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Socio-economic conditions and livelihood dynamics of fishermen in Guhagar, Maharashtra: A study in vulnerability and resilience

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Abstract

India's marine fisheries sector is vital for national food security and economic growth, yet the small-scale fishing communities that form its backbone face escalating vulnerabilities. This research paper presents a comprehensive assessment of the socio-economic conditions and livelihood dynamics of the fishing community in Guhagar, a coastal village in Maharashtra's Ratnagiri district. Using a mixed-methods approach that includes a survey of 120 fisherfolk and focus group discussions, the study is framed by the Sustainable Livelihoods Framework. The findings reveal a profound internal economic stratification, creating effectively "two communities" within one locale: mechanized boat owners with a high livelihood score (78%) and a majority of hired labourers trapped in a low-score (55%) cycle of poverty. This is compounded by a pervasive debt trap, with 75% of credit sourced from non-institutional channels, and a heavy reliance on a volatile, single-resource economy. Despite a high census literacy rate (94.77%), the study uncovers a significant gap in functional awareness of government schemes and a critical skills deficit. Furthermore, the crucial economic contributions of fisherwomen remain largely unrecognized and unsupported by formal institutions. The research concludes that the current livelihood model is unsustainable and requires a paradigm shift from top-down aid to community-led empowerment. It advocates for a multi-pronged strategy focusing on resource co-management, targeted financial inclusion, the empowerment of fisherwomen, and the strategic use of technology to foster long-term ecological and economic resilience.

Keywords: Fishermen, fisheries, livelihood dynamics, socio-economic conditions, Sustainable Livelihoods Framework (SLF), vulnerability, resilience, co-management, Guhagar

1. Introduction

India's vast coastline, traditionally measured at 7,500 kilometres, serves as the lifeline for millions of people dependent on fisheries and marine resources (CMFRI, 2023) [10]. This geographical expanse was recently re-assessed to be 11,098.81 kilometres, further underscoring the nation's immense maritime potential (Government of India, Ministry of Earth Sciences, 2024) [21]. The marine fisheries sector is a crucial component of the national economy, contributing significantly to Gross Domestic Product (GDP), foreign exchange earnings through exports, and, most importantly, to food and livelihood security for a substantial coastal population (Ministry of Fisheries, Animal Husbandry and Dairying, 2022) [30]. The sector supports a diverse ecosystem of communities, with the small-scale, artisanal fishermen forming its backbone. These communities, often residing in coastal villages, possess a deep, intrinsic relationship with the sea, a bond that is cultural, economic, and spiritual in nature (Kurien, 1992) [29]. However, this traditional way of life is increasingly under threat from a confluence of environmental, economic, and socio-political pressures, necessitating in-depth, micro-level studies to understand their contemporary realities and inform sustainable policy interventions.

Within the Indian context, the state of Maharashtra, with its 720-kilometre-long coastline along the Arabian Sea, holds a prominent position in the marine fisheries landscape. The Konkan region, comprising districts like Ratnagiri and Sindhudurg, is particularly significant. Here, fishing is not just an occupation but a defining element of the regional cultural identity. Ratnagiri district, renowned for its natural bounty, also has a robust and historically rich fishing industry. This study focuses on Guhagar, a large coastal village and taluka in Ratnagiri, which epitomizes this dependency and serves as an ideal site for a focused case study.

Census of India (2011) [5] data provides a compelling snapshot of Guhagar's socio-demographic fabric. With a population of 2,929 residing in 785 families, it is a substantial human settlement. A striking feature is its exceptionally high literacy rate of 94.77%, significantly surpassing the Maharashtra state average of 82.34%. This high literacy rate presents a paradox: a community equipped with basic education yet grappling with the economic

uncertainties inherent in a traditional occupation. This suggests that the challenges faced are not merely due to a lack of awareness, but may stem from a gap in specialized skills, market access, and resource management (Bavinck & Veron, 2018) [4]. The work profile further solidifies the picture of an economy deeply tied to the coast. Of the 1,137 total workers, 832 are engaged in "Main Work." With only 62 individuals listed as cultivators and 38 as agricultural labourers, it is evident that the vast majority of the workforce is dependent on non-agricultural activities, primarily marine fisheries and the burgeoning tourism sector.

