

PARTICIPATORY CONSERVATION AND PRODUCTIVITY IMPROVEMENT OF PADDY LANDS IN LOW COUNTRY WET ZONE



Renuka Weerakkody



HARTI

Hector Kobbekaduwa Agrarian Research and Training Institute

Participatory Conservation and Productivity Improvement of Paddy Lands in Low Country Wet Zone

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Foreword

The sustained decline of *asweddumized* paddy lands in Sri Lanka's Low Country Wet Zone Coastal Districts (LCWZCDs) reflects a convergence of economic, policy, environmental, and social challenges. While land misuse and abandonment are the visible symptoms, the underlying causes lie in deeper structural issues such as urbanization pressures, land fragmentation, inconsistent policy implementation, and the failure to adapt to changing climatic conditions. Together, these challenges have now developed into a national crisis.

The degradation of these multifunctional ecosystems threatens not only food security, but also essential environmental services such as flood mitigation, groundwater recharge, and biodiversity conservation. Without urgent and location-specific interventions, this study confirms the alarming trend that the paddy farming system in these regions could face severe decline and potentially collapse within the next century.

To address this crisis, the study recommends a coordinated policy approach that integrates effective regulatory enforcement with community-based restoration, promotes regenerative agriculture, utilizes land monitoring, and delivers incentives for sustainable land management. Moreover, the future of coastal paddy landscapes depends on a shift from neglect and land conversion toward proactive restoration and adaptive management, supported by ecological and socio-economic resilience.

I extend my sincere thanks to Renuka Weerakkody, the Research Fellow, for her contribution in bringing forward such a timely and important study, and I strongly believe that its findings will serve as a valuable resource for policymakers, researchers, and all those concerned with the sustainable management and preservation of Sri Lanka's paddy lands.

Prof. A.L. Sandika
Director/CEO

Acknowledgement

I wish to express my heartfelt appreciation to all those who extended their support and cooperation towards the successful completion of this research study.

First and foremost, I sincerely thank the farmers and community members who generously shared their experiences, knowledge, perceptions, and concerns regarding paddy cultivation and the future of paddy lands. Their willingness to participate and openly share their practical experiences provided an invaluable foundation for this study. Special thanks are extended to the members of the Rotaract Club of the American National College for their valuable support and active contribution to the recultivation programmes, which added an important practical dimension to the efforts discussed in this study.

I am equally grateful to the officials of the agriculture and agrarian development sector, for their valuable time, professional guidance, information, and insights. Their cooperation and willingness to share their tacit knowledge greatly enriched this study and contributed to strengthening its findings and policy relevance.

Finally, I extend my sincere thanks to the Director/CEO and other members of the Hector Kobbekaduwa Agrarian Research and Training Institute (HARTI) for their continued encouragement and support throughout the research process. I particularly appreciate the cooperation of colleagues who assisted in providing information, collecting data, facilitating field-level coordination, reviewing aspects of the study, and supporting the completion of this report.

I am deeply grateful to every person who contributed, directly or indirectly, to the successful completion of this study. Their collective support, commitment, and benevolence are sincerely appreciated.

Renuka Weerakkody

Executive Summary

This study examined the continuing decline of *asweddumized* paddy lands across Sri Lanka's Low Country Wet Zone Coastal Districts (LCWZCDs), focusing on five key areas: (i) the socio-economic factors contributing to paddy land abandonment, (ii) key legislation, and amendments along with administrative directives related to paddy land governance, (iii) the effectiveness of state-led reclamation efforts, (iv) the ecological significance of paddy-based ecosystems, and (v) community perceptions of participatory paddy land management.

Since recording the highest extent of cultivated paddy lands in 1984, the region has experienced a consistent annual reduction in cultivated paddy land due to urban expansion, land-use shifts, abandonment, and inadequate institutional responses. The continued abandonment is primarily driven by long-standing, non-technological drivers such as labour shortages, poor infrastructure, land disputes, and threats from wild animals. Although technological challenges, including low yields and salinity intolerance, also exist, the reversible socio-economic factors have made paddy farming financially unviable over the past two decades. Current trends indicate that if these patterns persist, the LCWZCDs may lose all functional paddy ecosystems within the next century.

Despite several national programmes aimed at reclaiming abandoned paddy lands, their success has been limited by major institutional and operational challenges, including outdated or inconsistent data, poor implementation of guidelines, and a lack of follow-up support. These issues compounded by weak youth engagement, delayed funding, and inadequate problem diagnosis have undermined the effectiveness and sustainability of interventions, highlighting a broader failure to translate policy into coordinated, and accountable action that deliver lasting outcomes.

Since 2018, a series of circulars have progressively relaxed protections under the Agrarian Development Act, enabling the reclassification and non-paddy use of abandoned lands. While these policy changes recognize the need for greater flexibility in land use, they have also encouraged some landowners to move away from paddy cultivation. Although the Act provides a strong legal framework to prevent misuse of paddy lands its enforcement remains weak and relies mainly on penal measures without adequate support for farmers. To effectively reduce abandonment, legal provisions should be strengthened through better monitoring, proactive interventions, and farmer support systems that address the underlying structural challenges.

The decline in paddy lands in the LCWZCDs has consequences that extend far beyond agricultural productivity. They lands are multifunctional wetland ecosystems that provide critical environmental services including water regulation, carbon sequestration, and biodiversity support. Both abandonment and reclamation carry complex ecological consequences. While poor drainage and infrastructure contribute

to abandonment, some abandoned lands evolve into valuable secondary habitats. Current reclamation strategies often overlook these ecological dynamics, potentially causing environmental damage and increasing climate vulnerability. Recognizing the high and often underappreciated, economic value of ecosystem services, the study calls for context-specific, climate-resilient, and ecologically informed land-use strategies that go beyond conventional cultivation models.

Community perspectives are twofold: on one hand, there is a strong preference for diversified and economically viable land uses; on the other, there is continued support for preserving traditional paddy cultivation. However, the decline of traditional agro-ecological knowledge and community-based management systems is weakening rural resilience.

Given this context, the study highlights several policy implications: 1). Dominance of non-technological drivers in abandonment, 2). Policy fragmentation and institutional overlaps, 3). Limited long-term impact of reclamation programmes, 4). Absence of area-based planning and integrated resource management, 5). Underutilized ecosystem values, 6). Importance of community preferences and legitimacy.

Hence, a uniform land-use policy is no longer suitable, as it fails to account for the spatial and socio-economic heterogeneity of paddy lands and farming systems. The future of paddy lands in the LCWZCDs should be guided by a differentiated, evidence-based, and participatory land-use framework that considers agricultural viability, ecosystem value, and socio-economic feasibility. The study proposes the following strategic directions for the sustainable management and transformation of abandoned paddy lands: 1). Structural reforms to address socio-economic drivers of abandonment 2). Institutional reform and policy coordination to restore the priority status of paddy lands, 3). Strengthen reclamation viability of paddy land reclamation through appropriate technical, financial, and institutional support, 4). Establishing a national paddy land classification and zoning framework to support land-use differentiation and targeted interventions, 5). Promote climate-resilient and economically viable cultivation/ Incentivize ecosystem services and sustainable alternative land uses 6). Fostering participatory planning and community-led restoration to strengthen local ownership and long-term sustainability.

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Abbreviations

ARPA	Agriculture Research and Production Assistant
ASC	Agrarian Services Centers
DAD	Department of Agrarian Development
DCS	Department of Census and Statistics
EIA	Environmental Impact Assessment
FAO	Food and Agriculture Organization
FGD	Focus Group Discussions
IPBES	Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services
IUCN	International Union for Conservation of Nature
KII	Key Informant Interviews
LCWZCDs	Low Country Wet Zone Coastal Districts
MoA	Ministry of Agriculture
MOP	Murate of Potash
PES	Payment for Ecosystem Services
TSP	Tripple Super Phospate
UNEP	United Nations Environmental Programme

Chapter One

Introduction

1.1 Study Background

Paddy-based ecosystems are widely recognized as multifunctional landscapes that extend far beyond their primary role in rice production (Witharana, 2016; Natuhara, 2013; Agus et.al, 2006 & Dhanapala, 2005). A substantial body of research highlights their invaluable contributions to human well-being and ecological sustainability. The Ramsar Convention Secretariat (2016) also recognizes paddy fields as a unique category of human-made wetland ecosystems that provide a wide range of ecosystem services, such as water regulation, biodiversity conservation, climate moderation, and cultural and livelihood support, particularly across Asia.

In Sri Lanka, the ecological and socio-economic significance of these ecosystems has prompted the Department of Agrarian Development (DAD) under the Ministry of Agriculture (MOA) to play a central role in safeguarding paddy lands. Even though, national statistics indicate a gradual increase in the extent of paddy cultivation over time (DAD, 2020a), this general trend marks persistent patterns of abandonment and fallowing of in the Low Country Wet Zone (LCWZ), particularly within the coastal districts of Colombo, Gampaha, Kalutara, Galle and Matara. These districts, collectively referred to as the Low Country Wet Zone Coastal Districts (LCWZCDs), have experienced a sustained and expanding phenomenon of paddy land abandonment.

The LCWZCDs represent a distinct agro-ecological and socio-economic zone where paddy lands are increasingly threatened by saltwater intrusion, flooding, urban land demand, and long-term neglect. Numerous studies have examined these challenges and identified a combination of technological and non-technological drivers of abandonment (Ratnayake et al., 2022, Buhary et al., 2022; Witharana, 2016; Wijesundara & Piyadasa, 2017; Bentota, 2010; Epasinghe, et. al, 2009; Dhanapala, 2005; & Department of Census and Statistics (DCS), 1999). Despite these insights, comprehensive and sustainable policy solutions to address the issue remain elusive.

A notable gap in the existing literature concerns the effectiveness of state-led reclamation efforts. Although substantial public funds have been invested in such programmes, the National Audit Office (2020) reports limited success in restoring abandoned paddy lands to sustain agricultural productivity. This paradox raises critical questions about the rationale for continued state intervention and whether alternative land-use pathways, better aligned with evolving socio-economic and ecological realities, should be considered.

At a time when concerns about food security are intensifying and climate-induced stresses, such as erratic rainfall and prolonged droughts, increasingly threatening agricultural productivity, the adaptive value of paddy-based ecosystems has become even more significant. Their potential to serve as ecological buffers, sequester

carbon, regulate hydrological cycles, and support biodiversity reinforces the urgent need for context-sensitive land-use planning.

This study contributes to the ongoing policy and academic discourse by examining the dynamics of paddy land degradation and the potential pathways for restoration or transformation. It evaluates two competing approaches - reclamation and regulated conversion to alternative uses - while critically assessing their respective socio-economic and environmental trade-offs. By doing so, the study aims to inform more sustainable, inclusive, and evidence-based decision-making regarding the future of paddy-based eco system in the LCWZCDs.

1.2 Research Problem and Rationale

Despite the historical, ecological, and food security significance of *asweddumized* paddy lands in Sri Lanka's LCWZCDs, these lands continue to experience degradation. Key drivers include persistent abandonment, conversion to other uses, low farmer participation in conservation, declining productivity, and weak integration of ecological and socio-economic goals. This decline is further exacerbated by fragmented state policies, socio-economic pressures, and environmental vulnerabilities.

Over the years, several state-led reclamation programmes have been introduced, however, available evidence indicates limited success in sustainably reducing abandonment and preventing conversion. More recently, a policy shift permitting diversified land use has, in some cases, accelerated the decline of traditional paddy-based ecosystem. Compounding these challenges, the absence of participatory approaches undermines both ecological integrity and long-term agricultural viability of these systems.

Against this backdrop of continued state-led reclamation efforts on one hand and persistent abandonment on the other, a central policy question emerges: Should state priorities remain focused on reclamation, or should they support regulated conversion aligned with evolving socio-economic and environmental realities?

This study addresses that question by examining and evaluating two competing land-use pathways in LCWZCDs: (i). Reclamation of abandoned paddy lands, and (ii). Regulated transitions to alternative uses. It also assesses the potential of participatory approaches to safeguard ecological integrity while ensuring the long-term agricultural viability. These evaluations are framed within the broader context of evolving community needs, environmental constraints, and national development goals, with the aim of informing a more strategic and sustainable policy response to the growing issue of paddy land abandonment in Sri Lanka's LCWZCDs.

1.3 Objectives of the Study

1.3.1 General Objective

The main objective of the study is to assess and inform strategic policy directions concerning the abandonment and transition of *asweddumized* paddy lands in Sri Lanka's LCWZCDs, by examining the complex interplay between state interventions, socio-economic drivers, environmental impacts, and community perspectives.

1.3.2 Specific Objectives

- i. To explore the socio-economic factors driving the persistence or increasing the paddy land abandonment.
- ii. To examine how policy shifts, legal amendments, and institutional actions have influenced patterns of paddy land abandonment and land use transition.
- iii. To evaluate effectiveness of state-led interventions.
- iv. To understand ecological significance of paddy-based ecosystems and local community perceptions, values, and preferences regarding participatory conservation and management.

1.3.3 Key Analytical Themes and Research Questions

To fulfil the above objectives, the study has been organized around four central themes, each addressing a set of critical questions.

- i. Neglected Social Realities and Alternative Land Uses: Current policies often overlook evolving socio-economic dynamics and local community preferences.
Should government policy shift from a reclamation-centric approach toward more viable alternative land uses?
- ii. Policy Shifts and Legal Amendments Shaping Land Use Transitions: Over the past two decades, various policy reforms and legal amendments, intended to regulate paddy land use, have had complex and in some cases, unintended consequences.
How have policy changes and legal reforms affected the abandonment and transformation of asweddumized paddy lands in the LCWZCDs?
- iii. Persistent State Intervention without Tangible Benefits: Despite ongoing public investment in reclamation programmes, evidence points to limited success in restoring abandoned paddy lands in LCWZCDs?
How effective have reclamation programmes been in reversing paddy land abandonment.
- iv. Integrating Environmental Sustainability and Community Perspectives in the Participatory Management of Paddy-based Ecosystems: *Understanding local community perspectives is essential for developing sustainable approaches to the future management of abandoned paddy lands.*

How do local communities perceive and prioritize the conservation and future use of abandoned paddy lands, and what are the environmental implications of participatory approaches to their reclamation or conversion?

1.4 Organization of the Report

This report comprises of five chapters offering a comprehensive analysis of the future use of abandoned paddy lands in Sri Lanka's LCWZCDs. **Chapter One** outlines the background, research problem, objectives, and key analytical questions. **Chapter Two** reviews the literature on the multifunctionality of paddy-based ecosystems, global and local land reclamation policies, abandonment patterns in coastal regions, and the study's theoretical and conceptual frameworks. **Chapter Three** explains the methodology, including the study area, research design, data collection, and analytical framework. **Chapter Four** presents findings across five themes; socio-economic drivers of abandonment, policy shifts and legal amendments, the effectiveness of reclamation programmes, environmental impacts of reclamation versus conservation and community perceptions. **Chapter Five** concludes with a critical discussion of the findings and policy implications, evaluates trade-offs between competing land-use options, and provides recommendations.

Chapter Two

Literature Review

2.1 Introduction

This chapter critically reviews the body of literature related to the evolution and regulation of *asweddumized* lands, followed by a focused examination of the extent, causes, and consequences of paddy land abandonment in Sri Lanka's LCWZCDs. It draws on historical records, legal documents, agronomic research, and socio-economic analyses to provide a comprehensive understanding of both the use and misuse of these lands. The review aims to place the phenomenon of abandonment within the broader context of agricultural policy transitions while identifying key gaps that inform the present study.

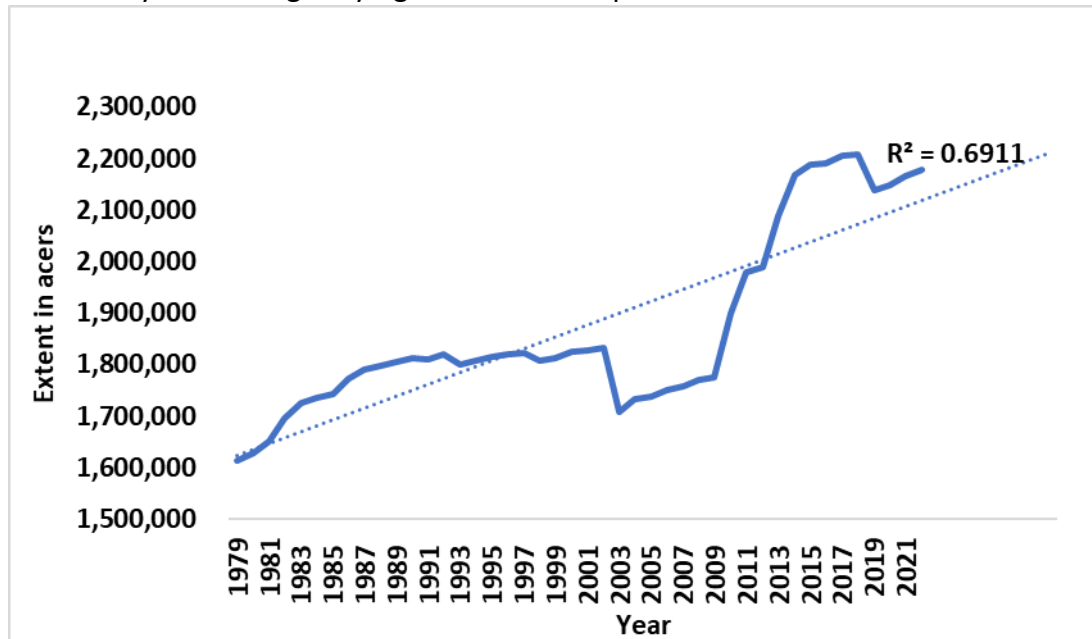
2.2 The Concept of *Asweddumization*

The concept of *asweddumization* holds significant historical and policy relevance in Sri Lanka, reflecting the country's long-lasting efforts to develop and maintain a water-managed, rice-based agrarian economy. These lands are not merely areas of cultivated paddy but also represent state-supported irrigation infrastructure and traditional knowledge systems that have sustained food production for centuries. They are legally protected and culturally revered spaces, intended primarily for rice cultivation, the staple diet and an integral element of rural identity. In the present context, marked by climate uncertainties, land degradation, and changing socio-economic priorities, the strategic value of *asweddumized* lands has become even more pronounced. Recognizing their role in ensuring national food security, supporting rural livelihoods, and mitigating ecological vulnerabilities, policy frameworks must prioritize the sustainable use, rehabilitation, and management of these lands. Thus, the preservation and revitalization of *asweddumized* areas are not only agricultural imperatives but also critical components of broader environmental and development planning.

2.3 *Asweddumized* Extent in Sri Lanka

The term *asweddumized* lands refers to areas where dikes and other water control structures have been constructed to regulate water flow specifically for paddy cultivation (DCS, 1999). These lands represent a critical component of Sri Lanka's agricultural landscape and are present in every administrative district of the country. As of 2022, the total extent of *asweddumized* land was estimated at 2,177,886 acres (approximately 881,370 hectares) (DCS, 2023). Since 1979, the overall extent of *asweddumized* land has increased by approximately 35 percent (Figure 2.1), with most of this expansion occurring in districts outside the Wet Zone.

In contrast, several districts, particularly those located within the LCWZ, and certain districts of the Central and Northern provinces have experienced a notable decline in *asweddumized* land area. These include Colombo (a 44% reduction), Gampaha (22%), Kalutara (27%), Galle (30%), Matara (21%) Jaffna (65%), Kandy (34%) and Kegalle (27%). These reductions may be attributed to a combination of factors, including urbanization, land use changes, shifting labour patterns, and declining farmer interest in paddy cultivation. This spatial variation in *asweddumization* trends highlights the need for region-specific policy interventions to sustain these historically and ecologically significant landscapes.



Source: DCS, 2023

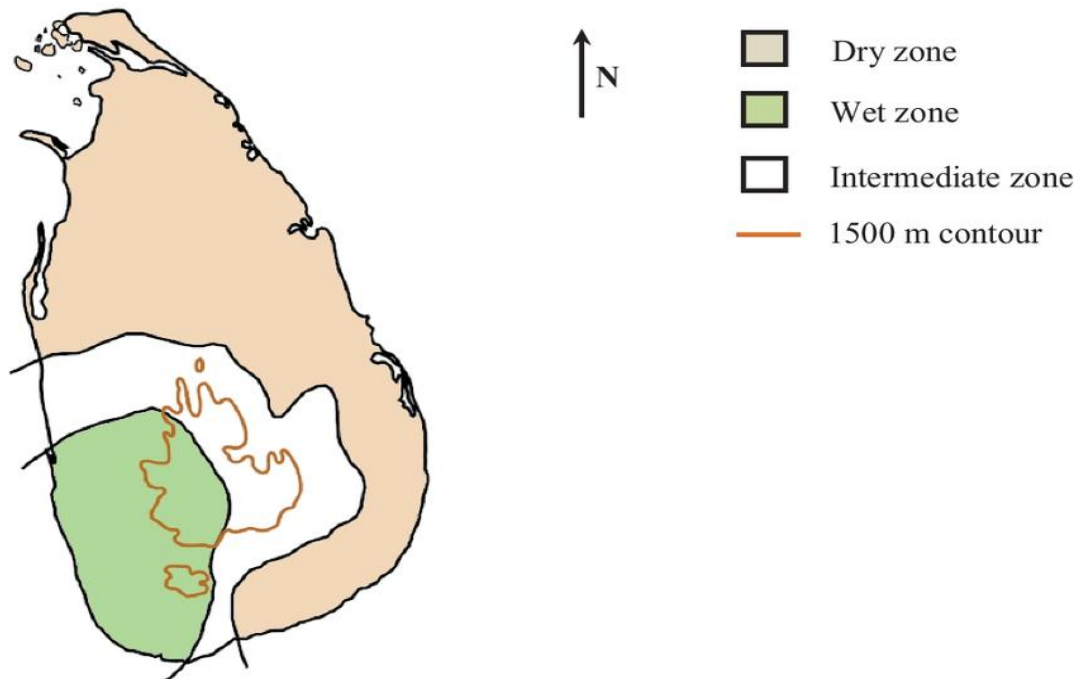
Figure 2.1: Asweddumized Extent in Sri Lanka: 1979-2022

2.4 Asweddumized Extent in Low Country Wet Zone Coastal Districts

Among the districts experiencing a decline in *asweddumized* lands, Colombo, Kalutara, Galle, Matara and Gampaha stand out due to a combination of geographic and environmental factors. These districts are fully or partially located within Sri Lanka's Low Country Wet Zone and receive high rainfall associated with the Southwest monsoon. They are also intersected by major river systems, making them particularly prone to seasonal flooding. All five districts lie along the Island's Southwestern coastal belt, exposing inland paddy lands to the persistent threat of saltwater intrusion. This problem is further exacerbated by sea level rise and reduced freshwater flow during dry periods.

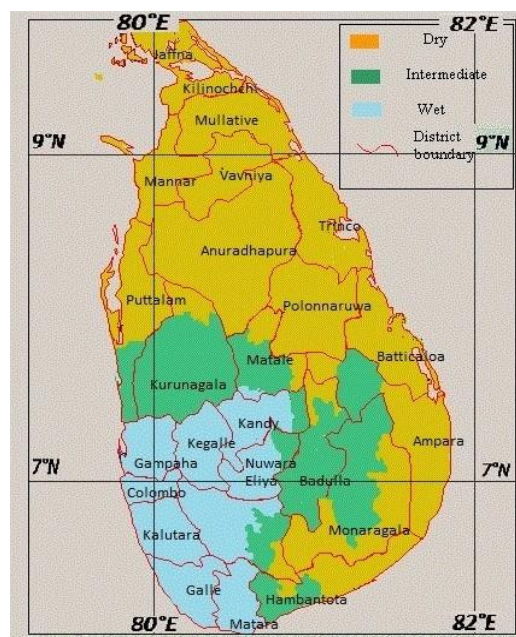
According to data from the DCS (2023), the paddy-based ecosystem within the LCWZCDs encompassed approximately 233,641 acres in 1979. However, over the past four decades, these areas have experienced a progressive decline in cultivated extent. By 2022, the total remaining *asweddumized* area in these districts had

decreased to 170,810 acres, representing a loss of 62,831 acres or approximately 17 percent. This decline signals a concerning trend with implications for food production, water management, and ecological balance in a region already facing multiple environmental stressors.



Source: Sewwandi and Fernando, 2023

Map 2.1: Map of Sri Lanka indicating Three Climatic Zones

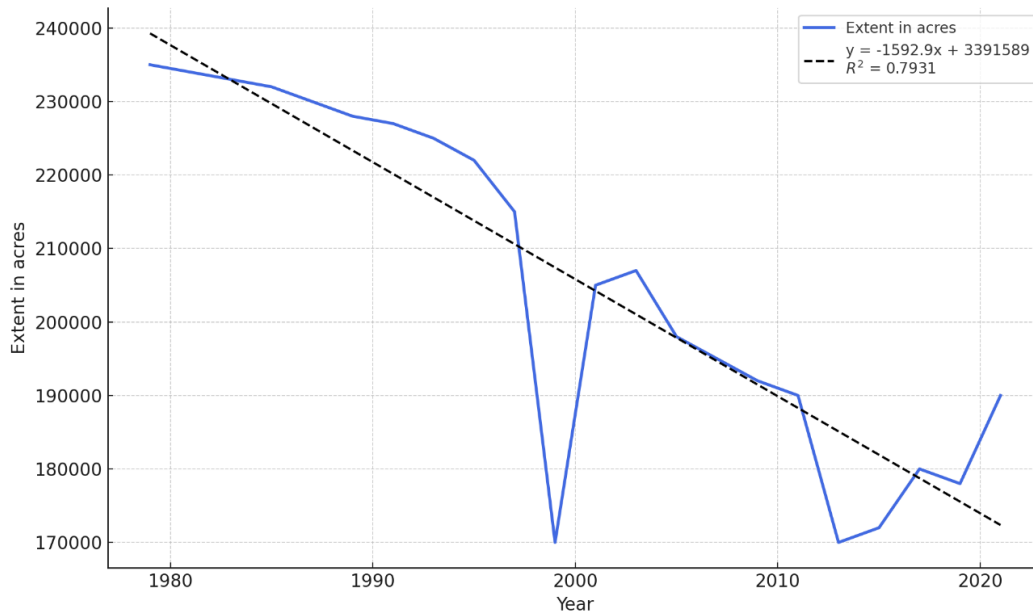


Source:

https://www.researchgate.net/profile/Nadira_Karunaweera/publication/260252714/figure/download/fig1/AS:203156031053828@1425447580788/Map-of-Sri-Lanka-Climatic-zones-dry-intermediate-and-wet-zones-of-Sri-Lanka.png (Accessed on 25 January 2025)

Map 2.2: Map of Sri Lanka indicating Districts by Climatic Zones

The graph shows a significant decline in land extent over time, as indicated by the negative slope of the trendline ($y = -1751.6x + 3700560$, $R^2 = 0.8037$). This suggests a consistent reduction in *asweddumized* lands, which may be attributed to factors such as urbanization, abandonment, and conversion to non-agricultural uses.



Source: Department of Census and Statistics, 2023

Figure 2.2: Trend in the Extent of *Asweddumized* Lands in Low Country Wet Zone Coastal Districts in Sri Lanka from 1979 to 2021

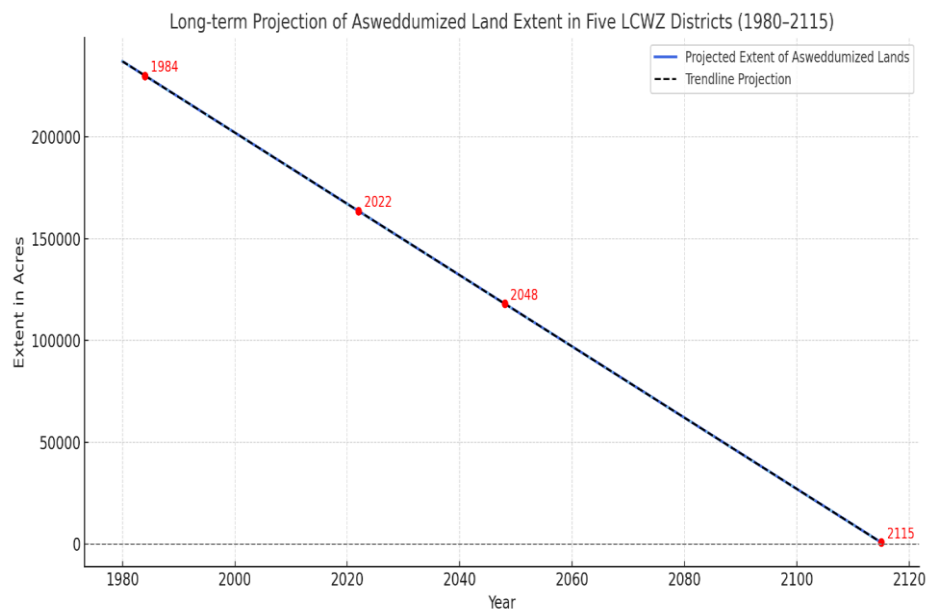
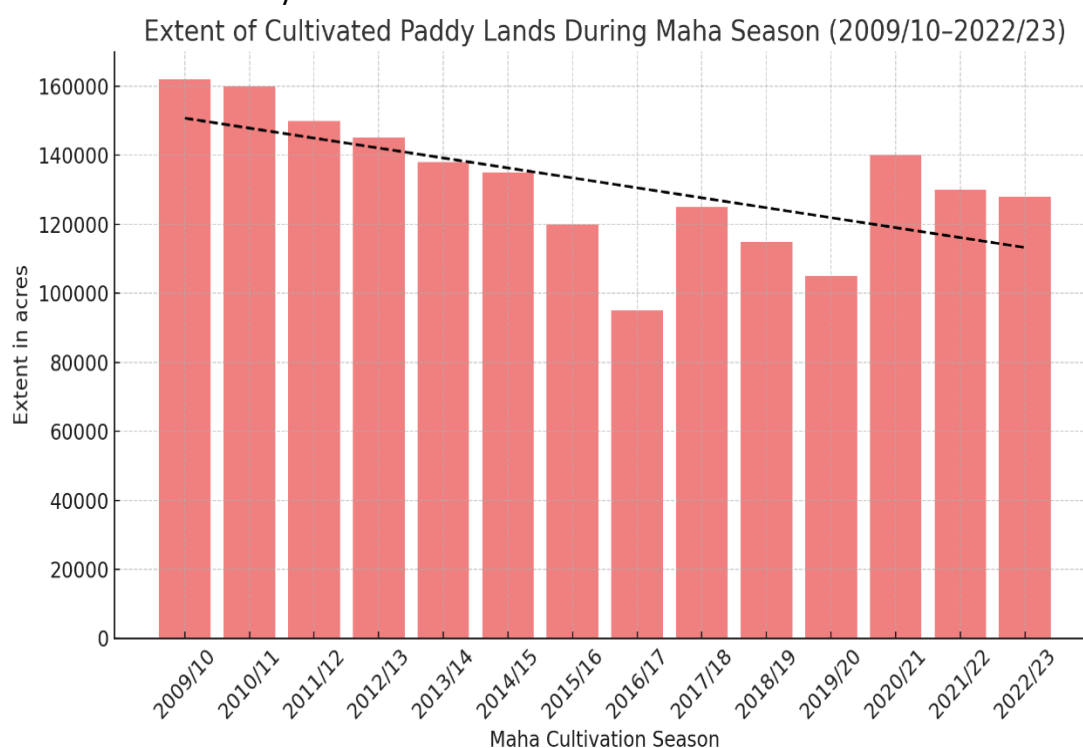


Figure 2.3: Long Term Projection of *Asweddumized* Land Extent in Low Country Wet Zone Coastal Districts in Sri Lanka

According to the DCS statistics (2020), the year 1984 has recorded the highest extent of *asweddumized* lands across the five districts totaling 235,097 acres since the beginning of the data series in 1979 (Figure 2.2). However, by 2022, the extent had decreased by 64,287 acres, representing a reduction of approximately 27 percent, with an average annual loss of about 1,836 acres, leaving around 170,810 acres. The regression model applied to this trend yields an R^2 value indicating a reasonably good fit, supporting the use of the model for forecasting purposes. If this declining trend continues, approximately half of the 1984 *asweddumized* extent could be lost by 2048. Projections further suggest that the entire *asweddumized* area in the LCWZCDs could disappear in approximately 93 years placing the potential total loss around 2115 within the next 100 years (Figure 2.3).

