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LIVELIHOOD TRANSITION OF WETLAND DEPENDENT COMMUNITIES IN ERNAKULAM DISTRICT OF KERALA

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ABSTRACT

Aim: *The aim of the present study is to examine the livelihood profile of wetland-dependent communities in Ernakulam district of Kerala and to analyse the transition occurring in traditional wetland-based occupations in the context of wetland degradation and socio-economic changes.*

Background: *Wetlands play a crucial role in supporting livelihoods and maintaining ecological balance, particularly in regions where communities are highly dependent on natural resources. Kerala, with a significant proportion of wetland ecosystems, faces increasing threats from urbanization, industrialization, and land-use change. Ernakulam district, which possesses one of the largest wetland extents in the state, has witnessed rapid degradation and conversion of wetlands. These changes have considerable implications for traditional resource-dependent communities. This study examines the livelihood profile of wetland-dependent households and analyses the transition in wetland-based occupations..*

Methodology: *The study is based on primary data collected from 340 respondents across Kadamakudy, Kumbalam, Varappuzha panchayats, Maradu municipality, and Cochin Corporation in Ernakulam district. Both quantitative and qualitative approaches were adopted. Structured survey schedules were used to collect quantitative data, while focus group discussions provided qualitative insights into livelihood dynamics, occupational shifts, and sustainability concerns among wetland-dependent communities.*

Analytical Results: *The findings reveal significant disparity in land ownership, with only a small proportion of households owning cultivable wetlands. Fishing and clam collection emerged as the dominant livelihood activities, with 73.5% of household heads engaged in these occupations. Approximately 77% of households depend on wetland-based livelihoods. Agriculture, particularly pokkali cultivation, has declined due to labour shortages, high cultivation costs, and land conversion. A majority of employed individuals (61.39%) are engaged in fishing-related activities.*

Conclusion: *The study concludes that wetland-based livelihoods in Ernakulam district are increasingly vulnerable due to ecological degradation and socio-economic transformations. Fishing remains the primary livelihood, while agriculture continues to decline. The observed generational shift away from traditional occupations raises concerns about the long-term sustainability of wetland-dependent communities.*

KEYWORDS: *Wetland Degradation; Land Use Change; Sustainable Livelihoods; Ernakulam District; Kerala*

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1. INTRODUCTION

Wetlands are among the most productive ecosystems in the world, providing a wide range of ecological, economic, and social benefits. They play a crucial role in supporting biodiversity, regulating hydrological cycles, and sustaining livelihoods, particularly for communities dependent on natural resources. In developing regions, wetlands serve as a primary source of income, food security, and employment for a large segment of the population. However, increasing anthropogenic pressures such as urbanization, industrialization, pollution, and land-use changes have led to the rapid degradation and conversion of wetland ecosystems, thereby threatening their sustainability and the livelihoods they support. Kerala, located at the southernmost tip of India, is endowed with extensive wetland ecosystems due to its unique geographical setting and climatic conditions. The state experiences both southwest and northeast monsoons, resulting in significant waterlogged areas that contribute to the formation of wetlands. These ecosystems support a variety of livelihood activities, including fishing, agriculture, aquaculture, and allied occupations. Despite their importance, wetlands in Kerala are increasingly under stress from developmental activities and environmental degradation.

Ernakulam district, situated in the central part of Kerala, possesses one of the largest extents of wetlands in the state. These wetlands have historically supported traditional occupations such as fishing, clam collection, and pokkali cultivation. The wetland ecosystems of the district also provide multiple ecosystem services that sustain the socio-economic well-being of local communities. However, rapid urban expansion, industrial growth, and land reclamation have significantly altered the wetland landscape, leading to declining productivity and reduced livelihood opportunities for resource-dependent households.In recent years, changes in environmental conditions and socio-economic factors have influenced livelihood choices among wetland-dependent communities. Traditional occupations are gradually declining, and younger generations are increasingly shifting towards alternative employment opportunities. Understanding the livelihood profile of wetland-dependent communities and the transition in their occupational patterns is essential for developing policies aimed at sustainable wetland management and livelihood security.

Against this background, the present study examines the livelihood profile of wetland-dependent communities in selected areas of Ernakulam district and analyses the transition occurring in traditional wetland-based occupations in response to ecological degradation and socio-economic transformation.