The livelihoods of fishermen in Guhagar, as in many other parts of the world, are characterized by a high degree of uncertainty and vulnerability. Their socio-economic conditions are shaped by a complex interplay of factors. On the economic front, fishermen grapple with fluctuating fish catches, driven by seasonal variations and broader ecological changes (Pauly *et al*., 2002) [34]. This instability is compounded by the rising costs of modern fishing equipment, diesel, and boat maintenance, which often trap them in a cycle of debt (Chakraborty & Sivaraman, 2021) [7]. Furthermore, their reliance on a multi-layered marketing system, dominated by middlemen, often results in a meager share of the final consumer price, limiting their economic upliftment.

Environmentally, the very resource base that sustains these communities is under severe stress. Issues such as overfishing, habitat degradation due to coastal development, pollution from industrial and domestic sources, and the looming impacts of climate change—including rising sea temperatures, ocean acidification, and altered monsoon patterns—are leading to declining fish stocks and unpredictable migration patterns (IPCC, 2022) [25]. These environmental stressors directly threaten the viability of traditional fishing livelihoods. Socially, fishermen communities often face marginalization, with limited access to quality education, healthcare, and alternative employment opportunities (Mohan & Sinha, 2019) [32]. The perilous nature of their work exposes them to high risks, and the lack of adequate social security nets leaves their families vulnerable.

Despite the macro-level data available on Maharashtra's fisheries sector, there is a distinct research gap in understanding the nuanced, ground-level realities within specific communities. A generalized overview often obscures the unique challenges and adaptive capacities of a particular locale. Therefore, this research paper aims to bridge this gap by undertaking a comprehensive investigation into the socio-economic conditions and livelihood dynamics of the fishermen in Guhagar village. The significance of this study lies in its potential to provide empirical, location-specific evidence that can inform targeted policy-making, guide the interventions of non-governmental organizations, and contribute to the broader academic discourse on sustainable coastal development and community resilience.

The primary objectives of this research are

1. To profile the socio-demographic characteristics of the fishing households in Guhagar.
2. To analyze the economic conditions, including income patterns, expenditure, debt, and asset ownership.
3. To examine the prevailing fishing practices, technologies, and the challenges associated with them.
4. To assess the perceived impact of environmental changes and government policies on their livelihood.
5. To explore the coping and adaptation strategies employed by the fishermen to navigate socio-economic and environmental uncertainties.

2. Materials and Methods

2.1 Study Area

The present study was conducted during the period of October 2022 to September 2023 in Guhagar, a coastal village and taluka headquarters in the Ratnagiri district of Maharashtra, India (Fig. 1). Geographically, Guhagar is situated at approximately 17°29'N latitude and 73°12'E longitude on the northern Konkan coast, bordering the Arabian Sea. The village is characterized by a 6 km long stretch of sandy beach and is in close proximity to the Vashishti river estuary, which provides a unique brackish water ecosystem conducive to both marine and estuarine fishing. The economy of Guhagar is predominantly driven by marine fisheries, with a significant portion of its population directly or indirectly engaged in fishing-related activities, including boat ownership, net making, fish vending, and processing. In recent years, Guhagar has also gained prominence as a tourist destination, leading to an emerging service sector, which adds a complex layer to the traditional livelihood dynamics of the fishing community. The selection of Guhagar as the study site was deliberate, aiming to understand the interplay between a traditional fishing economy and the pressures and opportunities of modern tourism.

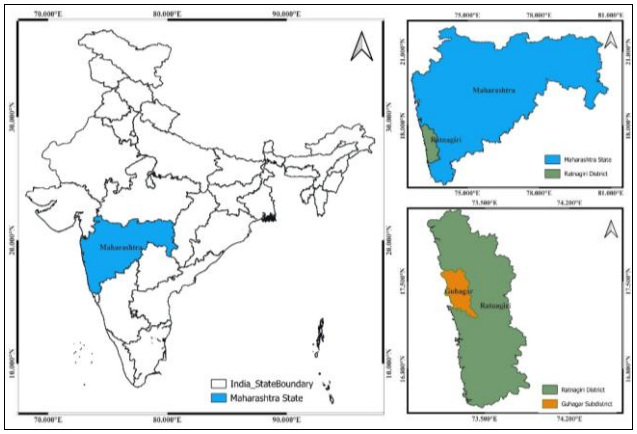


Fig 1: Mapping of the site (Guhagar)

2.2 Sampling Design and Data Collection

A multi-stage sampling design was employed to ensure a representative and robust sample of the fishing community. Firstly, a comprehensive list of active fisher families was compiled in consultation with the local Guhagar Matsya Sahakari Mandli (Fisheries Cooperative Society) and verified with records from the Maharashtra State Department of Fisheries, Ratnagiri division. This list served as the sampling frame.