The persistent decline reflects a broader trend in land use patterns in these districts. Paddy lands in the LCWZDs are increasingly being left fallow, abandonment or converted to other uses. This shift signifies a complex interplay of socio-economic and environmental factors, including declining farmer participation, urbanization, and climate variability.



Source: Department of Census and Statistics, 2023

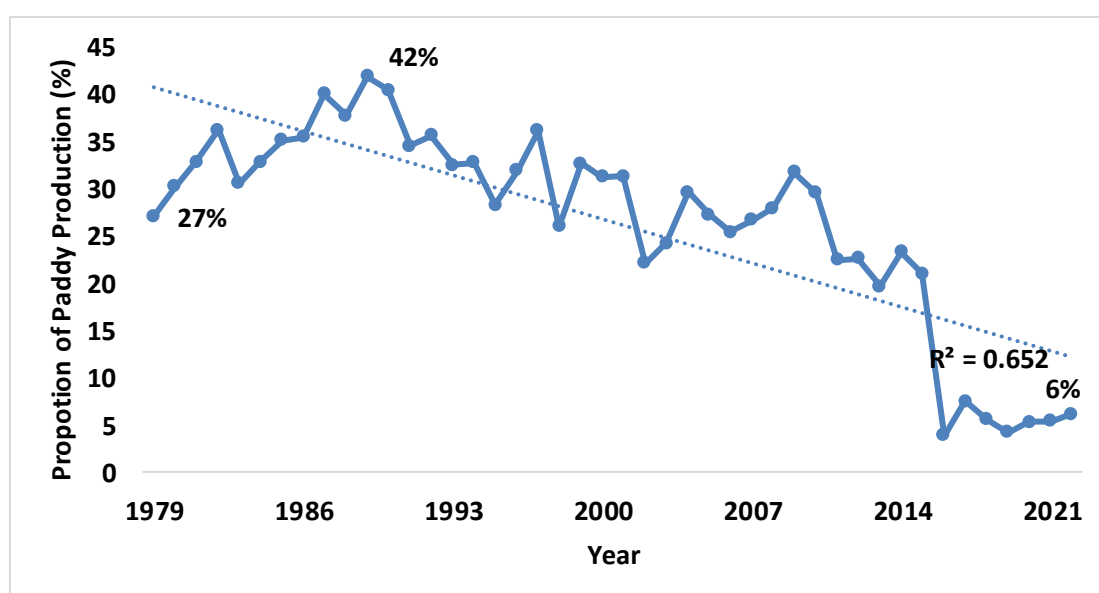
Figure 2.4: Extent of Cultivated Paddy Lands in *Maha* Seasons in Low Country Wet Zone Coastal Districts in Sri Lanka

While re-cultivation programmes have emerged in some areas, aiming to restore the ecosystem, they have not been sufficient to reverse the overall trend. Notably, the five coastal wet zone districts continue to experience a net decline in *asweddumized* land (Figure 2.1). This has directly affected the sown extent as indicated in Figure 2.4,

which reveals a declining trend in the extent of paddy cultivation during the *Maha* season over the 14-year period.

Despite a few rebounds in certain years (such as 2017/18 and 2020/21), the overall trend shows a consistent reduction in cultivated extent. This downward trend can be largely attributed to the increasing abandonment of paddy lands, particularly in the Low Country Wet Zone. This highlights the urgent need for targeted interventions to address abandonment and sustain paddy cultivation in this region.

2.5 Share of Paddy Production by Low Country Wet Zone Coastal Districts



Source: Department of Agriculture (1979-2021)

Figure 2.5: Paddy Production in the Wet Zone Compared to the National Production

Figure 2.5 illustrates the proportion of Sri Lanka's total paddy production contributed by the five Low Country Wet Zone Coastal Districts (LCWZCDs) from 1979 to 2021. In 1979, these districts accounted for 27 percent of the country's paddy production. This share gradually increased, reaching a peak of 42 percent in 1989, reflecting the significant role of the Wet Zone in national rice production at the time. However, from the early 1990s onwards, a steady decline became evident, with a dramatic drop after 2016, when the contribution fell below 10 percent and stabilized at around 6 percent by 2021.

This long-term decline is largely attributable to the expansion of paddy cultivation in the Dry Zone, particularly under major irrigation schemes such as the Mahaweli Development Project, which enhanced land availability and productivity. In contrast, the Wet Zone experienced mounting challenges, most notably widespread paddy

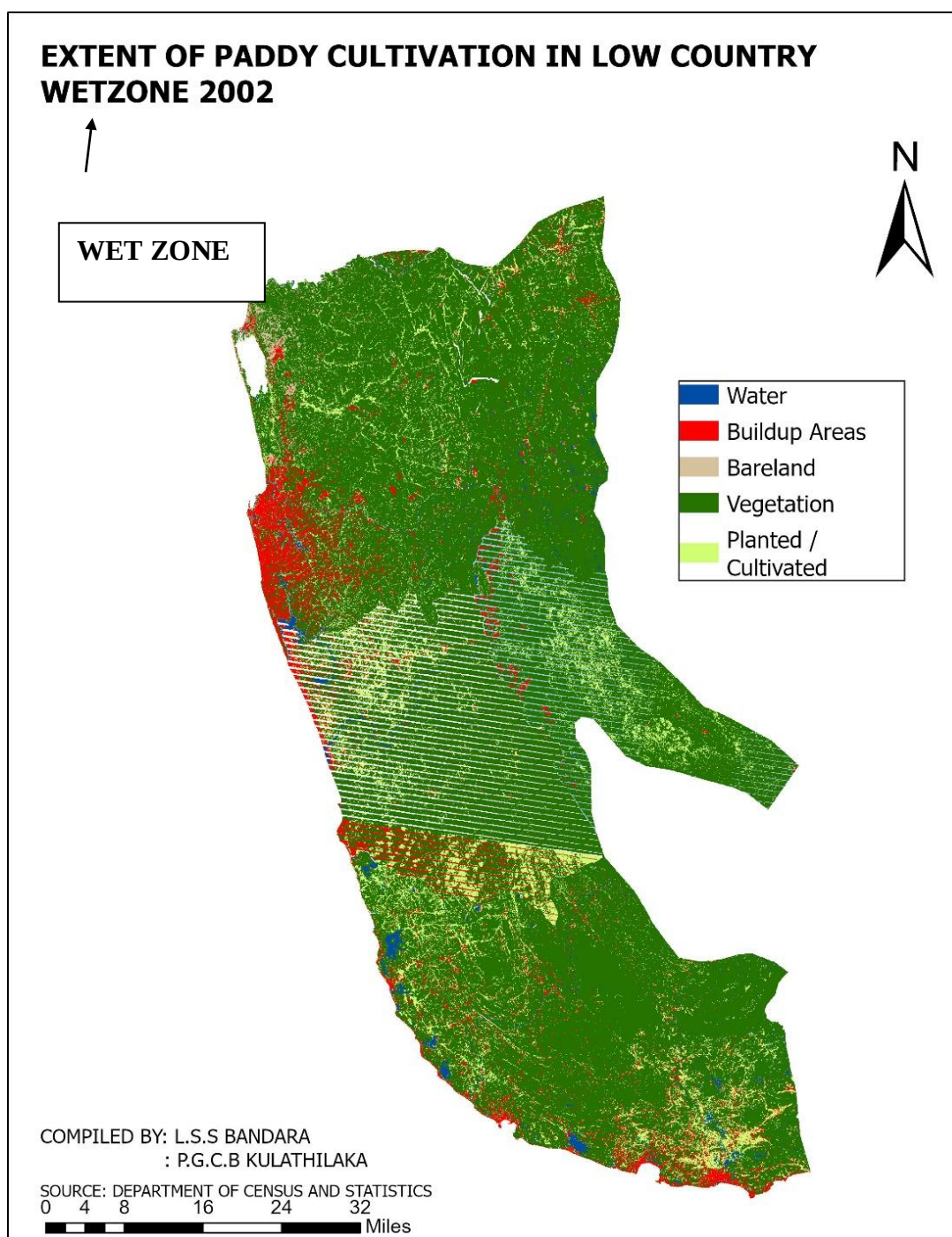
land abandonment driven by socio-economic pressures, technological constraints, and limited policy support.

Figure 2.5 underscores the structural transformation of Sri Lanka's paddy sector, highlighting the marginalization of the Wet Zone's once-prominent paddy-based ecosystems. It also reveals a stark geographic imbalance in development priorities, as sustained policy attention and resources were channeled toward the Dry Zone, while the decline of the Wet Zone remained largely unattended.

2.6 Spatial Dynamics of Paddy Cultivation in the Low Country Wet Zone Coastal Districts (2002–2022)

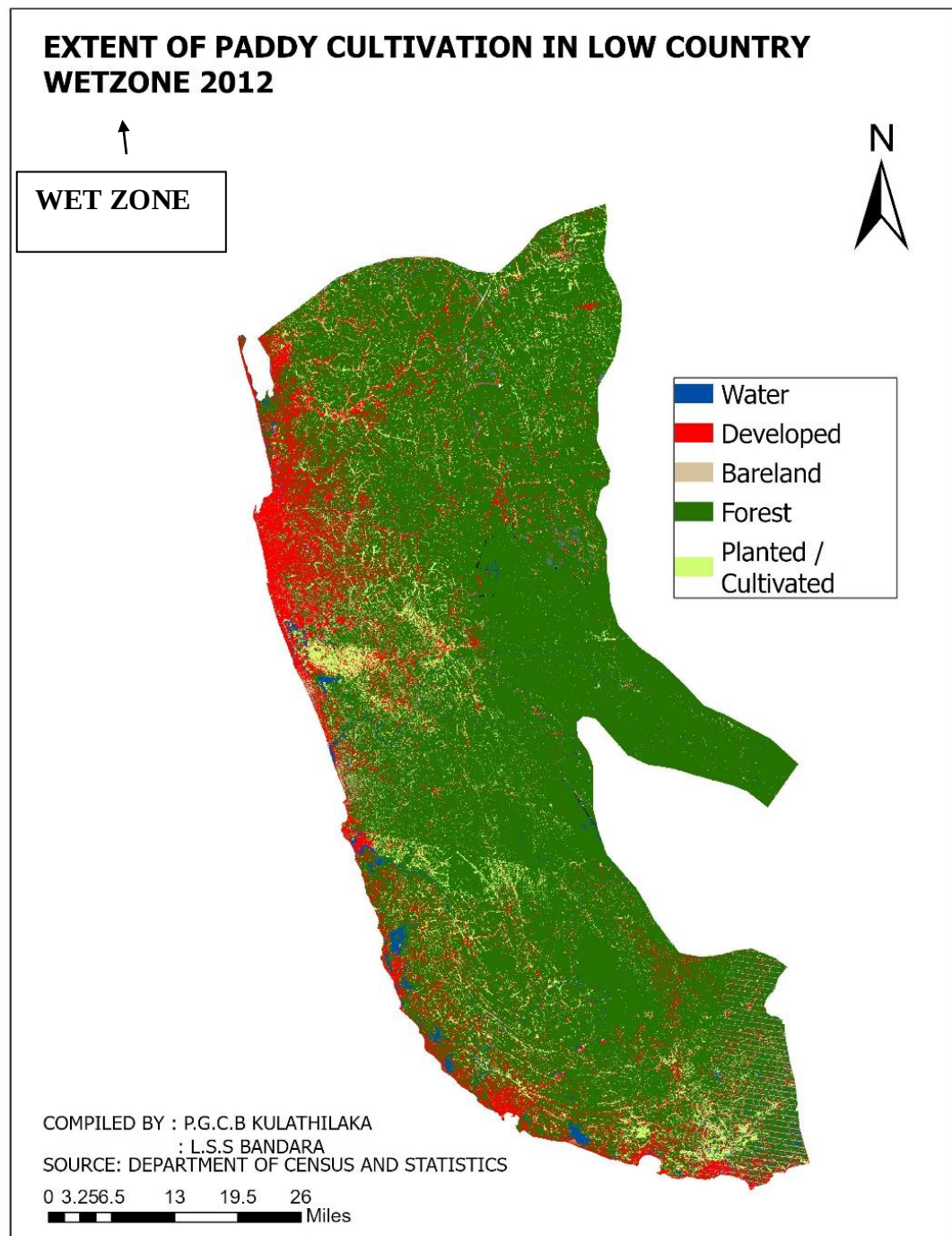
The spatial distribution of paddy cultivation in the LCWZCDs (Gampaha, Colombo, Kalutara, Galle, and Matara) over the past two decades provides further evidence of the structural decline observed in production statistics. Maps for 2002 (Map 2.3), 2012 (Map 2.4), and 2022 (Map 2.5) clearly highlight contraction, fragmentation, and eventual marginalization of paddy lands in the region.

In 2002, extensive and relatively continuous stretches of paddy land (light green) were still visible across the central belt of the region, supported by long-established valley and flood plain cultivation systems. While built-up areas were already expanding along the coastal strip, inland paddy landscapes remained largely intact. This pattern corresponded with a substantial contribution of around 30–35 percent to national paddy production. By 2012, however, a marked reduction and fragmentation of paddy lands had occurred. Cultivation areas became increasingly isolated, with significant portions converted to other land uses or left fallow. Urban development (red) expanded rapidly along the Western sealine, extending inland and competing directly with paddy cultivation. This spatial change aligns with the statistical decline in the LCWZCDs' share of national paddy production to below 25 percent during the same period.



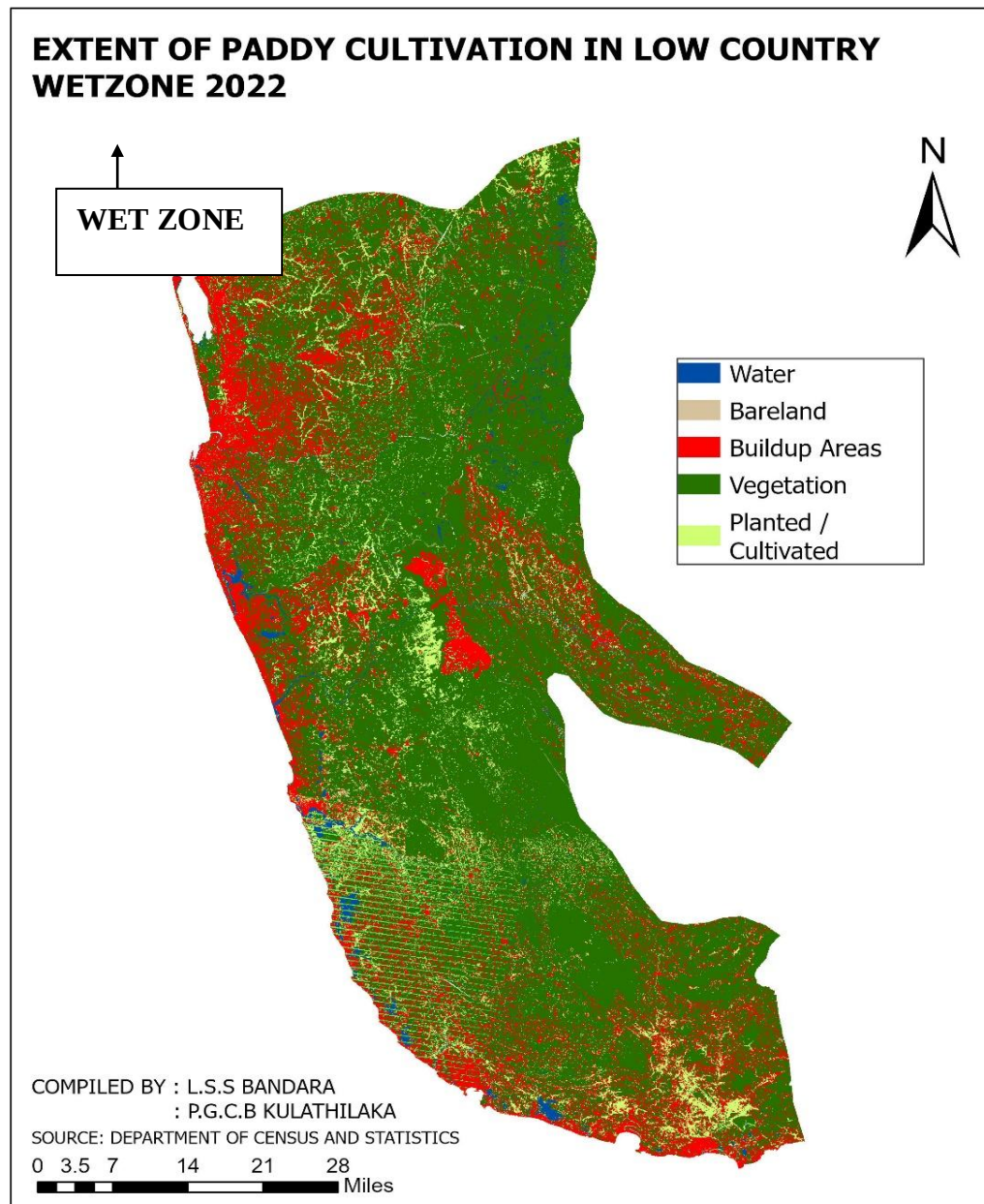
Source: Bandara & Kulathilaka (n.a)

Map 2.3: Extent of Paddy Cultivation in Low Country Wet Zone- 2002



Source: Bandara & Kulathilaka (n.a)

Map 2.4: Extent of Paddy Cultivation in Low Country Wet Zone- 2012

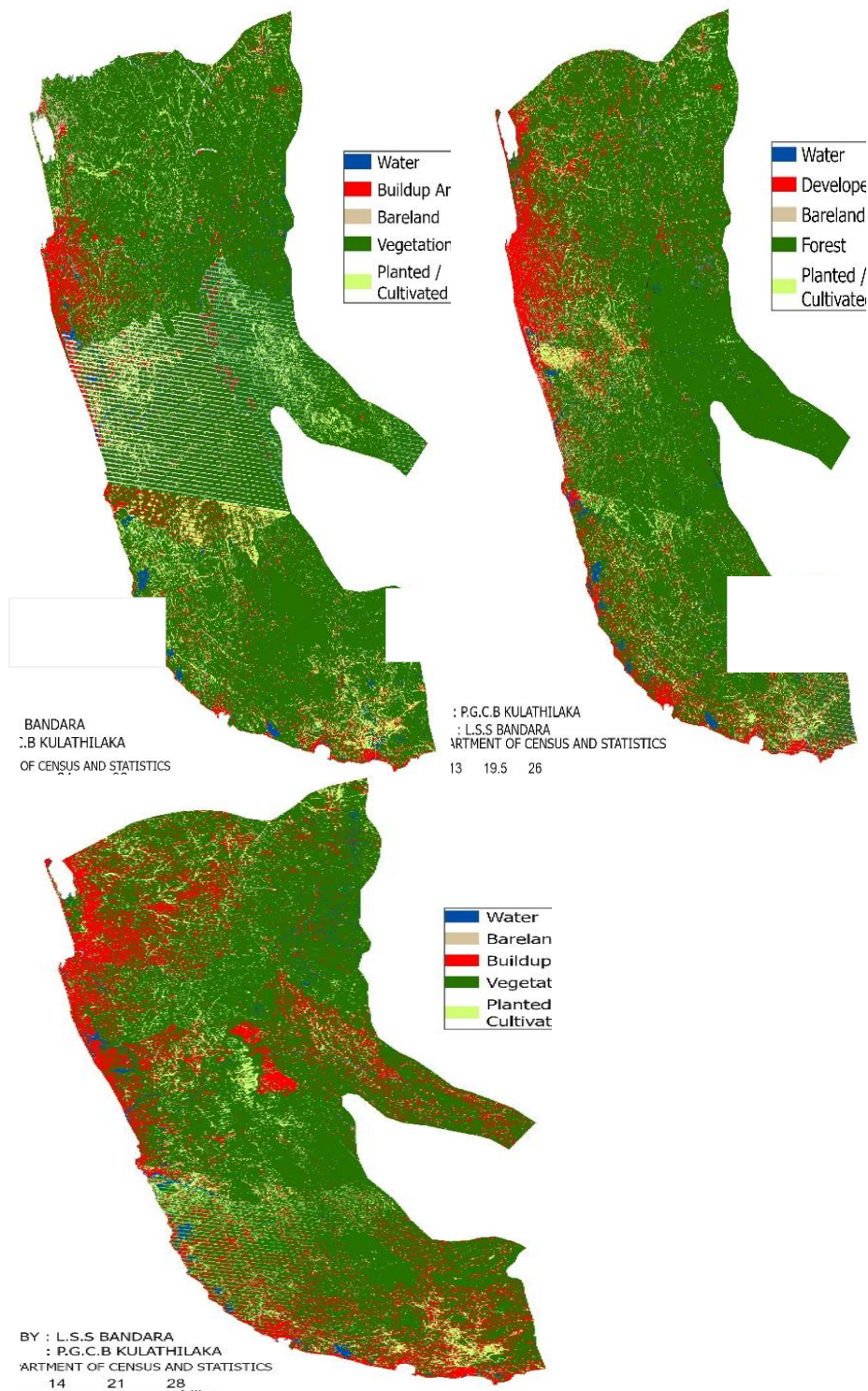


Source: Bandara & Kulathilaka (n.a)

Map 2.5: Extent of Paddy Cultivation in Low Country Wet Zone- 2022

The 2022 map demonstrates the peak of this trend. The remaining paddy fields appear only as small, scattered, and fragmented pockets, with most of the former cultivation tracts either abandoned, urbanized, or converted into non-agricultural uses. Built-up areas have expanded considerably across coastal and semi-urban zones, while large portions of earlier paddy land have transitioned into vegetation cover (dark green), or bare land. This near-erasure of paddy cultivation from the

LCWZ landscape corresponds directly with the decline in its share of national paddy production to around 6 percent by 2021.



Source: Bandara & Kulathilaka (n.a)

Figure 2.6: Extent of Paddy Cultivation in Low Country Wet Zone- 2002, 2012, 2022

Taken together, these spatial dynamics reveal how the LCWZ, once a stronghold of paddy cultivation, has been progressively marginalized over the past two decades as Figure 2.6. In contrast, sustained state investment and irrigation development in the Dry Zone enabled it to surpass and dominate national paddy production. The evidence thus highlights a profound geographic imbalance in Sri Lanka's paddy sector development priorities, with significant implications for the long-term viability of paddy-based ecosystems in the Wet Zone.

2.7 The Concept of Abandonment

Recent decades have witnessed the growing *abandonment* of these *asweddumized* lands, especially in the LCWZCDs. In the context of Sri Lankan agriculture, abandonment of paddy lands is defined as a prolonged discontinuation of cultivation without acceptable or justifiable reasons, resulting in the deterioration or non-utilization of land that has previously been cultivated or designated for paddy farming.

According to the DAD, abandonment refers specifically to the non-cultivation of *asweddumized* paddy lands for consecutive seasons, where the land is neither prepared for cultivation nor maintained in a condition suitable for agriculture. The Agrarian Development Act No. 46 of 2000 and its subsequent regulations provide the legal framework to monitor such situations. It obligates cultivators to submit a report to the Agrarian Services Center (ASC) if cultivation does not take place, stating valid reasons for non-use. If such reasons are not accepted, and cultivation does not resume, the land may be considered *abandoned* under the law.

Furthermore, frequent fallowing without valid cause may also be considered a precursor to abandonment. The DAD also notes that, if abandonment continues, the land may be transferred to the Land Bank for reassignment to other parties willing to cultivate it. Thus, under the Department's administrative and legal framework, abandonment represents a condition of neglect and inactivity in relation to paddy cultivation and may be subject to regulatory action.

2.8 Factors Driving Paddy Land Abandonment

Paddy lands are abandoned for a variety of reasons. The DCS examined the extent of abandoned paddy lands in Sri Lanka during the 1997/98 *Maha* season and identified several causes, including lack of water, excess of water, sea water intrusion and land disputes causes their abandonment (DCS, 1999). According to Dhanapala (2005) inundation, floods and soil problems associated with anaerobic decomposition of organic matter in half-bog and bog soils in the low-lying coastal belt, problems related to leaching iron and aluminum from the adjoining uplands in the inland valleys of first order that require sub soil drainage cause abandonment. Epasinghe et al., (2009) identified 38 individual reasons for paddy land abandonment, of which nine were considered particularly influential. These included blockage of irrigation

waterways, climate-related problems such as flooding, high cost of paddy production, labour scarcity, poor returns from paddy cultivation, damage caused by animals, poor access roads, lack of time due to employment, and the failure of farmers cultivating adjacent plots in the same field to continue cultivation. They also emphasized that farmers often face multiple problems simultaneously, rather than a single factor, when deciding whether to abandon paddy cultivation.

Bentota et al., (2010) added sea water intrusion to the list of factors contributing to paddy land abandonment, while Wijesundara and Piyadasa (2017) identified labour shortages and transport problems as additional factors. Witharana (2016) identified two main reasons for paddy land abandonment and highlighted several additional factors, including farmers' lack of interest, legal barriers, low yield, lack of access roads, land disputes, unplanned development projects, land fragmentation, and land ownership issues. Other studies have also identified saline water intrusion during dry periods, heavy flooding during May and October; blocked waterways, urbanization, and labour shortages. as important causes of paddy land abandonment.

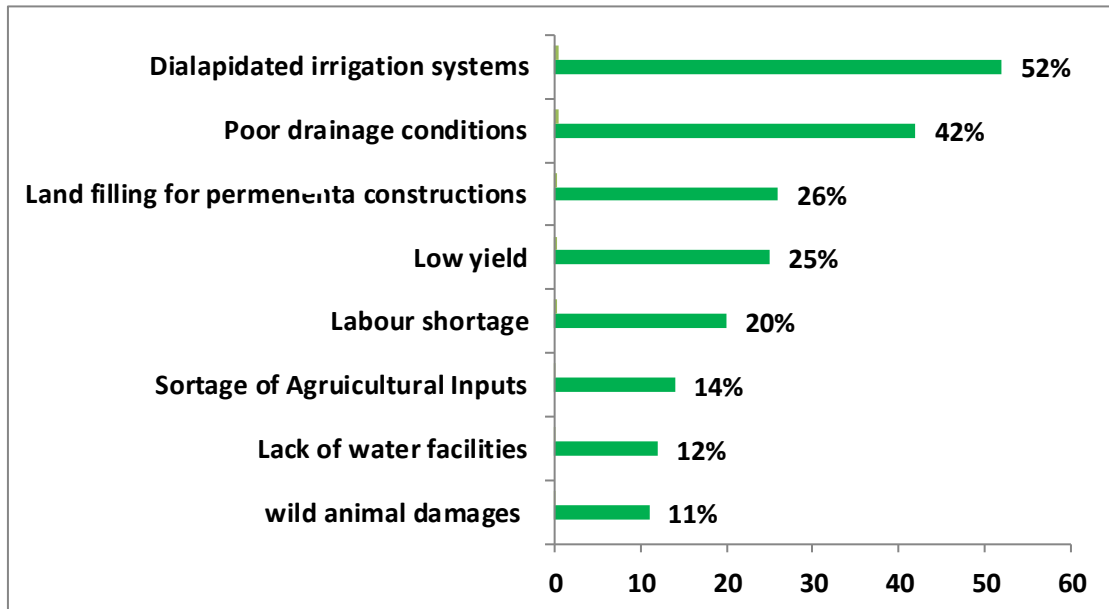
Dhanapala (2005), categorizing the factors into technological and non-technological issues, stated that farmers face many more burning non-technological problems than technological ones, such as irrigation related problems, timely unavailability of inputs and high cost of inputs, difficulties in obtaining agricultural loans, credit and subsidies, damage caused by wild animals, specifically the wild boar and marketing issues and low paddy prices. The National Audit Office (2020) found that paddy lands are abandoned for soil related issues, land disputes, and development projects, high input costs, wildlife damages, poor maintenance of drainage systems, non-cultivation of adjacent plots by neighbouring farmers, alternative employment opportunities, and lack of time for cultivation.