2. REVIEW OF LITERATURE

- There is a rich body of literature which throws light on the degradation of wetland ecosystems and its ecological impact. However, there are only few studies, especially in the context of Kerala, that studies the interlinkages between wetland ecosystem services and sustainable livelihood. Florence M.A. (n.d.) examined the livelihood challenges faced by communities dependent on the Vembanad wetland ecosystem, focusing on 250 fishermen from Muhamma and Thanneermukkam. Using the Sustainable Livelihood Framework developed by DFID, the study identified key factors contributing to resource depletion and assessed the sustainability implications for traditional fishing communities. The findings underscore the significance of various asset types in shaping household survival strategies and highlight the influence of institutions, organizations, and policies on the livelihoods of traditional fishers. A central concern of the study is the construction of the Thanneermukkam barrage in 1976, which disrupted the ecological continuity of the lake, leading to a marked decline in fish yields and species diversity. This ecological disruption has increased the vulnerability of the local fishing communities and demonstrated the link between ecosystem degradation and poverty.
- Srinivasan (2011) investigated the interaction between wetland agriculture and livelihoods in the Kole lands of Thrissur, Kerala. Employing the Driver-Pressure-State-Impact-Response (DPSIR) framework, the study identified various pressures affecting the wetland ecosystem and explored the underlying drivers. The research found that multiple livelihood activities are conducted on Kole

lands, but often these activities conflict with the interests of households that rely primarily on these wetlands for their income and food security.

- Lamsal, Pant, Kumar, and Atreya (2010) explored the role of local ethnic communities in wetland conservation and assessed the economic benefits derived from wetland ecosystems. The study examined the socio-economic variables influencing dependency on wetlands and the extent of resource extraction. It emphasized the importance of community-based conservation strategies to enhance wetland productivity and sustainability. The authors recommended interventions such as the promotion of biogas plants, adoption of improved cooking fuels, and the implementation of conservation awareness programs to support both ecological conservation and livelihood security.
- There is a notable paucity of research in the context of Kerala, and particularly in Ernakulam district, that explores the interlinkages between wetlands and livelihoods. Understanding the complex dynamics between wetland ecosystem services and the livelihoods of resource-dependent communities is crucial for advancing knowledge on how ecosystem services directly influence socio-economic well-being and sustainable livelihood outcomes.

3. STATEMENT OF THE PROBLEM

Ernakulam district faces two major challenges with respect to wetland sustainability: the rapid conversion or reclamation of wetlands for alternative land uses, and the progressive degradation of existing wetlands resulting from unsustainable exploitation of the ecosystem. These environmental transformations have significant socio-economic implications, particularly for traditional communities whose livelihoods are intricately linked to wetland resources. The decline in wetland resources has significant socio-economic implications for traditional resource users whose livelihoods are directly dependent on these ecosystems. Reduced fish catch, shrinking cultivable wetland areas, and limited access to natural resources have adversely affected income stability and occupational security. At the same time, modern development activities such as infrastructure expansion, tourism, and industrial growth have intensified pressure on wetland ecosystems, further accelerating their degradation.

The extensive wetlands in Ernakulam have historically supported a wide range of livelihood activities and hold considerable ecological and economic value. The ecosystem sustains a large segment of the local population, serving as a primary source of income and subsistence. Wetland resource users can be broadly categorized into traditional and modern users. Traditional users include agricultural communities—especially pokkali rice cultivators—along with inland and marine fishers, clam collectors, aquaculturists, and individuals engaged in small-scale activities such as sand mining. In contrast, modern resource users encompass industrial sectors, port authorities, tourism enterprises, the navigation industry, and various government agencies.

Another important concern is the observable shift in livelihood preferences across generations. While older generations continue to depend on wetland-based occupations, younger members are increasingly reluctant to pursue such livelihoods due to declining returns, environmental uncertainties, and the availability of alternative employment opportunities. This transition raises concerns about the sustainability of traditional occupations and the future of wetland-dependent communities.

Therefore, there is a need to examine the livelihood profile of wetland-dependent households and understand the changing occupational patterns in the context of wetland degradation. The present study addresses this gap by analysing livelihood dependency, diversification, and transition among wetland resource users in selected areas of Ernakulam district.

4. Objectives

The main objectives of this research study are:

(i) To examine the livelihood profile of wetland-dependent communities in Ernakulam district of Kerala.

(ii) To analyse the transition in traditional wetland-based occupations.

(iii) To identify the major livelihood activities practiced by wetland resource users.
(iv) To examine the extent of dependency on wetland ecosystem services.
(v) To assess livelihood diversification among wetland-dependent households.
(vi) To understand generational changes in livelihood preferences.

5. RESEARCH METHODOLOGY

The present study is based on both quantitative and qualitative approaches to examine the livelihood profile of wetland-dependent communities and the transition in their occupations. Primary data were collected from 340 respondents belonging to Kadamakudy, Kumbalam, and Varappuzha panchayats, Maradu municipality, and Cochin Corporation in Ernakulam district of Kerala. These areas were selected due to their significant wetland coverage and the presence of communities dependent on wetland resources for their livelihoods.

A structured interview schedule was used to collect quantitative data on demographic characteristics, land ownership, livelihood activities, and occupational diversification. In addition to the survey, qualitative information was gathered through focus group discussions with wetland resource users to understand livelihood dynamics, generational changes, and sustainability concerns.