In the second stage, a proportionate random sampling technique was used to select the respondents. A total sample size of 120 active fisher families was determined to be

statistically significant for the study. These families were randomly selected from the compiled list, ensuring representation from different hamlets (wadis) within Guhagar village and across different fishing categories, such as mechanized boat owners, non-mechanized (traditional) boat owners, and daily wage fisher labourers.

Primary data were collected through a mixed-methods approach. The primary quantitative tool was a structured and pre-tested interview schedule. Personal interviews were conducted with the head of the household (who was predominantly male) at their residence or at the fish landing centre. To capture the gendered dimensions of livelihood, information was also solicited from female spouses regarding their roles in post-harvest activities (like fish sorting, drying, and vending) and household financial management.

To complement the quantitative data and gather deeper qualitative insights into the community's perceptions, challenges, and adaptation strategies, four Focus Group Discussions (FGDs) were also conducted. These FGDs were organized separately with distinct groups: (i) elder fishermen (above 50 years), (ii) young and active fishermen (25-40 years), (iii) fisherwomen engaged in vending, and (iv) labourers. Each FGD consisted of 8-10 participants and was facilitated by the researcher using a semi-structured guide to explore topics like changes in fish catch, market dynamics, the impact of tourism, and the efficacy of government schemes.

2.3 Variables and Livelihood Analysis Framework

The study investigated a comprehensive set of socio-economic and livelihood attributes, adapting the framework established by Kumaran *et al*. (2021) [28] to the specific socio-cultural and ecological context of Guhagar. The variables were systematically categorized under the five core assets of the Sustainable Livelihood Approach (SLA), as advocated by the Department for International Development (DFID, 1999) and the Food and Agriculture Organization (FAO, 2005) [16].

- **Human Capital:** Age, education level, family size, fishing experience, health status, and possession of alternative skills.
- **Natural Capital:** Perceived status of fishery resources (availability, diversity), access to fishing grounds, and observed environmental changes (e.g., climate change, pollution).
- **Physical Capital:** Ownership and type of fishing craft (mechanized, non-mechanized), ownership of fishing gear (nets, engines), housing type, and ownership of household assets.
- **Financial Capital:** Monthly income (seasonal variations), expenditure patterns, savings behaviour, access to credit (institutional vs. non-institutional), and debt status.
- **Social Capital:** Membership in fisheries cooperatives or other community groups, social participation, access to government welfare schemes, insurance coverage, and access to healthcare facilities.

A novel aspect incorporated into this study was a dedicated module to assess the Impact of Tourism, which examined household income from tourism-related activities, perceived conflicts with fishing operations, and attitudes towards tourism development.

For the quantitative livelihood assessment, eighteen key attributes were carefully selected from the above categories based on their direct relevance to the livelihood security of the Guhagar fishing community. Following the methodology of Kumaran *et al*. (2021) [28], each attribute was assigned a score through a standardized operationalization procedure. For instance, higher education was scored higher than illiteracy, ownership of a mechanized boat was scored higher than being a labourer, and access to institutional credit was scored higher than reliance on moneylenders. The scores of all eighteen variables were summed to arrive at a total possible score. The ratio of an individual respondent's total score to the possible maximum score was then converted into a percentage to derive the individual's Livelihood Score. Based on this score, respondents were categorized into low (<65%), medium (66-75%), and high (>75%) livelihood levels for analytical purposes.

