosion and other natural disasters. One of the largest rehabilitation project ever taken up in the state of Kerala was the 2004 Tsunami rehabilitation project and another notable scheme is Project Punargeham. Project Punargeham was initiated to rehabilitate people who are residing within 50 meters of high tide line.

This paper evaluates the efficacy of state-led project Punargeham and Tsunami rehabilitation through a comprehensive review of academic literature, government reports, and news media. While these projects successfully provided physical infrastructure such as houses and flats, findings suggest they often fail to address essential livelihood concerns and the unique socio-vulnerability of the community. Consequently, relocated populations struggle to achieve upward mobility, highlighting a critical need for rehabilitation frameworks that integrate socio-economic resilience with disaster mitigation.

Keywords: *Rehabilitation, Fishing communities, Livelihood, Disaster, Resilience*

1. Introduction

Kerala is situated in the south-western corner of India, along the Arabian Sea. It roughly constitutes about 5.41 percent of India's total coast (Ministry of Ports, Government of India 2025). The state has a 590 km long shoreline and a fishing community population with the population of over 10.65 lakhs (State Planning Board, 2024). The fisheries sector provides food, nutritional security, and employment opportunities to a considerable number of people from the fishing community. The lives of fishing community are increasingly at risk due to climate change and other natural disasters. The vulnerability of the community is escalating daily, with coastal erosion emerging as a prominent threat. The increasing degree of coastal erosion affects the lives, occupation, financial stability, and wellbeing of the fishing community. In addition to the increasing coastal erosion, the 2004 Tsunami, different cyclones, and global sea level rise are among the disasters that have devastated the lives of fishing communities necessitating the government's intervention to rehabilitate the affected people. In fact, rehabilitation of people affected by disasters is a challenging task for Governmental agencies.

In this context, this paper reviews the post disaster rehabilitation initiatives undertaken by the Government of Kerala for its fishing community. Additionally it discusses the concept of rehabilitation and specific issues that should be addressed during the rehabilitation process. This review paper argues that rehabilitation process initiated by the government of Kerala for its fishing community was not adequately

addressing the distinct vulnerabilities of the community, their occupational specialities and their future upward mobility. The main objective of the paper is to evaluate the rehabilitation processes initiated by the government of Kerala for its fishing communities from the post-2004 tsunami disaster. One of the key themes focused in this paper is the current discussions on the rehabilitation process. Based on review of academic journals and reports, the guiding principles of rehabilitation processes are discussed in detail in the first section. In the second section, aspects of vulnerabilities of the fishing community are discussed. In the final section, the paper discusses the experience of rehabilitation with respect to fishing communities in Kerala. The current experiences of the rehabilitation process in the state of Kerala were analysed in light of the guiding principles in rehabilitation processes.

2. Background of the study.

Kerala coast is vulnerable to extreme climate change. Cyclones, sea level rise and coastal erosion are creating challenges in the lives and livelihood of coastal fishing communities. The 2004 Tsunami, Cyclone Ockhi in 2018 and cyclone Tauktae in 2021 were very destructive in terms of the impact they had on coastal villages. According to the Kerala State Disaster Management Plan, approximately 300 km of the state's 570 km coastline is highly vulnerable to various environmental threats. These risks include intense precipitation, storm surges, and the ongoing challenge of rising sea levels. The Kerala coastline is characterized by significant instability; approximately 480 km of the shore is currently threatened by erosion (Irshad, 2018). According to a 2021 assessment by the National Centre for Coastal Research (NCCR), nearly 45% of Kerala's coastline has undergone varying levels of erosion over the past quarter-century (Umesh O, 2023). The alarmingly increasing rate of sea-level rise and the coastal erosion is aggravating the risks in the coast. Around 11.67 % of the fishing community living within 50 meters of the high tide line are under threat of sea erosion" (Government of Kerala, 2019). As all these hazards and disasters were affecting the lives and livelihoods of the fishing community, it leads to their displacement and dislocation.