The study employed descriptive statistical tools such as mean, standard deviation, percentage, and frequency distribution to analyse the data. These tools were used to examine land ownership patterns, occupational distribution, and livelihood diversification among respondent households. The findings from focus group discussions were used to supplement and interpret the quantitative results.

Thus, the mixed-method approach adopted in the study enabled a comprehensive understanding of livelihood dependency, occupational transition, and sustainability issues among wetland-dependent communities in Ernakulam district.

6. DATA ANALYSIS & INTREPRETATION

Since the study area is dominated by wetlands and possesses rich natural resources, the livelihoods of residents are largely shaped by ecological factors. Historically, occupations such as agriculture and fishing have been the primary sources of livelihood for the people in the region. However, an examination of land ownership data reveals significant disparity, indicating unequal distribution of natural capital assets among households. The mean land ownership is only 29.17 cents, with a high standard deviation of 139.52, highlighting considerable inequality in land distribution.

Table 1: Land area Owned

(Area measured in cents)

Mean	29.1665
Std. Deviation	139.52395
Range	2099.00
Minimum	1.00
Maximum	2100.00
No. of households who own land	330
No. of households who do not own land	10
Total	340

Source: Authors own calculation from survey data

Only 38 families own cultivable wetlands, out of which only 19 are engaged in cultivation. Mean wetland area owned is found to be 196.11 with a high standard deviation of 352.41. There is high disparity in the ownership of wetlands.

Table 2: Wetland Area Owned

(Area measured in cents)

Mean	196.1053
Std. Deviation	352.41183
Range	1983.00

Minimum	17.00
Maximum	2000.00
Total number of Households who own wetland	38
Number of households who cultivate wetlands	19

Source: Authors own calculation from survey data

Thus, the data collected reveals that ownership of wetlands determines the livelihood of only a few. Majority of the sample households make a living by extracting resources from the river/estuary in their locality. The livelihood profile of the respondents shows that mainly three types of wetland services are found to be utilized by the sample households which are fishing (includes fishing using different types of nets, aquaculture practices like shrimp farms, cage culture etc), wetland agriculture (pokkali cultivation practiced by 19 out of 38 households who own wetland) and clam collection.

The occupational distribution of respondent households was analysed to understand their livelihood profile. A unique feature of the livelihood profile of the people in the study area was that many of them were engaged in multiple livelihood activities. It was found that fishing and related activities are the major source of livelihood of the regions under study. In 73.5% of the sample households the head of the family is engaged in fishing or clam collection in the estuary/river. 2.6% are engaged in integrated pokkali/ shrimp cultivation. A unique feature of the wetland based cultivation in Ernakulam district is the pokkali fields which support the system of cultivation where paddy (pokkali) and shrimp are cultivated alternatively. However, in the study area, at present, this unique rice/fish culture is found only in Varapuzha and Kadamakudy. One or two households in Kumbalam also practice pokkali/shrimp cultivation. In Maradu and Cochin Corporation, which form a part of the urban area of Ernakulam district, the practice has completely died off due to the unavailability of agricultural labour, high cost of labour and widespread conversion of pokkali fields to other land uses. 1.5% were found to be engaged in agriculture, either own cultivation or working as agricultural labour. Thus approximately 77% of the head of households in the respondent families were engaged in wetland based livelihood activities with fishing being the dominant occupation.

Table 3: Primary Occupation of Head of the Household

Livelihood Activity	Frequency	Percent
Agricultural Labour/ Cultivator	5	1.5
Fishing/clam	250	73.5
Non Agricultural labour	15	4.4
Poultry/Cattle rearing	7	2.1
Private Sector	4	1.2
Govt/Semi Govt employee	4	1.2
Own Business	6	1.8
Pokkali/Shrimp Cultivation	9	2.6
Total	300	88.2
Unemployed	40	11.8

Source: Authors own calculation from survey data

Table below presents the livelihood profile of family members from 340 surveyed households. Livelihood data were collected for up to four individuals per household, yielding a total of 562 employed individuals across the sample. Among these, a majority (61.39%) are engaged in fishing-related activities. Non-agricultural wage labour constitutes 15.48% of the employment, while 12.28% are employed in the private sector. A smaller proportion of individuals are involved in poultry farming (2.13%), government employment (2.67%), and self-owned business enterprises (3.38%). Engagement in agriculture is minimal, with only 0.89% working as agricultural labourers and 1.60% involved in pokkali or shrimp cultivation.