2.4 Statistical Analysis

The collected quantitative data were coded, cleaned, and analyzed using SPSS software (version 26.0). Descriptive statistics, including frequency distributions, percentages, means, and standard deviations, were used to consolidate and present the socio-economic profile of the respondents. To analyze the significant difference in livelihood levels between different economic groups within the community, the non-parametric Mann-Whitney U test was employed. This test was specifically used to compare the mean livelihood scores of mechanized boat owners (a relatively privileged group) and non-mechanized boat labourers (a more vulnerable group). The qualitative data from the Focus Group Discussions were transcribed, thematically analyzed, and used to triangulate and enrich the findings from the quantitative analysis.

3. Results and Discussion

The findings from the comprehensive study conducted in Guhagar village reveal a community at a critical juncture, where traditional livelihoods are increasingly pressured by ecological, economic, and social transformations. The results, structured around the Sustainable Livelihoods Framework, provide a detailed portrait of their current status, vulnerabilities, and adaptive capacities, which are further contextualized through a comparative analysis with other coastal regions.

3.1 Socio-economic and Demographic Profile: An Aging Workforce and a Skill Gap

The socio-demographic profile of the 120 respondent fisherfolk is presented in Table 1. The age distribution indicates an aging workforce, a significant concern for the future of the profession. While 32% of the respondents were in the prime active age group of 31-40 years, a substantial 40% were in the 41-60 year bracket, and 18% were above 60 years (Fig. 2). This trend suggests potential issues of physical sustainability and a worrying pattern of youth out-migration to urban centers like Mumbai and Pune, a point repeatedly raised during Focus Group Discussions (FGDs). During an FGD, a young participant elaborated: "Why

should I go to sea? My father did it, his father did it. The catch is less, the costs are high, and the risk is huge. I can earn a steady salary in Pune without fearing for my life every day." This sentiment highlights a growing inter-generational disconnect, where the youth perceive fishing as a high-risk, low-return occupation.

Educational attainment presents a paradox. While the community has moved beyond illiteracy, with only 12% having no formal education, higher education remains elusive. A majority (58%) had completed secondary education (up to 10th standard), but only 7% were graduates (Table 1). This creates a "skill gap." The fishermen are literate enough to be aware of new technologies or government schemes but often lack the technical or managerial skills required to implement them. For instance, they may understand the concept of cage aquaculture but lack the specific knowledge of water quality management or feed formulation to make it a successful business venture. The family structure is predominantly nuclear (72%), with an average size of 4.2 members, likely an adaptive response to economic uncertainty. Asset ownership reveals a clear economic divide; while house ownership is high (82% in concrete houses), a mere 38% owned their primary fishing asset—the craft. The majority (62%) were labourers or owners of smaller, less productive boats.

Table 1: Socio-economic and Demographic Profile of Fishermen in Guhagar (n = 120)

Sl. No.	Attribute	Category	Fishermen (%)
1	Age	Up to 30 years	10.00
		31-40 years	32.00
		41-50 years	25.00
		51-60 years	15.00
		Above 60 years	18.00
2	Education	No formal education	12.00
		Primary (up to 5th standard)	18.00
		Secondary (6th-10th standard)	58.00
		Higher Secondary (11th-12th standard)	5.00
		Graduation and above	7.00
3	Family Type	Nuclear family	72.00
		Joint family	28.00
4	Craft Ownership	Owns mechanized boat / trawler	15.00
		Owns non-mechanized boat	23.00
		Labourer / hired hand	62.00
5	House Type	Kaccha (thatched/mud)	3.00
		Semi-pucca (tiled/asbestos)	15.00
		Pacca (concrete)	82.00