Kerala maintains a high average population density of 859 people per square kilometer, its coastal zones are significantly more crowded, with a density reaching 2,022 people per square kilometer (Umesh O, 2023). A large population resides in a narrow stretch of Kerala coast, and it makes the rehabilitation process more complicated. This poses a significant challenge for the governments and its agencies in matter of rehabilitation.

3. Rehabilitation as an avenue for addressing vulnerabilities.

Rehabilitation of the disaster-affected people, and their resilience, is a major concern in this era of ever-increasing disasters. Rehabilitation is part of the process of protecting and promoting livelihoods of people enduring or recovering from emergencies. Rehabilitation is a multi-faceted process encompassing immediate income support, the restoration of private and public assets, and the strengthening of social institutions. Its primary aim is to advance core developmental goals, specifically focusing on sustainable livelihoods, community participation, gender equality, and the enhancement of local institutional capacity (Harvey, 1997). Rehabilitation should be designed in a way that helps the community to develop. Participation of the affected community in the decision-making should be ensured. The structures and institutions we build during the process of rehabilitation should be sustainable. The ecology of the affected community should be taken care of by the agencies in charge of rehabilitation. The process should be undertaken by understanding the ecology and considering its fragility. The Post disaster recovery period is considered as making the affected community less vulnerable towards the future disasters (Joakim, 2015). Rehabilitation processes should be resilient towards the expected natural calamities. Scholars see rehabilitation as an opportunity to resolve the community's former vulnerabilities and, at the same time, to make them capable of managing the future disaster risks.

Rehabilitation cannot be seen as a simple replacement of people from one place to another. Empowerment of people, building of organizations and capability building are part of rehabilitation processes through which social development of the community is achieved. Job creation, investment, market access, microfinance initiatives, and livelihood diversification are factors that help to achieve economic development (Robert S Pomeroy, 2006). Sustainable use of ecology is another dimension of rehabilitation. The planning and implementation of these projects should ensure the participation of the affected communities. It should address the specific needs and aspirations of the community. Redevelopment policies should be carefully developed upon comprehensive site based assessments, along with continuous consultation with stakeholders (Jane C. Ingram, 2006). Relocating people from one place to another without addressing their socio-cultural characteristics will affect the community socially, economically and culturally.

4. Rehabilitation and livelihood

The life of fishing community is rooted in interactions with the sea and seashore. Community consciousness and rich societal bonding can be seen in the fishing community. Every aspect of their personal and social life is connected to the coast. The web of life of the coastal community is woven around sea and seashore. In every aspect of the life, be it festivals, weddings or even death, the community is intricately related to the natural marine resource (Sreedhar.P.Nair, 2023). It is important to study the characteristics, livelihood and social-cultural practices of the community that is relocated or rehabilitated. The British development agency, Department for International Development (DFID) provides a comprehensive definition of the concept of "livelihood": A livelihood comprises the capabilities, assets (including both material and social resources) and activities required for a means of living (DFID, 1999). In case of fishing community, their livelihood is connected to the geography in which they live. They rely on the sea for fishing and seashore for the remaining activities. Fishermen dock the boats and repair the nets on the seashore. Fish landing centres and markets are situated near the sea. Fish drying and fish food making process also takes place in nearby places of the seashore. The Fishing community use the seashore for their cultural activities, leisure, and as a playing ground. So the sea and seashore are intrinsically connected to their lives and livelihoods.

Studies suggest that before starting rehabilitation, agencies should have a thorough understanding of the diversity within coastal communities, particularly regarding their livelihoods (Robert S Pomeroy, 2006). Process of rehabilitating coastal livelihoods should be socially feasible. The livelihood option should be according to the needs and aspirations of the affected. Current work ethic and livelihood strategies should be considered (R. Pomeroy, 2011). Fishing is directly connected to the available resources Fishing acts as a cultural anchor, shaping the daily lives, social values, and personal identities of coastal inhabitants who view the sea as the centre of their world (Jentoft S, 2017). Fisheries cannot be reduced to only an economic activity. The relationship between fishing communities and the sea is intrinsic and multifaceted. Fisheries dictate the rhythm of life, dietary habits, and value systems of the population, embedding the community within the very marine environment they depend upon (Sharma, 2011). Mostly, fishing communities stick with their job even though it has risks. A study conducted in a fishing village of Ernakulam and Trivandrum in Kerala says, more than 60 percent of the people mainly rely on fishing as a livelihood in a fishing village (Shyam S. Salim, 2019). So the rehabilitation

