CHANGE IN LAND USE IN MULAVUKAD GRAMA PANCHAYAT: A STUDY WITH SPECIAL REFERENCE TO POKKALI CULTIVATION

PROJECT SUBMITTED TO

ST TERESA'S COLLEGE (Autonomous), ERNAKULAM

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FOR THE AWARD OF THE DEGREE OF

BACHELOR OF ARTS IN ECONOMICS

BY

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MARCH 2024

CERTIFICATE

This is to certify that the project titled "**CHANGE IN LAND USE PATTERN IN MULAVUKADU GRAMA PANCHAYATH: A STUDY WITH SPECIAL REFERENCE TO POKKALI CULTIVATION**" submitted in partial fulfilment of the requirement for BA degree in Economics to St Teresa's College (Autonomous), Ernakulam (Affiliated to Mahatma Gandhi University, Kottayam), is a bona fide record of the work done by the project group under my supervision and guidance.

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DECLARATION

We hereby declare that the project titled **'CHANGE IN LAND USE PATTERN IN MULAVUKADU GRAMA PANCHAYATH: A STUDY WITH SPECIAL REFERENCE TO POKKALI CULTIVATION'** submitted by us for the B. A degree in Economics is our original work.

Signature of the Supervisor

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INTRODUCTION

INTRODUCTION

Mulavukad Panchayat, located in the picturesque state of Kerala, India, has undergone significant transformations in its land usage patterns over the years. Once known for its thriving agricultural practices, particularly in the cultivation of Pokkali rice, the area now grapples with a shifting landscape shaped by various factors such as urbanisation and demographic changes.

In the past, agriculture served as the lifeblood of Mulavukad Panchayath in both an economic as well as a cultural aspect. Farmers relied on the fertile land to sustain their livelihoods and preserve centuries-old traditions associated with farming practices. However, with time, the allure of urban life and economic opportunities in nearby cities led to an increasing number of individuals who sought opportunities in urban centres leading to a gradual exodus of the rural population, resulting in a decline in agricultural activity.

Through this project, we aim to seek a deeper understanding into the underlying reasons behind these changes in land use and their far-reaching implications on the lives of Mulavukad Panchayat's residents by scrutinizing the socio-economic and environmental facets of this transition. We aim to uncover the complexities of a rapidly evolving landscape and its impact on the lives of those who call Mulavukad Panchayat home.

The goal is to grasp the challenges and opportunities brought about by these changes and understand how factors like urban migration and reduced farming affect Mulavukad Panchayat and its residents. We seek to understand the intricate connections between employment opportunities, environmental factors, and the evolving land usage patterns.

Using a combination of research methodologies, including surveys, interviews, and data analysis, we hope to gain insights into the challenges and opportunities arising from these shifts in land use patterns.

Additionally, we intend to seek input from key stakeholders, including farmers and community leaders, in order to get a more clearcut perspective on the situation. Through collaboration and

knowledge-sharing, we aim to identify strategies to fortify Mulavukad Panchayat and ensure the well-being of its residents.

Ultimately, this project seeks to understand and address the ongoing transformations in Mulavukad Panchayat. Our goal is to facilitate the community's ability to adapt and thrive in the face of these changes, ensuring a sustainable and prosperous future for all.

1.1 REVIEW OF LITERATURE

1. **Monitoring and Reporting Land Use Change and Its Effects on the Queensland Environment**

By Paul Lawrence, Craig Shephard, Phillip Norman, Christina Jones and Christian Witte

The chapter highlights the importance of understanding changes in land use patterns and their effects on the environment. It emphasizes the need for frequent updates to land use data to accurately reflect current conditions. Additionally, challenges in acquiring suitable imagery for mapping purposes are discussed, particularly in remote areas. The article also mentions pilot projects exploring alternative data sources, which revealed limitations in accuracy. Furthermore, it underscores the importance of considering the actual impacts of land use changes on water quality and ecosystems, beyond just the spatial changes themselves. Overall, the article suggests recommendations for improving land use mapping methodologies and data utilization to better understand and manage changes in land use patterns.

2. **Land-use regime shifts: an analytical framework and agenda for future land- use research**

The article by NavinRamankutty and Oliver T. Coomes reflects on the significance of understanding land-use regime shifts in the context of predicting future land states. It emphasizes the critical importance of studying these abrupt shifts in land-use dynamics, which can lead to rapid and extensive changes in land cover, ultimately impacting global environmental change. By focusing on the drivers of land-use regime shifts, researchers can better anticipate future changes in land use patterns and identify vulnerabilities within the system. This understanding is essential for improving predictive models and scenario building efforts aimed at mitigating the effects of land use change on the environment and society.

3. **Shifting Land Use Patterns in India: A Comprehensive Analysis From 2004-05 To 2020-21**

The article by Faridus Mamun Khan sheds light on India's evolving land use patterns from 2005-06 to 2020-21, illustrating a notable transformation driven by economic growth. It discusses the positive trend of reclaiming waste land and activating fallow land for agricultural, non-agricultural, and fishing purposes. The study establishes a correlation between sectoral gross value added (GVA) and land use, indicating a consistent increase in agricultural and non-agricultural land utilization alongside respective GVA growth. Particularly striking is the fishing sector's remarkable productivity improvement, surpassing that of agriculture and non-agriculture. This comprehensive analysis underscores the significance of understanding changing land use patterns and their implications for sustainable development.

4. **The Impacts of Land Use Change on Biodiversity in Australia by John Neldner**

The chapter highlights the profound impact of land use changes on terrestrial biodiversity, emphasizing the adverse effects of habitat loss, fragmentation, and modification due to activities like land clearing. These changes, driven by economic motives and demographic shifts, have led to extensive wildlife loss and biodiversity decline. Despite legislative efforts and incentive-based approaches for sustainable land management, the biodiversity impacts of land clearing persist over long periods, often with unforeseen consequences like extended extinction debts. The study underscores the importance of understanding and monitoring biodiversity trends, as well as implementing conservation strategies to mitigate the detrimental effects of land use changes on ecosystems.

5. **Exploring links between the sustainability performance of urban public transport and land use in international cities**

By Graham Currie and Chris De Gruyter

The research findings shed light on the intricate relationship between land use patterns and the sustainability of urban public transport systems. Highlighting the significance of population and job density, the study suggests that these factors strongly influence the overall sustainability performance of public transport, with higher-density land use positively impacting sustainability outcomes. Moreover, the research underscores the importance of integrating land use and transport planning to address sustainability challenges effectively. Specifically, the study indicates that densification strategies, such as Transit Oriented

Development, could play a crucial role in enhancing sustainability in urban areas, particularly in regions with poor service effectiveness and economic performance. This insight is valuable for understanding how changes in land use patterns can contribute to the broader goal of achieving sustainable urban development.

6. Climate Change Impacts on Ecosystem Services in High Mountain Areas: A Literature Review

The literature review by Ignacio Palomo highlights the profound impacts of climate change on ecosystem services in high mountain areas, emphasizing its relevance to the study of changes in land use patterns. The article underscores how altered precipitation patterns, glacier retreat, and shifting weather conditions disrupt food systems, water availability, and natural hazard regulation in these regions. Such disruptions have significant implications for land use, affecting agricultural practices, infrastructure development, and tourism activities. Understanding these impacts is crucial for informing land use planning and adaptation strategies, emphasizing the need for further research to address the challenges posed by climate change in high mountain areas.

7. Land use and land-use change in the study regions

The report shows how land use changes in Peru's Amazon region are causing big problems. Things like farming, big farms, mining, and cutting down trees are changing the land a lot. This is hurting forests and making farming areas bigger. In some places, like San Martin, they're trying to stop cutting trees, but in other places, like Ucayali, they're planting a lot of oil palm trees, which is bad for forests. Illegal mining is also making things worse by polluting rivers and forests. To fix these problems, we need to find better ways to manage the land so that we don't hurt the environment or people's lives.

8. The Political Institutional Determinants Of Land-Use Change And Sprawl: A Conceptual Model

the article by Anthony S. Clark explains how government decisions affect how cities spread out. It talks about rules on what can be built where, taxes, and how infrastructure like roads and sewers are funded. It says that often, government decisions favor big businesses over regular people, leading to more sprawling development. These decisions make land more valuable, which encourages developers to build more, spreading cities out even more. The article suggests that studying how government works can help us understand why cities grow the way they do and how we can plan better for the future.

1.2 RESEARCH PROBLEM

The dwindling practice of farming, which historically played a central role alongside fishing in sustaining livelihoods within Mulavukad Panchayath, poses a multifaceted challenge with implications for the community's socio-economic fabric and environmental sustainability. Understanding the nuanced factors contributing to the decline in farming activity beyond mere acreage statistics is essential.