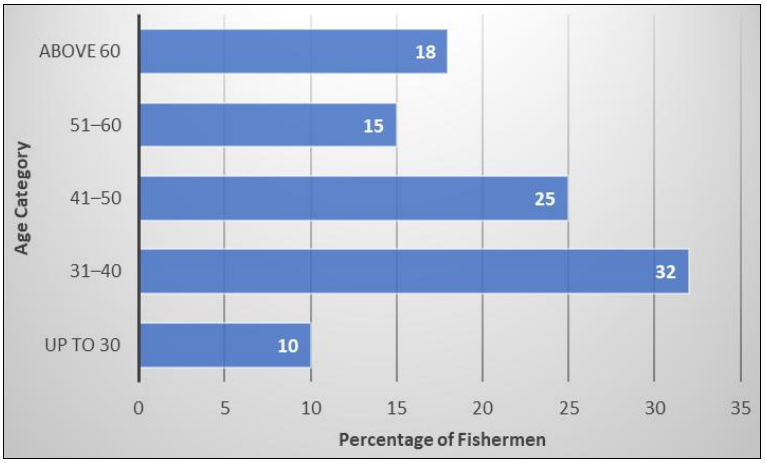


Fig 2: Age Profile of the Fishing Community in Guhagar

3.2 Occupational Structure, Income Dynamics, and the Role of Fisherwomen

The occupational structure underscores a heavy reliance on fishing. As shown in Table 2, 71% of households were solely dependent on fishing. The remaining 29% had diversified, but this diversification was often fragile and low-paying. A more detailed breakdown (Table 3) reveals that most diversification is into seasonal agriculture or small, informal tourism-related services, which are themselves dependent on the monsoon and tourist seasons, respectively.

Income is not only seasonal but also deeply stratified. The average monthly income during the peak season for a boat owner was INR 55,000, whereas a labourer earned only INR 18,000 (Table 2). This income collapses during the monsoon ban. The expenditure pattern (Fig. 3a) reveals the core vulnerability: a massive 40% of income is consumed by operational costs. Fisherwomen play a critical, yet often unaccounted, role. As one fisherwoman explained in an FGD: "When the men are at sea, we mend the nets. When

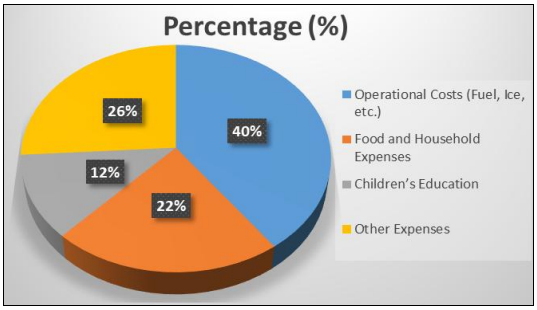
they return, we sort the catch, negotiate with the traders (or at least try to), manage the household, and dry the low-grade fish so nothing is wasted. The money I make from selling dried fish is what pays for the school fees and medicines when there is no catch." Their income was estimated to contribute 18% to the household economy, acting as a crucial buffer and providing financial autonomy.

Table 2: Average Monthly Income of Fishermen during Different Fishing Seasons

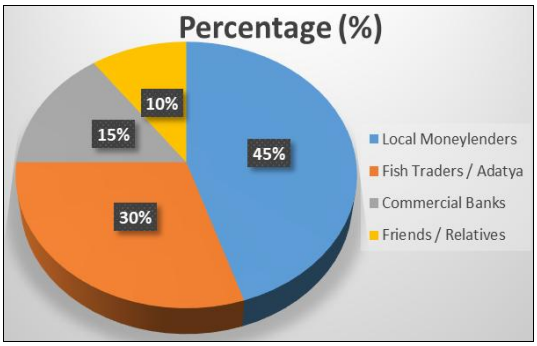
Category	Peak Season (INR/month)	Lean Season (INR/month)	Monsoon Ban Period (INR/month)
Mechanized Boat Owner	55,000	20,000	7,000 (Government aid)
Non-Mechanized Boat Owner	22,000	8,000	7,000 (Government aid)
Labourer / Hired Hand	18,000	6,000	7,000 (Government aid)

Table 3: Nature of Non-Fishing Income Sources (n = 35 households)

Type of Diversification	Diversified Households (%)	Average Monthly Contribution (INR)
Seasonal agriculture (mango/cashew)	45	6,000 (seasonal)
Small eatery / tea stall	25	8,000
Homestay / room rental	15	10,000 (seasonal)
Manual labour (construction)	10	7,000
Other (small shop)	5	5,000



(a) Expenditure Pattern (% of Total Income)



(b) Sources of Credit (% of Households Availing Loans)

Fig 3: (a) Expenditure Pattern and (b) Credit Sources of Fishermen in Guhagar

3.3 Access to Livelihood Assets and Social Capital: The Debt Trap and Ineffective Institutions

Access to institutional support was severely limited. A staggering 75% of credit was sourced from non-institutional channels (Fig. 3b). The reliance on moneylenders and traders is not merely a choice but a consequence of systemic exclusion. The formal banking sector is perceived as slow, bureaucratic, and demanding of collateral, which most fishermen lack. A moneylender, in contrast, provides instant, no-questions-asked cash. This convenience comes at the cost of exorbitant interest rates (24-36% p.a.), creating a vicious cycle of indebtedness passed down through generations.