cannot affect their livelihood. The relocation of affected community to unknown geography will affect their occupation, social, and cultural life. The arbitrary dislocation of people from the coast will definitely affect them psychologically and socially.

5. Vulnerabilities faced by the fishing communities.

It is necessary to understand the vulnerabilities of the fishing community before rehabilitation. It will make the rehabilitation more effective and able to solve the earlier issues that affected the community. Every coastal disaster will initially affect the livelihoods of the coastal community. Sea erosion destroys the houses in the seashore, resulting in losses of permanent properties. Frequent cyclones and storms have led to the destruction of fishing equipment such as boats, gears and nets. Mostly people have to rely on their relative's houses or shelter homes arranged by the governmental agencies for temporary stay.

Cyclones, storms, and rough sea severely affect their job. A study conducted in the northern part of Kerala finds that reduction in fishing days is the most critical issue, regarding climate change and erratic weather events (Bindu Vijayakumari Sudhakaran, 2025). Decreasing number of workdays will directly affect their financial stability. Fishing is directly tied to the health and availability of fish stocks. These resources are vulnerable to environmental changes, pollution, and climate variability. The availability of fish and the diversity of fish are decreasing on the Kerala coast. Kerala's fisheries sector is currently grappling with the dual challenge of declining fish stocks and climate-driven environmental changes, both of which are severely threatening the livelihoods of coastal communities. (Swathi, 2018). It will force the fishermen to travel great distances irrespective of their safety. At the same time, the cost of fishing will also increase. The diminishing availability of marine resources compels fishers to venture into deeper, more hazardous waters, significantly escalating their occupational risks.

Fishermen were highly Vulnerable to debt and exploitation in most of the regions. Extreme weather events make the fishermen's income unsteady. Due to unstable income and a lack of access to formal banking services, fishermen often rely on informal moneylenders and middlemen who charge exorbitant interest rates. This is creating debt traps among fishing community. Disaster condition aggravates these situations. In addition, fishermen do not have a fair ownership of land in Kerala. Only 45.6 per cent of the fishing community own land and that too less than 3 cents of land (Celestine, 2023). Study

shows that the fishing community's HDI scores were lower by approximately 16% compared to the general population of Kerala (Shyam S salim, 2024). Poverty in fishing communities is reinforced by a lack of basic amenities and the inherent uncertainty of their livelihood opportunities. Vulnerability and disaster risk are directly proportional; in such high-risk environments, persistent poverty becomes inevitable. Consequently, in order to mitigate disaster risk, the various dimensions of vulnerability should be addressed (Perera, 2011). Although the rehabilitation process is a viable mechanism for reducing vulnerability, its effectiveness depends on addressing underlying socio-economic gaps.

6. Kerala government's recent initiatives in the rehabilitation of fishing communities.

In Kerala, coastal rehabilitation projects are underway along the entire coast. The Kerala government launched a project to rehabilitate the people from the coast called "Punargeham". The Tsunami rehabilitation project was earlier done in Kerala. However, the policies followed by the government, in these initiatives were criticized by the scholars. It was found that the policies were not implemented properly to solve the vulnerabilities of fishing community. The Kerala government's approach to coastal rehabilitation issue was top-down and ill-conceived in which the fishing community's need was viewed only from the perspective of resettlement and relocation, changing their living space into a mere shelter (Umesh O, 2023).