Table 4: Primary Occupation of Family Members of Respondent Households

Livelihood activity	Head of the Household	Family member 1	Family member 2	Family member 3	Family member 4	Total
Agricultural Labour	5 (1.67)	-	-	-	-	5 (0.89)
Fishing/clam	250 (83.33)	64 (51.61)	27 (22.31)	4 (25)	-	345 (61.39)
Non Agricultural labour	15 (5)	32 (25.81)	37 (30.58)	3 (18.75)	-	87 (15.48)
Poultry/Cattle rearing	7 (2.33)	5 (4.03)	-	-	-	12 (2.13)
Private Sector	4 (1.33)	14 (11.29)	43 (35.54)	7 (43.75)	1 (100)	69 (12.28)
Govt/Semi Govt employee	4 (1.33)	3 (2.42)	7 (5.79)	1 (6.25)	-	15 (2.67)
Own Business	6 (2)	6 (4.84)	7 (5.79)	1 (6.25)	-	19 (3.38)
Pokkali/Shrimp Cultivation	9 (3)	_	-	-	-	9 (1.60)
Total Employed	**300 (100)**	**124 (100)**	**121 (100)**	**16 (100)**	**1 (100)**	**562 (100)**
Unemployed/ NA	40	216	219	324	339	1138

(Values in parenthesis show percentage to total employed)

Source: Authors own calculation from survey data

In addition to their primary occupations, some individuals diversify their income sources by engaging in secondary livelihood activities. Such diversification is often a strategy to enhance household income security, particularly in regions vulnerable to economic or environmental fluctuations. In the present study, it was observed that 16.8% of the surveyed households reported that the head of the household engaged in a secondary livelihood activity. Among these, 5.9% were involved in fishing as an additional source of income. A smaller proportion, 1.5%, occasionally undertook agricultural labour, while 2.4% participated in pokkali or shrimp cultivation as a supplementary activity.

Table 5: Secondary Occupation of Head of the Household

Livelihood Activity	Frequency	Percent
Agricultural Labour	5	1.5
Fishing/clam	20	5.9
Non Agricultural labour	18	5.3
Poultry/Cattle rearing	2	0.6
Own Business	4	1.2
Pokkali/Shrimp Cultivation	8	2.4
Total	57	16.8
Not applicable	283	83.2
Total	340	100

Source: Authors own calculation from survey data

Among the other family members across the surveyed households, only 34 individuals were found to be engaged in secondary livelihood activities. The majority of these individuals were involved in wetland-based occupations, such as fishing and pokkali or shrimp cultivation, to supplement their primary sources of income. An analysis of livelihood choices across generations within respondent households reveals a notable shift. In most households, members of the older generation are primarily engaged in wetland-based livelihoods, particularly fishing. In contrast, the younger generation shows a marked disinterest in pursuing such occupations. This aversion is not only generational but also reinforced by

parental attitudes. Many parents currently engaged in wetland-dependent livelihoods expressed reluctance for their children to continue in these lines of work. Their concerns stem from the perceived unsustainability of such livelihoods due to the degradation of wetland ecosystems, driven by widespread pollution and ongoing land-use changes, including the conversion of wetlands for other purposes.

Consequently, there is a growing trend among these households to invest more heavily in the education of younger family members, with the aim of enabling them to pursue alternative, more stable forms of employment outside the traditional wetland-based economy.

7. CONCLUSION

The analysis highlights that wetland-dependent livelihoods in Ernakulam district are strongly influenced by unequal access to natural capital, particularly land and cultivable wetlands. The statistical indicators of land ownership reveal substantial disparity, suggesting that only a limited number of households benefit from direct ownership of wetland resources. Consequently, the majority of respondents rely on extractive activities such as fishing and clam collection, which are highly sensitive to ecological changes. The dominance of fishing as the primary occupation indicates heavy dependence on wetland ecosystem services and limited occupational diversification.

The declining participation in wetland agriculture, especially pokkali cultivation, reflects structural challenges such as labour scarcity, high production costs, and conversion of wetlands for non-agricultural purposes. Furthermore, the low incidence of secondary livelihood activities suggests limited adaptive capacity among households. The generational analysis reveals a gradual occupational shift, with younger members moving away from traditional wetland-based livelihoods due to perceived economic insecurity and environmental degradation.

Overall, the findings indicate that wetland-based livelihoods are undergoing a transition characterized by declining agricultural engagement, continued reliance on fishing, and emerging occupational shifts. These trends underscore the vulnerability of wetland-dependent communities and emphasize the need for integrated strategies that combine wetland conservation with sustainable livelihood diversification.The study found a large disparity among the sample respondents in the matter of land ownership and that ownership of wetlands determine the livelihood activity of only a few. Majority of resource users depend on fishing as their major livelihood activity and a drifting of people away from agriculture was evident. The focus group discussions conducted in the area revealed that unavailability of agricultural labour, high cost of agricultural labour, widespread conversion of pokkali fields to other land uses etc. are the major reasons for this shift. The study also looks into the sustainability of wetland related occupations. The reluctance of the younger generation to engage in wetland related occupations was also revealed.

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