Social capital, while present in the form of community cohesion, was not effectively translated into economic or political power. All respondents were members of the local fisheries cooperative society, but its role was perceived as limited to facilitating ban compensation. In the FGDs, it was criticized for being "politically controlled" and lacking the vision to initiate larger development projects. This institutional weakness leaves the community fragmented and unable to collectively bargain.

3.4 Livelihood Status Assessment: A Tale of Two Communities

The composite livelihood analysis painted a concerning picture. The overall mean livelihood score for the fishermen of Guhagar was 62%, placing them in the low-to-medium category. This score is driven by weak financial capital (high debt) and deteriorating natural capital (declining fish stocks), despite relatively strong physical capital (housing) and human capital (basic education).

The Mann-Whitney U test confirmed a vast disparity in well-being between boat owners and labourers ($U = 245.5$, $p \leq 0.001$). The mean livelihood score for boat owners was 78% (High), while for labourers, it was a mere 55% (Low). This quantitative gap is visually stark in Fig. 4. This indicates that within the single geographical location of Guhagar, there are effectively two separate communities with vastly different levels of security and vulnerability. The labourers, who form the majority, are trapped in a cycle of poverty with little hope of upward mobility.

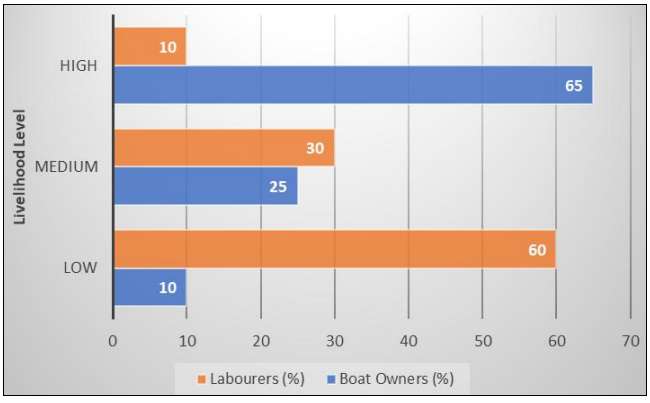


Fig 4: Comparison of Livelihood Levels between Boat Owners and Labourers

3.5 Perceptions of Climate Change and Local Adaptation Strategies

Fishermen have acute observations of climate change. Their perceptions, summarized in Table 4, align with scientific findings. They reported an increase in cyclone intensity, erratic monsoons affecting fish breeding, and a perceived rise in sea level. In response, they have adopted autonomous adaptations like venturing further out to sea and investing in stronger boats. However, these are reactive and have limits. As one fisherman noted, "We can build stronger boats, but we cannot build a stronger sea. The sea is changing faster than we can adapt."

Table 4: Fishermen's Perceptions of Climate Change and Adaptation Responses

Perceived Climate Change Phenomenon	Respondents Reporting (%)	Primary Adaptation Strategy
Increased intensity of cyclones	75	Reinforcing boats; avoiding fishing during weather warnings
Changes in monsoon timing and duration	68	Adjusting fishing calendars; increased reliance on government aid
Unpredictable fish migration patterns	85	Travelling further offshore; exploring new fishing grounds
Sea-level rise / coastal erosion	40	Planting casuarina trees; constructing temporary protective walls

3.6 Social Capital, Institutional Access, and Information Flow

Beyond the cooperative society, other forms of social and institutional access were examined. Contact with the Department of Fisheries was infrequent, with 60% of respondents reporting only "occasional" or "rare" interactions, primarily for ban compensation. This indicates a significant communication gap between the state's resource management body and the primary stakeholders. Mass media exposure was also limited; while most households had a television, viewership was irregular due to their work schedules. Mobile phone ownership was high (90%), but its use was largely restricted to personal communication. Only 12% of respondents reported using their phones for accessing market information or weather forecasts, and a mere 5% used social media for any professional purpose. This highlights a "digital divide" not in terms of access, but in the application of technology for economic empowerment, representing a massive untapped potential.