Nearly two decades ago, Dhanapala (2005) observed that the abandonment of paddy lands in Sri Lanka was primarily driven by non-technological factors, such as socio-economic constraints, changes in livelihood preferences, irrigation-related issues, the timely availability of inputs and cost of inputs, access to agricultural loans, credit and subsidies, damage caused by wild boar, and issues relating to marketing and prices. Even after two decades, the situation remains largely unchanged, with non-technological factors continuing to be the primary reasons continuing to be the primary drivers of paddy land abandonment in the LCWZCDs.

According to Ratnayake et al. (2022), paddy land abandonment remains closely associated with non-technological challenges, including dilapidated irrigation infrastructure, poor drainage conditions, land being filled for permanent constructions, labour shortage, damage caused by wild animals, and limited access to water (Figure 2.7). Only 25 percent of farmers cited low yield, a technological factor, as the sole reason for abandoning their paddy fields.

The continued abandonment of paddy lands may also be influenced by the continued neglect of other paddy fields within the same *yaya* system due to non-

technological reasons. As adjacent plots remain uncultivated, shared infrastructure such as irrigation canals and drainage systems may deteriorate further, reducing the viability of cultivation even in otherwise recoverable plots. This cascading effect demonstrates how initial non-technological drivers can contribute to the gradual degradation of the ecosystem. Consequently, sustained improvements in paddy production and ecosystem restoration have yet to be fully realized.



Source: Ratnayake et al., 2022

Figure 2.7: Reasons for Abandonment of Paddy Lands

Yet the interplay between technological and non-technological reasons remains strong. According to Wijesinghe and Wijesinghe (2015), low yield in Wet Zone paddy lands is often associated with technological constraints. Witharana (2016), in summarizing the reasons for paddy land abandonment, reinforces this view. Buhary et al. (2022) found that failures in technology transformation contribute to low yields, indicating that these issues, though non-technological in nature, are reversible. These findings are consistent with Epasinghe et al. (2009), who emphasized that paddy land abandonment typically occurs due to a combination of multiple factors. Importantly, the persistence of non-technological drivers identified by Dhanapala (2005), suggests that many causes of abandonment remain reversible, although addressing them may require substantial resources and coordinated interventions.

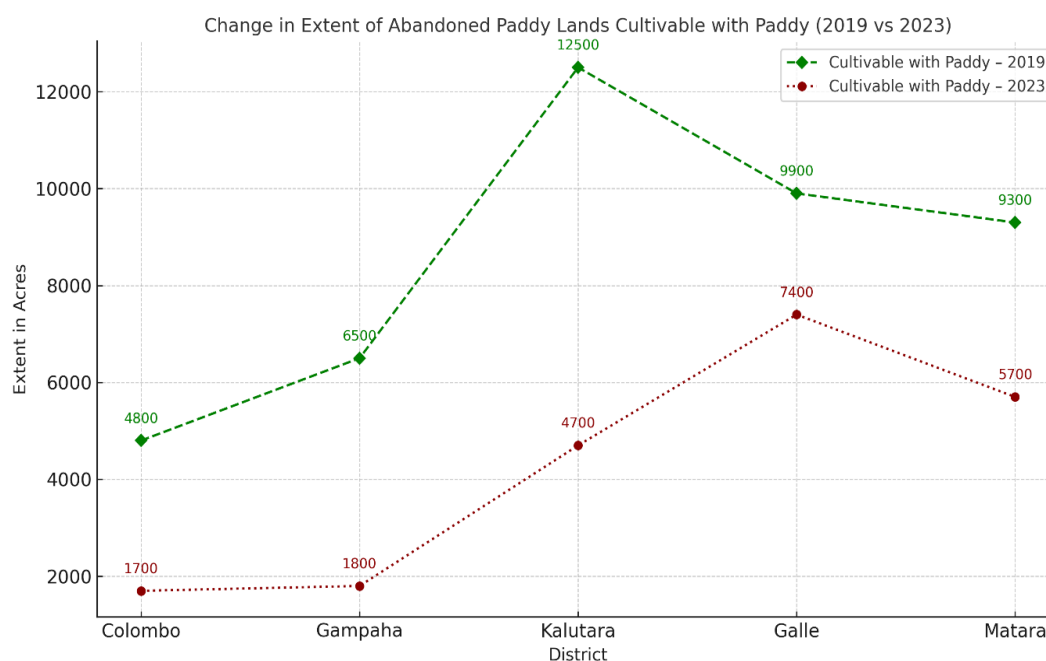
The foregoing discussion reveals that paddy land abandonment in the LCWZCDs results from a complex mix of interlinked technological and non-technological factors. Although these factors have evolved, over time, the underlying issues have been repeatedly identified and remain largely addressable. Therefore, the conversion of paddy lands to alternative uses cannot be justified on these grounds, particularly given the ecological and socio-economic value of the paddy-based landscape in the LCWZCDs.

2.9 Categories of Abandoned Paddy Lands

According to the DAD (2020a), abandoned paddy lands are classified into three main categories based on their current suitability for cultivation. Category A includes lands that remain suitable for paddy cultivation and can be brought back into production. Category B comprises lands that are no longer suitable for paddy cultivation but remain cultivable with other crops. Category C refers to lands that are no longer viable for agricultural purposes.

In a more recent update, the DAD (2023) introduced a refined sub-classification within Category B to reflect the diverse patterns of land use observed in the field. This classification includes three sub-categories; B1, which refers to former paddy lands currently cultivated with short-term crops or seasonal field crops, B2, which includes lands under longer-term or perennial agricultural crops; and B3, which accounts for lands that have been repurposed to other agricultural uses, such as livestock rearing, inland freshwater aquaculture or pasture cultivation. This categorization provides greater clarity on the evolving utilization of abandoned paddy fields and their potential for targeted interventions.

As illustrated in Figure 2.8, there has been a notable decline in the extent of land categorized under Category A, those abandoned but still suitable for paddy cultivation, across all districts within the LCWZCs during the periods from 2019 to 2023. This trend reflects those increasing areas are either shifted to less productive uses or becoming permanently unsuitable for cultivation, thereby exacerbating ecosystem degradation and heightening the vulnerability of the food system.



Source: Department of Agrarian Development, 2020 and 2023

Figure 2.8: Change in Extent of Abandoned Paddy Lands Cultivable with Paddy in LCWZCDs

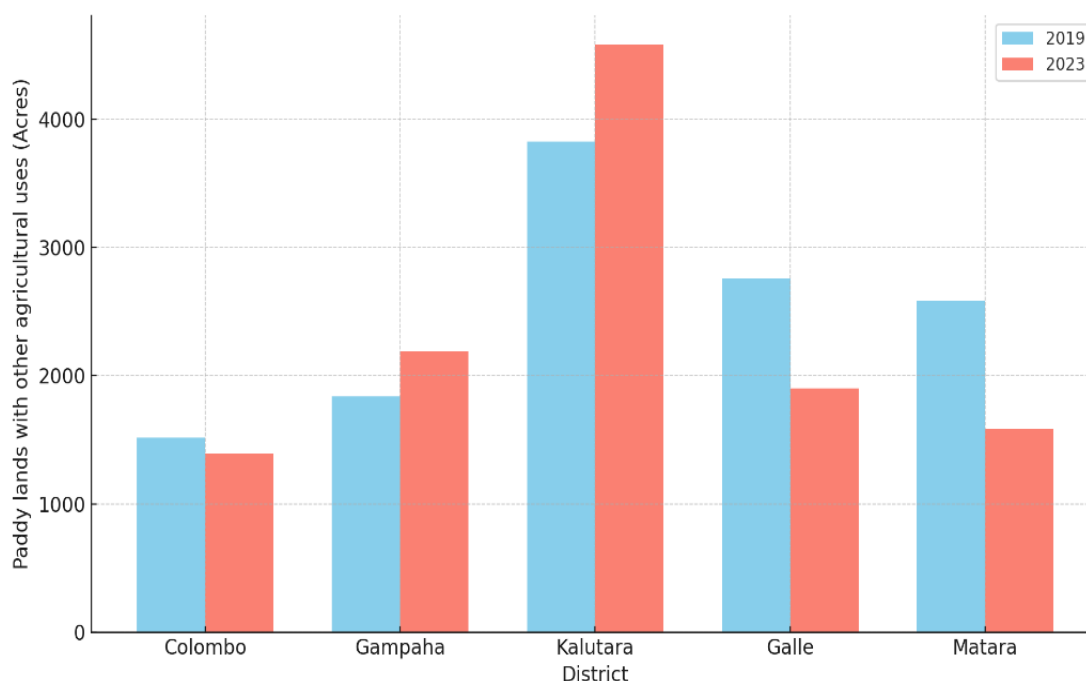
The five LCWZDs account for 337,701 paddy land allotments spanning an area of 218,870 acres. This constitutes approximately 11.1 percent of the total paddy land extent and 18.5 percent of the total number of paddy allotments in Sri Lanka. Within this regional extent, approximately 67,108 acres, or 31 percent of the total Wet Zone paddy area, remain abandoned, affecting 94,300 allotments, which represent 28 percent of the regional total.

Based on the DAD classification, Category A lands which are abandoned but remain suitable for paddy cultivation, comprise 43,308 acres, or 64.5 percent of the total abandoned area. Category B lands, which are suitable for other agricultural uses, occupy 12,525 acres, or 18.7 percent. Categories A and B account for 55,833 acres, while Category C lands which are unsuitable for agricultural purposes, comprise the remaining 11,275 acres, or 16.8 percent.

In terms of the number of allotments, Category A includes 66,188 allotments (70.2%), Category B comprises 16,474 allotments (17.5%) and Category C accounts for 11,638 allotments (12.3%). These figures underscore the disproportionately high rate of paddy land abandonment in LCWZCDs compared with national levels. Approximately 31 percent of the paddy land extent in these five districts is abandoned, compared with only 8.3 percent at the national level. Similarly, 28 percent of the paddy land allotments in these districts are abandoned, compared with 10.2 percent nationally.

It is worth noting that these figures represent the situation prior to the classification of agricultural lands based on the 2015/16 *Maha* season by the DAD. Although minor adjustments have been made since then, the overall trend highlights land abandonment as a critical and persistent issue affecting the sustainability of paddy cultivation in the Wet Zone coastal regions of Sri Lanka.

The DAD utilizes a standardized data collection instrument known as the P1 form to enumerate paddy land holdings across the country. This form serves as the foundational tool for updating land-use records, including the classification of paddy lands as active or abandoned. During enumeration, abandoned paddy lands are systematically excluded from the P1 form. However, if any portion of land previously removed from the registry is brought back under cultivation, regardless of the scale or season, it is classified as *asweddumized* and once again included in the active records (DCS, 1999).



Source: Department of Agrarian Development, 2020 and 2023

Figure 2.9: Change in Abandoned Paddy Lands under Other Agricultural Uses in Five Coastal Districts

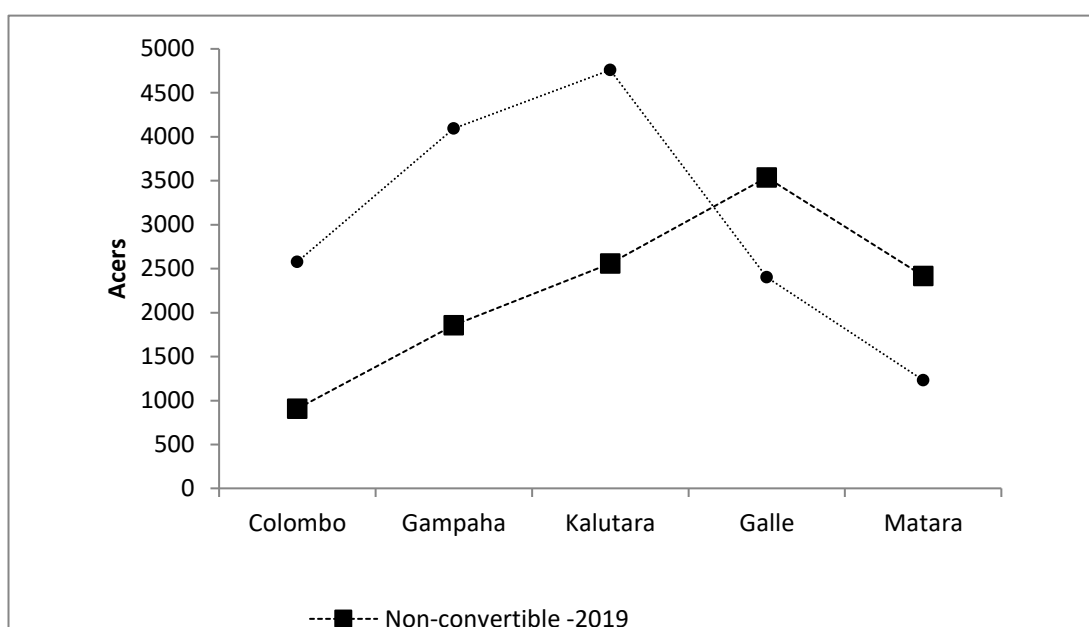
According to official guidelines, the status of abandonment is considered nullified upon the resumption of cultivation, and such lands are treated as active for a full cycle of ten consecutive cultivation seasons, equivalent to approximately five years. This administrative provision underscores the dynamic nature of paddy land status and reflects the policy objective of encouraging the reactivation of abandoned paddy lands.

Figure 2.9 illustrates the extent of abandoned paddy lands that have been diverted to other agricultural uses (categorized as B1 and B2) across the five coastal wet zone districts. It shows a consistent increase in the extent of abandoned paddy lands being used for alternative agricultural purposes. Conversely, the Southern province districts, Galle and Matara, display a slight decline in these alternative uses, suggesting either a slowdown in land conversion or emergence of constraints. These diverting patterns highlight regional differences in land-use adaptation and agricultural resilience.

Figure 2.9 illustrates the extent of abandoned paddy lands classified as Category C, referring to areas deemed unsuitable for any form of agricultural production, in the five LCWZ coastal districts for 2019 and 2023. The data reveal a notable overall increase in such non-convertible lands across most districts, with particularly sharp rises in Colombo, Gampaha, and Kalutara. This trend suggests growing constraints on the potential for land restoration, possibly due to factors such as prolonged neglect, saltwater intrusion, or severe degradation. In contrast, Galle and Matara show a

marked decline in non-convertible lands, which may indicate either partial rehabilitation efforts or reclassification of land use.

Compared with Figure 2.9, which tracks lands diverted to other agricultural purposes, Figure 2.10 reflects a parallel but more concerning trend: an expanding share of abandoned lands that are effectively excluded from agricultural production. This highlights the urgent need for targeted conservation and adaptive land-use strategies. According to official records, however, about 23 percent of the *asweddumized* land area remains abandoned or is subject to various other uses and forms of misuse. This reflects the extent to which society has lost the ecosystem services and related benefits provided by these paddy lands.



Source: Department of Agrarian Development, 2020 and 2023

Figure 2.10: Change in Paddy Land Unsuitable for Agricultural Purposes

The DAD issued Circular No. 1/2021, granting permission under Sections 30 (3) and 34 (1) of the Agrarian Development Act No. 46 of 2000 for the continuous cultivation of paddy highlights the potential crops for utilizing these abandoned fields for various agricultural activities beyond traditional crop cultivation, including the cultivation of both non-permanent and permanent crops using the ridge and furrow system. This circular represents a significant shift in paddy land use policy. While it aims to maximize agricultural production, it also risks exacerbating the degradation of paddy-based ecosystems within the LCWZCDs. The provisions outlined in this circular have, in effect, incentivized the further loss of valuable paddy-based ecosystems, as illustrated in the accompanying figures.

2.10 Reclamation Effects

In principle, re-cultivation programmes, whether initiated by the government, civil society, or farming communities, should result in a measurable reduction in the extent of abandoned paddy lands. Simultaneously, these efforts are expected to produce a corresponding increase in the sown extent under paddy and an expansion of the overall *asweddumized* land area.

However, a review of secondary data (Figure 2.4) indicates that such positive trends have not materialized on a significant scale in recent years. Despite sporadic efforts at land rehabilitation and re-cultivation, the data do not show a sustained increase in active paddy cultivation or a notable decline in abandonment. This discrepancy suggests potential challenges in programme implementation, monitoring, or farmer participation, all of which merit further investigation to strengthen future land recovery strategies.

2.11 Theoretical Framework

The theoretical and conceptual framework of this study draws on three perspectives: political ecology, land-use transition theory, and the multifunctionality of paddy-based ecosystems. Political ecology highlights how power relations, policy interventions, and institutional structures shape land use decisions, influencing reclamation programmes, resource access, and governance outcomes. Within this context, paddy land abandonment and competing land uses in Sri Lanka's LCWZCDs are rooted in broader political-economic dynamics shaped by historical land policies and rural development paradigms. Land Use Transition Theory (Lambin & Meyfroidt, 2010) further explains how agricultural lands undergo shifts toward abandonment or conversion to residential and commercial uses under pressures of urbanization, demographic change, and economic development. These trends are evident in the LCWZCDs, where land values for housing increasingly exceed the returns from agricultural activities. Complementing these perspectives, the concept of agricultural multifunctionality recognizes the paddy lands serve purposes beyond food production. They provide important ecological services, support local livelihoods, contribute to flood regulation and biodiversity conservation, and form an integral part of the socio-cultural identity of rural communities.

2.12 Conceptual Framework

The conceptual framework of this study has been derived based on the above theoretical framework and it constitutes four important aspects, as illustrated in Figure 2.11.

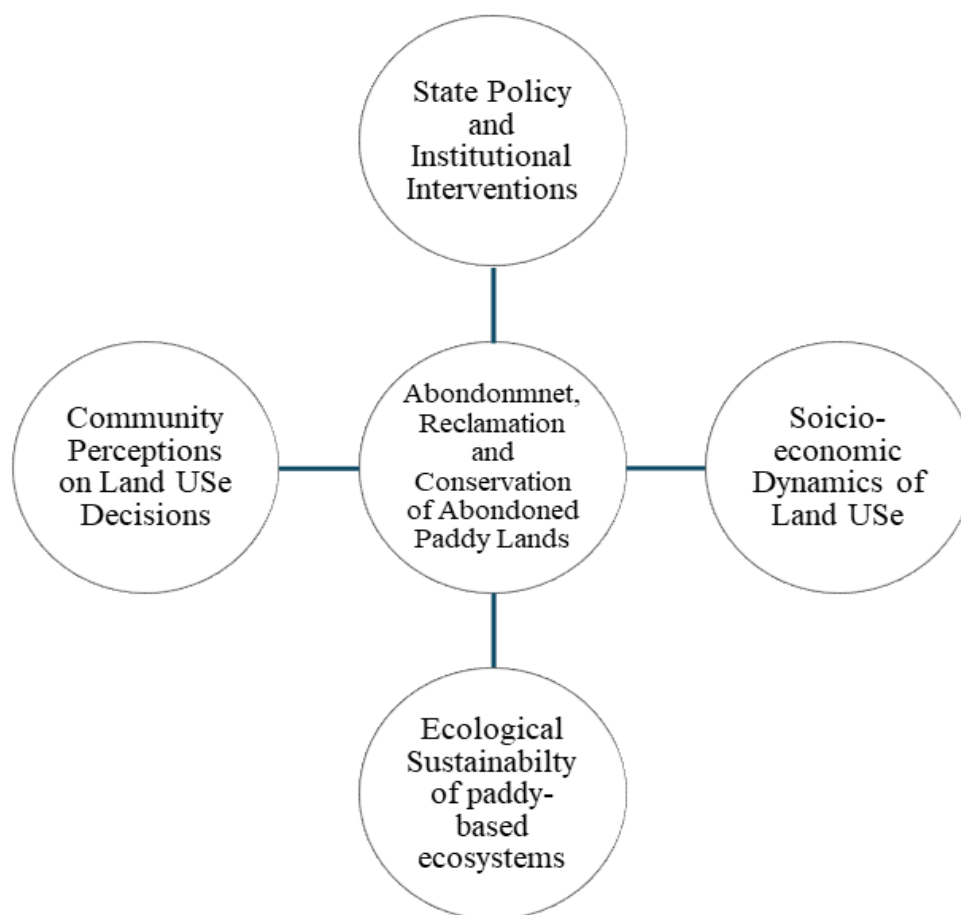


Figure 2.11: Schematic Representation of Project Concept

- **Socio-economic Drivers:** Income opportunities, land market pressures, labour availability, and generational preferences.
- **State Interventions:** Policies and programmes aimed at reclaiming or conserving paddy lands.
- **Environmental Implications:** The impacts of land conversion or reclamation on water flow, soil health, and ecosystem services.
- **Community Perceptions:** Local attitudes toward paddy cultivation, its conservation value, and preferred land uses.

Chapter Three Methodology

3.1 Introduction

The conceptual framework for this study is built around four key perspectives critical to understanding the dynamics of paddy land abandonment and the transition of *asweddumized* paddy lands: (i) socio-economic drivers of land use, (ii) state policies and institutional responses (iii) environmental sustainability concerns, and (iv) community perceptions and engagement in land use decisions. Together, these interconnected dimensions offer a comprehensive framework for analyzing the complex realities surrounding paddy land use transitions.

Against this backdrop, this chapter outlines the methodological approach employed to examine the abandonment, reclamation, and transformation of *asweddumized* paddy lands in the LCWZCDs of Sri Lanka. The study employed a mixed-methods research design, integrating both qualitative and quantitative techniques to capture the complex, and multifaceted nature of land use dynamics. Data were obtained from official statistics, research studies, policy documents, relevant circulars, and community perspectives. Through this structured approach, the study aimed to provide a holistic understanding of the forces shaping the abandonment and future use of paddy lands, while also identifying gaps between policy intentions and their implementation on the ground realities.

3.2 Study Area

The study focused on five LCWZCDs, Colombo, Gampaha, Kalutara, Galle, and Matara, which have experienced significant declines in *asweddumized* paddy land over the past four decades. These districts are characterized by high rainfall, risks of saltwater intrusion, rapid urban expansion, and significant socio-economic transformations, making them suitable for examining patterns of paddy land abandonment and the outcomes of related policies and interventions.

3.3 Data Collection Methods

3.3.1 Secondary Data Review

Secondary data were collected and reviewed from the Department of Agrarian Development (DAD), Department of Census and Statistics (DCS), Ministry of Agriculture, Department of Agriculture, and other relevant government institutions in Sri Lanka. The review also covered relevant circulars, policy documents, research studies, and other publications issued by these institutions during the period from 2000 to 2023.

Types of Data:

The secondary data reviewed covered the following areas:

- Extent and trends of *asweddumized* and abandoned lands (1979–2023)
- Coverage and budgets of paddy land reclamation programmes.
- Legal and institutional frameworks governing paddy land use.
- Circulars and policy measures influencing land-use transitions
- Socio-economic datasets (labour use, fertilizer and seed use, yield, income and profitability)

3.3.2 Key Informant Interviews (KIs)

KIs were carried out to assess the perceived effectiveness of policies, capture implementation challenges and understand institutional perspectives on paddy land reclamation and conversion to alternative uses.

Participants:

- Assistant Commissioners of Agrarian Development Department in study districts
- Agrarian Development Officers -10 discussions
- Agriculture Instructors -10 discussions
- Community leaders

3.3.3 Focus Group Discussions (FGDs)

FGS were conducted with farmer groups in Padukka Agrarian Service Centre area, where a pilot project had been implemented. The discussions focused on the drivers of paddy land abandonment, farmers' preferences regarding land use, attitudes towards state interventions, and perceived barriers to paddy cultivation.

3.3.4 Policy Document Analysis

All relevant circulars issued between 2000 to 2024 relating to paddy land governance, together with the Agrarian Development Act and its amendments were analyzed to assess their content, implementation mechanisms, and possible linkages to abandonment trends in paddy land abandonment and land-use transitions.

3.4 Sampling

This study is primarily based on secondary data sources. The secondary data covered all five districts over a 40-year period. Of the four research objectives, the final objective required the collection of grassroots-level information. For this purpose, the Pahala Hanwella Agriculture Research and Production Assistant (ARPA) Division in Padukka Agrarian Service Centre was selected, with the guidance and support of

the respective Agrarian Development Officer. Districts: Based on highest rates of paddy land abandonment and strategic relevance.

3.5 Data Analysis Methods

Quantitative Analysis

- Trend Analysis: Longitudinal examination of the extent of *asweddumized* lands, abandoned lands, and reclamation success rates using the DCS data (1979–2022).
- Descriptive Statistics: Cost-effectiveness of reclamation efforts, proportions of land in Categories A, B, and C.
- Projection Models: Regression analysis to forecast future loss of paddy land under current trends.

Qualitative Analysis

- Thematic Analysis of interview and FGD transcripts under the four core themes: state intervention, socio-economic drivers, environmental trade-offs, and community perception.
- Policy Analysis Matrix: To assess the alignment and contradictions between circular content and ground realities.

3.6 Limitations

- Among the five districts under consideration, published secondary data on cultivation costs were available only for Gampaha and Kalutara districts.
- Limited ability to validate actual ground-level enforcement of policy directives.

Community perceptions on land use were influenced by the prevailing political climate, which promoted paddy land diversification following the issuance of a recent circular. As a result, the scope of the pilot activity was significantly limited to a single *yaya* programme.

Chapter Four

Results and Discussion

4.1 Introduction

This chapter presents and discusses the key findings of the study in relation to specific objectives. The analysis draws on both primary and secondary data and provides an in-depth understanding of the multiple dimensions of paddy land abandonment and transformation in Sri Lanka's LCWZCDs. The findings are organized around the following specific themes; socio-economic paddy land abandonment, the influence of policy shifts and legal amendments, effectiveness of reclamation programmes, environmental implications and farmer and community perceptions. The discussion highlights both the quantitative and qualitative aspects of each objective and relates the findings to the broader policy and theoretical frameworks established earlier in the report.

4.2 Socio-economic Drivers of Paddy Land Abandonment

The following discussion highlights the socio-economic drivers of paddy land abandonment based on the data from Gampaha and Kalutara districts for the period from 2011 to 2020.

4.2.1 Labour: A Critical Determinant

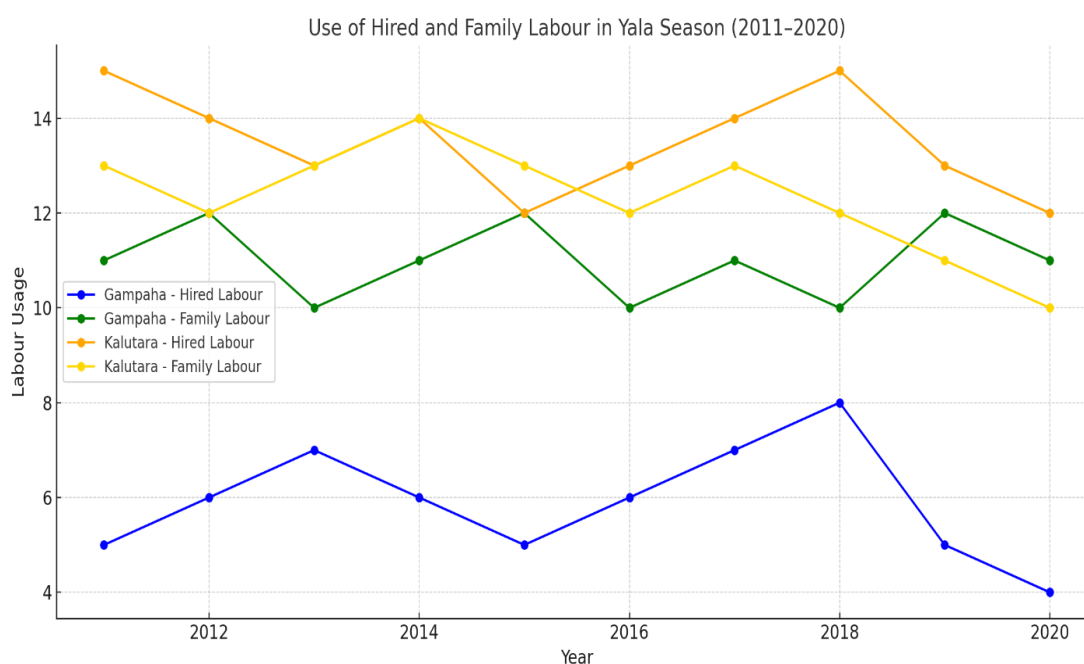
Paddy cultivation in LCWZCDs of Sri Lanka is predominantly carried out during both the *Yala* and *Maha* seasons, relying on a combination of family and hired labour. This dual labour model has historically enabled smallholder farmers to manage cultivation costs while maintaining flexibility in labour allocation across different phases of the cropping cycle. However, labour dynamics in the region have undergone noticeable changes over the past decade.

Data from the Gampaha and Kalutara districts covering the period from 2011 to 2020 offer valuable insights into these shifting patterns (Figure 4.1). The analysis reveals that family labour generally played a more prominent role than hired labour in both cultivation seasons. Nevertheless, a gradual but significant shift towards greater reliance on hired labour is evident, particularly in Kalutara. During the *Yala* season, for instance, the share of hired labour in Kalutara rose from 49% in 2011 to 68% in 2020 (Figure 4.1). A key turning point occurred in 2014, when the proportion of hired labour first surpassed that of family labour, marking the beginning of a new trend in labour dependence.