6.1 Punargeham project

Punargeham is a project devised by the department of Fisheries, Government of Kerala for relocating families of fishing community living within 50 meters of high tide line. According to the Fisheries Department of Kerala, construction of 1682 houses has been completed under Punargehm project so far. Under the project, a maximum of 10 lakh rupees will be provided for one family to find land and to construct house. Under this scheme, help will be provided to families of affected fishing community who buy 2- 3 cents of land on their own (Government of Kerala, Department of Fisheries, 2025). Flats were also being constructed by acquiring government land or private land, under the Punargeham project for rehabilitation purpose. Flats have been handed over to the fishing communities in districts, including Thiruvananthapuram, Kollam, and Malappuram.

Under Punargeham project a good number of people from the fishing community got a residence, but it creates a lot of problems in livelihood and

culture, and increases the investment for fishing. People who were dislocated resided near the coast earlier. But now though most of them got flat, the distance from the seashore to the flat was far. It causes additional transportation charges for the fishermen to reach the coast. Sometimes they have to transport the gears and other fishing equipment's before and after the fishing. Fishermen select the time for fishing according to their vessels and by analysing the wind and sea waves. In each fishing village it may be different. Sometimes they want to go in the early morning. So they cannot even get transportation facilities at the time, to reach the seashore and it makes their job more complicated (Anusree, 2025).

The norms and regulations under the Punargeham project were also causing severe problems for the fishing community. Under the project families who own less than five cents of land, and chose the option to relocate in flats constructed under the Punargeham project should relinquish the land they previously owned to the government. Families who own more than five cents can use that land for other purpose but not for construction. In most cases fishing community owns below five cents of land. Beneficiaries choosing 10 lakh rupees to buy the land and construct their house can only buy two to three cents of land with this amount. In case they choose flat, beneficiaries of under the project will lose land ownership. In reality they become the landless people through this rehabilitation scheme. Therefore, in the guise of rehabilitation, the government is grabbing lands from the poor fishing community.

A recently study (conducted in Alappuzha), which examine beneficiary's perception about Punargeham project finds that beneficiaries under the Punargeham project were not willing to part with their land in lieu financial aid of Rs.10 lakh offered by the government (Sreedhar.P.Nair, 2023). However, they were forced to part with their land and relocate when the government's order says that they will not get any financial aid from the government in future disasters if they refused to do so. No wonder why the project Punargeham is opposed by the fishing communities in different parts of Kerala, as reported in the news (Joseph N. , 2021).

6.2 Tsunami rehabilitation programme-2004

The 2004 Indian Ocean Tsunami, which occurred on December 26, 2004, remains one of the most devastating natural disasters in the history of Kerala. Kollam district was the most severely affected area. Alappuzha and Ernakulam also suffered significant damages. According to the Comptroller and Auditor general of India report of 2006, 238

persons died. The number of houses reported to be fully damaged was 4053 and the number of persons reported to be injured was 2525. The disaster caused significant damage to 8 fishing harbors and 15 landing centres across Kerala. In terms of equipment, the mechanized sector suffered the highest loss at ₹64 crore, followed by ₹20 crore in the non-mechanized sector and ₹16 crore in the motorized sector (R. Sathiadhas, 2005). Rehabilitation started only one year after the tsunami and the process got completed in the year of 2012.

Tsunami rehabilitation initiatives were jointly funded by the Central Government, the State Government of Kerala, and the Asian Development Bank (ADB). These efforts were structured into three main frameworks: the ADB-funded Tsunami Emergency Assistance Project (TEAP), the Central Government's Tsunami Rehabilitation Programme (TRP-General Package), and the State Government's Tsunami Rehabilitation Programme (TRP-Special Package). Tsunami rehabilitation included livelihood restoration and giving transportation facilities. Under Theeramaithry project of Fisheries Department, different projects were launched to diversify livelihood options for fishing community. The construction projects were done by different departments including public works department (PWD) roads and bridges, PWD buildings, harbour Engineering Department, KSEB, District Nirmithi Kendra, Gram panchayats. Etc. The Kerala government's primary objectives under the tsunami rehabilitation package included the construction of housing, the restoration of livelihoods, and the relocation of residents living within 50 meters of the High Tide Line (HTL). Additionally, the package focused on replacing social overhead capital and ensuring the timely completion of pending infrastructure development projects (Irshad, 2018).