Once renowned for their Pokkali rice cultivation, Mulavukad Panchayat is now witnessing a departure from its agricultural roots due to rapid urbanization. This urban shift has led to a noticeable migration of the workforce towards cities in recent times.
Our project aims to explore the reasons behind the rapid decline in agriculture, with a specific focus on Pokkali cultivation. We seek to illuminate the evolving patterns of land usage over the past decade. Beyond presenting raw data, our objective is to raise awareness about the dwindling agricultural sector in Kerala.

We hope that by examining these factors, we can provide insights into the challenges faced by farmers and the broader community in Mulavukad Panchayat. Through our research, we aim to spark conversations and initiatives aimed at revitalizing the agricultural sector and promoting sustainable practices. By fostering a deeper understanding of the issues at hand, we aspire to contribute to the resilience and well-being of Mulavukad Panchayat and its inhabitants amidst these changing times.

1.3 OBJECTIVES

1. To conduct a more in-depth analysis into the cause for the dynamic characteristics of the land use pattern in Mulavukad Grama Panchayath.
2. To further examine the influence and effects of this change in the land use pattern of Mulavukad Grama Panchayath

1.4 THEORETICAL FRAMEWORK

The topic under study can be relate with The Land Degradation Theory. The Land Degradation Theory focuses on the deterioration of land quality and productivity over time, resulting from various natural and human-induced factors. It is a key concept within environmental economics and land use management, as it addresses the complex interactions between environmental processes, human activities, and land management practices.

The Land Degradation Theory is a foundational concept in environmental economics and land use management, shedding light on the gradual deterioration of land quality and productivity over time. This degradation stems from a complex interplay of natural processes and human activities. Factors such as soil erosion, desertification, deforestation, and pollution contribute to the decline in land quality, impairing its ability to sustain productive activities like farming and grazing.

The repercussions of land degradation are extensive, impacting various aspects of society and the environment. Reduced soil fertility, loss of biodiversity, and diminished water availability are among the many consequences. Both natural phenomena like climate change and anthropogenic actions such as overgrazing and urbanization exacerbate this phenomenon.

The consequences of land degradation ripple across multiple sectors, affecting agriculture, food security, water quality, poverty levels, and even contributing to conflicts and migration. Addressing this challenge requires holistic approaches that tackle its underlying causes and processes.

Sustainable land management practices play a pivotal role in mitigating land degradation. Strategies that promote soil conservation, afforestation, sustainable agriculture, and responsible land use can help restore and maintain land productivity. By adopting such practices, societies can minimize the adverse impacts of land degradation and foster environmental resilience.

Furthermore, international cooperation and policy frameworks are essential for addressing land degradation on a global scale. Collaborative efforts aimed at promoting sustainable land management and addressing the socio-economic drivers of land degradation are crucial for achieving long-term environmental sustainability and resilience.

1.5 METHODOLOGY

- Methodology for the first objective

We mainly rely on secondary data which we get from panchayat statistics.

- Methodology for the second objective

Collecting 32 samples of families who used practice Pokkali cultivation.

The study was carried out by collecting primary data and secondary data. The primary data was collected from households that used to do pokkali cultivation and for the secondary data we mainly relyed on Panchayat statistics which was primarily collected from Mulavukad Panchayat Anthima Padhathi Rekha and Integrated Development Plan for Bolgatty and Vallarpadam Islands

1.6 STATISTICAL TOOLS

- Bar Diagrams
- Clustered Columns
- Pie charts (donut charts)

1.7 SCHEME OF STUDY

- Chapter 1: Introduction; Change in Land Use Pattern in Mulavukadu Panchayath

The chapter includes the introduction, review of literature, objectives, theoretical framework, methodology, statistical tools used as well as limitations faced.

- Chapter 2: A Study on Change in Land Use Pattern in Mulavukadu Panchayath

The chapter is adetailed overview on the change in land pattern in Mulavukad Grama Panchayath

- Chapter 3: An Analysis of Data on Change in Land Use Pattern in Mulavukad Grama Panchayat.

The chapter includes the analysis of data obtained through survey in Mulavukadu Grama Panchayath

- Chapter 4: Findings, Recommendations and Conclusion

The chapter includes major findings, suggestions, recommendations, and conclusion of the research.

1.9 LIMITATIONS

- Limited availability of data
- Connectivity issues to the research site
- Non-responsiveness of respondents to the questionnaire
- Limited number of samples

CHAPTER 2

AN OVERVIEW OF CHANGE IN LAND USE PATTERN IN MULAVUKADU GRAMA PANCHAYATH

2.1 GENERAL SHIFT OF RICE CULTIVATION IN KERALA

Rice cultivation holds significant importance in Kerala's agricultural sector due to it's role in providing food security, and livelihoods for farmers. Firstly, it's a staple food for the state's population and contributes to the economy through domestic consumption and export potential. And secondly it provides employment opportunity for the natives especially in rural areas. Rice cultivation supports biodiversity, water management, and traditional farming practices in Kerala's unique agro-ecological landscape. Furthermore, rice cultivation is integral to Kerala's agricultural landscape, food security, and socio-economic well-being.

There has been a noticeable shift in rice cultivation in Kerala towards more sustainable and diverse practices during these recent years. Many farmers are adopting organic methods, which embraces the traditional varieties, and incorporating innovative techniques to increase productivity while preserving the environment. Also, there's a growing interest in rice varieties which is suitable to organic farming. The change in rice farming methods in Kerala can be credited to a variety of factors.

Traditional paddy cultivation faced challenges due to labour shortages, high costs, and declining profitability. Main factors like changes in land use patterns, urbanization, and environmental concerns have influenced farmers to diversify into more profitable crops or non-agricultural activities. This shift has led to a decrease in rice cultivation in favour of crops like rubber, spices, and vegetables. Besides that, the government policies and subsidies have also played a role in encouraging farmers to switch to alternative crops. Comprehensively, the shift reflects broader socio-economic and environmental changes impacting agricultural practices in Kerala.

Several factors that caused shifts in rice cultivation in Kerala are as follows:

- Land Availability: Changes in land use patterns due to urbanization, infrastructure development, or conversion of agricultural land for other purposes can affect rice cultivation.

- Climate Change: Alterations in rainfall patterns, temperature, and other climatic factors can influence the suitability of areas for rice cultivation.
- Technology and Farming Practices: Adoption of modern agricultural techniques such as use of high-yielding varieties (HYV seeds), and improved irrigation methods, can impact where rice is cultivated and its productivity.
- Market Demand: Shifts in the taste and preferences of consumer, demand in the international and domestic markets, and fluctuations in price can influence farmers' decisions regarding rice cultivation.
- Government Policies: Changes in agricultural policies, subsidies, incentives, and regulations can affect the profitability and viability of rice cultivation.
- Labour Availability and Costs: Changes in labour availability, wages, and costs can influence farmers' decisions on whether to cultivate rice and the extent of cultivation.
- Infrastructure Development: Irrigation facilities, storage facilities, and markets can impact the feasibility of rice cultivation in different regions.
- Environmental Concerns: Increasing awareness of environmental sustainability and concerns over water usage, soil degradation, and biodiversity conservation can influence agricultural practices, including rice cultivation.
- Disease and Pest Pressure: Outbreaks of diseases or pests that affect rice crops can lead to shifts in cultivation practices.

In conclusion, rice cultivation in Kerala faces challenges such as limitations of land resources and water scarcity. There are opportunities for farmers to thrive by adopting advanced technologies, sustainable practices, and exploring new markets. Collaboration between the government, researchers, and farmers will be crucial in realizing the full potential of rice cultivation in the state according to the current situation.

2.2 GEOGRAPHY OF THE LAND

Mulavukad Panchayath, situated in Ernakulam district, Kerala, is renowned for its lively society and tranquil scenery.

Situated in the Ernakulam district, Mulavukad village is rather small, consisting of three islands: Mulavukad, Panambukad, and Thanthonithuruth. Although a rural area, Mulavukad is surrounded by an urban population with Vypin island and Vallarpadam island ling on its west side and Vaduthala lying to its east. Mulavukad is connected to mainland Ernakulam & Vallarpadam by the Goshree bridges and to Container terminal road at north side to connect to Kalamassery and Aluva side.

Characterized with sandy beaches, scenic backwaters coastal plains adorned with coconut palms, mangrove forests, and paddy fields., the panchayath has a distinct topography as it shares a geographical vicinity with the Arabian Sea. Due to the area being affected by tidal waves, waterbodies intervening and surrounding the area are saline in nature. Backwaters surround the island, forming a network of interconnected canals, rivers, and lagoons crucial to the region's economy and ecosystem. The primary agricultural activities include paddy cultivation, Pokkali crop farming, fishing, and coconut cultivation.