This growing dependence on hired labour can be attributed to several interrelated socio-economic factors. One major factor is the declining availability of family members to engage in paddy farming, driven by increased off-farm employment opportunities, rural-to-urban migration, and the aging of the farming population. Younger generations are increasingly pursuing education and employment in non-

agricultural sectors, reducing the pool of available household labour for farming activities. As a result, the farmers have had to fill these labour gaps by hiring workers from outside the household. The growing dependance on hired labour also reflects a broader shift in rural labour dynamics within the Wet Zone.

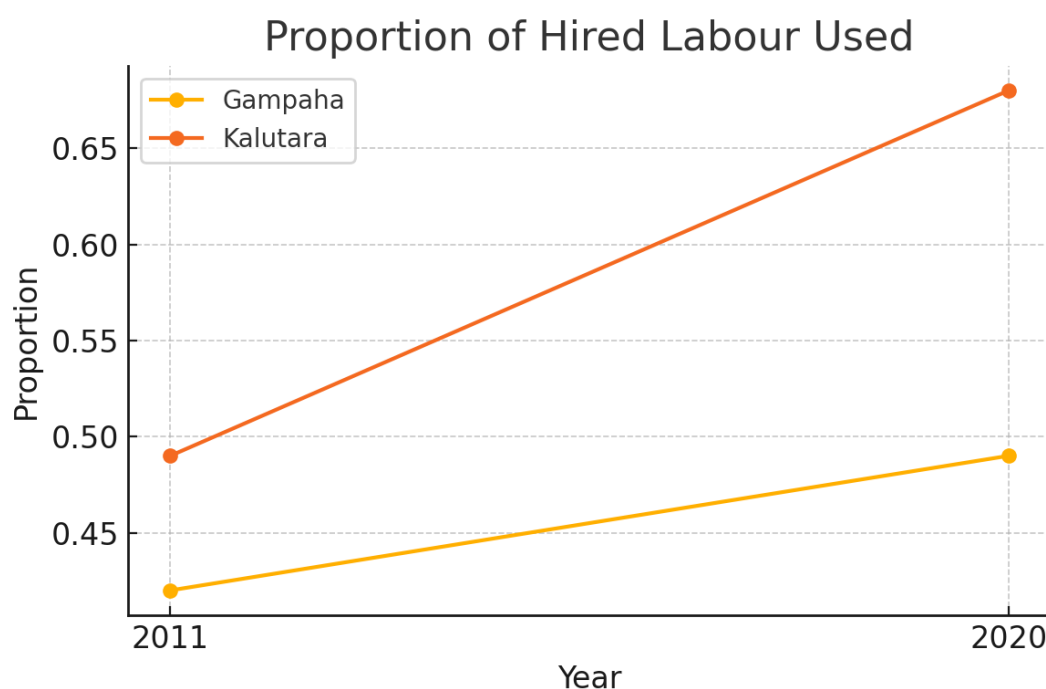
Another critical factor behind this shift is the escalating cost of hired labour. In 2011, the average daily wage for agricultural workers was Rs. 761.00, but by 2020, this figure had more than doubled to Rs. 1,550.00. This sharp increase in wage rates has placed a growing financial burden on smallholder farmers, particularly those operating with narrow profit margins. For many farmers, the rising cost of labour not only reduces the net returns from paddy cultivation but may also influence decisions to reduce or abandon cultivation.



Source: Department of Agriculture (2011-2020)

Figure 4.1: Hired and Family Labour Use for Paddy Cultivation in Gampaha and Kalutara Districts in Yala Season from 2011-2020

These trends indicate a broader transformation in rural labour dynamics (Figure 4.2) within the LCWZCDs. Traditional reliance on family-based labour is weakening, while limited mechanization and rising labour costs are placing increasing pressure on the sustainability of paddy cultivation.



Source: Department of Agriculture (2011-2020)

Figure 4.2: Proportion of Hired Labour Use in Gamapaha and Kalautara Districts: 2011-2020

Therefore, there is an urgent need for targeted interventions to address these labour-related challenges. Promoting labour-saving technologies, such as mechanized transplanting and harvesting, could help reduce the impact of rising costs and scarcity of manual labour. At the same time, integrated rural employment policies that encourage youth participation in agriculture, and support for part-time or flexible agricultural work, could help stabilize labour availability.

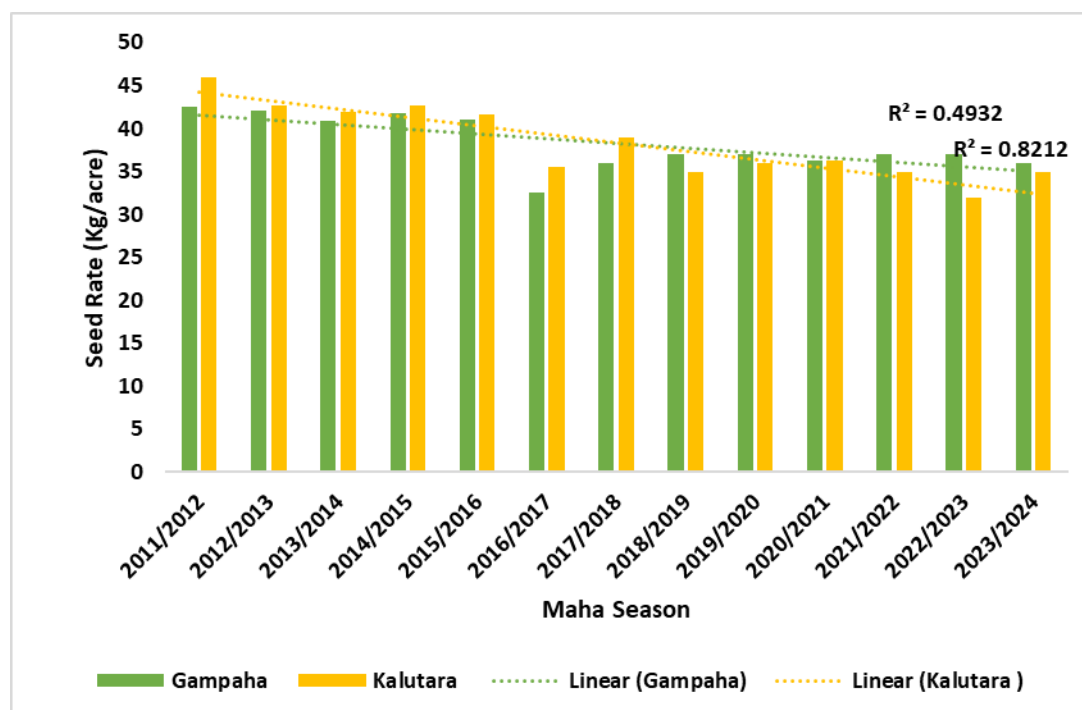
In summary, the shift from family to hired labour in LCWZ paddy cultivation is both a symptom and a driver of broader socio-economic change. Addressing these labour-related challenges issues will be critical to sustaining rice farming in the region and ensuring long-term food security.

4.2.2 Input Usage and Costs

Seed Use

Over the ten-year period under consideration, the types of seed paddy used in the LCWZCDs have remained relatively consistent. Farmers have continued to use a mix of paddy varieties such as BG 358, BG 352, BG 300, BG 359, LD 356, LD 368, BW 367, BW 372 and Kuruluthuda.

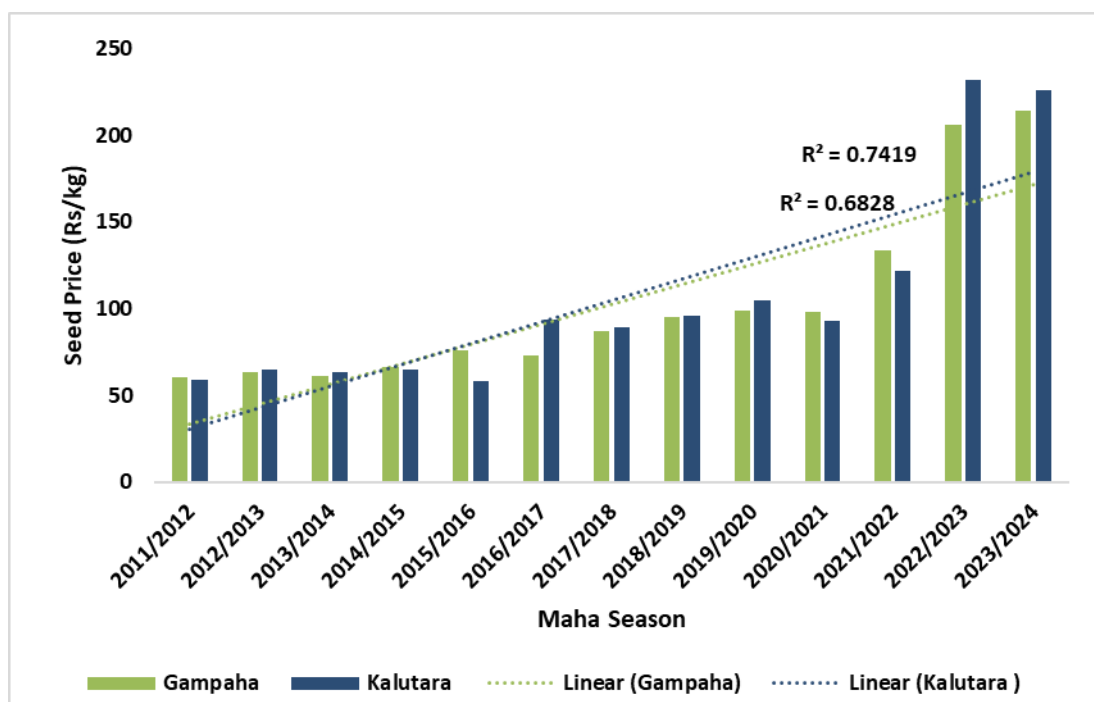
Figure 4.3 compares seed paddy rate (kg/acre) over time in two districts during the *Maha* seasons from 2011/2012 to 2023/2024 together with linear trend lines and R^2 values. Overall, both districts show a declining seed rate over the period, with a steeper decline in Kalutara (0.97 kg/acre/yr) than in Gampaha (0.62kg/acre/yr).



Source: Department of Agriculture (2011-2024)

Figure 4.3: Variation in Seed Rate between Gampaha and Kalutara Districts across *Maha* Seasons

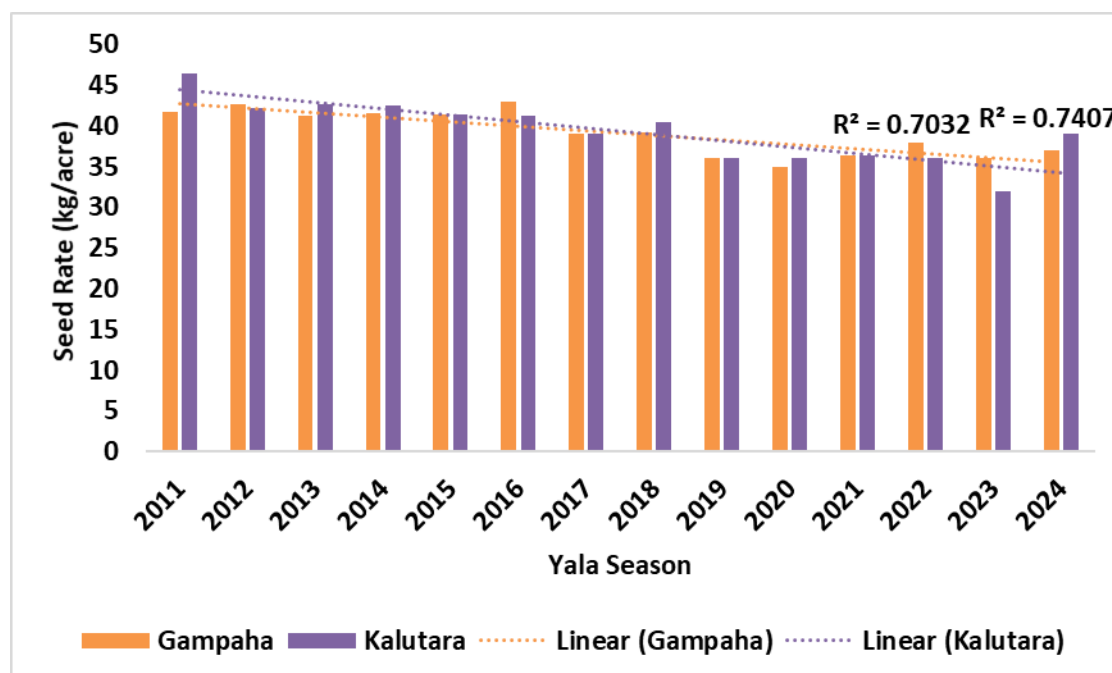
While the average seed rate during the period was around 38kg/acre in both districts, the initial seed rate was higher in Kalutara (around 45kg/acre) than in Gampaha (42kg/acre). In recent years, however, the rates have become nearly equal, at around 35–36 kg/acre. The trend lines and R^2 values indicate a more consistent downward trend in seed rate in Kalutara, while Gampaha shows a weaker correlation and greater year-to-year variability. This implies that farmers in Kalutara have more systematically reduced seed application over time. Possible explanations include efforts to reduce production costs, changes in agronomic recommendations, or shifts in cultivation intensity. Over the same period, seed prices in both districts increased sharply from around Rs. 50–60/kg to more than Rs. 200/kg (Figure 4.4). The sharpest increases occurred after 2021/2022, coinciding with the lowest seed rates in both districts.



Source: Department of Agriculture (2011-2024)

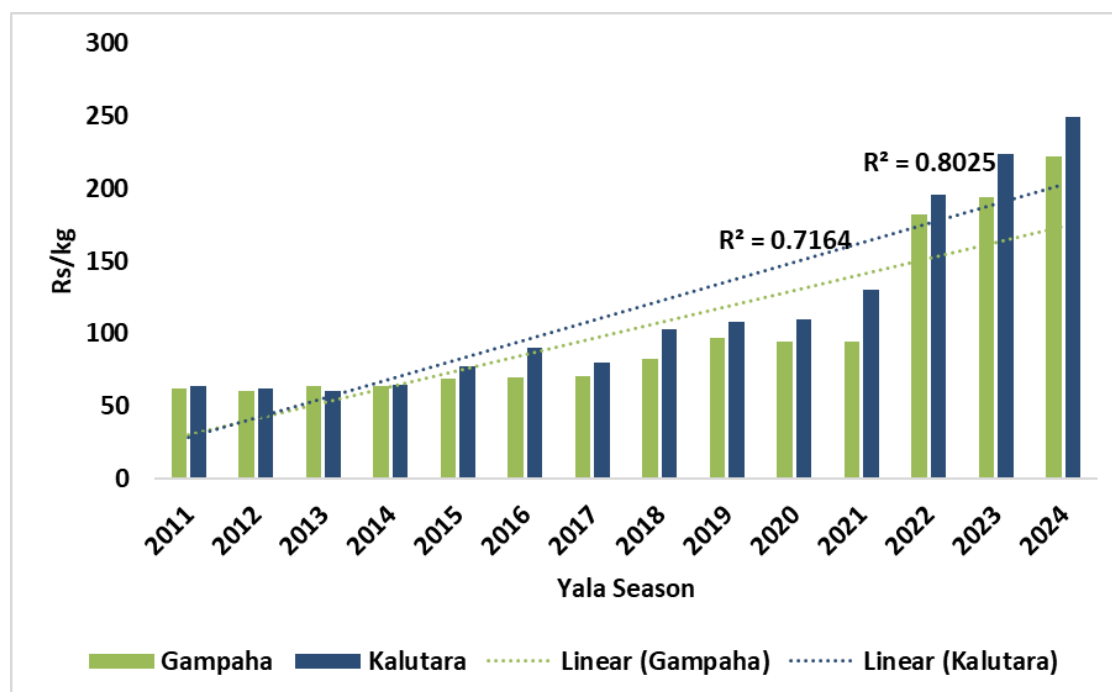
Figure 4.4: Variation in Seed Paddy Prices between Gampaha and Kalutara Districts across *Maha* Seasons

Figure 4.5, which compares seed paddy rate (kg/acre) over time in two districts during the *Yala* seasons from 2011 to 2024, shows a similar declining trend in both districts, whilst the average seed rate for the period concerned is around 39kg/acre in both districts. This decline corresponds with an overall increase in seed prices over the same period, with Kalutara exhibiting a steeper rise in seed prices compared to Gampaha (Figure 4.6). The analysis suggests that rising seed cost may be one of the contributing factors to the decline in seed rates. The high R^2 values indicate that the declines are not merely random year-to-year fluctuations but may reflect improved seed efficiency, changes in cultivation practices, or broader resource constraints. Therefore, it is necessary to evaluate whether reduced seed rates are agronomically optimal or primarily a response to input constraints.



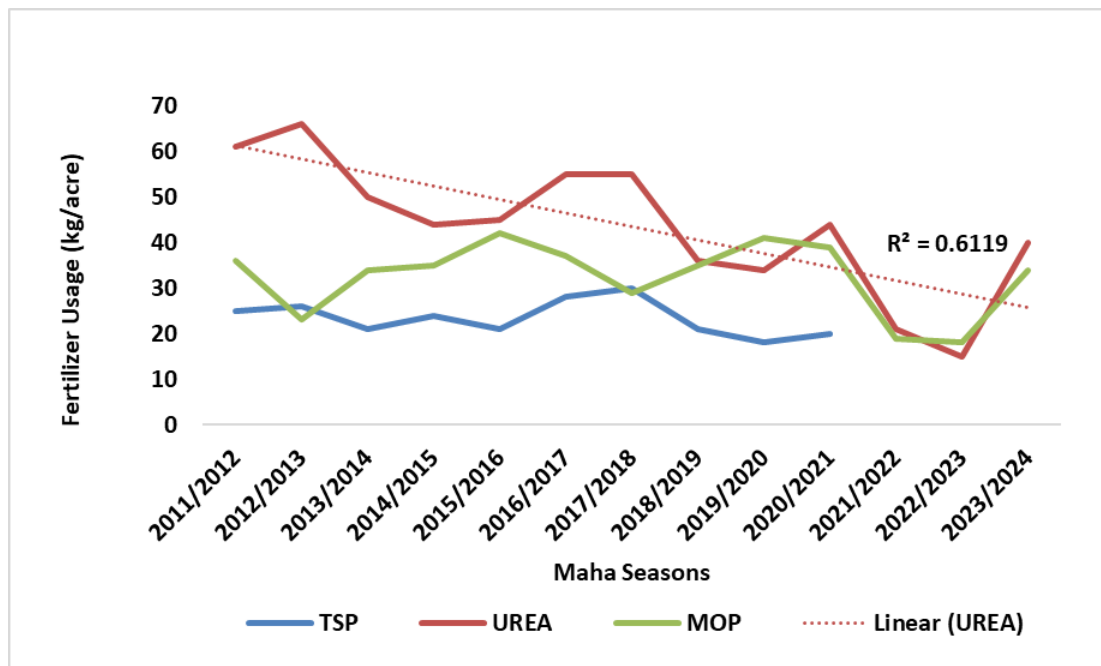
Source: Department of Agriculture (2011-2024)

Figure 4.5: Variation in Seed Rate between Gampaha and Kalutara Districts across Yala Seasons



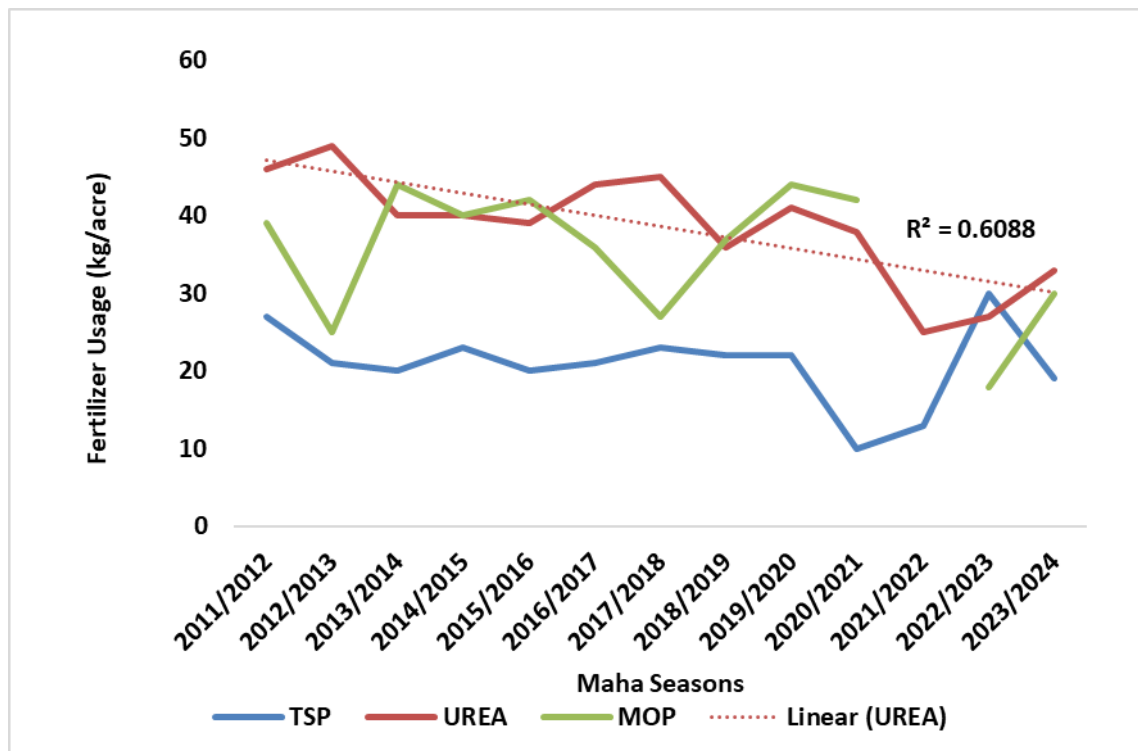
Source: Department of Agriculture (2011-2024)

Figure 4.6: Variation in Seed Price between Gampaha and Kalutara Districts across Yala Seasons



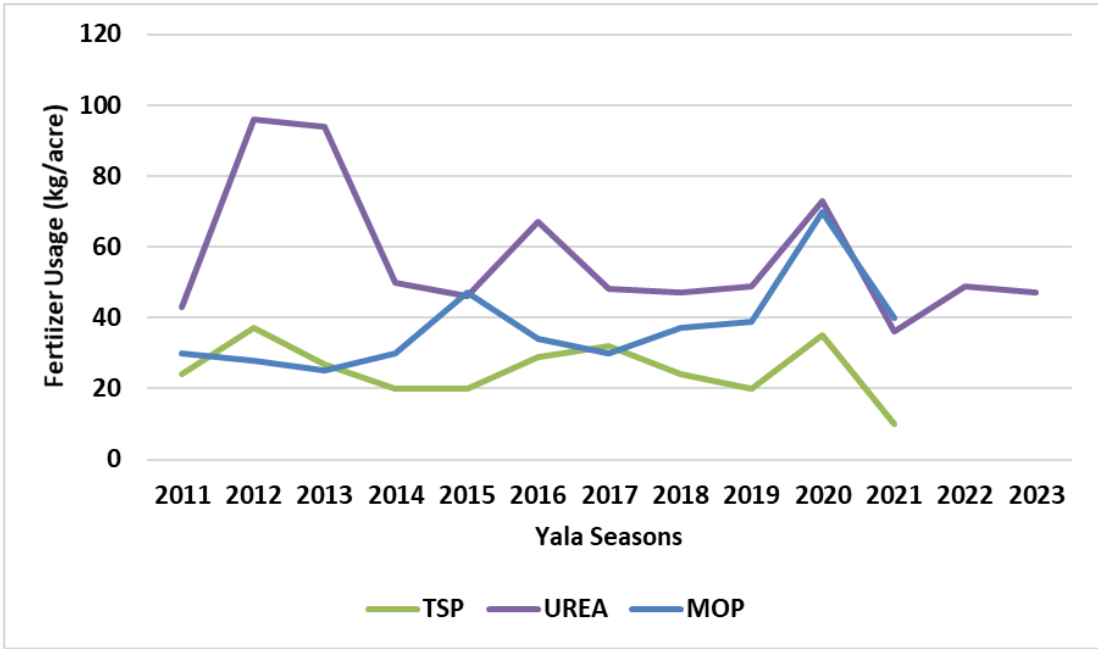
Source: Department of Agriculture (2011-2024)

Figure 4.7: Variation in Fertilizer Use in Gampaha District across *Maha* Seasons



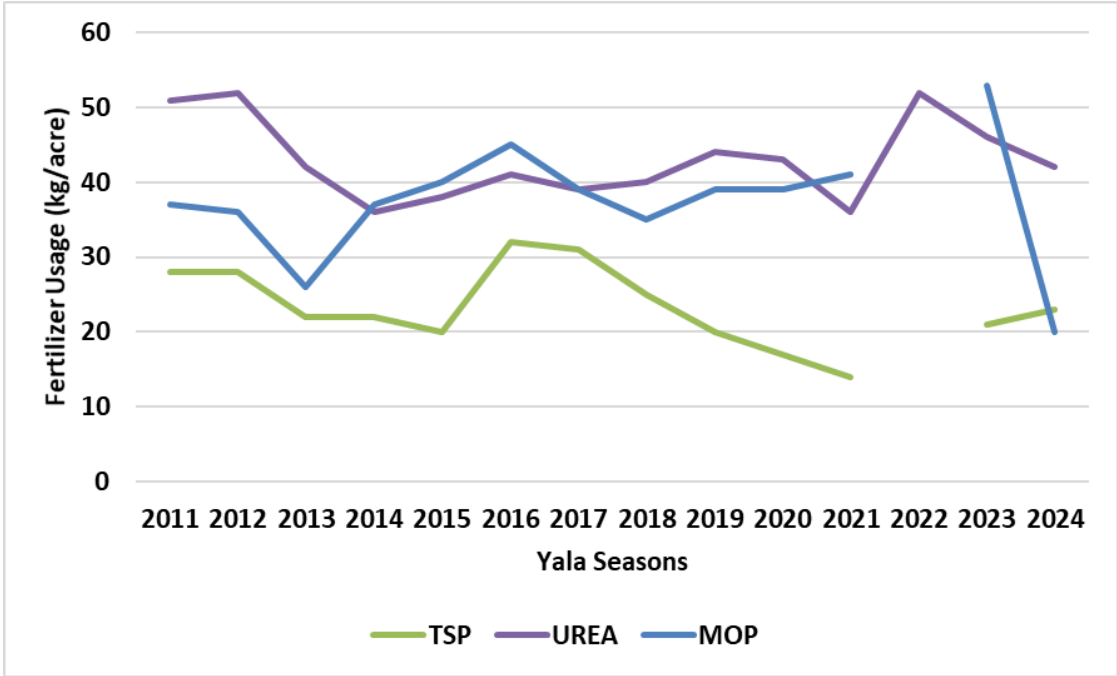
Source: Department of Agriculture (2011-2024)

Figure 4.8: Variation in Fertilizer Use in Kalutara District across *Maha* Seasons



Source: Department of Agriculture (2011-2024)

Figure 4.9: Variation in Fertilizer Use in Gampaha District across *Yala* Seasons



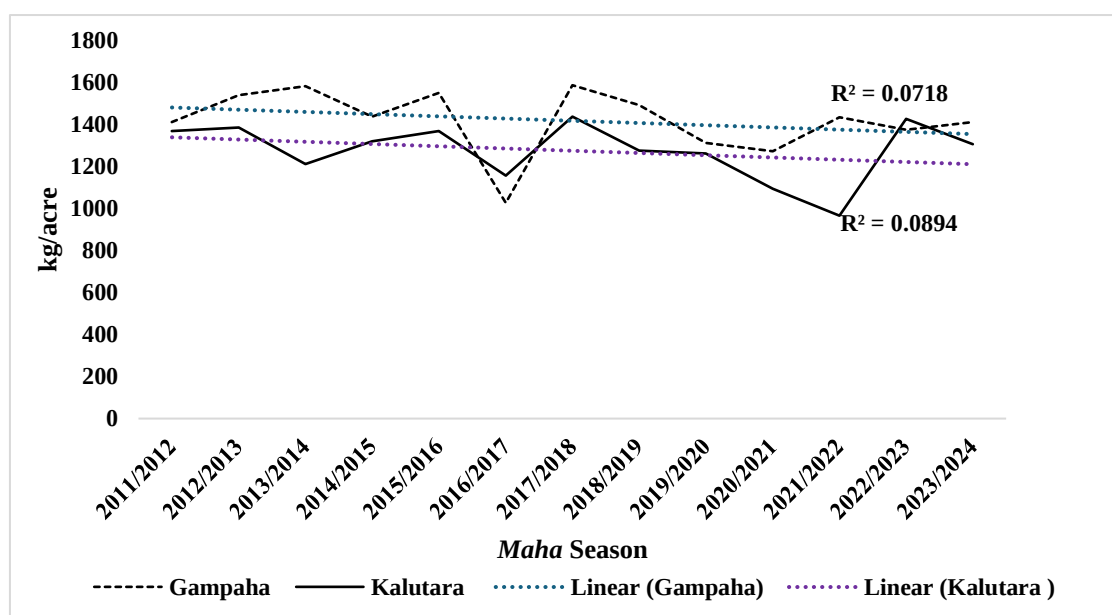
Source: Department of Agriculture (2011-2024)

Figure 4.10: Variation in Fertilizer Use in Kalutara District across *Yala* Seasons

Figure 4.7 to Figure 4.10 illustrate the trends in the use of three chemical fertilizers — Triple Super Phosphate (TSP), Urea and Muriate of Potash (MOP)— in paddy cultivation in the Gampaha and Kalutara districts during the *Yala* and *Maha* seasons. Overall, fertilizer use patterns show considerable year-to-year fluctuation.