A study on rehabilitation in Aalappad panchayat, Kollam District reveals the reality of rehabilitation projects. The houses constructed by the panchayats with the participation of the beneficiaries, were satisfactory. But families of fishing community relocated to housing colonies were thoroughly disappointed. The primary concerns were about the quality of materials used for house construction. Inadequate approach roads, drinking water problems, sewage and drainage issues were other problems faced by the community in rehabilitation colonies. Distance from fish landing centres was also pointed as a major concern by the study (Joseph N. , 2015). The study also found that the rehabilitation was not in favour of building a sustainable ecology which will ultimately facilitate sustainable livelihood. Another study which was done in the Kollam district reveals that lack of accessibility to livelihood activities was the major

issue in Tsunami rehabilitation. The study suggests that housing recovery has to be associated with livelihood recovery for sustainable recovery of disaster affected communities (M.V. Smitha, 2019)

Through rehabilitation, authorities simply replaced what was previously owned by the fishing community. Small houses of 340 sq. feet were constructed for the beneficiaries. Upward economic and social mobility were not the focus of rehabilitation (Irshad, 2018). Livelihood restorations part of tsunami rehabilitation mainly concentrated on compensation for the losses incurred in boats and other fishing equipment, which helped for an immediate recovery but not in the long run. The tsunami rehabilitation programme focused on restoring what had been lost rather than promoting better or emerging livelihood (Sarun S, 2019). Another study finds that overall aspiration of the victims has not been addressed optimally by the governmental agencies. The initiatives such as micro financing groups, self-help groups also failed after some time because of poor capability building. The skill training programs lacked the necessary duration and depth, resulting in participants receiving insufficient preparation to achieve meaningful employment outcomes (Joseph N. , 2015).

The positive side of the Tsunami rehabilitation was the development of infrastructure like roads and bridges in the affected areas. However, all in all, housing, livelihood, and sustainable ecology is not addressed adequately.

7. Conclusion

The sheer magnitude of the disaster ensures that the recovery of fishing-based livelihoods remains a complex and significant task. Achieving a proper balance between rapid implementation, high standards, and local participation has turned out to be the greatest challenge. Several problems have been highlighted in the review most prominent of which is that despite interventions from government and NGOs, fishing communities in coastal Kerala still face hardships and vulnerabilities in housing, land ownership, safety at sea, and economic security. Therefore, rehabilitation should first identify these hardships. Fishing community's socio-cultural characteristics is the second factor that should be addressed in rehabilitation. Fishing community's livelihood, culture and social life is tied to sea and seashore. Therefore, important aspects of livelihoods of fishing communities should be understood properly for any rehabilitation programs to be effectively successful. The Puanrgeham project and Tsunami rehabilitation programme have focused only on the quick revival of fisheries activities and consideration was not given to the livelihoods of fishing

communities. After rehabilitation, communities faced a varying degree of hardships related to fishing. These rehabilitation strategies often undermine two critical factors: the marginal fish-workers' access to essential livelihood resources and the recognition of their right to self-determine their own developmental trajectories (Santha, 2014). Rehabilitation in these two projects cannot assure the upward mobility of the community.

Therefore, rehabilitation project should focus more on the livelihoods and socio-cultural wellbeing of the fishing communities. Furthermore, organizations committed to long-term recovery must evaluate and rectify deficiencies in aid delivery. Success depends on stakeholders collaboratively developing a standardized assessment framework to identify specific gaps. The foundational work established by local groups serves as a vital starting point for future strategies, offering pathways to integrate with broader regional infrastructure projects. Finally, a collaborative planning session involving all stakeholders is essential to create a phased roadmap for fisheries infrastructure. This approach ensures that development aligns with current local capacities and utilizes available opportunities effectively. Major partners in fisheries should develop a common strategy together with both state and local body institutions to define their roles and responsibilities.

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