The area experiences year-round warmth due to its tropical environment. Rainfall during the monsoon season brings abundant greenery and fills the area's rivers and streams. Characterised with abundance of mangrove trees, the area provides a habitable condition for fish reproduction.

The majority of Mulavakadu Panchayath is rural, with a few tiny settlements strewn around the landscape. The local economy is heavily reliant on agriculture, with rice paddies, coconut palm fields and pisciculture being given priority.

According to the 2011 India census, Mulavukad had a population of 21,833 of which 0,633 are males while 11,200 are females. The boundaries of Mulavukad Panchayath are delineated by Kadamakkudy and Njarakkal Panchayaths to the north, Kochi Corporation to the east and south, and Elangunnappuzha Panchayath to the west. Bolgatty Palace, a popular tourist attraction built by the Dutch in 1774, is situated in the southern part of the island and is currently under the control of the Department of Tourism, Government of Kerala.

Transportation on the island primarily relies on roads and waterways. Wide varieties of coconut cultivation can be observed, with coconut and Pokkali farming concentrated in specific wards. The area's environment has suffered due to inadequate waste management practices, leading to the depletion of Pokkali and other challenges. However, Mulavukad natural beauty, with its backwaters, lush vegetation, and diverse wildlife, continues to attract tourists seeking to experience Kerala's coastal landscapes.

2.3 RELEVANCE OF POKKALI IN MULAVUKAD

Pokkali rice cultivation holds great relevance in the Mulavukad region due to its adaptability to the brackish water conditions prevalent there. This traditional rice variety is well-suited to the saline-rich environment, making it a sustainable choice for farmers in coastal areas like Mulavukad.
Pokkali cultivation promotes biodiversity and helps in maintaining the ecological balance of the region.

In the Mulavukad region, where brackish water is a prevalent feature due to its proximity to coastal areas, Pokkali rice cultivation serves multiple purposes beyond just being a crop. It helps in natural saltwater purification, as Pokkali fields act as a natural barrier against the intrusion of seawater, protecting nearby freshwater sources. Pokkali cultivation promotes the conservation of traditional farming practices and heritage rice varieties, contributing to the cultural and agricultural richness of the region.

The relevance of Pokkali in Mulavukad extends beyond agriculture, encompassing environmental conservation and cultural preservation.

In the Mulavukad region, Pokkali rice cultivation plays a vital role in the socio-economic fabric of the community. It provides a source of livelihood for local farmers, offering them a sustainable means of income generation. The cultivation of Pokkali rice also fosters community cohesion and traditional knowledge sharing, as farmers often collaborate and exchange techniques passed down through generations.

Pokkali rice is known for its nutritional value and distinct flavor profile, making it a sought-after commodity in local markets and contributing to the culinary identity of the region.

The cultivation of Pokkali rice helps in mitigating the impacts of climate change by sequestering carbon and promoting soil health, thus contributing to the region's resilience against environmental challenges. Overall, Pokkali rice holds multifaceted significance in the Mulavukad region, encompassing economic, cultural, environmental, and nutritional aspects.

In the Mulavukad region, the significance of Pokkali rice extends to its role in promoting sustainable agriculture and food security. As a crop well-adapted to brackish water conditions, Pokkali rice offers a resilient option for farmers facing challenges such as salinity intrusion and water scarcity. Its cultivation requires minimal inputs and is relatively low-cost compared to other crops, making it accessible to smallholder farmers in the region. Pokkali rice cultivation contributes to the conservation of wetland ecosystems, as the fields provide habitat for various aquatic organisms and migratory birds. This ecological function is particularly important in coastal areas like Mulavukad, where wetlands are under threat from urbanization and pollution. By preserving Pokkali cultivation practices, the Mulavukad community can safeguard not only their agricultural heritage but also the health and sustainability of their local environment for future generations.

In conclusion Pokkali rice holds immense significance in the Mulavukad region, where its cultivation serves as a cornerstone of sustainable agriculture, cultural heritage, and environmental conservation. As a crop uniquely adapted to brackish water conditions, Pokkali rice provides livelihood opportunities for local farmers, promotes biodiversity, and contributes to the resilience of coastal ecosystems. Beyond its economic and ecological benefits, Pokkali rice embodies the rich agricultural traditions of the region and represents a valuable asset in the face of climate change and environmental degradation. Preserving and promoting Pokkali cultivation in Mulavukad is not only essential for ensuring food security and livelihoods but also for safeguarding the unique cultural and ecological heritage of the region for generations to come.

2.4 URBANISATION

Urbanization refers to the process by which an increasing proportion of a population resides in urban areas, leading to the growth and expansion of cities and towns. It involves the migration of people from rural areas to urban centers, as well as the development of infrastructure, industries, and services characteristic of urban areas.

Mulavukkad Panchayat is experiencing rapid urbanization due to various factors such as population growth, infrastructure development, and economic opportunities. This urbanization trend is likely leading to changes in the landscape, socio-economic dynamics, and environmental factors within panchayat

The urbanization trends are moving to Mulavukkad, increasing its urban population.

- Infrastructure development: Roads, water supply, and electricity systems are expanding to support urban living.
- Housing construction: More residential buildings are being built to accommodate the growing population.
- Rise in commercial activities: Shops, markets, and businesses are increasing to meet the needs of urban residents.
- Improved transportation: better roads and public transportation options are being developed for easier mobility.
- Changes in lifestyle and socio-economic patterns: Urbanization is altering how people live, work, and interact within the community.
- Environmental impact: Urbanization can lead to challenges such as pollution and loss of green spaces, requiring sustainable planning solutions. In Mulavukkad panchayath mainly it arises the major issue of water salinity.

Strong potential to develop Pokkali farming in vallarpadam island and north end of bolgatty islands.

- Potential to develop a strong tourism and other economic activities along the backwaters.
- Presence of NH-966A

CHAPTER 3

AN ANALYSIS OF DATA OF CHANGE IN LAND USE PATTERN IN MULAVUKAD GRAMA PANCHAYATH

3.1 INTRODUCTION

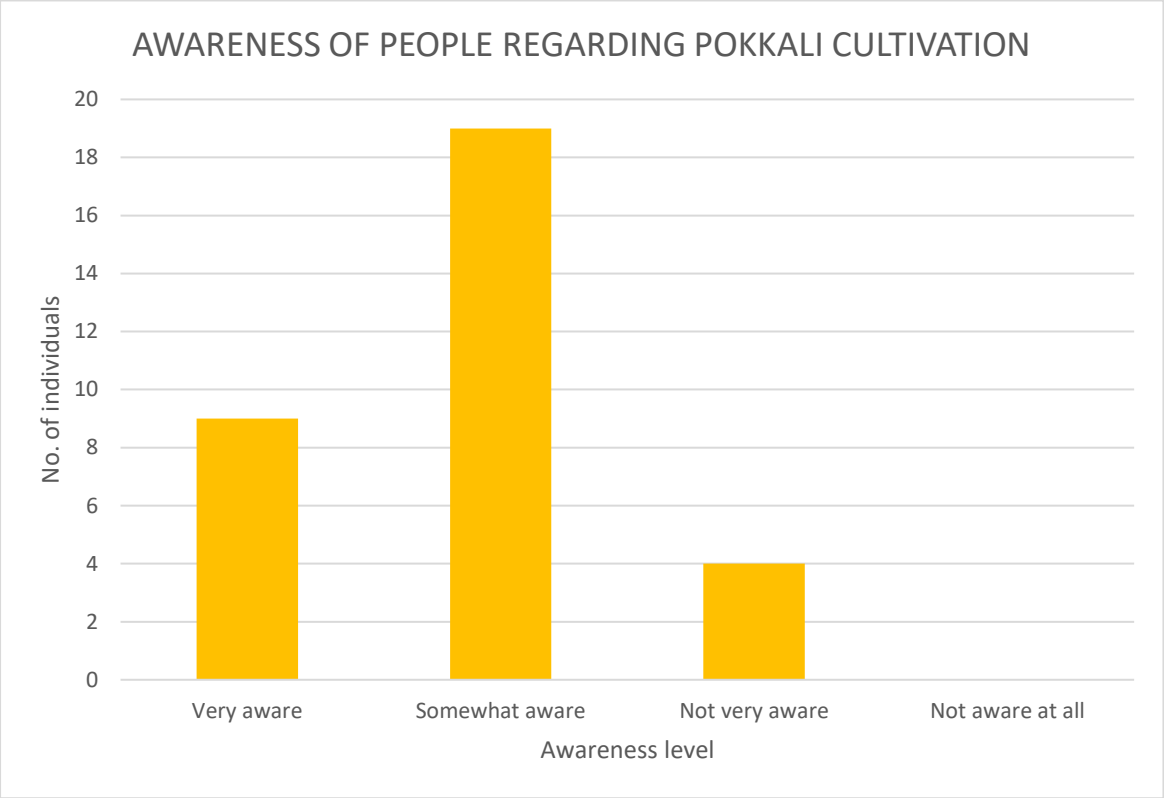
This chapter is the analysis of data collected through a combination of primary and secondary sources. Primary data was gathered through surveys and interviews conducted with households engaged in Pokkali cultivation in the Mulavukad Grama Panchayat area. This first-hand data provides insights into the experiences, practices, and perspectives of individuals directly involved in this traditional form of agriculture.