3.7 Health, Lifestyle, and Occupational Hazards

The health dimension of their vulnerability, often overlooked, was a critical finding. A self-assessment of health status revealed that 35% of fishermen rated their health as "poor" or "very poor." Common complaints included chronic back pain from hauling nets, respiratory issues, and skin problems from constant exposure to sun and saltwater. This physical toll is compounded by lifestyle factors. High rates of tobacco (gutka, cigarettes) and alcohol consumption were reported as coping mechanisms for stress, physical pain, and the idle time during the lean season. This creates a vicious cycle: poor health reduces their capacity to work, which in turn lowers their income and increases financial stress, further driving them towards these harmful habits. Access to specialized healthcare for occupational hazards was virtually non-existent.

3.8 Awareness of Welfare Schemes and Aspirations

Despite the high literacy rate, awareness of specific government welfare schemes was surprisingly low. While all were aware of the monsoon ban compensation, only 25% had heard of the central Pradhan Mantri Matsya Sampada Yojana (PMMSY), and even fewer knew how to access its benefits. This points to a failure in information dissemination. When asked about their primary expectations from the government, their responses were pragmatic and directly addressed their core vulnerabilities (Table 5). The top-ranked expectation was for cold storage and ice plant facilities, followed by better access to institutional credit, and educational support for their children, including scholarships for higher education.

Table 5: Fisherfolk's Expectations from Government (Garrett's Ranking Technique)

Rank	Expected Benefit	Garrett's Composite Score
1	Cold storage / ice plant facilities	78.5
2	Access to low-interest institutional credit	72.3
3	Educational support / scholarships for children	68.9
4	Subsidized diesel and fishing equipment	61.2
5	Better market infrastructure	55.6

3.9 Synthesis and Comparative Discussion: Pathways to Resilience

The livelihoods of Guhagar's fishermen are unsustainable in their current form. The moderate-to-low livelihood score of 62% is a clarion call for intervention. The quantitative analysis is substantiated by qualitative insights, which identified four interconnected challenges: an ecological crisis, economic entrapment, the double-edged sword of tourism, and policy/institutional gaps. To contextualize these findings, a comparative analysis reveals both shared struggles and unique local specificities.

The Paradox of High Literacy and Low Agency: The census data showing a 94.77% literacy rate presents a stark paradox when contrasted with the study's findings of low awareness of government schemes (25%) and the perceived ineffectiveness of the local cooperative. This suggests that formal education is not being translated into functional literacy or civic empowerment. Unlike in some regions where education fuels social mobilization, in Guhagar, it does not appear to have equipped the community to challenge exploitative market structures or engage effectively with state institutions. This points to a need for "bridging programs" that focus on financial literacy, legal rights, and scheme navigation.

The Pernicious Symbiosis of Debt and Health: The study uncovered a vicious cycle linking financial and physical

well-being. The 75% reliance on non-institutional credit creates a constant state of financial stress, which fishermen reported coping with through high rates of tobacco and alcohol use. This, combined with the physical toll of the profession, leads to the poor health status reported by over a third of respondents. This finding, which aligns with studies like that in Paithan (Shaikh Mahmad, 2023) [39], shows that health is not a separate issue but an integral component of livelihood vulnerability. Any intervention must therefore be holistic, addressing both financial inclusion and occupational health.

The "Invisible" Fisherwomen and Gendered Vulnerability: The economic contribution of fisherwomen (18% of household income) is substantial, yet their role remains largely invisible in policy frameworks. They face a "double burden" of productive work (net mending, fish processing, vending) and reproductive work (household management, childcare). Crucially, they lack direct access to institutional credit, which is almost always granted in the name of the male head of household. This gendered exclusion limits their ability to scale up their businesses or invest in better processing techniques, reinforcing their subordinate economic position.

Technology's Unmet Potential: The near-universal ownership of mobile phones (90%) represents a significant, yet largely untapped, asset. The current use is limited to personal communication. This highlights a digital divide not in access, but in application and knowledge. A simple, well-designed mobile application providing real-time market prices from different mandis, weather alerts, and a direct helpline for government schemes could revolutionize their bargaining power and access to information.