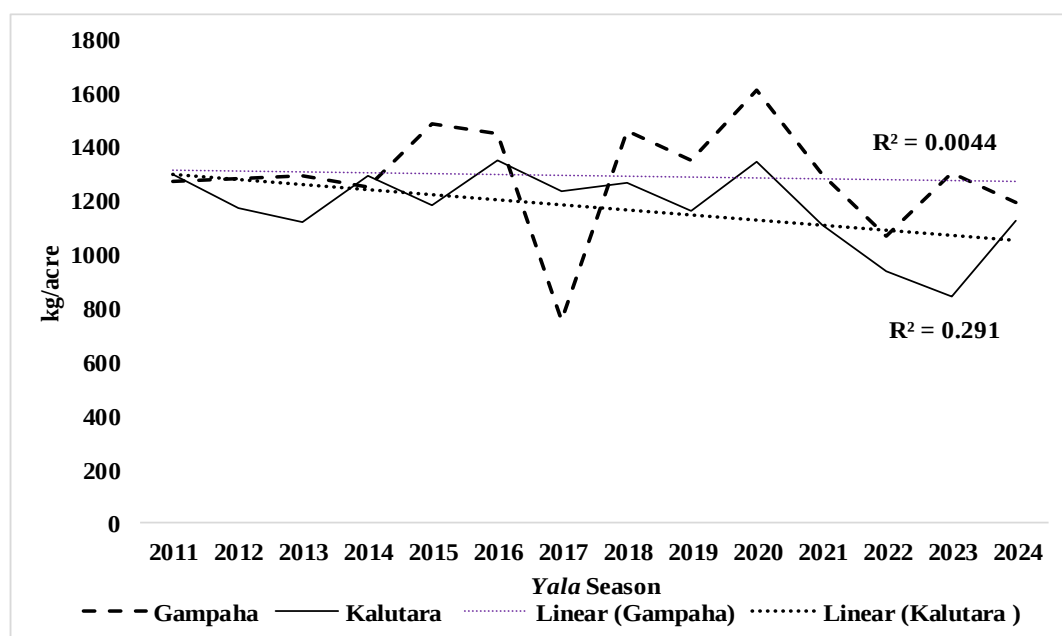
4.2.3 Paddy Yield and Unit Price

The average yield over the *Maha* seasons from 2011/2012 to 2023/2024 was 1,416 kg/acre in Gampaha district and 1,274 kg/acre in Kalutara district. Figure 4.11 compares paddy yield trends in the two districts for the same period. Both districts show almost flat linear trends, with very low R^2 values (0.0718 for Gampaha, 0.0894 for Kalutara), indicating weak correlation between time and yield changes. This suggests that yields have not shown a strong long-term upward or downward long-term trend in either district during the *Maha* seasons. Figure 4.12 compares paddy yield trends in Gampaha and Kalutara districts across *Yala* seasons from 2011 to 2024, and similar trends are evident. The average yield during the *Yala* seasons over the same period was 1,291 kg/acre in Gampaha District and 1,174 kg/acre in Kalutara District. Gampaha consistently recorded higher yields than Kalutara in most years across both seasons.



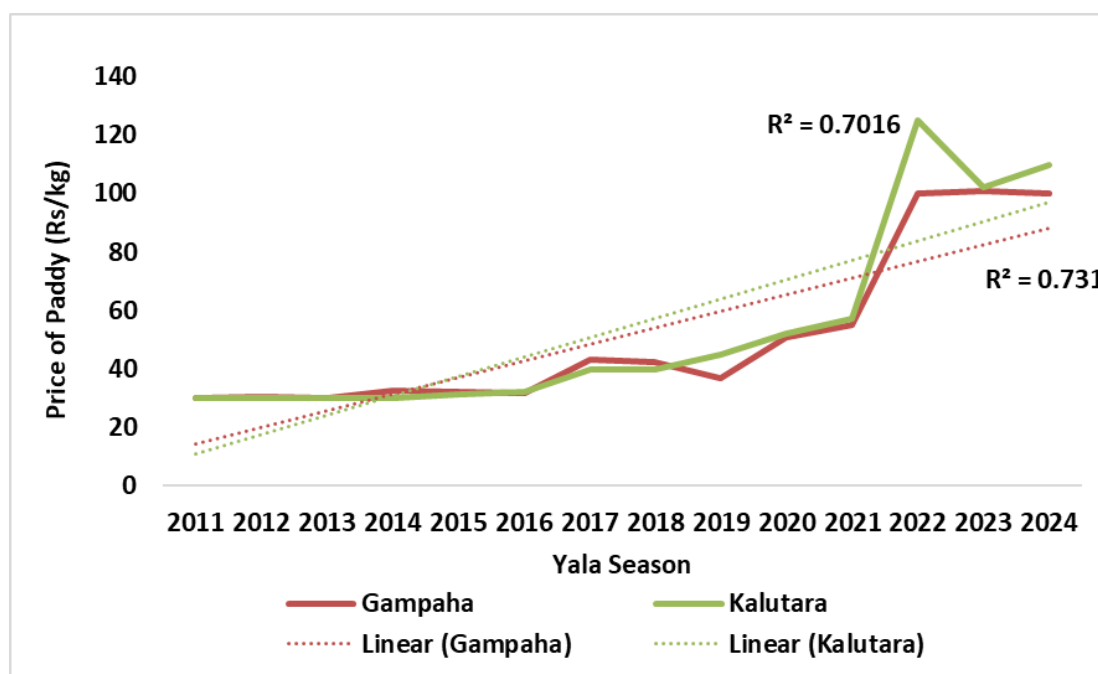
Source: Department of Agriculture (2011-2024)

Figure 4.11: Yield Variation between Gampaha and Kalutara Districts across Maha Seasons



Source: Department of Agriculture (2011-2024)

Figure 4.12: Yield Variation between Gampaha and Kalutara Districts across Yala Seasons



Source: Department of Agriculture (2011-2024)

Figure 4.13: Variation in Paddy Price between Gampaha and Kalutara Districts across Yala Seasons

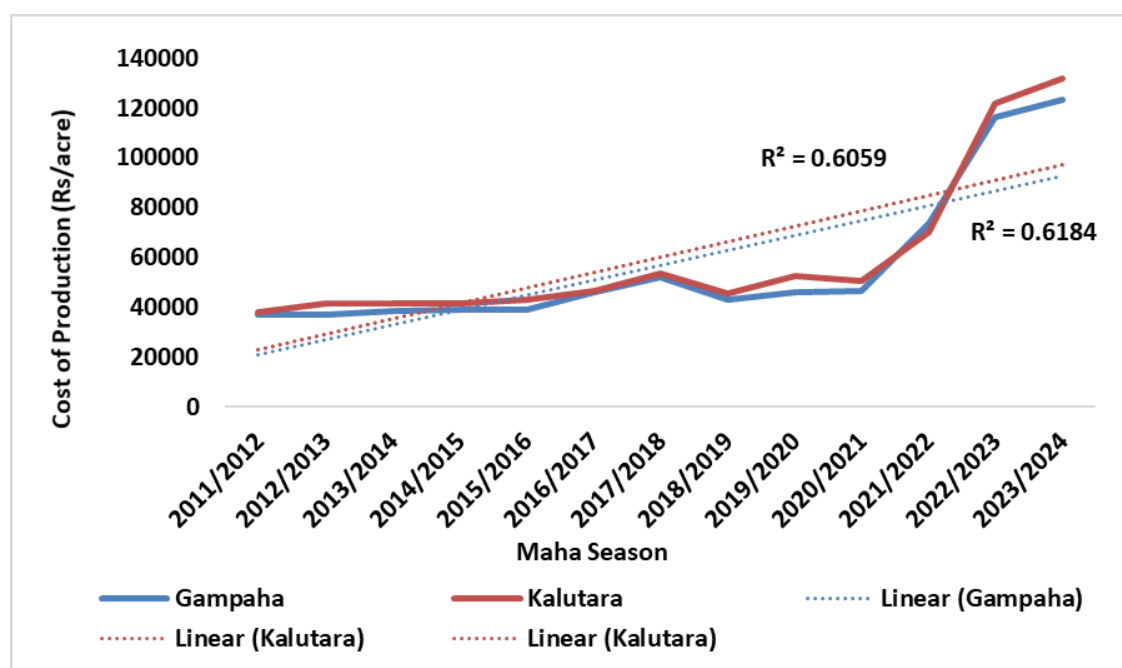
Figure 4.13 indicates a steady upward trend in seed prices, rising from approximately Rs. 30/kg in 2011 to around Rs. 50/kg by 2021, followed by a noticeable surge in the

subsequent year, when prices nearly doubled to about Rs. 100/kg in both districts and across both seasons. Both seasons report the same trend.

4.2.4 Cost of Paddy Cultivation

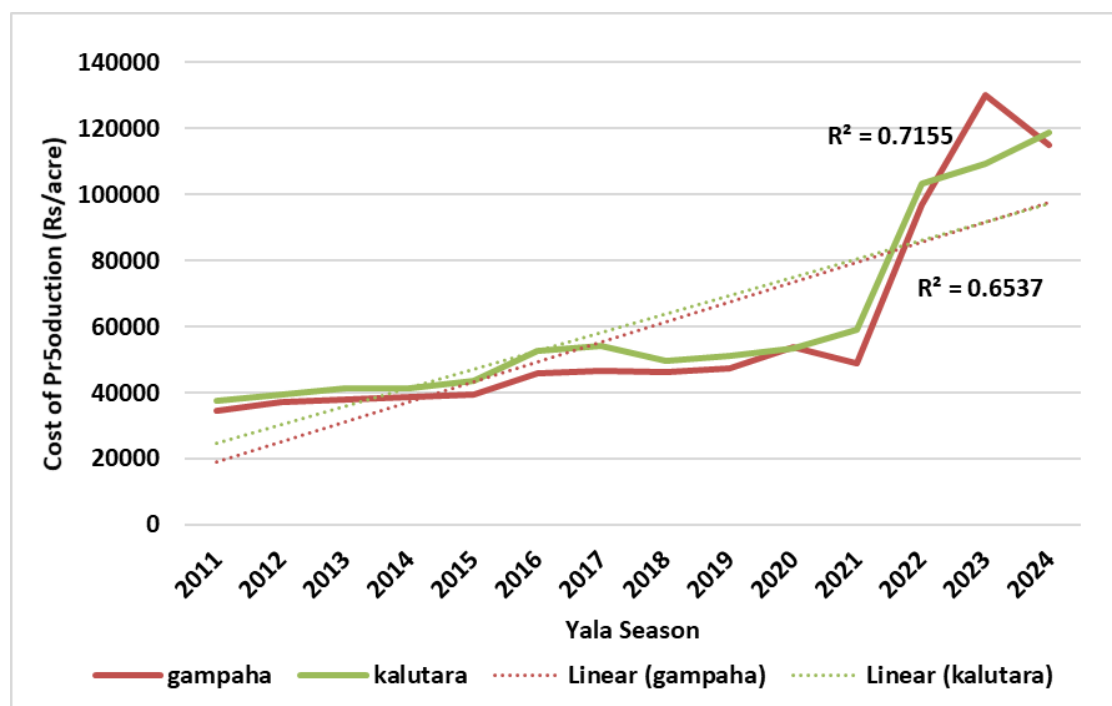
The cost of paddy cultivation in both Gampaha and Kalutara districts showed a steady long-term increase during both *Maha* (Figure 4.14) and *Yala* (Figure 4.15) seasons from 2011/2012 *Maha* and 2011 *Yala* to 2023/2024, with a sharp escalation after 2021/2022 in both seasons. During the *Maha* season, Kalutara generally recorded slightly higher cultivation costs than Gampaha, while during the *Yala* season, Gampaha surpassed Kalutara in later years, reaching a peak in 2023 before a slight drop in 2024.

The cost trends are moderately strong in *Maha* season ($R^2 \approx 0.61$) but stronger in *Yala* season ($R^2 = 0.65-0.72$), suggesting more consistent increases in cultivation costs over time during *Yala* season. These patterns indicate that both seasons were affected by post-2021 surge in input prices, and labour costs, and season-specific factors such as water availability and seasonal labour demand intensifying cost growth in *Yala* compared to *Maha*.



Source: Department of Agriculture (2011-2024)

Figure 4.14: Cost of Paddy Cultivation in *Maha* Season (Rs/ac Including Imputed Cost)

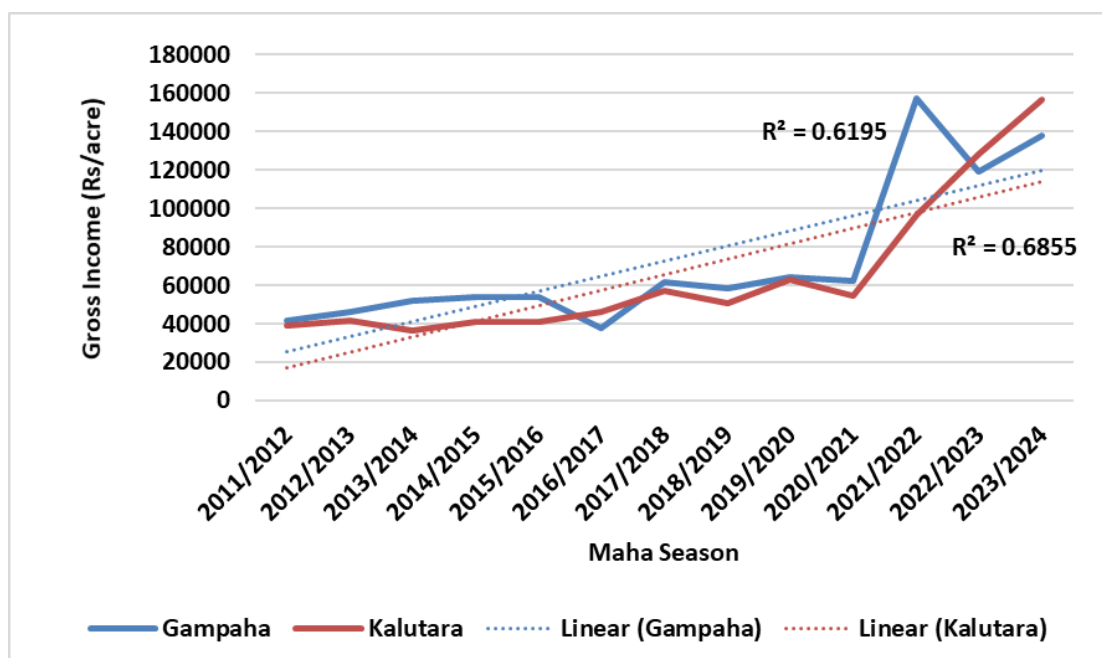


Source: Department of Agriculture (2011-2024)

Figure 4.15: Cost of Paddy Cultivation in Yala Season (Rs/ac Including Imputed Cost)

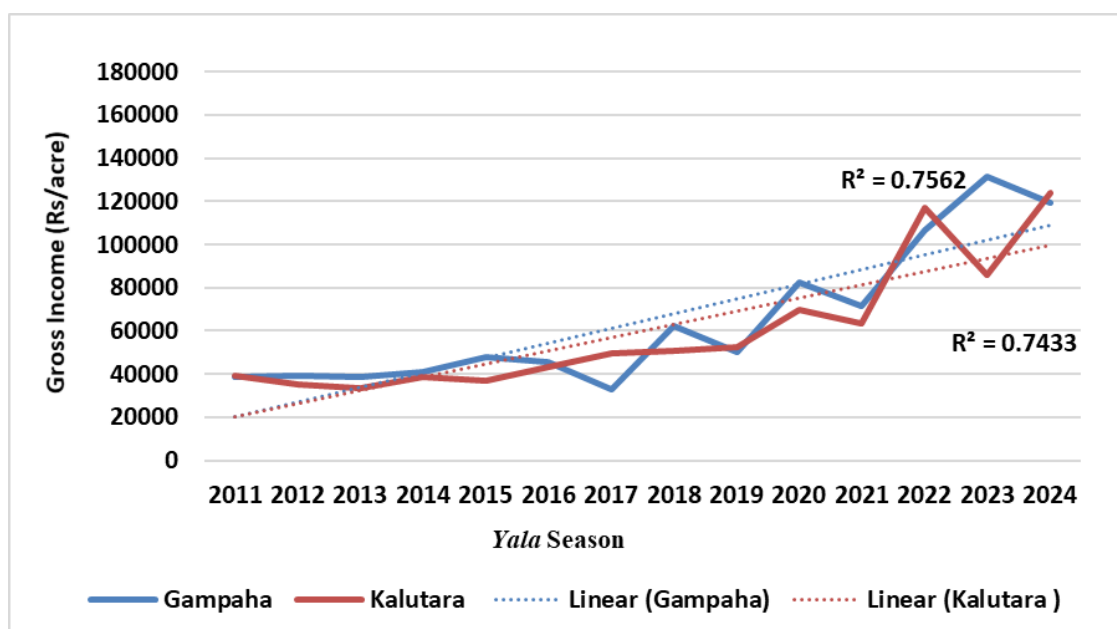
4.2.5 Income and Profitability

Figures 5.16 and 4.17 illustrate a general upward trend in paddy income in both districts from 2011 to 2024. While Gampaha shows greater fluctuations, the trend in Kalutara is relatively smoother, reflecting variations in yields, input costs, and market prices across different seasons. The R^2 values indicate moderate to strong correlations in the respective linear trends.



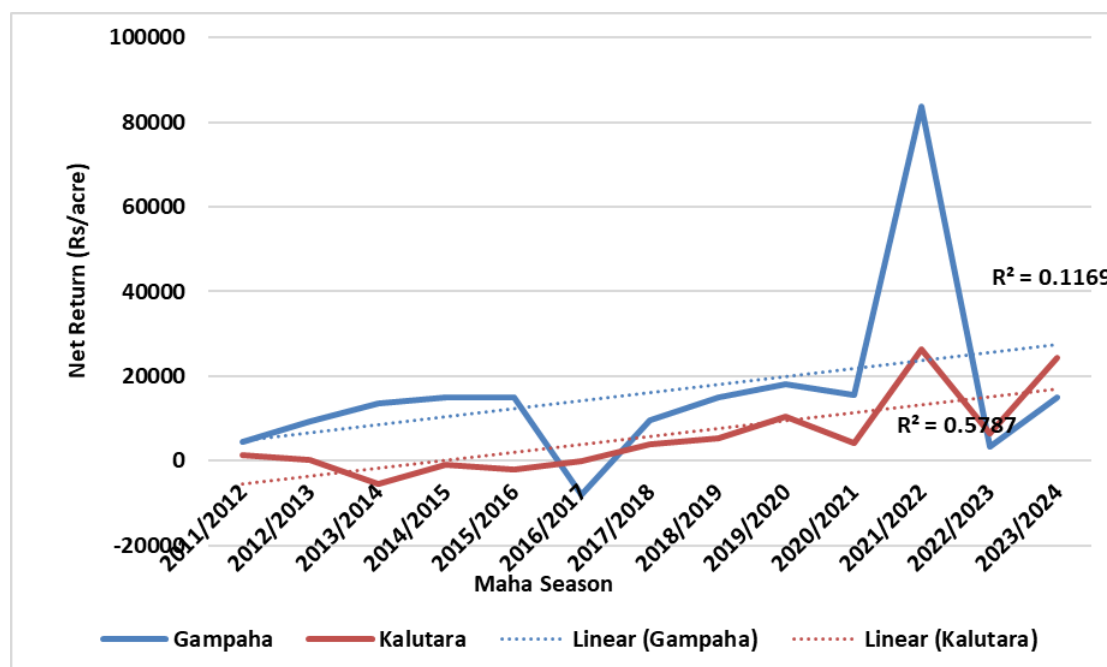
Source: Department of Agriculture (2011-2024)

Figure 4.16: Gross Income from Paddy Cultivation in *Maha* Season (Rs/ac Including Imputed Cost)



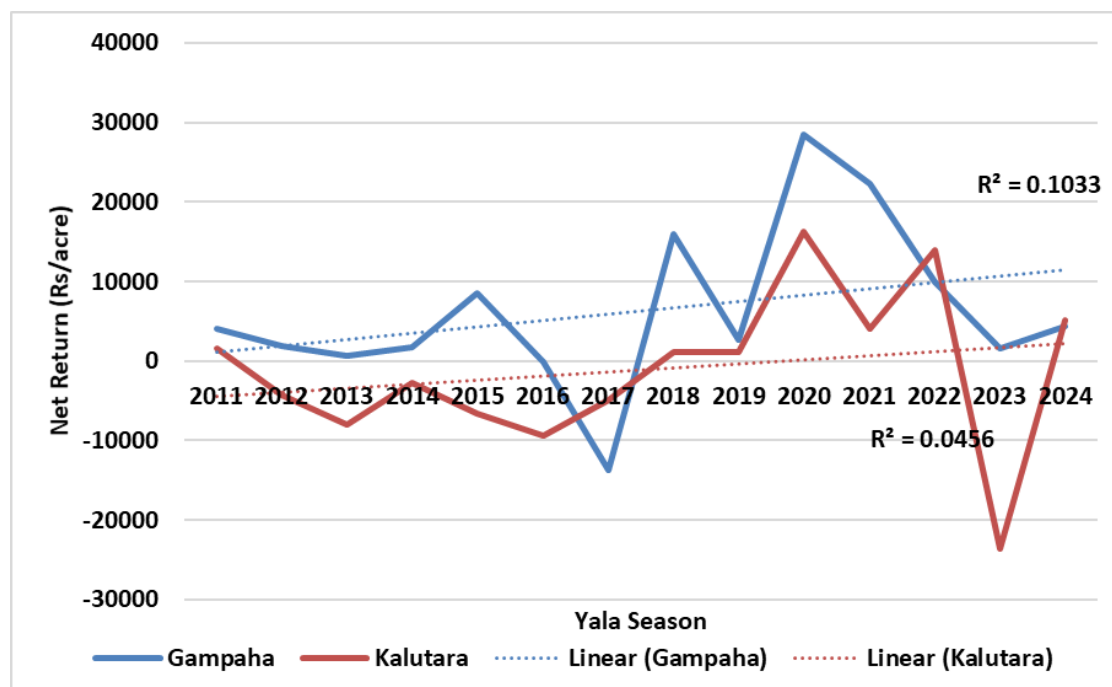
Source: Department of Agriculture (2011-2024)

Figure 4.17: Gross Income from Paddy Cultivation in *Yala* Season (Rs/ac Including Imputed)



Source: Department of Agriculture (2011-2024)

Figure 4.18: Net Return from Paddy Cultivation in *Maha* Season (Rs/ac Including Imputed Cost)



Source: Department of Agriculture (2011-2024)

Figure 4.19: Net Return from Paddy Cultivation in *Yala* Season (Rs/ac Including Imputed Cost)

Figure 4.18 and Figure 4.19 illustrate the profitability of paddy cultivation in both districts across the *Maha* and *Yala* seasons. Except for the notably high profitability observed in the 2020 *Yala* season and the subsequent *Maha* season, profitability fluctuated slightly from year to year, alternating between positive and negative values. Overall, these findings highlight the economic challenges of paddy cultivation in LCWZCDs, providing a clear rationale for land abandonment and underscoring the need for targeted interventions to address this issue.

4.3 Key Legislation and Amendments related to Paddy Land Governance in Sri Lanka

4.3.1 Paddy Land Acts and Amendments

Paddy Lands Act of 1953

The Paddy Land Act of 1953 marked an early legal effort to protect the rights of tenant cultivators by requiring written and registered lease agreements and providing protection against eviction. Initially, the Act applied to the Hambantota and Batticaloa districts. However, its impact was limited by weak implementation and enforcement. According to the cited source, only two agreements were signed in Hambantota allowing landlords to bypass the system. (<https://www.lankaweb.com/news/items/2021/03/08/the-general-election-of-1956-part-4f/>). The limited number of registered agreements allowed landlords to circumvent the provisions of the legislation. Nevertheless, this early legislation laid the foundation for subsequent and more comprehensive measures, including the Paddy lands Act No. 1 of 1958, the Agrarian Services Act of 1979 and the Agrarian Development Act of 2000, which progressively reshaped agrarian relations and paddy land governance in Sri Lanka.

Key Provisions:

- i. **Security of Tenure**
Lease agreements were required to be documented and registered, providing tenants with protection for the duration of the agreement, generally five years
- ii. **Eviction Protection**
Tenants could be evicted only through a formal court process, thereby reducing arbitrary eviction by landlords.
- iii. **Regulation of rents**
The Act introduced limits on rents payable by tenants to landlords, recognizing the prevailing sharecropping arrangements and seeking to protect tenant farmers from excessive rental demands.

The Paddy Land Act, No. 1 of 1958

The Paddy Lands Act, No. 1 of 1958 was enacted in 1958 as one of Sri Lanka's first major agrarian reform laws. It strengthened the legal protection of tenant cultivators and introduced mechanisms for paddy land registration and protection. Its key objectives included providing security of tenure for tenant cultivators, regulating relationships between landlords and tenant farmers, ensuring a more equitable distribution of benefits from paddy cultivation and promoting the proper use and development of paddy lands. The Act represented a significant step in Sri Lanka's agrarian reform process and sought to address long-standing issues of rural poverty, inequalities between landlords and tenants, and low agricultural productivity. However, its implementation faced administrative and political challenges. Many of its provisions were subsequently modified or superseded by later legislation, particularly the Agrarian Services Act of 1979 and subsequent laws (Weerawardena, 1975).

Key Provisions

- i. **Tenant Security:** Recognized tenant cultivators (known as *ande tenants*) were provided with legal protection against arbitrary eviction by landlords. Under certain conditions, tenancy rights could be inherited.
- ii. **Regulation of Tenancy Terms:** The share of produce due to landlords was regulated (generally ranging from one-fourth to one-third of the harvest, rather than allowing arbitrary demands), and written tenancy agreements were also encouraged.
- iii. **Administrative Mechanisms:** Establishment of Cultivation Committees (later renamed *Paddy Lands Committees*) in each area to oversee implementation. Committees were responsible for resolving disputes, maintaining records of tenant cultivators, and managing paddy land development programmes.
- iv. **Promotion of Cultivation:** Aimed to prevent underutilization or abandonment of paddy lands by requiring landlords to allow cultivation by tenants and encouraged the organized use of water and collective farming practices.

Agrarian Services Act, No. 58 of 1979

The Agrarian Services Act, No. 58 of 1979, was a significant piece of legislation in Sri Lanka that replaced the earlier 1958 Act, broadening the scope of agrarian services and institutional frameworks. Its primary objectives were to provide security of tenure to tenant cultivators of paddy lands, regulate tenancy agreements, and establish a more structured institutional framework for agrarian services (LankaLaw, Accessed on 2025.04. 07).

Key Provisions:

- i. **Security of Tenure:** The Act sought to protect tenant cultivators from arbitrary eviction and safeguard their right to cultivate paddy lands without undue interference.
- ii. **Regulation of Tenancy Agreements:** It defined the rights and responsibilities of both landlords and tenant cultivators and specified the terms of tenancy agreements and rents payable.
- iii. **Establishment of Agrarian Services Committees:** The Act provided for the creation of Agrarian Services Committees to oversee and manage agrarian matters at the local level.
- iv. **Resolution of Disputes:** It outlined procedures for resolving tenancy and other disputes relating to agricultural lands, and empowered the Commissioner of Agrarian Services to adjudicate such matters.
- v. **Appointment of Cultivation Officers:** The Act provided for the appointment of cultivation officers to assist in implementation its provisions and supporting tenant cultivators.
- vi. **Repeal of Previous Legislation:** The Act repealed the Agricultural Productivity Law, No. 2 of 1972, and the Agricultural Lands Law, No. 42 of 1973, thereby consolidating important aspects of agrarian legislation under a single framework.

Agrarian Development Act, No. 46 of 2000

The principal legislation governing paddy land use, tenant rights, and agrarian development.

Key Provisions:

- i. **Sections 32-34:** Regulate the use of paddy lands, and require written permission from the Commissioner-General for non-agricultural uses.
- ii. **Section 53:** Mandates the maintenance of agricultural land registers by Agrarian Development Councils.
- iii. **Provision for Land Bank:** Provides for the establishment of a Land Bank to manage underutilized or abandoned paddy lands.

Agrarian Development (Amendment) Act. No. 46 of 2011

The 2000 Act was amended to enhance regulatory mechanisms and address emerging challenges in agrarian development. The Agrarian Development (Amendment) Act No. 46 of 2000, along with its 2011 amendment, encompasses various clauses that, directly or indirectly, seek to prevent the neglect and abandonment of paddy lands.

Key Provisions:

- i. **Protection against Unauthorized Use and Conversion**

Sections 32 to 34 prohibit the use of paddy land for non-agricultural purposes without the written permission from the Commissioner-General. This includes filling, constructing structures, or extracting minerals from paddy lands (Sri Lanka Law-LawNet).

ii. **Monitoring and Enforcement Mechanisms**

Section 31 empowers the Commissioner-General and designated officers to inspect agricultural lands to ensure they are used appropriately and are not misused or left uncultivated.

iii. **Tenant Cultivator Rights and Obligations**

Sections 1A to 1H define the rights and obligations of tenant cultivators, including protection against arbitrary eviction and procedures relating to succession and disputes. This framework aims to promote continuous cultivation by providing greater security to cultivators (Sri Lanka Law-LawNet).