Additionally, secondary data sourced from Panchayat statistics, particularly from the Mulavukad Panchayat Anthima Padhathi Rekha and Integrated Development Plan for Bolgatty and Vallarpadam Islands, forms a crucial component of the analysis. These official records offer a broader context and understanding of land use patterns, agricultural trends, and demographic characteristics within the panchayat jurisdiction.

Through a systematic analysis of both primary and secondary data sets, this chapter aims to uncover trends, correlations, and key findings related to the change in land use patterns in Mulavukad Grama Panchayat. By triangulating data from multiple sources, the analysis seeks to provide a comprehensive understanding of the factors influencing shifts in land use practices, the impact of pokkali cultivation on local agricultural dynamics, and implications for sustainable land management and rural development in the region.

3.2 AWARENESS OF POKKALI CULTIVATION IN THE COMMUNITY

A.



Source: Primary data

Based on the data collected from 32 households regarding their awareness of recent changes in land use patterns in Mulavukad Panchayat, it's clear that a significant portion of the respondents are at least somewhat aware of these changes. Specifically, 19 out of 32 households indicated that they are somewhat aware, while 9 households reported being very aware. Interestingly, none of the households indicated being completely unaware of these changes.

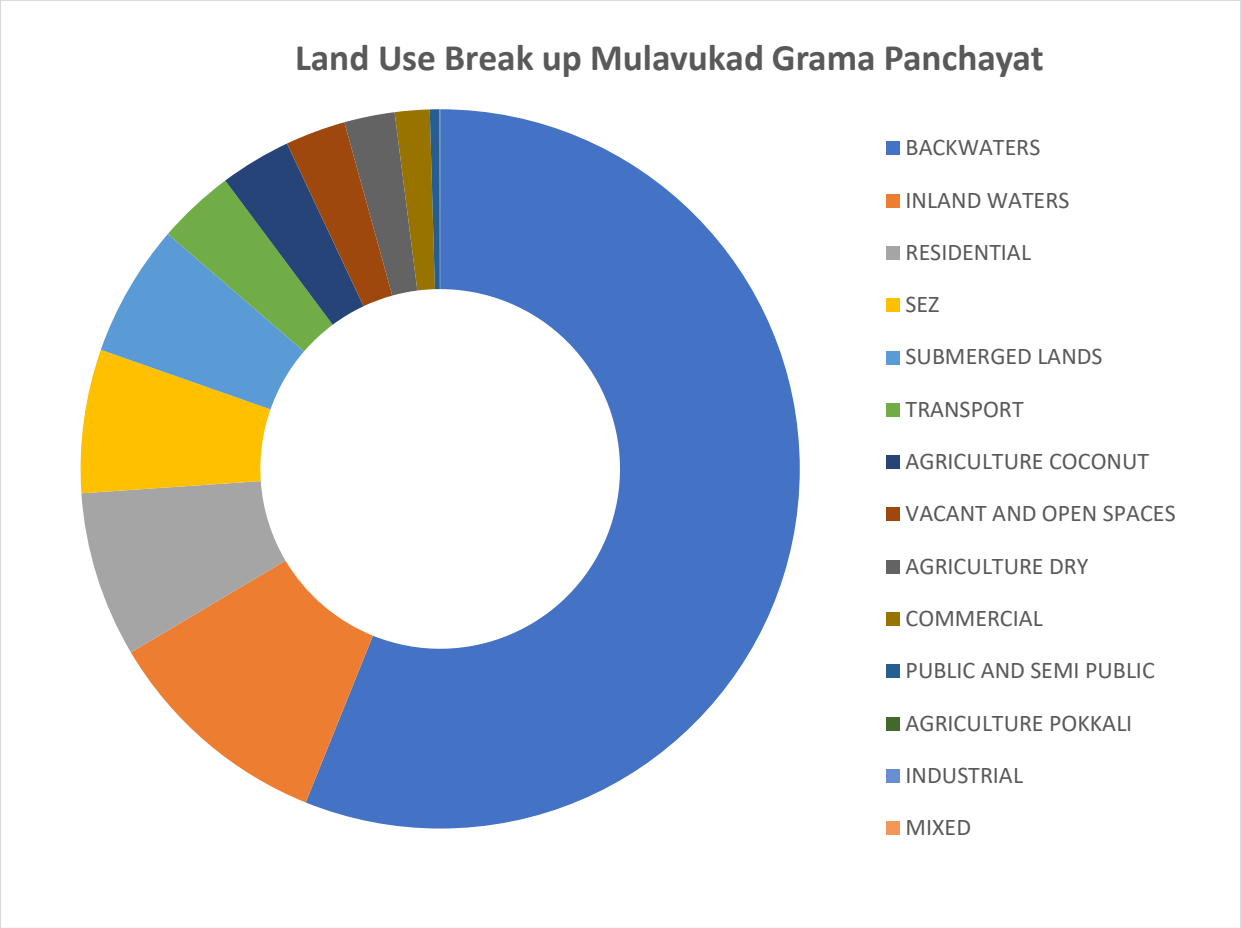
This suggests that there is a moderate to high level of awareness among the surveyed households regarding the recent changes in land use patterns in Mulavukad Panchayat. The fact that a majority of respondents indicated at least some level of awareness highlights the significance of these changes within the community.

Moving forward, efforts to further educate and inform residents about these changes could help enhance their understanding and engagement with issues related to land use and community development. Additionally, leveraging this existing awareness can be beneficial for fostering

community involvement in decision-making processes regarding future land use planning and development initiatives.

3.3 LAND DISTRIBUTION

A.

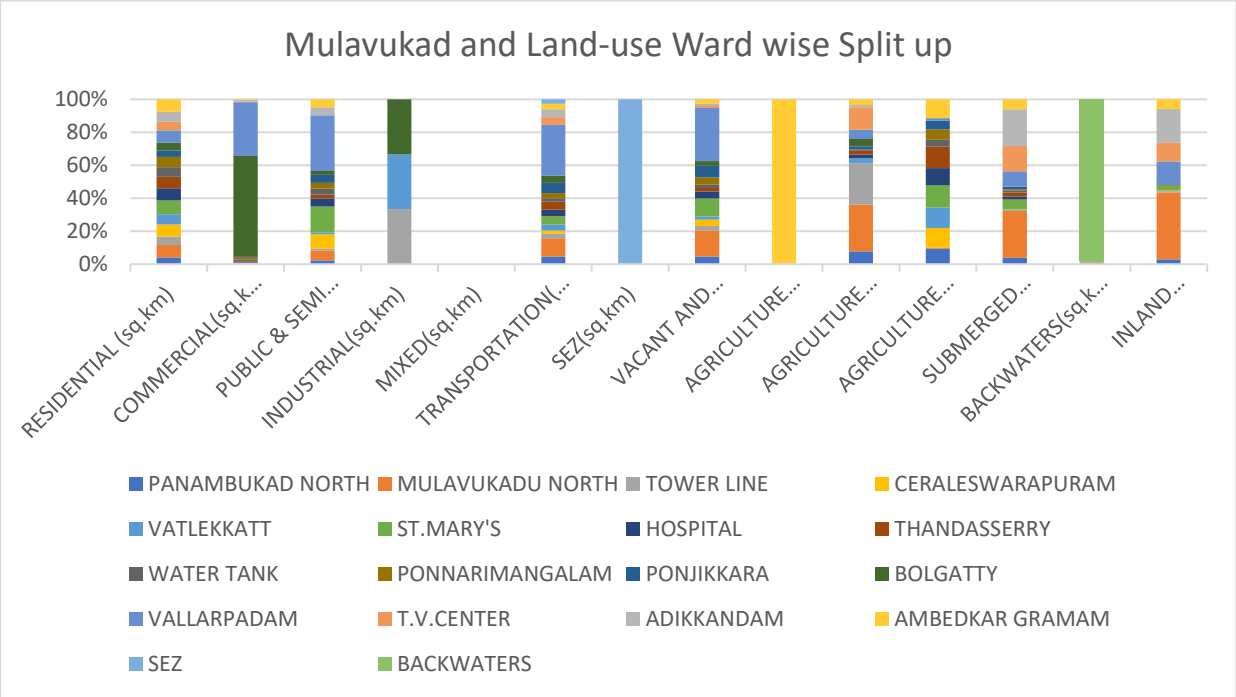


Source: Secondary data

Integrated Development Plan for Bolgatty and Vallarpadam Islands

This data provides insights into the land distribution within Mulavukad Panchayat. By examining it, we can observe that the largest portion of land is covered by backwater. Conversely, the smallest distribution is seen in Agricultural Dry and Agriculture Pokkali. This suggests a decline in both Pokkali cultivation and traditional agriculture practices. The present land use pattern not favouring agriculture, in particular Pokkali is event through the data.