Comparison with Puducherry (Kumaran *et al*., 2021) [28]: The findings in Guhagar share striking similarities with the exploratory study in Puducherry. Both highlight severe resource depletion, the urgent need for supplementary livelihoods like cage/pen farming, and the potential of leveraging the Pradhan Mantri Matsya Sampada Yojana (PMMSY). However, key differences emerge. The Guhagar study reveals a far more pronounced *internal economic stratification* (the 78% vs. 55% livelihood score gap) than the regional differences (Puducherry vs. Karaikal) reported in the Puducherry study. Furthermore, Guhagar faces the unique and complex pressure of mass tourism, a conflict less central to the Puducherry paper. Finally, the debt trap appears more systemic and acute in Guhagar (75% non-institutional credit) compared to the more mixed credit landscape in Puducherry.

Comparison with Other Indian Coastal Studies: When compared to studies from Kerala (e.g., Shyam *et al*., 2017) [40], Guhagar's fisherfolk exhibit lower levels of social and political mobilization. Kerala's fishing communities are known for their strong unions and effective advocacy, which contrasts sharply with the perceived ineffectiveness of Guhagar's cooperative society. In contrast, when compared to studies from Odisha or West Bengal (e.g., Salagrama, 2006) [36], which often report higher levels of absolute poverty and dependence on traditional crafts, Guhagar's situation is different. Here, the challenge is not just poverty but managing inequality within a community that has, on the surface, achieved certain material assets like concrete housing.

Global Context: Globally, these challenges mirror the crisis facing small-scale fisheries worldwide, as documented by the FAO (2022) [19], where overfishing, climate change, and market marginalization threaten the fabric of coastal communities.

This comparative analysis underscores that while the underlying vulnerabilities are shared, the *solutions* must be context-specific. The situation in Guhagar demands a holistic, multi-pronged strategy that addresses its unique internal stratification and tourism-related conflicts. This requires a paradigm shift from passive aid receipt to active, community-led resource management and development. The pathways forward include:

1. **Resource Restoration through Genuine Co-management:** Empowering the community through legally-mandated co-management committees.
2. **Breaking the Debt Trap with Financial Inclusion:** Creating customized financial products and financial literacy programs.
3. **Strategic Diversification:** Focusing on value addition by fisherwomen and community-led, responsible tourism models.
4. **Climate-Resilient Planning:** Investing in early warning systems and promoting climate-resilient aquaculture.

4. Conclusion

This study provides a micro-level assessment of the socio-economic and livelihood conditions of the fishing community in Guhagar, Ratnagiri, revealing a community marked not by uniform deprivation but by pronounced internal inequality. Despite high literacy (94.77%) and relatively good housing, deep structural vulnerabilities persist. A sharp socio-economic divide between mechanized boat owners and hired labourers—reflected in their contrasting livelihood scores (78% vs. 55%)—emerges as the central determinant of livelihood insecurity. The findings underscore the interconnected nature of ecological, economic, and social challenges. Declining fish stocks are closely linked with widespread indebtedness, driven largely by dependence on non-institutional credit (75%), which in turn exacerbates poor health, economic stress, and maladaptive coping strategies. The disconnect between literacy and empowerment, limited political agency, underutilization of digital tools, and the largely invisible yet critical role of fisherwomen further compound community vulnerability. These insights highlight the inadequacy of fragmented, top-down interventions. Building sustainable livelihoods in Guhagar requires a paradigm shift toward integrated and participatory approaches. Strengthening ecological resilience through co-management of resources, promoting economic resilience via inclusive and fisheries-specific financial instruments, empowering fisherwomen through targeted skill development and microfinance, and revitalizing local institutions through transparency and digital connectivity are imperative. With an overall livelihood score of 62%, the sustainability of Guhagar’s

fishing livelihoods remains uncertain. However, the evidence presented offers a clear pathway forward. An integrated strategy that simultaneously addresses ecological sustainability, economic equity, and social empowerment can transform Guhagar from a state of vulnerability into one of long-term resilience, ensuring the continuity and viability of this coastal livelihood system.

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