Strengths of the Existing Provisions

- i. **Comprehensive Regulatory Framework:** The act establishes clear guidelines on the permissible use of paddy lands, aiming to prevent their unauthorized conversion and, encourage their continued cultivation.
- ii. **Empowerment of Oversight Authorities:** By granting inspection and enforcement powers to the Commissioner-General and relevant officers, the act facilitates proactive monitoring and intervention.
- iii. **Protection of Cultivator Rights:** By safeguarding tenant cultivators from unjust eviction and recognizing their rights, the Act promotes sustained engagement in paddy cultivation.

Potential Weaknesses and Gaps

- i. **Enforcement Challenges:** Although the Act provides for inspections and penalties, its effectiveness in enforcement may be hindered by limited resources, lack of awareness among stakeholders and bureaucratic delays.
- ii. **Ambiguity in Addressing Abandonment:** The act focuses more on preventing unauthorized use rather than directly addressing scenarios where paddy lands are left fallow without any alternative use. This may create gaps in effectively addressing land abandonment.
- iii. **Insufficient Incentives for Cultivation:** The Act emphasizes regulations and penalties but contains limited provisions to actively encourage or incentivize landowners and cultivators to maintain continuous cultivation, especially under economically challenging circumstances.

4.3.2 Key Administrative Guidelines related to Paddy Land Governance in Sri Lanka

1. Circular No. 12/2001:

Implementation of the Regulations under the Agrarian Development Act, No. 46 of 2000.

Issued by the DAD in Sri Lanka, the circular mainly deals with the transfer of ownership of paddy lands from the owner to the actual operator (the person who cultivates the land), in line with provisions under the Agrarian Development Act No. 46 of 2000 (DAD, 2001). The purpose of the circular is to establish a formal procedure through which a landowner can sell or transfer paddy land to the actual operator (cultivator), ensuring legal recognition and security of tenure for the operator. The circular is based on Sections 32(1), 33(1), and 34(1) of the Agrarian Development Act, which deal with the rights of tenant cultivators and procedures relating to changes in land ownership.

(https://drive.google.com/file/d/1P1mFY9tArWMKMJvV_72OSOUFo4h4Np1S/view, Accessed on 2025.02.02).

Key Provisions:

- i. The landowner may agree to sell the land to the recognized cultivator.
- ii. The Agrarian Development Officer plays a key role in verifying the status of the operator and facilitating the transfer process.
- iii. It ensures that cultivators with long-term involvement in paddy cultivation are not unfairly removed or displaced.
- iv. The land must remain under paddy cultivation even after the ownership transfer, thereby maintaining its agrarian use.

The importance of the circular lies in its effort to protect cultivators' rights, reduce informal tenancy arrangements, and promote long-term investment in paddy cultivation. It also reflects the State's policy of strengthening the hands of actual food producers rather than absentee landowners.

2. Circular No. 01/2018:

Opening Agricultural Land Register for Public Inspection and Accepting Ownership Objections for Revision – 2018.

Issued by the DAD in Sri Lanka, the circular addresses the resolution of ownership disputes concerning paddy lands. The circular outlines procedures for verifying and correcting ownership records in the Paddy Land Register, thereby ensuring that rightful owners are accurately documented (DAD, 2018a).

Key Provisions

- i. Establishes a process through which individuals can submit claims or objections regarding paddy land ownership.
- ii. Applicants are required to provide supporting documents, such as deeds or other legal evidence, to substantiate their claims.
- iii. Upon receiving a claim, the Department conducts a thorough assessment to verify the legitimacy of the ownership dispute.

- iv. If the claim is validated, the necessary corrections are made to the Paddy Land Register to reflect accurate ownership information.

The importance of the circular lies in its aim of maintaining transparent and accurate land ownership records and ensure that all changes to land ownership are properly documented and accessible for future reference. This directive also seeks to uphold the integrity of land ownership records, prevent unauthorized claims, and protect the rights of legitimate landowners.

3. Circular No. 06/2018:

Preparation of a Document Containing Information Related to Abandoned Paddy Lands Identified under the 2015/2017 Paddy Land Register Revision Programme.

Issued by the DAD in Sri Lanka, the circular focuses on the classification and documentation of abandoned paddy lands. It introduces a systematic approach to identify and register these lands under three categories -A, B, and C- based on their current usage and cultivation status (DAD, 2018b).

Key Provisions:

- i. **Category A:** Paddy lands that remain suitable for paddy cultivation and can be brought back into production.
- ii. **Category B:** Paddy lands that are not currently used for paddy cultivation but have the potential to be used for other agricultural purposes.
- iii. **Category C:** Paddy lands that have been permanently abandoned and are unlikely to be used for cultivation in the future.

The circular mandates Agrarian Service Centers to conduct thorough surveys to accurately classify abandoned paddy lands into these categories. This classification aims to facilitate better land management, policy formulation, and targeted interventions to rehabilitate and optimize the use of abandoned paddy lands across the country.

4. Circular No. 07/2018:

Procedure for Obtaining Approval to Use Paddy Lands for a Purpose other than Agricultural Cultivation, or to fill a Paddy Land for Any Purpose other than Cultivation, Under Sections 32(1), 33(1), and 34(1) of the Agrarian Development Act No. 46 of 2000 as Amended by Act No. 46 of 2011.

Issued by the DAD in Sri Lanka, the circular provides comprehensive guidelines for the utilization of paddy lands for purposes other than traditional agriculture. This directive is grounded in Sections 32(1), 33(1), and 34(1) of the Agrarian Development Act No. 46 of 2000, as amended (DAD, 2018c).

Key Provisions:

- i. **Alternative Land Use Authorization:** The circular establishes a legal framework under which paddy land can be repurposed for non-agricultural activities. This includes a structured four-stage process to ensure that any land use change is systematically evaluated and approved.
- ii. **Application and Approval Process:** Landowners seeking to convert paddy lands for alternative uses must submit formal applications. These applications are subject to rigorous assessment by the DAD to ensure compliance with existing agricultural policies and land-use regulations.
- iii. **Environmental and Agricultural Impact Assessments:** Before approval, thorough evaluations are conducted to assess the potential environmental impact and the implications for agricultural productivity. This ensures that land conversions do not adversely affect the ecosystem or food security.
- iv. **Monitoring and Compliance:** Following approval, the Department mandates regular monitoring to ensure that the land use aligns with the approved purpose and that any conditions stipulated during the approval process are strictly adhered to.

The circular aims to balance the need for land development with the imperative of preserving agricultural land, particularly paddy fields, which are vital for Sri Lanka's food security, rural livelihoods, and ecosystem services.

5. Circular No. 08/2018:

The Agricultural Lands (Paddy Lands) Register Revision Programme conducted under Section 53 of the Agrarian Development Act No. 46 of 2000.

Issued by the DAD in Sri Lanka, the circular serves as the final directive concerning the compilation and maintenance of the Paddy Land Register. This circular consolidates previous instructions and provides comprehensive guidelines to ensure the accurate documentation of paddy lands across the country (DAD, 2018d).

Key Provisions:

- i. **Finalization of Paddy Land Register:** The circular mandates the completion of the Paddy Land Register to ensure that all paddy lands are accurately recorded.
- ii. **Standardized Procedures:** It introduces standardized procedures for the registration process to minimize discrepancies and ensure uniformity in data collection and recording.
- iii. **Verification and Validation:** The circular emphasizes the importance of verifying and validating the information entered into the register, requiring cross-checks with existing records and field inspections.
- iv. **Deadline for Completion:** A specific deadline is set for the completion of the registration process, urging all relevant authorities to expedite their efforts to meet the prescribed timeline.

This directive is crucial for the effective management and utilization of paddy lands and provides a basis for improved planning and policymaking in the agricultural sector.

6. Circular No. 17/2018:

Utilization of agricultural lands in accordance with Agricultural Policies – Part II of the Agrarian Development Act No. 46 of 2000, as Amended by the Agrarian Development (Amendment) Act No. 46 of 2011

Issued by the DAD in Sri Lanka, the circular provides guidelines for cultivating paddy lands in alignment with the agricultural policy outlined in the Agrarian Development Act (DAD, 2018e).

Key Provisions:

- i. **Alternative Agricultural Use:** The circular outlines procedures for repurposing paddy lands for other agricultural activities, ensuring that such transitions align with national agricultural policies and land use regulations.
- ii. **Authorization Process:** It specifies the necessary approvals required from relevant authorities before paddy lands can be converted for alternative agricultural uses. This includes assessments to determine the suitability and potential impact of such conversions.
- iii. **Environmental Considerations:** The circular emphasizes the importance of conducting environmental impact assessments to minimize adverse effects on surrounding ecosystems and agricultural productivity.
- iv. **Monitoring and Compliance:** It mandates regular monitoring of lands used for alternative agricultural purposes to ensure compliance with the outlined guidelines and to prevent unauthorized land use changes in land use.

This directive aims to balance the need for diversified agricultural practices with the preservation of paddy lands, thereby supporting more sustainable land management in Sri Lanka.

7. Circular No. 19/2018:

Enhancing the Productivity of Agricultural Lands by Granting Permission, under Sections 30(3), 32(1), and 34(1) of the Agrarian Development Act No. 46 of 2000 as Amended by Act No. 46 of 2011, to Use Abandoned Paddy Lands in an Environmentally Sustainable Manner for Cultivating Semi-Annual or Perennial Crops Other than Paddy, for Non-Cultivation Agricultural Activities, or for Other Agriculture-Related Purposes.

Issued by the DAD in Sri Lanka, it provides guidelines for the utilization of paddy lands for agricultural purposes other than traditional paddy cultivation (DAD, 2018 f).

Key Provisions:

- i. **Promotion of Paddy Cultivation:** The circular emphasizes the importance of utilizing paddy lands for rice cultivation to ensure national food security and support the livelihoods of farming communities.
- ii. **Compliance with Agrarian Policies:** It mandates that the cultivation practices on paddy lands adhere with the provisions and regulations set forth in the Agrarian Development Act, ensuring sustainable and efficient use of these lands.
- iii. **Monitoring and Reporting:** The circular outlines procedures for monitoring activities on paddy cultivation lands and reporting any deviations or non-compliance to the relevant authorities.
- iv. **Support for Farmers:** It highlights the provision of appropriate support and resources to encourage farmers to continue cultivating paddy lands.

This directive aims to reinforce the commitment to maintaining paddy lands for their intended agricultural purpose, thereby contributing to the country's food production goals and the well-being of its agrarian communities.

8. Circular No. 24/2018:

Granting Approval for the Use of Paddy Lands for Activities Related to the Extraction of Mineral Resources (such as Gem Mining Through Excavation) Under Sections 32, 33, 34, and 36 of the Agrarian Development Act No. 46 of 2000, as Amended by the Agrarian Development (Amendment) Act No. 46 of 2011.

Issued by the DAD in Sri Lanka, it provides guidelines on the utilization of paddy lands for commercial-level mining activities (DAD, 2018g). It outlines the procedures and conditions under which paddy lands can be repurposed for mining purposes, ensuring that such transitions align with national agricultural policies and land-use regulations.

Key Provisions:

- i. **Authorization Process:** The circular specifies the necessary approvals required from relevant authorities before paddy lands can be converted for mining activities. This includes assessments to determine the suitability of the land and the potential impacts of such conversions.
- ii. **Environmental Considerations:** It emphasizes the importance of conducting environmental impact assessments to mitigate adverse effects on surrounding ecosystems and agricultural productivity.
- iii. **Restoration Obligations:** The circular includes provisions for restoring the land after mining activities, with the aim of returning it to a condition suitable for agricultural use or other approved purposes.

- iv. **Monitoring and Compliance:** It requires regular monitoring of mining activities on former paddy lands to ensure compliance with the outlined guidelines and to prevent unauthorized changes in land use.

This directive aims to balance the economic benefits of mining with the need to preserve agricultural land and promote sustainable land management practices in Sri Lanka.

9. Circular No. 26/2018:

Reporting Information Regarding 'Category C' Fallow Paddy Lands Identified Under Circular 06/2018 to the Head Office.

Issued by the DAD in Sri Lanka, this circular focuses on the identification, classification and reporting of fallow paddy lands designated as 'Category C'. These lands are identified as abandoned or underutilized and are not actively engaged in paddy cultivation (DAD, 2018h).

The circular mandates that all Agrarian Service Centers systematically identify and report 'Category C' lands to the Department's Head Office. This initiative aims to maintain an up-to-date and accurate registry of paddy lands, thereby facilitating effective land management and planning. By documenting these lands, the Department seeks to:

- i. Assess the extent of paddy land abandonment across the country.
- ii. Develop strategies to rehabilitate and reintegrate these lands into productive agricultural use.
- iii. Inform policy decisions relating to land use and agricultural development.

These circular forms part of a broader effort to optimize the use of agricultural land and promote the productive utilization of fallow paddy lands in Sri Lanka.

10. Circular No. 07/2019:

Taking Action to Include 'Category C' Abandoned Paddy Lands in the Agricultural (Upland) Land Registry Based on the Landowner's Request, Under Departmental Circulars 05/2018, 10/2018, or 23/2018 (DAD, 2019).

Issued by the DAD in Sri Lanka, the circular aims to standardize the process of granting permission for the temporary use of *asweddumized* (previously cultivated) paddy lands for non-paddy agricultural activities, while ensuring that such use is consistent with national food security and environmental conservation objectives.

Key Provisions:

- i. **Eligibility Criteria:** The circular applies to *asweddumized* paddy lands that are currently underutilized or abandoned. Landowners must provide justifiable

reasons for requesting a change of use (e.g., unsuitable irrigation conditions or the lack of economic feasibility of paddy cultivation, etc.).

- ii. **Permitted Uses:** Temporary cultivation of short-term crops, vegetables, fruits, grains, or other non-paddy crops is permitted. Permanent constructions or modifications to the land are not allowed.
- iii. **Approval Process:** Application must be submitted through the relevant Agrarian Services Center. The request is evaluated by a technical committee comprising representatives from the Agrarian Service Centre, the Department of Agriculture and the District Agrarian Committee. Consideration is given to soil and water conditions, environmental sustainability and the potential impact on food security.
- iv. **Duration and Conditions:** Approval is temporary and reviewed periodically. The land must remain capable of being restored for paddy cultivation when necessary. Any violation of the conditions (e.g., unauthorized construction or sale of the land) may result in revocation of permission.
- v. **Monitoring and Reporting:** Agrarian Services Officers are required to monitor the use of such lands regularly and submit reports to the Commissioner General of Agrarian Development.

The circular aims to prevent long-term degradation of paddy lands; promote the productive use of idle lands while safeguarding national paddy land resources and enable farmers to generate income from alternative crops without permanently altering the land use classification.

11. Circular No. 01/2020:

Enhancing the Productivity of Agricultural Lands by Granting Permission—Under Sections 30(3) and 34(1) of the Agrarian Development (Amendment) Act No. 11 of 2011—for the Use of Fallow Paddy Lands Classified Under 'Category B' in the 2016/2019 Agricultural Land (Paddy Land) Reclamation Programme, for the Cultivation of Semi-Annual Crops (excluding paddy), or Other Agriculture-Related Purposes and Other Non-Crop Agricultural Activities, in a Manner that does not Cause Environmental Harm (DAD, 2020b).

Issued by the DAD in Sri Lanka, the circular clarifies and streamlines the implementation of Circular 07/2019, which provides temporary permission to use *asweddumized* paddy lands for non-paddy agricultural purposes. This circular introduces more specific procedures, responsibilities, and documentation requirements to ensure effective and standardized enforcement.

Key Provisions:

- i. **Application Process:** Landowners must submit a written request using the specified application form to the Agrarian Services Center under which the land falls. The application should clearly state the reasons for the proposed change of use, type of crops to be cultivated, and the intended duration of use.

- ii. **Field Inspection and Reporting:** A field inspection must be conducted by the Agrarian Development Officer, the Agricultural Instructor, and a Representative of the Farmer Organization. A joint report should be prepared assessing: current land condition, water availability, and its environmental and agronomic suitability.
- iii. **Approval Mechanism:** The District Agrarian Committee is responsible for approving or rejecting the application. If approved, the land can be used for the specified non-paddy crops subject to prescribed conditions. A letter of approval specifying the conditions of use and monitoring is issued.
- iv. **Conditions of Use:** Permission is temporary and revocable. The land cannot be sold, transferred, or used for construction and must remain in a condition that allows it to be restored to paddy cultivation. Only short-term food or commercial crops suited to the relevant agro-ecological zone are allowed.
- v. **Monitoring & Compliance:** The Agrarian Services Center is responsible for continuous monitoring of the approved lands. If the land is found to be used in violation of the conditions (e.g., unauthorized construction or other misuse), the permission may be revoked immediately.
- vi. **Documentation and Records:** Every Agrarian Services Center must maintain a separate register of all lands approved under the circular. Periodic progress reports must be submitted to the Commissioner General of Agrarian Development.

The circular aims to ensure that the temporary use of abandoned or underutilized paddy lands contributes to food production and farmer welfare, without undermining their long-term potential of paddy cultivation or violating land-use regulations.

12. Circular No.01/2021:

Granting Permission Under Sections 30(3) and 34(1) of the Agrarian Development Act No. 46 of 2000 for the Continuous Cultivation of Crops Other Than Paddy on Abandoned Paddy Lands; the Use of Abandoned Paddy Lands for Non-Crop Agricultural Activities; and the Cultivation of Seasonal and Perennial Crops Under the 'Aeliveti' (Sorjan) Method on Abandoned Paddy Lands (DAD, 2021a).

Issued by the DAD in Sri Lanka, the circular addresses the utilization of fallow paddy lands (known as *puran kumburu*) for alternative agricultural purposes.

Key Provisions:

- i. **Continuous Cultivation of Non-rice Crops:** The circular encourages the year-round cultivation of alternative crops on fallow paddy lands to maximize land-use efficiency and productivity.

- ii. **Non-Crop Agricultural Activities:** Certain non-traditional agricultural activities are permitted on these lands, provided that they are consistent with sustainable land-use practices.
- iii. **Implementation of the *Sorjan* Method:** The circular promotes the *Sorjan* cultivation technique, which involves creating alternating raised beds and water channels, allowing the simultaneous cultivation of both upland and aquatic crops. This method is particularly beneficial for areas prone to waterlogging.

The primary objective of this circular is to revitalize underutilized paddy lands by promoting diversified and sustainable agricultural practices, thereby enhancing food security, improving land productivity, and supporting farmer livelihoods.

13. Circular No. 02/2021:

Granting Permission for the Use of Paddy Lands for the Purpose of Extracting Mineral Resources (such as Gem Mining and Excavation), Under Sections 32, 33, 34, and 36 of the Agrarian Development Act No. 46 of 2000 as Amended by the Agrarian Development (Amendment) Act No. 46 of 2011 (DAD, 2021b).

Issued by the DAD in Sri Lanka, this circular regulates and standardizes procedures for granting permission to extract mineral resources (including gem mining) from paddy lands, while ensuring agricultural integrity and legal compliance under the Agrarian Development Act.

Key Provisions:

- i. **Legal Authority:** The process must comply with Sections 32, 33, 34, and 36 of the Agrarian Development Act No. 46 of 2000, amended in 2011. Any permission granted must be consistent with the protection of agricultural land and its intended use.
- ii. **Conditions for Approval:** Permission is granted only on a **temporary basis** and for specific mineral extraction activities, such as gem mining. Such activities should not cause permanent damage to the paddy land. Upon completion of the activity, the land must be fully restored and returned to agricultural use.
- iii. **Application Process:** Applicants must submit a formal request to the relevant Agrarian Services Center. The application must include landowner consent, purpose and proposed duration of mining activity, and a plan for restoring the land.
- iv. **Field Inspection and Report:** A joint field inspection must be conducted by the Agrarian Development Officer, a representative of the Department of Agriculture, and a representative of the local farmer organization. The inspection report assesses environmental suitability of the proposed activity and the feasibility of restoring the land after extraction.
- v. **Approval and Monitoring:** Approval must be granted by the District Agrarian Committee. Strict monitoring of the activities is required during and after

mining. Non-compliance (e.g., damage to the land or failure to restore land) may result in the revocation of permission and legal action.

- vi. **Prohibited Actions:** Permanent conversion of the land, construction or other non-agricultural development, and transfer of land ownership for mining purposes are prohibited.

The circular aims to balance resource utilization of mineral resources (such as gem mining) with the conservation of agricultural land, ensuring that paddy lands remain available for future cultivation while permitting the controlled and legally regulated extraction of mineral resources.

14. Circular No. 06/2021:

Delegation of Authority Under Section 38 of the Agrarian Development Act No. 46 of 2000, as Amended by the Agrarian Development (Amendment) Act No. 46 of 2011, to Remove Soil and Prepare Suitable Paddy Soil for the Purpose of Converting a Paddy Land Unsuitable for Paddy Cultivation into Land Fit for Such Cultivation, in Accordance with the Powers Vested in me Under Sections 30, 31, 32, 33, and 34 of the said Act (DAD, 2021c).

Key Provisions:

- i. **Legal Framework:** on Sections 30–34 of the Agrarian Development Act (as amended), applies to paddy lands that have become uncultivable due to drainage issues, soil conditions, or prolonged abandonment.
- ii. **Eligibility and Application:** Landowners or legal custodians may request that such land be rehabilitated for paddy farming. Applications must be made through the Divisional Agrarian Services Center.
- iii. **Inspection and Assessment:** A field inspection is conducted by, Agrarian Development Officer, Agricultural Instructor, Farmer Organization Representative. Evaluation covers, physical condition of the land, water availability, and its potential for rehabilitation.
- iv. **Rehabilitation Plan:** If the land is considered suitable for rehabilitation, a plan is developed in consultation with technical experts. This may include land leveling, improvement of drainage, construction of bunds, and application of appropriate soil amendments.
- v. **Supervision and Monitoring:** The Agrarian Services Center is responsible for supervising the rehabilitation work. Progress must be reported to the Commissioner General of Agrarian Development. Following rehabilitation, the land must remain designated for paddy cultivation.
- vi. **Restrictions:** The land cannot be converted to non-agricultural or other permanent alternative uses. Unauthorized construction or changes in land use may result in legal action.

The circular aims to restore agricultural productivity of underutilized or degraded paddy lands through appropriate legal and technical interventions, thereby

supporting the long-term sustainability of rice cultivation and national food security.

15. Circular No. 07/2021:

Granting Permission for Coconut Cultivation on a Paddy Land that is Unsuitable for Cultivating Paddy or Other Non-Perennial Crops, Under Section 30(3) of the Agrarian Development Act No. 46 of 2000, as Amended by the Agrarian Development (Amendment) Act No. 46 of 2011(DAD, 2021d).

Issued by the Agrarian Development in Sri Lanka, the circular provides a legal and administrative framework for permitting the cultivation of coconut, a perennial crop, on paddy lands that are permanently unsuitable for paddy or other seasonal crop cultivation, due to environmental or physical constraints

Key Provisions:

- i. **Legal Basis:** The circular is based on Section 30(3) of the Agrarian Development Act No. 46 of 2000, as amended in 2011. It applies only to *asweddumized* paddy lands that are proven to be unsuitable for cultivation of rice or other non-perennial crops.
- ii. **Permitted Use:** Permission is granted specifically for coconut cultivation, and the land must remain in agricultural use.
- iii. **Application Procedure:** The landowner must submit a formal request through the relevant Agrarian Services Center. The application should include technical justification demonstrating the land's unsuitability for rice or seasonal crops, together with a proposed land development plan for coconut cultivation.
- iv. **Field Evaluation:** A field inspection must be conducted by the Agrarian Development Officer, Agricultural Instructor, and a representative of the Farmer Organization. The inspection team will assess soil conditions, irrigation availability, and long-term viability of coconut cultivation.
- v. **Approval Process:** The final decision is made by the District Agrarian Committee based on the joint field report. Approval is conditional and may be revoked if the land is misused or the prescribed conditions are violated.
- vi. **Monitoring and Restrictions:** The land must not be used for construction or other non-agricultural purposes. Periodic monitoring will be conducted by the Agrarian Services Center. If conditions change and the land becomes suitable for paddy or seasonal crops, the authorities may reassess the permission.

The circular is aimed at promoting productive agricultural use of paddy lands that are no longer viable for traditional paddy cultivation, while maintaining their status as agricultural lands and preventing their abandonment or misuse.

16. Circular No. 03/2023:

Agricultural Land (Paddy Land) Reclamation Programme – Year 2023, Implemented Under Section 53 of the Agrarian Development Act No. 46 of 2000, as Amended by the Agrarian Development (Amendment) Act No. 46 of 2011.

Issued by the DAD in Sri Lanka, the circular deals with the implementation and streamlining of the Agricultural Land (Paddy Land) Reclamation Programme for 2023. The programme aims at promoting equitable land distribution and sustainable agricultural practices. This may involve measures such as redistributing underutilized land, updating land ownership records, or implementing policies to prevent land fragmentation. (<https://drive.google.com/file/d/1yqKUB6YCtmuZoPZOflCB0jiymw-awYz1/view>).

Key Provisions:

- i. Land Allocation and Reclamation:** Procedures are established for identifying and allocating land to eligible farmers, including smallholder farmers, marginalized communities, and landless farmers. Emphasis on transparent and fair distribution processes, ensuring priority for small-scale and marginalized farmers.
- ii. Eligibility Criteria:** Farmers and applicants must meet specific criteria related to landholding size, agricultural activities, and socio-economic status. Priority is given to first-time applicants and those without previous land holdings.
- iii. Registration and Documentation:** Clear procedures are provided for registering land applicants. Relevant documentation, including proof of identity, land ownership or lawful possession, and other required information, must be submitted.
- iv. Land Use and Development Guidelines:** Lands brought under the programme are required to be used for agricultural purposes. Emphasis is placed on the productive and sustainable use of paddy lands and the adoption of appropriate agricultural practices.
- v. Legal and Institutional Framework:** Relevant committees and authorities are responsible for overseeing the implementation of the programme, resolving disputes and monitoring. Clarification of legal procedures to address land disputes and violations.
- vi. Monitoring and Evaluation:** Regular monitoring to ensure proper utilization of land. Evaluation mechanisms to assess the impact of the land reform initiatives.
- vii. Support and Facilitation:** Provision of technical assistance, training, and access to agricultural inputs. Facilitation of credit and financial support for farmers under the scheme.
- viii. Implementation Timeline:** Specific timelines for the various phases of land allocation, registration, and commencement of agricultural activities.

The circular emphasizes the productive utilization, rehabilitation, and sustainable management of paddy lands. It aims to bring abandoned and underutilized lands back into agricultural production, thereby increasing agricultural productivity, supporting farmers' livelihoods, and contributing to national food security.

4.3.3 Recent Policy Developments

1. 2023 Initiative to Cultivate Fallow Paddy Lands

The Ministry of Agriculture directed the DAD to take over and cultivate 14,000 acres of fallow paddy land across eight districts, with the aim of reducing land abandonment and enhancing food security (agrimin.gov.lk). This included 2,774 acres of paddy fields in Matale, Nuwara-Eliya, Vavuniya, Kurunegala, Puttalam, Badulla, and Moneragala districts. It was expected that the reclamation programme would bring these lands back into productive agricultural use and significantly reduce the extent of abandoned paddy land in the selected districts.

2. 2024 Policy Shift allowing Diversified Agricultural Use of Paddy Lands

In early 2024, the government introduced measures to permit the use of fallow paddy lands especially in the Wet Zone, for alternative agricultural activities, including the cultivation of other crops and animal husbandry, subject to approval by the Commissioner-General of Agrarian Development.

4.4.4 The Potential Impact of Administrative Permissions on Paddy Lands

The Agrarian development Act no. 46 of 2000 provides a comprehensive legal foundation to prevent the misuse and abandonment of paddy lands in Sri Lanka. It establishes clear procedures for oversight, including mandatory reporting of non-cultivation by farmers, which is the first instance at which paddy land abandonment can be addressed. This is followed by preliminary assessments by ASCs, and follow-up monitoring by designated committees. Where cultivation fails without justifiable cause, the Act allows for the imposition of fines (Rs. 5,000 per acre) and, ultimately, enables state intervention through the acquisition of such lands into a proposed Land Bank. This regulation represents a proactive legal framework designed to discourage neglect and reintroduce idle lands into productive use.

However, despite the strength of its legal framework, practical enforcement remains a challenge. The effectiveness of these provisions depends on the attentiveness and capacity of local authorities, timely compliance by farmers, and institutional commitment to sustained land monitoring. Moreover, the Act relies primarily on penal measures, with limited emphasis on incentivizing continued cultivation or supporting farmers in overcoming structural barriers such as labour shortages, market instability, or climate-induced risks. This has led to continued decline in the extent of *asweddumized* paddy lands in the LCWZCDs.

From 2018 onwards, a series of circulars progressively relaxed the strict protection of paddy lands by allowing the reclassification of abandoned paddy lands, the

conversion of 'Category C' lands into upland registers, non-paddy cultivation on abandoned or underutilized lands, and temporary or commercial uses such as gem mining and coconut cultivation. Although these administrative permissions are often granted on a temporary or conditional basis, they may have encouraged some landowners to abandon paddy cultivation in favour of more lucrative or less labour-intensive alternatives, as summarized in Table 4.1.

Table 4.1: The Potential Impact of Administrative Permissions on Paddy Lands

Year	Key Policy or Circulars	Main Provisions	Potential Impact on Paddy Land
2018	Circulars 06/2018, 07/2018, 08/2018	Classified paddy lands and approved non-paddy uses; updated land registers	Legitimized land abandonment, and enabled alternative land uses
2019	Circular 07/2019	'Category C' allowed lands to be added to upland registers	Facilitated permanent exit from paddy cultivation
2020	Circular 01/2020	'Category B' lands allowed for other short-term crops	Reduced incentive to restore rice cultivation
2021	Circulars 01/2021, 02/2021, 07/2021	Approved the use of lands for non-paddy crops, the Sorjan method, and mining	Boosted land conversion and long-term abandonment
2023	Circular 03/2023 (Reclamation)	Direct state led reclamation and cultivation targeting food security	Attempted recovery; but possibly limited in scale and effectiveness
2023	MoA Directive (agrimin.gov.lk)	Govt-led cultivation of 14,000 acres of fallow lands in 8 districts	State intervention to reverse abandonment and restore cultivation, although its sustainability remains uncertain without continued support
2024	Policy Shift allowing diversified agricultural uses with the approval of the Commissioner, Agrarian Services (No circular issued yet)	Permitted alternative crops and livestock	Increased flexibility may reinforce the shift away from rice cultivation and, if not properly regulated, may further fragment paddy-based ecosystems and cause ecological and hydrological degradation. It may also accelerate the permanent conversion of paddy lands to alternative uses.