B.



Source: Secondary data

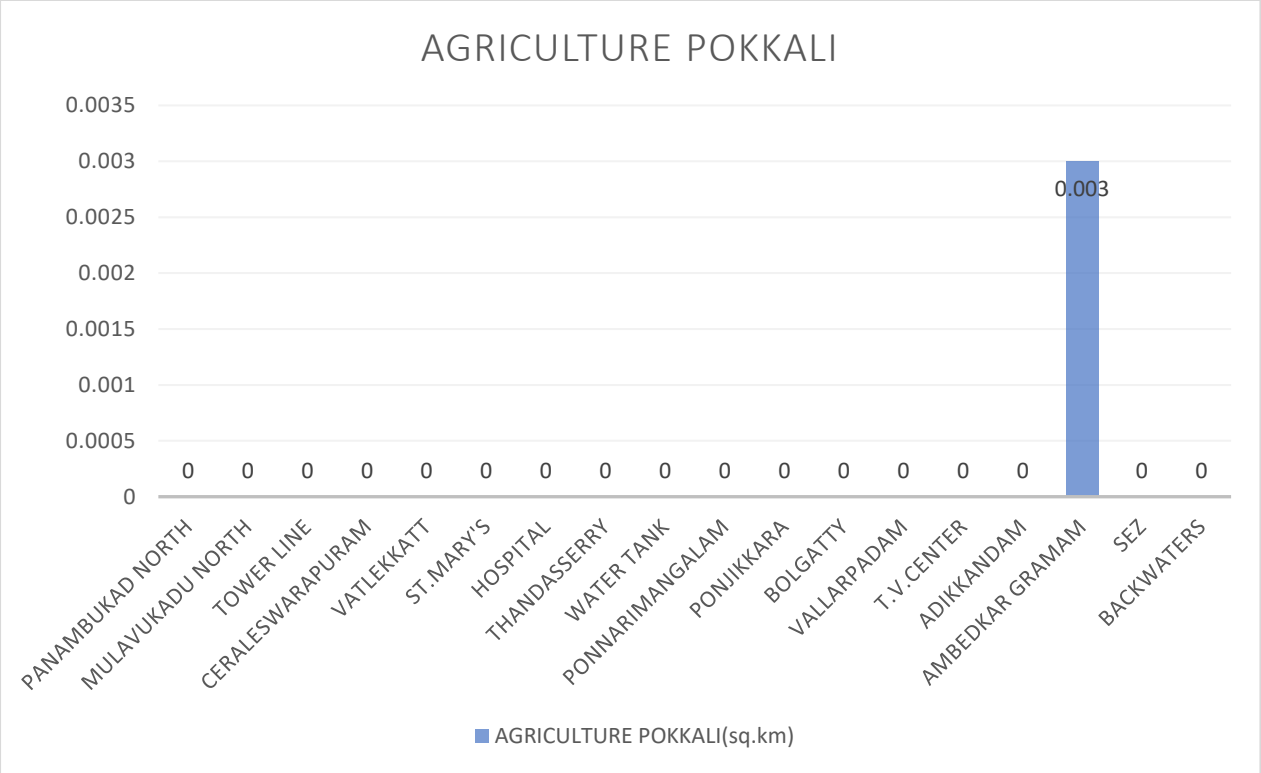
This comprehensive dataset is derived from secondary sources and sheds light on the land utilization patterns within each ward. It also offers valuable insights into the status of Pokkali cultivation

Mulavukad Pokkali Cultivation Ward Wise Split Up

WARD NAME	AGRICULTURE POKKALI(sq.km)
PANAMBUKAD NORTH	0
MULAVUKADU NORTH	0
TOWER LINE	0
CERALESWARAPURAM	0
VATLEKKATT	0
ST.MARY'S	0
HOSPITAL	0
THANDASSERRY	0

WATER TANK	0
PONNARIMANGALAM	0
PONJIKKARA	0
BOLGATTY	0
VALLARPADAM	0
T.V.CENTER	0
ADIKKANDAM	0
AMBEDKAR GRAMAM	**0.003**
SEZ	0
BACKWATERS	0
TOTAL	0.003

C.



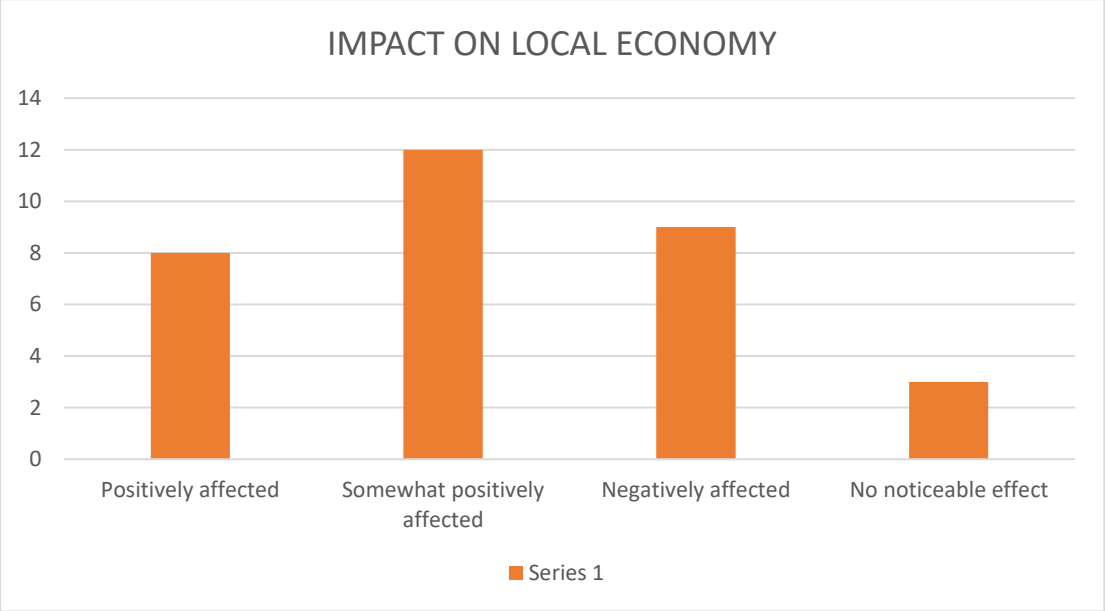
Source: Secondary data

This data specifically focuses on the extent of Pokkali cultivation within each ward of Mulavukad Panchayat, sourced from secondary data. Notably, Pokkali cultivation appears to be concentrated in only one ward, accounting for a mere 0.03% of the total land area. This stark contrast highlights the significant decline in Pokkali cultivation, which historically thrived across various locations within the Panchayat. This declining trend underscores the primary

focus of our research project, aimed at understanding the factors contributing to the dwindling rates of Pokkali cultivation in agricultural land use.

3.4 ECONOMICAL CHANGES

A.



Source: Primary data

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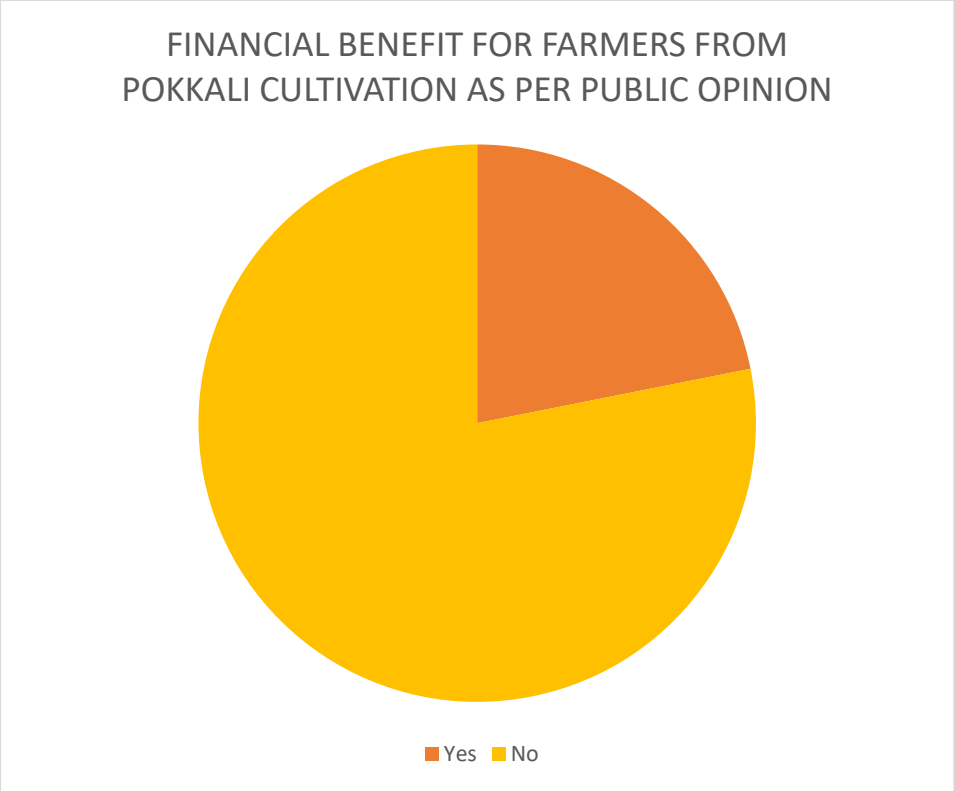
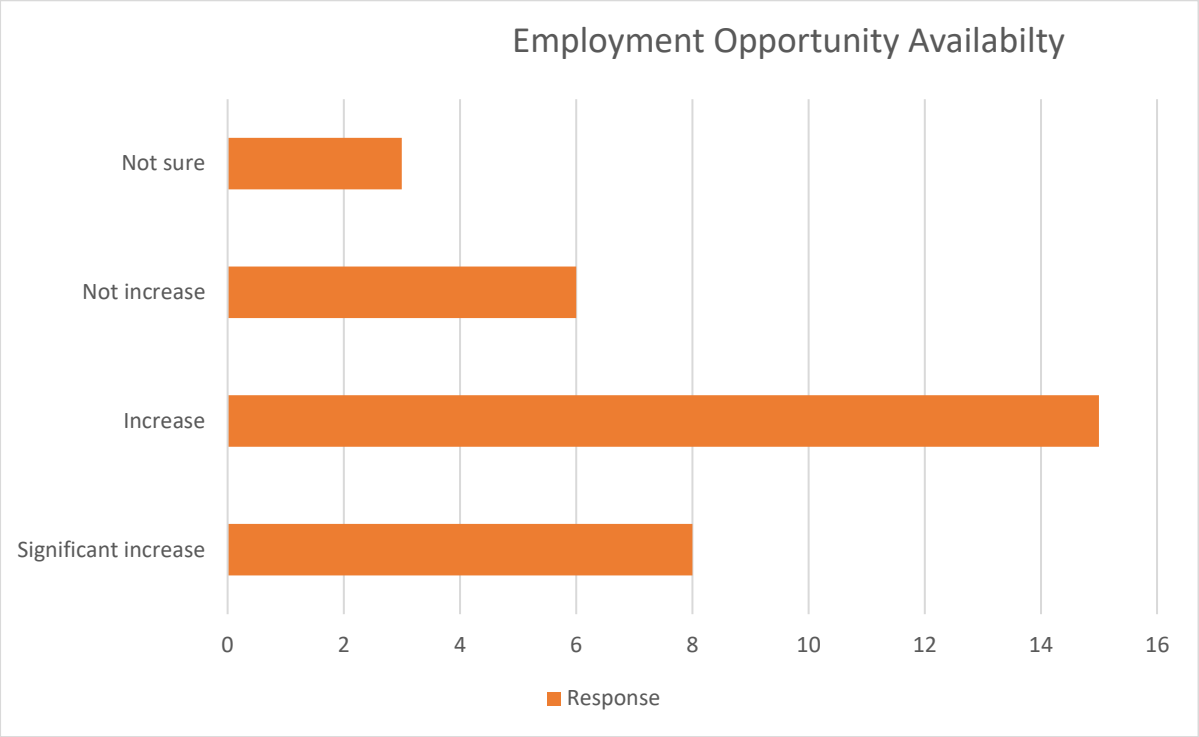


Source: Primary data

C.



Source: Primary data

Based on the primary data collected, it is evident that there is a mixed perception regarding the recent change in land use patterns and its impact on the local economy in Mulavukad Panchayat. While a majority of respondents believe that the change has somewhat positively affected the local economy, there is also a significant doubt regarding the financial benefits of Pokkali cultivation for farmers in the region.

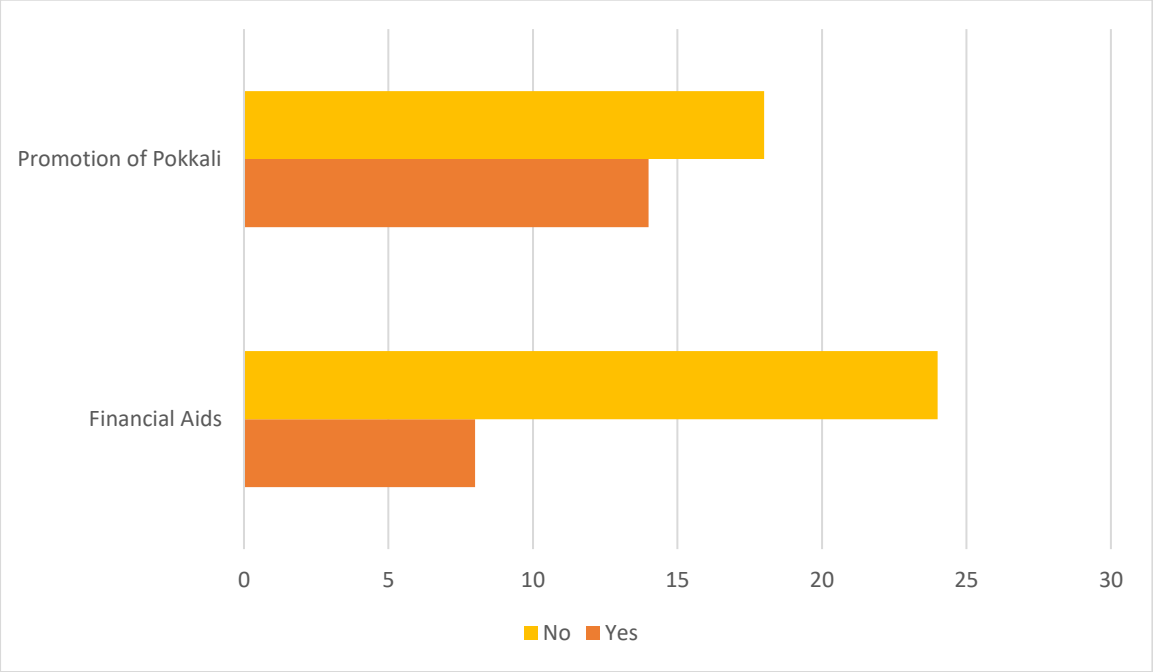
Furthermore, the majority opinion suggests that the changes in land use patterns have led to an increase in job opportunities to some extent. This indicates that while there may be employment opportunities arising from the shift in land use, there are still concerns about the overall financial viability of agricultural practices such as Pokkali cultivation.

In conclusion, the primary data reflects a nuanced understanding of the relationship between changes in land use patterns, local economy, and job opportunities in Mulavukad Panchayat. It highlights the need for further investigation into the factors influencing perceptions of

economic benefits and the sustainability of agricultural practices in the region. Additionally, it underscores the importance of exploring alternative strategies to support both economic development and agricultural livelihoods in the face of evolving land use pattern