The circulars reflect a shift from protectionist policies stipulated through the 2000 Agrarian Development Act towards more utilitarian and flexible land-use policies. While designed to increase land productivity, these measures have reduced the obligation to restore paddy lands, provided administrative routes to exit rice cultivation, encouraged cultivation of other crops, or even mining on low-lying lands. Thus, the policy environment itself may have incentivized the disuse or conversion of paddy fields, particularly in areas with poor irrigation or limited market access.

Therefore, to meaningfully address the persistent issue of paddy land abandonment, the existing legal framework needs to be complemented by stronger enforcement mechanisms, clear guidelines for proactive intervention, and targeted support systems that promote both economic viability and environmental sustainability. Strengthening these dimensions would significantly enhance the Act's capacity to preserve and revitalize Sri Lanka's paddy-based ecosystem.

4.4 Effectiveness of Reclaiming Abandoned Paddy Lands

Reclaiming abandoned paddy lands in the LCWZCDs has become a strategic priority for the government, particularly in the post-2015 period. State-led initiatives have been guided by legal mandates and institutional commitments, infrastructure rehabilitation, and farmer mobilization.

4.4.1. Costs and Outcomes of Reclamation Programmes Implemented in the LCWZDs

Section 22 of the Agrarian Development Act No. 46 of 2000 obligates landowners, farmers and beneficiaries to manage agricultural lands responsibly. In alignment with this provision, the DAD issued directives to bring all paddy lands, particularly abandoned paddy lands, back under cultivation (Lanka News Web, 2023). Since 2015, the state has made significant financial and institutional investments towards this goal.

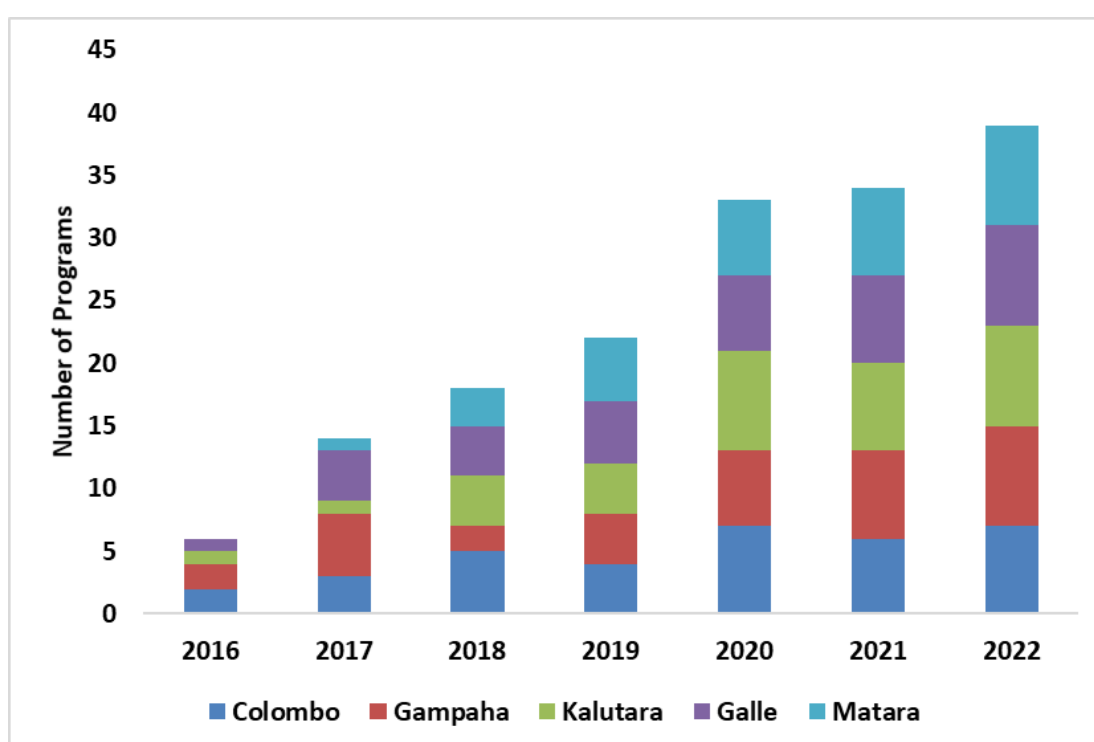
According to Witharana (2016), reclaiming 101,183 acres of abandoned paddy land was estimated to cost Rs. 18.1 billion. The DAD's 2020 *Yala* season campaign reportedly succeeded in reclaiming 23,517 acres island-wide, reducing the total extent of abandoned land to 80,767 acres. The 2020/21 *Maha* season targeted a further 25,972 acres for reclamation.

In the LCWZCDs, the 2020 *Yala* season brought 13,340 acres of abandoned paddy land back under cultivation. However, 36,352 acres remained uncultivated. The 2020/21 *Maha* season aimed to reclaim an additional 14,468 acres. If fully successful, this would reduce the extent of abandoned land in the region to 21,884 acres.

Financial commitments to these efforts have been substantial. From 2016 to 2022, continuous budgetary allocations supported both irrigation rehabilitation and re-cultivation and the re-cultivation of abandoned paddy lands.

- 2016: Rs. 1,320 million was allocated by the DAD for minor irrigation and re-cultivation.
- 2016-2017: An additional Rs. 2000 million was allocated for 1,494 projects aimed at repairing cascade systems, tanks, anicuts, canals and farm roads.
- 2017: The Ministry of Agriculture allocated Rs. 100 million to reclaim 1,250 acres of abandoned paddy land in the wet zone.
- 2020/2021 *Maha* season: Rs. 1,157 million was allocated to reclaim 14,468 acres in the LCWZCDs.

Reclamation costs were estimated at approximately Rs. 80,000.00 per acre, with performance-based reimbursements ranging from Rs. 25,00.00 and Rs. 100,000.00 per farmer.



Source: Ratnayake et al., 2022

Figure 4.20: Re-cultivation Programmes for Abandoned Paddy Lands

Figure 4.20 highlights the structure of those programmes. The majority of interventions involved, clearing overgrown canals, renovating anicuts and related irrigation infrastructure, providing seed paddy and fertilizer (received by 87% of farmers), and disbursing financial support to 63 percent of participants. Key success factors included the timely commencement of activities before seasonal rains, active farmer participation, and targeted development interventions.

4.4.2 Continuity of Reclaimed Paddy Lands

Re-cultivation programmes implemented in Sri Lanka's LCWZCDs have demonstrated certain success in restoring paddy cultivation in abandoned paddy lands. According to Rathnayaka et al. (2022) the programmes implemented in this area have been generally effective, with many farmers and officials expressing positive views. Key infrastructure improvements, particularly in canal rehabilitation, have addressed major causes of abandonment, while timely execution before cultivation seasons has enabled successful re-engagement in paddy farming. Although financial assistance has been limited, many farmers proceeded with support from the farmer organizations or at their own expense. In-kind support such as seed paddy and fertilizer was widely appreciated. Active participation from both farmers and Agrarian Services Officers significantly contributed to the success of these efforts. Overall, the programmes were considered relevant, timely, and aligned with local development needs, offering a hopeful path toward reversing paddy land abandonment.

Rathnayaka et al. (2022) further show that the programmes have led to a significant increase in the area under paddy cultivation, with 87 percent of farmers continuing cultivation after re-cultivation efforts. Further, 89 percent of respondents reported a reduction in abandoned paddy lands, while 53 percent have expressed satisfaction with the yields obtained, often attributing improved productivity to enhanced soil fertility after long fallow periods. Farmers have also reported positive economic outcomes, with 85 percent utilizing the harvest for household consumption and 30 percent engaging in partial sales. Furthermore, 88 percent of farmers maintained continuous cultivation, primarily the *Maha* season, while 47 percent reported increased motivation among neighbouring farmers to re-cultivate, driven by visible success and official encouragement. These outcomes underscore the effectiveness of the programmes in reversing abandonment and fostering community engagement in sustainable paddy farming. In such cases, there have been visible increases in the extents both reclaimed and sown.

Rathnayake et al. (2022) further reports that some farmers funded reclamation independently, suggesting a degree of commitment to continued cultivation. However, without fully addressing the root causes of abandonment within the *yaya*, such as poor drainage, salinity, and degraded infrastructure, re-cultivation may be short-lived. These structural weaknesses can result in re-abandonment, despite initial success. Furthermore, no comprehensive post-reclamation assessment has been conducted to measure economic or environmental returns or overall sustainability. The lack of systematic monitoring leaves a major knowledge gap regarding the durability of reclamation outcomes. Moreover, the increases in reclaimed and sown extents have not been consistently reflected in the officially recorded *asweddumized* extent. This gap raises concerns about the long-term sustainability and legal or institutional recognition of the reclaimed areas.

4.4.3 Institutional and Operational Challenges Limiting the Success of Paddy Land Reclamation

Several institutional and operational challenges continue to hinder the effectiveness of reclamation programmes. National Audit Office of Sri Lanka (2020) found that the management of fallow paddy lands has been hindered by multiple systemic failures. These include the absence of an up-to-date database on abandoned paddy fields, incomplete revision of paddy land registers, and inconsistencies between recorded data and the statistics of the Department of Census and Statistics. There has also been a failure to implement solutions identified through surveys and to establish a Land Bank. Institutional shortcomings were evident in the poor implementation of cultivation instructions and guidelines, errors in irrigation construction, and ineffective execution of related programmes. Moreover, the inability to monitor the progress of the programme in a timely manner and the failure to consider key factors contributing to land abandonment have further weakened reclamation efforts. Inefficient human resource management has resulted in suboptimal service delivery to farmers, causing delays and reducing the effectiveness of interventions. Collectively, these issues reflect a broader failure to translate policies into coherent, coordinated, and accountable actions. As reported (Rathnayake et al., 2022 & National Audit Office of Sri Lanka, 2020) the following factors limit the institutional capacity to maintain progress, scale up successes, and prevent future abandonment.

- Inadequate problem diagnosis: Many programmes had not fully assessed the nature or extent of development needs in abandoned lands, leading to limited interventions.
- Delays in fund disbursement: Bureaucratic inefficiencies often delay the delivery of financial assistance, reducing timeliness and effectiveness.
- Weak youth participation: Despite policies to attract youth into agriculture, their actual involvement in reclamation activities has been minimal.
- Lack follow-up and continuity: The absence of consistent monitoring and post reclamation support reduces the chances of sustained land use.
- Discrepancy in data reporting: Improvements in cultivated extents are not mirrored in official records, causing misalignment between field realities and administrative metrics.

4.5 Ecological Significance of Paddy-based Ecosystems and Community Perceptions of Participatory Paddy Land Management

4.5.1 Introduction

This section explores the intersection of community perceptions and environmental considerations in the conservation and future use of abandoned paddy lands in the LCWZCDs in Sri Lanka. Grounded in the fourth research objective, the analysis focused on how local communities perceive, value, and prioritize the participatory

management of paddy-based ecosystems based on the pilot project implemented in the Padukka ASC area. At the same time, it examines the environmental implications associated with different reclamation and land-use options.

Abandoned paddy lands, though often viewed as unproductive, hold substantial ecological and socio-cultural value for rural communities. As such, the perspectives of these communities are central to developing sustainable and context-sensitive strategies for managing these lands. This section examines the motivations, preferences, and concerns of local stakeholders regarding paddy land conservation and reclamation, with particular emphasis on participatory approaches that align with both environmental sustainability and local priorities.

The discussion integrates two critical analytical dimensions —environmental sustainability and community engagement — to highlight the potential and challenges of inclusive land-use planning. It also considers how participatory reclamation efforts may influence biodiversity, soil and water health, and broader ecosystem services. The insights presented here contribute to a more holistic understanding of how collaborative, environmentally conscious interventions can support the long-term viability of paddy-based landscapes.

4.5.2 Ecological Significance of Paddy-based Ecosystems

The Ramsar Convention Secretariat (2016) and local ecological studies highlight the capacity of paddy ecosystems to regulate water, sequester carbon, maintain soil fertility, support biodiversity, control pests, and moderate local climate. These functions often undervalued in conventional agricultural or development planning. In this context, the abandonment or reclamation of paddy lands is not merely a land-use decision, but a transformation with significant ecological and socio-economic consequences.

Paddy-based ecosystems are recognized as man-made wetland ecosystems (Ramsar Convention Secretariat, 2016), providing not only rice but also a broad range of ecosystem services that are vital to ecological stability and climate resilience. These services include water retention and regulation, carbon sequestration, soil conservation, nutrient regulation and maintenance, biodiversity support and pest regulation, and microclimate moderation. including temperature control, and air and water purification. They also provide useful organic biomass, such as straw, as well as cultural services that promote a sense of community and organizational strength. (Ramsar Convention Secretariat, 2016; Chivenge et al., 2020). In addition, paddy ecosystems are important for disaster prevention, particularly given the tropical monsoon climate. According to Witharana (2016), Sri Lankan paddy fields differ from those in many other countries because they function as unique ecosystems, forming a wetland mass that acts as ‘green lungs’ with many interconnected components. The value of paddy cultivation lies not only in the

production of a staple food for Sri Lankans but also in the eco-system services it delivers to humanity and the environment.

Dhanapala (2005) stressed that, despite increase in demand for rice, there is limited scope for bringing new land under cultivation. Therefore, protecting paddy-based ecosystem in this region is essential. In this context, viewing wet zone paddy cultivation solely from an economic perspective is unjustifiable. The continuation of Wet Zone paddy cultivation is particularly important because of its rain-fed nature, and its potential for cultivation in both seasons, as well as the natural replenishing of soil fertility of these flood plains through the annual overflow of major rivers.

Water Retention and Soil Health

Waterlogging is both a symptom and a driver of paddy land abandonment in the LCWZCDs in Sri Lanka. While paddy cultivation inherently involves controlled flooding, excessive and unmanaged water accumulation due to poor drainage, silted canals, and heavy monsoon rainfall lead to prolonged water logging. This in turn affects soil aeration, reduces microbial diversity, and makes land preparation uneconomical (Panabokke & Perera, 2005).

These conditions reduce the feasibility of timely land preparation and crop establishment, discouraging farmers from continuing cultivation. As a result, many farmers in affected areas opt to keep their fields either fallow or abandon them entirely, particularly when combined with high labour costs and declining economic returns. Once land is abandoned, the lack of maintenance of field bunds and drainage channels further exacerbates water retention, reinforcing waterlogged conditions. This cycle of neglect not only makes fields physically unsuitable for re-cultivation but also creates ecological issues, such as the proliferation of invasive aquatic plants and increased vector-borne disease risks (International Union for Conservation of Nature -IUCN Sri Lanka, 2016). Thus, waterlogging represents both a direct barrier to paddy production and a deeper structural challenge to the long-term sustainability of rice-based ecosystems.

Reclaimed lands, if not properly re-engineered, often revert to abandonment due to the failure to address underlying drainage and soil problems. Conversely, alternative land uses such as agroforestry or aquaculture may reduce waterlogging pressure but risk permanent loss of wetland functions if not designed with appropriate ecological safeguards.

Biodiversity Regulation and Habitat Value

According to Witharana (2016) and Dhanapala (2005), Sri Lankan paddy fields host a unique mix of aquatic biodiversity, avifauna, and beneficial soil microorganisms. These systems serve as seasonal wetlands that support amphibians, mollusks, insect larvae, and bird populations (Fernando, 2003; Kotagama & Ratnavira, 2010). Once

abandoned, the ecological equilibrium maintained through traditional paddy cultivation in these habitats deteriorates due to invasive species such as *Mimosa pigra* and *Eichhornia crassipes* (Weerakoon et al., 2010).

From an agrobiodiversity perspective, abandonment leads to the loss of traditional rice varieties and associated biotic communities, undermining long-term soil fertility and ecological pest control mechanisms (Abeygunawardena & Weerakoon, 2007). Collectively, these changes not only reduce species richness but also erode the ecological resilience of farming landscapes, amplifying vulnerabilities to climate variability and human-wildlife conflicts. Hence, preventing abandonment is critical not only for agricultural productivity but also for maintaining biodiversity and ecosystem services embedded within these agro-ecological systems.

Contrastingly, overtime, long-abandoned paddy fields can evolve into ecologically significant habitats that support diverse wild animal communities. In Sri Lanka, several such cases have been observed, particularly in the LCWZCDs, where decades of neglect have enabled natural succession to create secondary wetlands and scrublands. These habitats have become important refuges for amphibians, reptiles, wetland birds, and endemic species such as the *Pseudohilautus* bush frogs and *Pycnonotus melanicterus* (black-capped bulbul) (Weerakoon & Gunawardena, 2009). In post-conflict regions such as Batticaloa and Trincomalee, abandoned rice fields have transformed into seasonal wetlands, supporting migratory populations, though recent reclamation efforts have led to partial habitat degradation (IUCN Sri Lanka, 2016).

Internationally, similar patterns have been documented. In Japan, the abandonment of traditional *Satoyama* rice terraces has led to emergence of wet meadow ecosystems support dragonflies and amphibians. These developments contributed to the “*Satoyama Initiative*” which promotes the integration of biodiversity conservation into the management of traditional agricultural landscapes (Takeuchi et al., 2003).

Likewise, in the Cheorwon Plain within South Korea’s Demilitarized Zone (DMZ), long abandoned paddies have become critical habitats for endangered red crown canes (*Grus japonensis*), leading to calls to preserve these landscapes rather than recultivate them (Birdlife international, 2020). These cases suggest that not all abandonment is ecologically negative; in fact, some abandoned lands may provide greater biodiversity benefits than intensively reclaimed fields. These examples underscore the ecological value of abandoned paddy lands and the importance environmental impact assessment prior to reclamation, to avoid irreversible biodiversity loss.

Climate Resilience and Adaptation Alignment

Current reclamation practices in Sri Lanka are primarily infrastructure-heavy, with a focus on bund rehabilitation, canal clearing, and mechanical desilting (Ratnayake et al., 2022). While these measures improve short-term cultivation feasibility, they often lack alignment with broader climate adaptation strategies. Paddy fields, through water retention and evapotranspiration, help buffer climate extremes such as floods and droughts (Witharana, 2016). When converted to built-up or monoculture uses, these climate-moderating functions are lost. On the other hand, nature-based solutions such as wetland restoration and agroecological rice-fish systems have shown promise in enhancing both productivity and climate resilience (Pretty et al., 2006; FAO, 2018).

Ecosystem Services in Monetary Terms

Efforts to value these ecosystems monetarily reveal their hidden economic worth. Using benefit transfer and replacement cost methods, Rasheed et al. (2021) estimated that the paddy ecosystem in Wayanad District, Kerala (India), provides US\$8,391/ha/year in ecosystem services, 77% of which are non-marketed. The valued ecosystem services include water regulation, soil fertility maintenance, biodiversity support, flood control, and cultural functions associated with the paddy landscapes.

Paddy farming in Kerala and LCWZCDs of Sri Lanka share common features such as wet zone agro-climatology, smallholder dominance, traditional practice and ecological importance. Hence, the value of ecosystems services of LCWZCDs could be estimated, using the exchange rate of LKR 300 per USD, at approximately LKR 1,018,717 per acre year. This value far exceeds the average economic returns from seasonal paddy cultivation, emphasizing the case for conservation financing or Payment for Ecosystem Services (PES) schemes. Hence, the abandonment of paddy lands with the aim of converting them to other permanent uses while disrupting their wetland functions, represents a significant loss.

4.5.3 The Pilot Approach for Participatory Paddy Land Management

The pilot approach proposed in this study to assess the feasibility of participatory management of paddy lands involved several key elements presented below.

- Farmer identification and organization at the *yaya* level
- Formation of representative farmer groups at the *yaya* level
- Participatory planning and localized problem-solving
- Coordinated plan implementation and joint evaluation

The study was initiated in collaboration with two ARPA divisions in the Padukka Agrarian Service Centre (ASC) area, following preliminary discussions on

implementing the proposed participatory approach to paddy land management. Among the selected divisions, the ARPA officer from the Pahala Hanwella division demonstrated strong commitment and a deep understanding of the objectives. She firmly believed that all abandoned or underutilized paddy lands within her division should be brought back under cultivation and was determined to mobilize the necessary community support and institutional resources to achieve this goal.

Her enthusiasm and proactive leadership became a key driver of local engagement, laying a strong foundation for implementing a participatory model, although there were some deviations from the originally proposed approach. The experience gained from this division offered valuable insights into both the potential and limitations of community-led reclamation efforts, underscoring the importance of adaptive strategies and strong local leadership in achieving sustainable outcomes.

The following section outlines the progress made under her leadership and discusses key lessons learned from the field. These reflections are critical to understanding the practical realities of participatory conservation and land use transformation in the context of paddy-based ecosystems.

Plate 1: Paddy fields that have remained abandoned for over five decades were extensively overgrown with dense vegetation, predominantly tall shrubs and grasses. Over the years of abandonment, these lands had been transformed into complex secondary ecosystems dominated by dense vegetation, including invasive species such as *Wel Aththa* (*Annona glabra*), along with native shrubs, grasses, and wetland flora forming thick, impenetrable thickets that significantly altered the original landscape. This prolonged neglect had not only transformed the physical characteristics of the land but also posed considerable challenges to reclamation, including increased costs of land clearing, disrupted irrigation channels, and potential ecological imbalances. The spread of such hardy and invasive vegetation reflected the severity of the abandonment.



Plate 1: An Abandoned Paddy Field

Plate 2 and Plate 3: The sudden and large-scale mechanical clearance of vegetation from these long-abandoned paddy lands, particularly with heavy machinery such as bulldozers and tractors, undeniably enabled the physical restoration of land for cultivation. However, these areas had evolved into important refuges for local biodiversity, functioning as semi-natural wetlands that helped regulate water flow, support pollinators, and maintain soil moisture. The noise, vibration, and soil compaction caused by bulldozers during the reclamation process resulted in the destruction of these habitats, displacing or eliminating a wide range of fauna, including amphibians, reptiles, birds, small mammals, and diverse insect populations that relied on these altered ecosystems or microhabitats. Nevertheless, the scale of biodiversity loss remains invisible and unquantified, as no baseline ecological assessments were carried out prior to reclamation. This lack of monitoring highlights a critical gap in land-use planning, particularly the failure to account for the unintended environmental consequences of reclamation efforts.



Plate 2: Large Scale Mechanical Clearance of Abandoned Paddy Fields

Plate 3: Land Preparation for Paddy Cultivation

Plate 4 and 5: In parallel to physical reclamation efforts, initiatives to enhance youth engagement in agriculture have emerged as a promising pathway to revitalize interest in farming and ensure generational continuity. Recognizing the growing disconnect between younger populations and traditional farming practices, community-based and academic collaborations were attempted to bridge this gap. The Hector Kobbakaduwa Agrarian Research and Training Institute played a facilitative role in promoting such collaboration.

One notable example involved a group of university students who mobilized financial resources through community service projects to support a local paddy cultivation initiative. Their intervention focused on procurement *Rath Del*, a traditional and culturally significant paddy variety known for its resilience and nutritional value. This initiative not only provided financial support to smallholder farmers but also symbolized a meaningful partnership between academia and the community in sustaining indigenous crop varieties and promoting rural development.

The engagement of youth in this context underscores the value of integrating contemporary academic involvement with traditional agricultural knowledge. By facilitating access to high-quality seed paddy and promoting culturally meaningful cultivation practices, the initiative contributed to renewed interest in farming among local communities. Such efforts reflect an evolving perception of agriculture, not merely as a livelihood rooted in the past, but as a domain of innovation, collaboration, and cultural continuity with relevance for future generations.

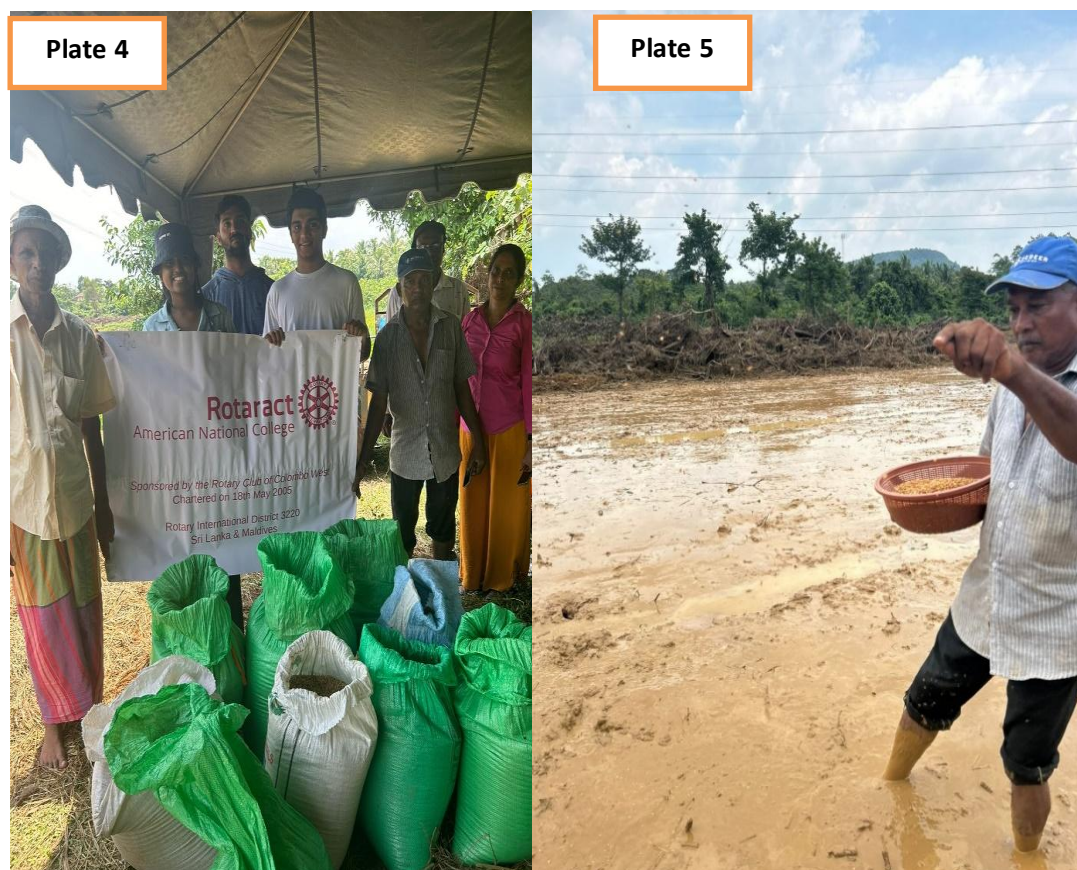


Plate 4: Contribution to Paddy Cultivation by Rotaract Club of the American National College

Plate 5: Broadcasting of Traditional Variety- *Rath Del*

Plate 6: The reclamation of previously abandoned paddy lands and their return to active cultivation represents a significant transformation, reflecting a sense of renewal and resilience within rural communities. This shift is not only indicative of improved food security but also underscores the enduring relationship between local populations and their agricultural heritage. While the process of reclamation may involve certain ecological trade-offs, the resumption of cultivation demonstrates the potential to revitalize rural economies and sustain livelihoods. Importantly, this transformation highlights that, despite environmental and structural challenges, neglected agricultural landscapes can be regenerated through the coordinated efforts of communities, institutions, and youth.

Plate 7: However, the collective efforts of the community and youth collaborators were soon disrupted by an extreme climatic event. Shortly after the sowing period, the area experienced an unprecedented flood, the most severe in over five decades. The floodwaters inundated the fields for ten consecutive days, leading to the destruction of the newly established crops and effectively nullifying the progress achieved through the initiative.

Plate 6



Plate 6: The Paddy Field Sown with *Rath Del* Seeds

This adverse outcome underscores the acute vulnerability of paddy cultivation in the low-lying wet zone to climate-induced hazards. It also illustrates the increasingly risky conditions under which farmers must operate, as extreme weather events become more frequent and intense due to climate change. The incident serves as a reminder that even well-planned and community-driven agricultural interventions remain highly susceptible to environmental shocks. It highlights the urgent need to integrate climate risk mitigation strategies such as improved drainage infrastructure, early warning systems, and resilient cropping practices into localized agricultural development efforts to safeguard both livelihoods and long-term food security.

This case study further illustrates the multidimensional nature of paddy land use in the region. It reveals a complex interplay between environmental conservation, agricultural productivity, youth engagement, cultural preservation, and the mounting risks posed by climate change. Therefore, future planning for paddy land reclamation in the LCWZCDs must adopt a holistic and adaptive approach that carefully balances ecological sensitivity, socio-economic viability, and resilience to climate-related uncertainties. The following case exemplifies how resilience was deeply embedded in traditional paddy cultivation practices.

Farmers cultivating paddy in flood-prone, low-lying areas often had to resow fields that were repeatedly damaged or destroyed within a single cultivation season. Over time, this practice led to the understanding that farmers were using a specific paddy variety called “Muththas’,” and consequently, this *yaya* continues to be termed as *Muththas Yaya* to this date.

However, an ecological farmer, Mr. Kandegama, clarified that there is no actual paddy variety named ‘Muththas.’ Instead, the practice of repeated sowing and re-sowing of fields in the hope of obtaining a successful crop has been termed ‘Muththas Govithana’, which roughly translates to ‘the practice of repeated cultivation’ or ‘persistent farming.’ Thus, the term ‘Muththas *yaya*’ likely derives from this cultural practice rather than the existence of a specific rice variety.