3.5 GOVERNMENT INITIATIVES

A. Financial Aid and Promotion of Pokkali



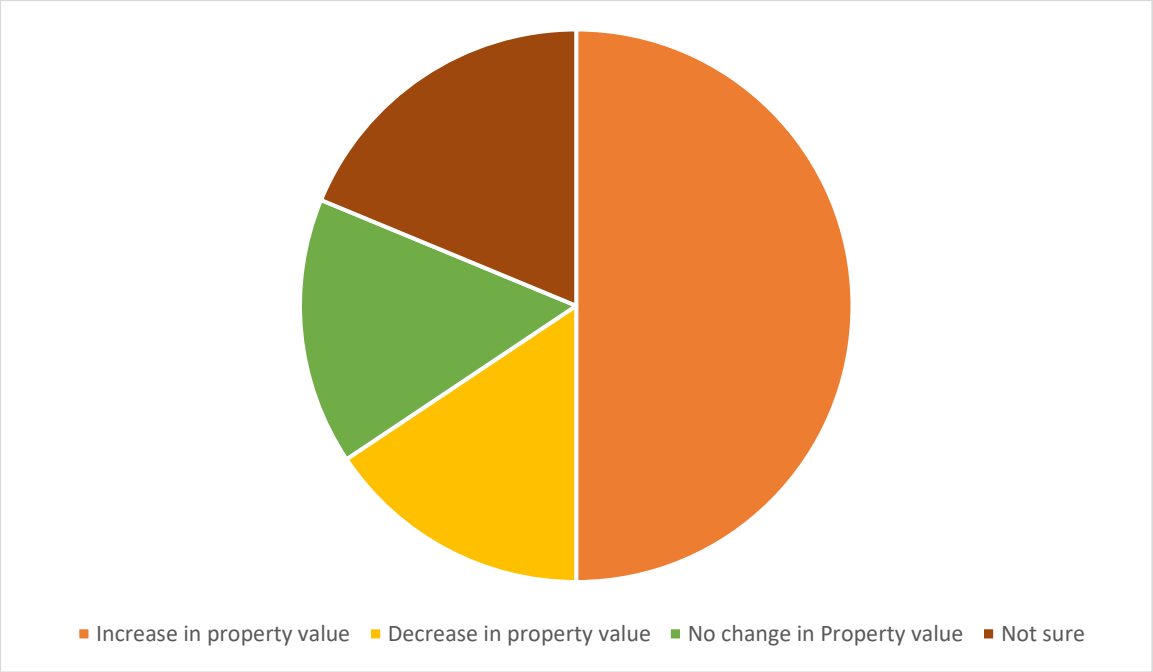
Source: Primary data

From the feedback gathered from 32 households about their knowledge of government efforts and other support for Pokkali cultivation, it's evident that many people aren't well-informed about these initiatives. Specifically, 19 out of 32 households mentioned they aren't aware of major government efforts. However, 13 households stated they understood government initiatives well, such as providing funds to enhance Pokkali cultivation and supporting agricultural promotion activities.

Mainly, respondents with limited access to information mentioned they were less aware of government initiatives. Based on these responses, it appears that a majority of households are unaware of government and other efforts to promote cultivation.

3.6 LAND VALUE

A. Land use change effect on Property value



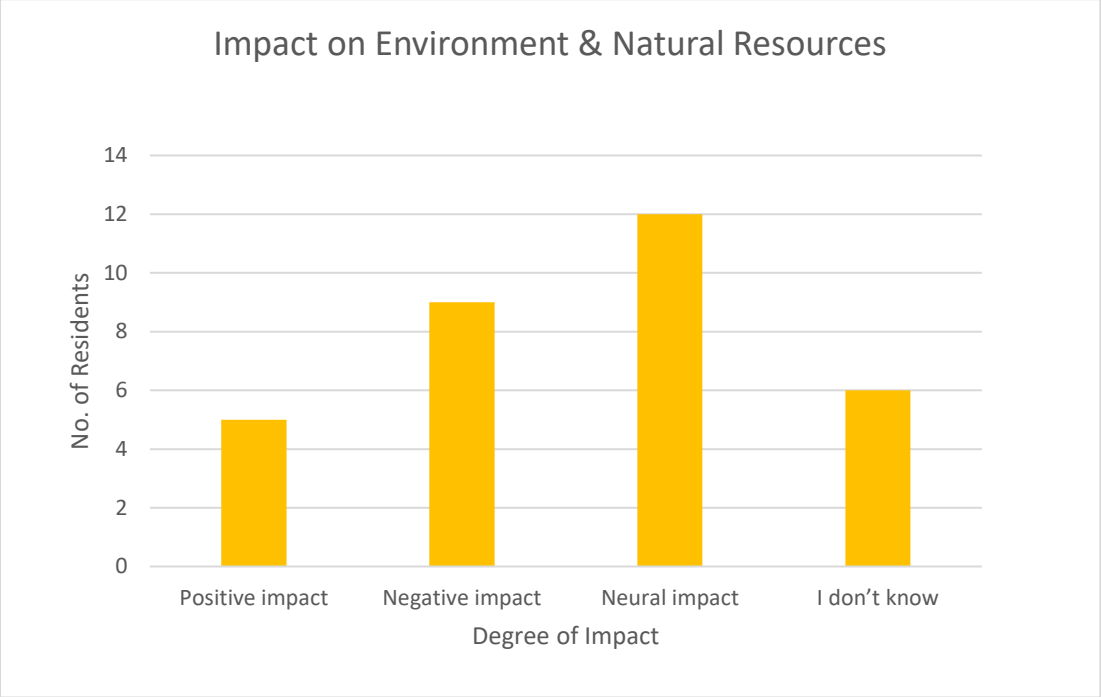
Source: Primary data

Changes inland use tremendously affected the land value. One big change is that property prices have gone up. Instead of just farming, more people are now working in other jobs, like services. This has brought more jobs, and also more tourists inflow. Because of all this, the demand for property has gone up a lot, and so have the prices.

According to the survey conducted on 32 people on what they think about this. Out of them, 16 said they noticed property prices going up. Some others, about 6 people, weren't sure. But most people seem to agree that changing how we use the land has made property prices go up. This shows that what we do with the land can cause various effects in a particular area, especially when it comes to how much property costs.

3.7 ENVIRONMENTAL AND SOCIAL IMPACT

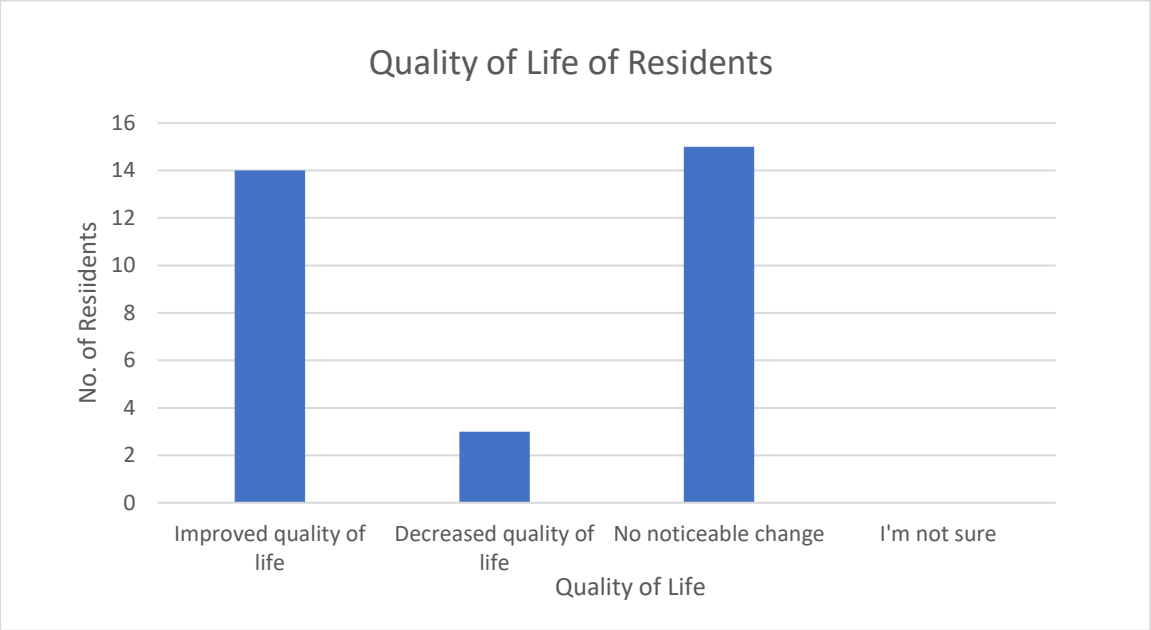
A.



Source: Primary data

From the above data it is clear that majority agrees that the change in land use pattern in Mulavukad Panchayat have a neutral impact on the environment.They have mixed feelings or the lack of sufficient information has lead them to this choice. The 2nd majority favours on a negative impact. This group believes that changes in land use patterns are detrimental to the environment and natural resources and mostly lead to habitat destruction, loss of biodiversity, pollution, or depletion of natural resources as the pattern of change has always been from agrarian land to land used for other puposes. A smaller portion of residents voiced uncertainty about the impact of land use changes. They may require more information or education on the subject to form an informed opinion. The minority suggests a positive impact. They may believe that such changes contribute to sustainability & biodiversity conservation.

B.



Source: Primary data

The above data provides information on the quality of life of Mulavukad Panchayat residents. The majority of respondents, comprising 15 individuals, report no noticeable change in their quality of life. This neutrality suggests that for many residents the effects of these changes may be subtle, not significantly impacting their daily lives. A significant proportion of residents express a positive outlook towards the changed land use pattern. These people might have experienced improvement in basic amenities, infrastructure or more economic opportunities. A smaller group is concerned about the decline in their quality of life due to changes in land use patterns. Their opinion points towards the adverse consequences like increased pollution levels. It's also noteworthy that none of the residents express uncertainty about the impact of land use changes on the quality of their life.

CHAPTER 4
FINDINGS AND SUGGESTIONS

4.1 FINDINGS

- Urbanization Impact: The rapid urbanization in the Mulavukadu Panchayat region has resulted in a significant migration of the workforce from rural areas to urban centers. This migration has led to a decline in farming activity as people seek employment opportunities in urban areas.

- Decline in Pokkali Cultivation: Historically renowned for Pokkali rice cultivation, Mulavukad Panchayat is experiencing a decline in this traditional agricultural practice. Factors contributing to this decline may include changes in market demand, labor shortages, and environmental challenges.

- Socio-Economic Implications: The dwindling practice of farming has multifaceted implications for the socio-economic fabric of the community. Loss of agricultural livelihoods may lead to income disparities, reduced food security, and dependency on external sources for food production.

- Environmental Sustainability: The shift away from agriculture may have adverse effects on the local environment. Reduced agricultural activity could result in land degradation, loss of biodiversity, and increased vulnerability to natural disasters.

- Historical Importance of Farming and Fishing:
  Farming and fishing have always been really important for the people living in Mulavukad Panchayath. They've not only helped people make money but also been a big part of their culture and who they are as a community.

- Challenges Now:
  But now, farming isn't as big as it used to be, and that's causing a lot of problems. It's not just about making less money—it's also affecting how people live and the environment around them. Figuring out why farming is getting less popular is really important if we want to solve these problems.

- Changes from the Past:

  Mulavukad Panchayat used to be famous for growing a special kind of rice called Pokkali rice. But now, because more people are moving to cities, there aren't as many farmers as before. This means less farming is happening overall.

4.2 SUGGESTIONS

- Promotion of Sustainable Agriculture: Encourage and support farmers in adopting sustainable agricultural practices such as organic farming, crop diversification, and water conservation techniques. This could help revive agricultural activity and promote environmental sustainability.

- Investment in Agricultural Infrastructure: Provide access to modern agricultural infrastructure, including irrigation systems, mechanized farming equipment, and storage facilities. Improving infrastructure can enhance productivity and profitability in farming.

  The panchayat is characterised by the presesnse of a large amount of inland water bodies which once where the prime location for Pokkali farming.While the farming practices has gone downin the recent decades, the water bodies still exist.

- Value Addition and Market Linkages: Facilitate value addition to agricultural products and establish market linkages to ensure fair prices for farmers. Promoting local produce through farmer markets, cooperatives, and agro-tourism initiatives can create alternative income opportunities for rural communities.

- Awareness and Capacity Building: Raise awareness about the importance of preserving agricultural heritage and the benefits of sustainable farming practices. Conduct capacity-building programs, training sessions, and workshops to empower farmers with knowledge and skills necessary for modern agricultural practices.

- Policy Support: Advocate for policies that prioritize the preservation of agricultural land and support the livelihoods of farming communities. Implement land-use planning measures that balance urban development with the protection of agricultural areas.

4.3 RECCOMENDATIONS

- Land use mapping and identification facilities at the base level
- The government should ensure that an accurate and reliable database is managed.
- Encourage research into advanced techniques to address intricate issues like soil and water quality outcomes associated with land use changes.
- Modern and improved technological applications should be employed in land use pattern mapping
- Ensure systematic monitoring of biodiversity to understand and manage the direct and indirect impacts of land use changes on flora and fauna.
- Enacting legislative measures to protect biodiversity in areas experiencing changes in land use patterns, ensuring their conservation for future generations.
- Implementing incentive-based approaches as means to tackle aftereffects of change in land use
- Explore opportunities for diversifying the market for Pokkali products and adding value to existing produce.
- Foster active involvement of local communities, especially Pokkali farmers, in decision-making processes regarding land use changes. Their insights and experiences are invaluable in understanding the socio-economic and ecological impacts of such changes.
- Promote eco-friendly farming techniques for higher yields with less environmental impact.

CHAPTER 5
CONCLUSION

5.1 CONCLUSION

In conclusion, the study on the change in land use pattern in Mulavukad Grama Panchayath, with a focus on Pokkali cultivation, highlights the socio-economic reasons for the decrease in Pokkali cultivation in the Mulavukad Panchayath. The study emphasizes the need for policies and interventions that support the continuation of such practices while addressing emerging challenges such as salinity of water, land degradation and urbanization in the economy. There has been a shortage of Pokkali farming lands in the recent decades and it is only limited to particular wards in that region. Major reasons for the shortage for Pokkali cultivation is the salinity of the water, climate changes, and rapid urbanization.

Shortage of labour, usage of land for development purposes, general ignorance towards agriculture, and conversion of Pokkali farms to monoculture (the cultivation of a single crop in a given area) have also led to significant reduction in land. The shift towards monoculture of prawns in Pokkali fields, in spite of yielding higher returns in the short term, is proving to be unsustainable. However, the long-term implications on soil and water quality, as well as the negative impact on prawn production, highlight the unsustainability of this practice. Regardless of the initial economic gains, the overall cost-benefit analysis suggests that the reliance on monoculture of prawns in Pokkali fields is not applicable in the long run. And the farmers tend to produce prawns rather than the Pokkali because it is more profitable according to the Pokkali cultivation.

The salinity of water has a significant challenge to Pokkali cultivation. This traditional rice cultivation method thrives in brackish water (Water occurring in a natural environment that has more salinity than freshwater, but not as much as seawater) ecosystems, but high salinity levels can negatively impact crop yields and soil fertility. High salinity levels in water can inhibit seed germination, and cause decrease in overall productivity. Additionally, salinity stress can lead to nutrient imbalances and affect the health and vigor of Pokkali crops. As a result, farmers often have to implement measures of water management techniques to avoid adverse effects of salinity on Pokkali cultivation. But when the climate change hits the salinity of water become higher because there is no rainfall at that time. It leads to decrease in productivity of the pokkali and reduce profitability.

Rapid urbanization also has a significant challenge in accordance with Pokkali cultivation. As urban areas expand, there is increased pressure on agricultural land and it leads to land conversion for residential, commercial, and industrial purposes. This reduces the availability of land for traditional agricultural practices like Pokkali cultivation.

Moreover, urbanization brings about changes in the socio-economic fabric of rural communities. They younger generations may be attracted to urban areas for better job opportunities, leads to a decline in the agricultural workforce. This demographic shift threatens the continuity of Pokkali cultivation, which relies on traditional knowledge and practices.

APPENDIX

BIBLIOGRAPHY

QUESTIONAIRE

1. How aware are you of the recent changes in land use patterns in Mulavukad Panchayat?
   - Very aware
   - Somewhat aware
   - Not very aware
   - Not aware at all

2. Have you heard of Pokkali cultivation before participating in this survey?
   - Yes
   - No

3. Have you noticed any changes in the amount of land dedicated to Pokkali cultivation in Mulavukad Panchayat in recent years?
   - Yes
   - No

4. In your opinion, how has the recent change in land use patterns affected the local economy in Mulavukad Panchayat?
   - Positively affected
   - Somewhat positively affected
   - Negatively affected
   - No noticeable effect

5. Do you believe the changes in land use patterns have led to an increase in job opportunities in Mulavukad Panchayat?
   - Yes, significantly
   - Yes, to some extent
   - No, not really
   - I'm not sure

6. How do you perceive the changes in land use patterns have affected the availability of agricultural land in Mulavukad Panchayat?

- Increased availability
- Decreased availability
- No significant change
- I don't know

7. Have you observed any government initiatives or support for Pokkali cultivation in Mulavukad Panchayat?
   - Yes
   - No

8. Do you think Pokkali cultivation can be financially beneficial for farmers in this region?
   - Yes
   - No

9. Are you aware of any efforts to promote Pokkali cultivation or increase awareness about it in your community?
   - Yes
   - No

10. Have you noticed any changes in property values as a result of the recent changes in land use patterns in Mulavukad Panchayat?
    - Increased property values
    - Decreased property values
    - No change in property values
    - I'm not sure

11. How do you perceive the impact of changes in land use patterns on the overall environment and natural resources in Mulavukad Panchayat?
    - Positive impact
    - Negative impact
    - Neutral impact
    - I don't know

12. In your opinion, have the changes in land use patterns affected the quality of life of residents in Mulavukad Panchayat?
    - Improved quality of life
    - Decreased quality of life
    - No noticeable change
    - I'm not sure