This insight highlights how local terminology often emerges from farmers’ lived experiences and practices, reflecting adaptive strategies developed to cope with challenging cultivation conditions, rather than formal agronomic classifications. The name ‘Muththas *yaya*’ therefore represents not a varietal identity but a resilient farming practice rooted in the community’s collective knowledge and experience.

4.5.4 Institutional and Policy Level Constraints to Pilot Implementation

Despite initial plans to implement the participatory approach in two ARPA divisions, the level of engagement varied significantly between the sites. In contrast to the enthusiasm observed in the Pahala Hanwella division, the second ARPA division demonstrated limited interest in contributing data or collaborating in the development of the action proposal. This lack of cooperation may have stemmed from interpersonal or administrative differences, which hindered effective coordination at the local level.

Compounding these institutional challenges, a significant policy shift in 2024 further constrained the implementation of the pilot initiative. This shift marked a departure from the more stringent land-use regulations stipulated under the Paddy Lands Act and the Agrarian Development Act, towards a more flexible framework intended to enhance farmer incomes through diversified land use. While the policy reform aimed to empower farmers, it inadvertently undermined some of the core assumptions of the pilot study, particularly the emphasis on uniformity, collective decision-making, and adherence to traditional *yaya*-based cultivation system.

The resulting policy environment introduced ambiguity regarding land use rights and weakened incentives for collective participation, thereby complicating efforts to test a coordinated and ecologically sustainable reclamation model. These developments suggest that future interventions in paddy land management should move beyond a crop-specific focus and adopt a broader land-use systems perspective that integrates farmer preferences, profitability considerations, and the need to maintain ecological integrity. Adapting to this evolving policy context will be essential to ensure both the

relevance and sustainability of participatory land management models in the LCWZCDs.

Nevertheless, while responding to farmer expectations to reclaim abandoned paddy lands, whether for paddy cultivation or alternative uses, it is imperative that future planning frameworks give due consideration to the ecological significance of paddy-based ecosystems. These landscapes provide a range of critical ecosystem services that extend far beyond their agricultural value.

4.5.5 Transition to Other Uses of Paddy Lands

In the face of persistent paddy land abandonment in the LCWZDs in Sri Lanka, various adaptive land-use practices have emerged, repurposing formerly cultivated areas for alternative agricultural and community-oriented purposes. The cultivation of short-term water tolerant crops such as leafy vegetables (*kankun* and *gotukola*) has become a popular option among smallholders due to their lower requirements and quicker returns. (Marambe et al., 2011). These crops are particularly well-suited for intermittently wet fields and allow farmers to maintain some level of agricultural productivity without the intensive input requirements of paddy cultivation.

In addition, inland fisheries have gained attention as a complementary use, especially in permanently waterlogged or seasonally inundated lands, with species such as tilapia and freshwater prawns being integrated into abandoned fields to generate food and income (De Silva & Davy, 2010). Beyond direct food production, some local authorities and community groups have repurposed these lands for low-impact infrastructure, such as walking paths and green corridors, aiming to combine conservation with public recreation and ecotourism (Gunaratne, 2020).

These alternative uses not only offer opportunities for livelihood diversification but also support environmentally sensitive land management. However, the transition from paddy cultivation to multifunctional land uses requires institutional support, regulatory clarity, and ecological assessments to ensure sustainability and avoid unintended consequences.

4.5.6 Ecological Impacts and Socio-economic Considerations of Paddy Land Use Changes in LCWZCDs

Paddy lands, though engineered for rice production, are globally recognized as multifunctional wetland ecosystems with far-reaching ecological value. In the LCWZCDs of Sri Lanka, these landscapes function as complex socio-ecological systems that support not only food security but also a wide range of environmental functions. The Ramsar Convention Secretariat (2016) and local ecological studies highlight the capacity of paddy ecosystems to regulate water, sequester carbon, maintain soil fertility, support biodiversity, control pests, and moderate local climate, that are the functions often undervalued in conventional agricultural or development planning. In this context, the abandonment or reclamation of paddy

lands is not merely a land-use decision, but a transformation with significant ecological and socio-economic consequences.

This section investigates the environmental dimensions of both paddy land abandonment and reclamation, drawing on evidence from Sri Lanka and global experiences. It establishes the ecological significance of paddy-based systems which are not just rice fields but dynamic wetland environments contributing to ecosystem stability and human well-being. However, prolonged waterlogging, a common feature in LCWZCDs due to poor drainage, heavy monsoons, and neglected infrastructure, has emerged as a key factor driving abandonment. This condition degrades soil health, disrupts microbial communities, and hinders land preparation, reinforcing the cycle of disuse. Once abandoned, the deterioration of irrigation networks and bunds further exacerbates these effects, creating physical and ecological conditions that are increasingly difficult and costly to reverse.

In terms of biodiversity, abandonment can result in both loss and regeneration. While invasive species can colonize and destabilize abandoned fields, some lands, especially those abandoned for decades, have evolved into ecologically valuable secondary habitats supporting native and endemic species. Comparative experiences from Sri Lanka, Japan, and South Korea underscore that abandonment does not universally result in environmental degradation; in some cases, it can enhance biodiversity conservation outcomes more effectively than intensive reclamation. These contrasting realities call for nuanced environmental impact assessments before reclamation, particularly where sensitive or rewilded habitats have developed.

The pilot-study addresses how current reclamation strategies, which are largely focused on mechanical land clearing and infrastructural rehabilitation, often fail to align with climate adaptation needs. Paddy systems naturally buffer floods and droughts through water retention and evapotranspiration. Their conversion to monocultures or built-up areas undermines this resilience. Case studies from the LCWZCDs illustrate the unintended consequences of reclamation, including the destruction of rewilded habitats and the displacement of wildlife. At the same time, promising developments, such as youth-led restoration using traditional seed varieties, show how social engagement and cultural stewardship can support both ecological recovery and rural revitalization. Yet, the unpredictability of climate events, exemplified by recent extreme floods, highlights the limitations of physical reclamation in the absence of systemic climate resilience planning.

Finally, the section highlights the often-overlooked economic value of ecosystem services provided by paddy lands. When measured using benefit transfer and replacement cost methods, these landscapes contribute significantly to local and national economies, not only through rice production, but also through services like water purification, biodiversity regulation, and climate buffering. In many cases, the economic value of these non-marketed services far exceeds the returns from

seasonal cultivation. This suggests a compelling case for exploring conservation financing mechanisms such as Payments for Ecosystem Services (PES), which could incentivize the protection or sustainable use of paddy ecosystems even in the absence of active cultivation.

Together, these sections present a holistic view of the environmental stakes involved in decisions around paddy land use in Sri Lanka's LCWZCDs. Rather than viewing abandonment or reclamation as binary choices, this chapter argues for context-specific, ecologically informed strategies that balance agricultural, environmental, and socio-cultural objectives in an era of climate uncertainty.

Chapter Five

Conclusions Policy Implications and Recommendations

5.1 Introduction

This chapter synthesizes the key research findings to outline the policy implications of continued paddy land abandonment and unplanned reclamation, driven by administrative directives, as opposed to regulated land use conversion in LCWZCDs. It also proposes forward-looking strategies for sustainable land use planning.

5.2 Conclusions

5.2.1 Persistent Paddy Land Abandonment Endangers the Paddy-based Ecosystem in Sri Lanka's Low Country Wet Zone Coastal Districts.

Wet Zone Coastal Districts (LCWZCDs) stems from a complex interplay of technological and non-technological factors. Although issues such as low yields and salinity intolerance present technological barriers, the continued abandonment of paddy lands is mainly due to reversible, non-technological factors that have persisted over the past four decades. Key factors include shifting labour patterns, inadequate irrigation and drainage infrastructure, land disputes and ownership complications, and increasing threats from wild animals ultimately leading to financial unviability of paddy cultivation in the area (Ratnayake et al., 2022; National Audit Office, 2020; Witharana, 2016; Epasinghe et al., 2009, Dhanapala, 2005; DCS, 1999).

Waterlogging functions as both a significant cause and a reinforcing consequence of paddy land abandonment, particularly in these low-lying coastal districts. While paddy cultivation inherently involves controlled flooding, the pilot exercise reaffirms and extends the observations of Panabokke and Perera (2005), showing that unmanaged water accumulation, largely due to poor drainage infrastructure, heavy monsoonal rainfall, and silted canals, continue to undermine crop viability. Thus, waterlogging represents both a direct barrier to paddy production and a deeper structural challenge to the long-term sustainability of rice-based ecosystems. As already revealed sea water intrusion, flooding, and infrastructure deterioration worsen cultivation conditions (Bentota et al., 2010). It is also emphasized, in line with Wijesundara and Piyadasa (2017) and Epasinghe et al. (2009), how infrastructural neglect, such as blocked irrigation waterways and lack of access roads have persistently discouraged paddy cultivation. These conditions have undermined the feasibility of timely land preparation and crop establishment, discouraging farmers from continuing cultivation.

Labour dynamics are particularly critical, with rising off-farm employment and urban migration, and declining interest among younger generations significantly reducing

the availability of family labour. As a result, the growing reliance on hired labour has significantly increased production costs, especially as labour expenses have more than doubled in the past decade. As National Audit Office (2020) pointed out, time constraints associated with alternative employment opportunities and the preference for more stable and profitable livelihoods continue to discourage engagement in paddy cultivation. Despite the adoption of improved seed varieties and increased fertilizer use under various subsidy programmes, yields have remained stagnant, failing to generate proportional income gains. Rising input costs, unstable paddy prices, and restricted market access continue to constrain profit margins. Moreover, existing subsidies are insufficient to offset these rising costs, particularly in the face of labour shortages and mounting dependence on wage labour. Consequently, financial returns often do not cover the total cost of production, placing smallholders under considerable economic strain. These economic pressures, combined with absentee landownership and institutional inaction, are reinforcing the cycle of abandonment initially shaped by non-technological constraints. These trends point to deeper socio-economic transformations that weaken intergenerational continuity and further reduce the attractiveness of paddy farming as a viable livelihood option.

Legal barriers and fragmented land ownership hinder collective action and field-level coordination required for paddy cultivation. The current fine for abandonment is Rs. 5,000 per acre, is not a sufficient deterrent, as it does not match or exceed the net return or production cost of cultivating an acre. As a result, many farmers opt to let the paddy fields uncultivated for a few seasons or abandon them entirely, particularly when combined with high labour costs and declining economic returns.

However, abandoning paddy lands is neither a sustainable nor desirable solution from food security and environmental perspectives. Once abandoned, these lands face infrastructure deterioration, such as blocked drainage and eroded bunds, leading to prolonged water logging and declining suitability for cultivation (Marambe, Weerakoon, & Silva, 2011). IUCN Sri Lanka (2016) notes that prolonged neglect of abandoned paddy lands not only renders them physically unsuitable for re-cultivation but also leads to ecological consequences, including the spread of invasive aquatic plants and heightened risks of vector-borne diseases. It also creates opportunities for illegal land-use changes, encroachment by non-agricultural activities, and the spread of invasive plant species that can permanently alter the ecological dynamics of the land. Frequent fallowing and neglect results in the loss of agricultural productivity over time, with declining soil fertility declining and an increasing risk of land degradation.

Moreover, the consequences of abandonment extend beyond environmental degradation, posing a threat to the traditional rice based cultural identity that has safeguarded regional food security for generations, including the production of red rice and consumption of parboiled red rice by the people in the region. Sri Lanka's population is projected to grow by approximately 47,900 people annually, or 131

people per day, after accounting for births, deaths and migration. In this context, the continued abandonment of paddy fields constrains the country's ability to meet rising food demand. Further, paddy cultivation in Sri Lanka supports the livelihoods of people, making the maintenance of these lands essential for economic stability and poverty alleviation.

More than two decades ago, Dhanapala (2005) emphasized that non-technological constraints outweighed technological ones, and warned that, if these interrelated constraints remained unaddressed, the continued loss of this valuable ecosystem would become inevitable. As current trends and statistical evidence now reveal, his prediction has proved accurate. This precious ecosystem, along with the critical services it provides, is increasingly at risk of disappearing within the next century.

5.2.2 Re-centering Policy on Collective, Landscape-based Management of Paddy Lands is Essential

Over the past 25 years, repeated policy shifts, often introduced in the name of modernization, flexibility, or economic diversification, have inadvertently laid the foundation for the gradual abandonment of paddy lands, particularly in Sri Lanka's LCWZCDs. These policies have consistently promoted individualistic land-use decisions while undermining the collective management traditions that historically sustained paddy cultivation through shared resource management at the *yaya* level.

As a result, the landscape-based systems upon which successful paddy farming depends have become increasingly fragmented. The shift away from collectivism has weakened community institutions, disrupted coordinated water management practices, eroded shared infrastructure, and diminished the effectiveness of agricultural extension services, while discouraging traditions of joint problem-solving. Consequently, *yaya*-based systems, which rely on landscape-level planning and cooperative action, have become increasingly difficult to maintain.

Unlike earlier studies that emphasized individual plot-level constraints, this analysis underscores the cascading effects of abandonment across adjacent plots. These cumulative impacts generate collective disincentives for cultivation by increasing inefficiencies in water management. According to Witharana (2016), paddy lands have no independent existence without the active maintenance of the interconnected components of paddy-based ecosystems. This highlights the spatial dimension to abandonment and underscores the need for more integrated, *yaya*-scale water management strategies in production planning.

Policymakers must therefore recognize and uphold this fundamental yet often overlooked truth; paddy lands are not merely plots of land for cultivation. They are special agro-ecological landscapes with intricate hydrological systems, communal resource needs, and cultural significance. Their ecological integrity and productivity depend on managing them as interconnected systems sustained by cooperation

among landholders rather than as fragmented private holdings subject to isolated decision-making or interventions.

5.2.3 Reclamation Offers an Alternative to Abandonment, but It Involves Significant Inefficiencies and Ecological Consequences

Reclaiming abandoned paddy lands has emerged as a critical priority particularly under rising population pressure, climate variability, and evolving agricultural policies. Reclamation programmes in the LCWZCDs have yielded site-level improvements in cultivated extents and demonstrated state commitment through policy, funding, and action. However, the effectiveness of these efforts remains constrained by structural, institutional, and agronomic limitations. Without long-term planning, adequate monitoring, and measures to address the underlying causes of abandonment, reclamation efforts risk becoming short-term fixes rather than sustainable solutions. Nonetheless, the experiences so far suggest that reclaiming paddy lands is feasible, if supported by a well-coordinated approach that addresses these limitations.

However, the ecological cost of reclamation cannot be overlooked. Land-clearing activities such as bulldozing and canal excavation disturb soil profiles and damage biodiversity habitats, especially in areas where abandoned lands have developed into semi-natural wetlands. These abandoned lands may provide important habitats for migratory birds, amphibians, and other invertebrates. In some cases, they may also serve as refuges for species that would otherwise be threatened by urbanization or agricultural intensification. The sudden disturbance of these habitats for reclamation, without consideration of the ecosystems that have developed over time, may destroy biodiversity refuges, trigger ecological imbalances, and contribute to species loss, particularly among vulnerable or endemic fauna. There is limited information on comparative assessments of environmental tradeoffs between reclamation and alternative land uses. There is insufficient evidence on how water retention, biodiversity and soils health compare between reclaimed and converted lands, or whether reclamation methods are aligned with climate adaptation or mitigation goals. Consequently, the environmental risks and benefits associated with reclamation and alternative land uses remain poorly understood.

On the other hand, unregulated conversion to non-agricultural use can result in irreversible wetland destruction. While certain planned conversions may support novel ecosystems, both reclamation and conversion require ecological sensitivity and site-specific assessments. Therefore, conversion of paddy land cannot be justified solely based on the limitations of reclamation.

Therefore, a sustainable land-use management approach is required that balances food production and ecological integrity of these wetland ecosystems. This includes integrating biodiversity friendly farming, maintaining wetlands of ecological value, and applying ecosystem-based land classification to guide future land use. The lack

of environmental baselines, climate-aligned reclamation practices, and Environmental Impact Assessments (EIAs) to guide reclamation efforts severely limits the ability to evaluate the long-term ecological trade-offs of large-scale reclamation.

Studies in similar ecosystems have shown that the ecosystem services generated by healthy paddy ecosystems such as water regulation, soil fertility maintenance, biodiversity support, flood control, and cultural functions are economically significant, with estimates valuing them at approximately LKR 1,018,717 per acre annually (US\$8,391/ha/year). This supports the case for Payment for Ecosystem Services (PES) schemes as a complementary strategy for both conservation and livelihoods. Therefore, it is crucial to approach this issue with a balanced perspective that considers both agricultural needs and the long-term ecological consequences. Public awareness, community involvement and collaboration between agricultural and environmental authorities are essential to ensure that reclamation efforts do not come at the expense of Sri Lanka's natural heritage.

In contrast, paddy land governance in Sri Lanka's LCWZCDs stands at a critical juncture that reflects a broader institutional neglect. The continuation of undifferentiated, large scale reclamation efforts without adequate consideration of ecological and socio-economic heterogeneity risks leading to inefficient resource use further landscape degradation. A more differentiated, community-engaged, and ecologically sensitive approach—one that accommodates diverse land-use pathways—is required to optimize food security, land productivity, and ecosystem integrity. Accordingly, there is an urgent need to shift towards a tri-fold strategy that embraces the options to 'reclaim, convert or conserve' in a purposeful and context-specific manner.

5.2.4 Community Perspectives Reveal Complex Motivations and Preferences in Paddy Land Use

Community perspectives gathered from the paddy-based ecosystem in LCWZCDs highlight a complex array of motivations, constraints, and aspirations concerning paddy land use. Several persistent barriers hinder active re-engagement in paddy cultivation, including high operational costs, increased climate-related risks, particularly flooding and a general lack of youth interest in farming, and inefficiencies in state-led interventions. Many farmers perceive reclamation programmes as short-lived and inadequately tailored to local realities, citing limited consultation and top-down implementation as key concerns. As a result, confidence in the legitimacy and responsiveness of current policy frameworks remains low.

In contrast, some alternative land uses have gained traction among farming communities. Agroforestry, leasing arrangements, and even conversion to residential use are often viewed as more viable options for underperforming paddy lands. These alternatives are frequently associated with greater economic returns, reduced risk exposure, and alignment with evolving demographic preferences.

Yet, amidst the uncertainty surrounding state programmes, a few promising grassroots-led initiatives offer a different narrative. For instance, community-driven projects such as the "Rath Del" traditional seed cultivation programme, led by youth groups, demonstrate the potential for blending tradition with innovation. Such efforts not only contribute to food security but also reinforce cultural identity, and youth engagement.

These community insights reaffirm that paddy lands are more than just farmland, but they are ecologically and culturally significant systems characterized by shared water resources, communal management traditions and multifunctional environmental roles. Their sustained productivity and ecological function demand coordinated, landscape-level interventions rather than isolated or individual interventions. The pilot model trialed in this study focused on organizing stakeholders at the *yaya* level and facilitated collaborative governance. Key elements of the model include the identification of both landowners and cultivators, the formation of landscape-based working groups, participatory planning and problem-solving, and coordinated implementation with stakeholder participation.

This approach aligns with best global practices promoted by international institutions such as the Food and Agriculture Organization (FAO), United Nations Environmental Programme (UNEP), and Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES), which advocate landscape-scale governance, community empowerment, and multi-stakeholder engagement as essential tools to address climate and land degradation challenges. In the case of paddy-based eco system in Sri Lanka's LCWZCDs, such strategies are particularly relevant, given that paddy-based landscapes play critical roles in flood mitigation, groundwater recharge, biodiversity conservation, and carbon sequestration. These ecosystem services cannot be sustained through fragmented, crop-diversified, profit-maximizing models alone. Therefore, ecosystem-based, participatory management is essential to protect vulnerable landscapes such as paddy-based ecosystems in LCWZCDs and build resilience to climate change.

Therefore, adopting landscape-level, participatory governance mechanisms emerge as a prerequisite for revitalizing paddy cultivation in these regions. Such mechanisms enable a more holistic response to the socio-ecological complexity of land use, support the rebuilding of communal governance structures, facilitates ecosystem-level planning, and enhance long-term sustainability while respecting local knowledge systems and cultural traditions.

5.3 Policy Implications and Recommendations

5.3.1 Dominance of Non-technological Constraints in Driving Abandonment

Although reclamation efforts have succeeded in reducing the extent of abandoned lands in the short term, their long-term effectiveness is undermined by several factors such as lack of drainage rehabilitation and climate-resilient infrastructure, the

absence of post-reclamation evaluation mechanisms, inconsistent alignment between field realities and programme goals, and high risk of re-abandonment due to persistent socio-economic disincentives. This suggests that reclamation alone is insufficient to reverse abandonment sustainably without concurrent structural reforms in tenure, labour, infrastructure, and input supply systems.

Moreover, while certain technological barriers do exist, the persistence of abandonment is primarily driven by reversible, non-technological constraints, such as shifting labour patterns, institutional neglect, and fragmented land ownership, which have not been adequately addressed by existing policy frameworks. These underlying factors continue to weaken the long-term viability of paddy cultivation, highlighting the need for a more integrated and systemic policy response.

Recommendations:

- Prioritize structural reforms that address socio-economic drivers of abandonment, including tenancy arrangements, labour availability, and youth engagement in agriculture.
- Shift policy interventions from purely technical solutions towards integrated socio-economic measures.
- Mandate baseline data collection, mid-term evaluations, and community feedback mechanisms in all reclamation and land development projects.

5.3.2 Policy Fragmentation and Overlaps

The priority status of paddy lands has diminished over the past two and a half decades due to inconsistent policies, weak enforcement and fragmented governance and responsibilities across government agencies. Multiple circulars and institutional mandates often overlap or contradict each other. For instance, certain circulars permit regulated conversion under certain conditions, while others prohibit such conversions without formal approval. Consequently, local authorities may misinterpret or inconsistently implement these guidelines. This creates legal uncertainty and enforcement gaps, weakening paddy land governance.

Weak enforcement of land-use regulations and limited real-time tracking of land abandonment or conversion have enabled continued abandonment and unauthorized conversions. A comprehensive reversal is therefore needed, with a unified legal and institutional framework, systematic monitoring land use changes and stricter penalties for illegal land conversions. Ratnayake et al., (2022) also proposed proper seasonal monitoring of the use and misuse of paddy lands through the village-level mechanism and updating the paddy land data as supportive measures to curb the frequent following and abandonment of paddy lands and prevent reversible changes in land use.

Recommendations:

Institutional reforms and policy coordination are required to prevent further abandonment and restore the priority status of paddy lands through;

- Update and integrate overlapping circulars into a single unified legal framework.
- Reimpose conditionality on paddy land reclassification and conversion.
- Require rigorous land suitability and ecosystem assessments before alternative uses are approved.
- Equip Agrarian Services Centers with adequate resources and legal authority to monitor land use and enforce compliance.
- Institutionalize satellite-based and GIS-enabled land monitoring to track abandonment, conversions, and post-reclamation outcomes.
- Enhance coordination among Agrarian Services, Land Commissioners, Environmental Authorities, and Local Authorities to ensure integrated land governance.
- Equip Agrarian Services Centers with GIS, satellite-based tools, and together with the necessary legal authority, to detect unauthorized land conversions and abandonment through seasonal monitoring.

5.3.3 Limited Long-Term Impact of Reclamation Programmes

Reclamation success depends on local engagement, ownership, and effective oversight mechanisms however minimal involvement of local communities in restoration efforts is a major drawback.

Recommendation: Strengthen Reclamation Viability through;

- Focus on cost-effective, climate-resilient reclamation in Category A lands.
- Improve drainage, access, and community-led maintenance.
- Mobilize farmer organizations and local committees for participatory planning and monitoring.
- Institutionalize post-reclamation monitoring including baseline data, mid-term evaluations, and community feedback mechanisms
- Bottom-to-top institutional mechanism at the DAD in identifying and monitoring current and potential occurrences leading to ecosystem degradation and implementing legal provisions to prevent, minimizing and discourage the same.

5.3.4 Absence of Area-based Planning and Integrated Resource Management

Current abandonment patterns in paddy lands exhibit clear spatial interdependencies, yet existing policy responses remain fragmented and focused primarily at the individual field level. This limits the effectiveness and sustainability

of interventions, as the ecological, economic, and social diversity of these lands demands more context-specific and spatially informed planning approaches.

The existing binary classification of paddy lands as either *cultivable* or *abandoned* fails to capture the full spectrum of variation in land quality, environmental sensitivity, and reclamation potential. This calls for a shift toward landscape-level planning and the establishment of a national paddy land classification and zoning framework that facilitates differentiated, targeted interventions based on ecological and socio-economic realities. Developing coastal zone-specific action plans considering salinity, flooding and urban pressures is particularly important.

Recommendation: Establishment of a Coastal Zone Paddy Land Classification and Zoning Framework

- Develop and implement a tiered classification system as shown in Table 5.1.
- Integrate the classification system into national planning frameworks
 - Promote landscape-level planning that accounts for interconnected paddy ecosystems.
 - Develop district-level abandonment risk maps to spatially target interventions.
 - Align eligibility for subsidies, land-use approvals, and technical support with the relevant classification tiers.
 - Establish zoning regulations to protect Category C eco-sensitive lands.
 - Integrate zoning and land classification data into national land-use platforms and link them, where appropriate, to carbon credit or eco system payment schemes.

Table 5.1: Strategic Options for Abandoned Paddy Lands

Land Category	Characteristics	Intervention Types /Policy Action	Key Instruments
Category 1	Agriculturally viable, ecologically stable (low ecological sensitivity)	Low cost, climate-aligned reclamation with improved infrastructure for paddy cultivation	Financial incentives, green subsidies, farmer groups, state programmes, public-private partnership
Category 2	Marginally productive, moderate ecosystem value	Allow mixed-use of lands (seasonal crops, salt-tolerance crops, agroforestry, climate-smart and regenerative practices such as vermicomposting, and organic nutrient recycling, and traditional water management systems) tailored to local capacities and climate risks. Support farmer corporates to facilitate collective production, resource sharing, marketing, and access to technical and financial services.	Local-level zoning, extension services, and training
Category 3	Ecologically sensitive, poor drainage or saline	Permit regulated conversion or conservation based on EIAs to guide ecologically appropriate decisions	EIAs, PES schemes, wetland zoning
All Categories	Require legal clarity, monitoring, and community involvement	Reform circulars and land laws; GIS-based tracking	Integrated land-use policy framework

Pilot Integrated Models in Critical Areas:

- Implement ecosystem-sensitive reclamation models in LCWZCDs, addressing issues such as urban encroachment, salinity, and climate vulnerability.
- Invest in bund and drainage rehabilitation, particularly in flood-prone or salt-affected zones.
- Promote community-led maintenance through cooperative labour-sharing and local stewardship initiatives.

- Record and monitor all land-use transitions through a national land-use tracking platform linked, where appropriate, to carbon credit and ecosystem service markets.

5.3.5 Underutilized Ecosystem Service Value

Most reclamation programmes do not adequately account for the ecosystem service value of abandoned paddy lands, including flood mitigation, biodiversity conservation, and groundwater recharge. With an estimated value of over US\$ 8,391 per hectare per year, many abandoned areas may generate greater long-term benefits when managed as wetlands than when converted back to rice cultivation. This provides a strong justification for integrating Payment for Ecosystem Services (PES) into future land-use policy frameworks.

Recommendation: Promote climate-resilient and economically viable cultivation while encouraging ecosystem services and sustainable land use alternatives

Given the specific agroecological and socio-economic conditions of LCWZCDs, regionally tailored strategies are needed to make paddy cultivation both viable and resilient. Where full-scale reclamation is not viable or desirable, support should shift towards more sustainable, and ecosystem-compatible land uses. Therefore, a holistic policy approach that bridges environmental sustainability, agricultural revitalization, and socio-economic incentives will be essential to preserve the multifunctional role of paddy ecosystems in the coastal wet zone districts.

- Provide targeted subsidies, credit and technical support for diversified sustainable alternatives and climate-resilient cultivation methods in abandoned or underperforming lands, including organic vegetables, medicinal crops, agroforestry and ecological farming systems through regulated conversion on Category B and C lands.)
- Prioritize smallholders, rural youth and women headed households in alternative land use programmes.
- Invest in coastal zone-specific action plans addressing salinity, flooding, and urban encroachment.
- Promote salt-tolerant varieties, regenerative practices, and the use of organic inputs.
- Encourage integrated farming systems, such as rice-fish, paddy-timber systems, to diversify and enhance income streams.
- Develop climate information services, crop insurance, and guaranteed price schemes for farmers in vulnerable farming zones
- Launch pilot Payment for Ecosystem Services (PES) schemes, especially for Category C lands with significant wetland or biodiversity value.

5.3.6 Community Preferences and Legitimacy

Restoration efforts have often failed due limited grassroots engagement and ownership. The study reveals that many farmers prefer greater flexibility in land use rather than enforced reclamation. Current top-down approaches often lack community buy-in and overlook ground realities such declining youth interest in farming, low returns from paddy cultivation, and infrastructure-related constraints. Community-driven alternatives, including agroecological diversification, cooperatives, and lease-based models, should therefore be integrated into land-use planning frameworks.

Recommendation: Foster Participatory Planning and Community-Led Restoration

- Engage communities in planning and monitoring land use transitions.
- Institutionalize post-reclamation follow-up through GIS-based monitoring and local committees.
- Mobilize farmer organizations and cooperatives to lead localized restoration initiatives.
- Provide technical training, financial incentives, and institutional support for community-managed systems, including bund maintenance, drainage upkeep, labour-sharing arrangements.
- Pilot ecosystem-sensitive, community-managed reclamation models with strong community participation, local ownership, and mechanisms for long-term monitoring and maintenance.

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