

**YANGON UNIVERSITY OF ECONOMICS
DEPARTMENT OF ECONOMICS
MASTER OF DEVELOPMENT STUDIES PROGRAMME**

**A STUDY ON THE EFFECT OF RECOVERY ACTIVITIES OF
CYCLONE MOCHA FOR RURAL LIVELIHOODS IN THE
MAGWAY REGION**

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MDevS II - 34 (18th BATCH)**

JUNE, 2025

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MAGWAY REGION**

A thesis submitted in partial fulfillment of the requirements for
the Master of Development Studies (MDevS) Degree

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This is to certify that the thesis entitled **“A Study on the Effect of Recovery Activities of Cyclone Mocha for Rural Livelihoods in the Magway Region”** submitted as partial fulfillment towards the requirements for the degree of Master of Development Studies has been accepted by the Board of Examiners.

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ABSTRACT

Rural communities around the world are experiencing growing impacts from natural disasters. This study examined the effects of recovery activities following Cyclone Mocha on rural livelihoods in Myanmar, focusing on 385 households from 20 randomly selected villages in Salin Township, Magway Region. Assessment of Cyclone Mocha's impact revealed substantial losses in agriculture and livestock, with crop loss notably threatening food security and economic stability. Respondents expressed moderate satisfaction with recovery efforts, highlighting that timeliness and relevance of support to household needs are critical areas requiring further improvement. The research underscored the importance of capacity-building, strengthened stakeholder coordination, and robust monitoring systems, alongside active community engagement, in disaster preparedness and recovery. Improved coordination, the provision of timely assistance, and fair resource distribution were identified as key to effective recovery efforts and enhanced resilience. These findings provide essential guidance for developing community-centered strategies that foster resilience and sustainable development in disaster-prone rural areas.

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LIST OF ABBREVIATIONS

GRADE	Global Rapid post-disaster Damage Estimation
MOH	Ministry of Health
WASH	Water, Sanitation, and Hygiene
WHO	World Health Organization

CHAPTER I

INTRODUCTION

1.1 Rationale of the Study

Natural disasters are increasingly affecting rural communities worldwide, disrupting livelihoods, displacing populations, and damaging infrastructure. Climate change has intensified the frequency and severity of events like cyclones, which disproportionately affect vulnerable populations dependent on agriculture and natural resources. Globally, recovery strategies aim to not only rebuild but also enhance resilience in the face of future disasters (WMO, 2019).

In Asia, particularly in the Bay of Bengal region, cyclones have long caused significant humanitarian and economic damage. Countries like Bangladesh, India, and Myanmar face recurring threats, with rural communities often bearing the brunt of the impact. Regional cooperation on disaster risk reduction has improved, yet the implementation of recovery measures remains inconsistent, especially in remote areas (UNODRR, 2015).

Myanmar is particularly susceptible to cyclones due to its geographic characteristics. With a predominantly rural population reliant on agriculture and fisheries for their livelihoods, the impact of cyclones poses significant threats to food security and the wellbeing of rural communities. Cyclone Mocha, which struck in 2023, had a profound effect on the country's rural areas, revealing critical gaps in disaster preparedness, response mechanisms, and long-term recovery strategies. Despite efforts from both the government and international organizations, concerns persist regarding the inclusivity and pace of recovery (FAO, 2023).

The Magway region, situated in the central dry zone of Myanmar, is especially vulnerable to climate-related shocks because of its reliance on rain-fed agricultural practices. The region experienced substantial damage as a result of Cyclone Mocha, leading to significant losses in crop production, livestock, and essential infrastructure. Rural households faced considerable disruptions in their income, food supply, and access to vital services, contributing to a prolonged and complex recovery process (World Bank, 2023).

Salin Township, located within the Magway Region, was directly impacted by Cyclone Mocha. The effectiveness of recovery efforts has varied significantly across different villages, with some communities receiving more aid and support than others. Analyzing the recovery process in Salin Township provides an opportunity to evaluate localized recovery interventions and assess their effectiveness in rebuilding livelihoods, restoring resilience, and ensuring the overall well-being of the community.

Despite the considerable efforts made by government agencies and aid organizations, recovery from Cyclone Mocha has been uneven and, in certain areas, inadequate. Rural communities continue to experience livelihood insecurity due to delays or inefficiencies in recovery activities.

This study aims to address the existing perceptions regarding the effectiveness of recovery strategies in rural Myanmar following Cyclone Mocha. By concentrating on Salin Township within the Magway Region, the research intends to provide valuable insights into the successes and limitations of current recovery measures, as well as to offer recommendations for more sustainable, community-centered disaster response models. Understanding the effects of these recovery efforts is crucial for designing future interventions that genuinely rebuild and enhance rural livelihoods in disaster-prone areas.

1.2 Objective of the Study

The main objectives of the study are:

- (1) To examine the effects of the cyclone on agricultural productivity, livestock, financial support and other primary income-generating activities in Salin Township
- (2) To examine the perceived effectiveness of Recovery Activities in Mocha Cyclone affected area in Salin Township

1.3 Method of Study

A cross-sectional quantitative research design was employed to investigate the multifaceted impacts of recovery efforts following Cyclone Mocha, particularly focusing on rural livelihoods in Salin Township. By focusing on 385 randomly selected households across three wards and ten villages in the cyclone-affected area, the study seeks to capture a representative sample that reflects the diverse experiences

and challenges faced by rural communities in the aftermath of the disaster. The study surveyed 385 households that were randomly selected from a pool of 60 villages within the cyclone-affected area, ensuring a representative sample that enhances the generalizability of the findings. Specifically, 20 villages were randomly chosen, with 15 to 20 households selected from each village, allowing for a diverse and comprehensive dataset reflective of the community's demographics. Data collection was conducted through face-to-face interviews using a semi-structured questionnaire. Data analysis involved presenting categorical data as frequency and percentage, while numerical data were summarized using mean and standard deviation. To further explore relationships between variables, correlation tests and linear regression analyses were performed.

1.4 Scope and Limitations of the Study

This research examined agricultural productivity, livestock management, financial support, and the effectiveness of recovery efforts following Cyclone Mocha, with a particular focus on Salin Township, Myanmar. The study offers several notable advantages. By targeting multiple aspects of rural livelihoods, it provides a comprehensive understanding of how communities respond to and recover from severe natural disasters. The robust methodological design, including carefully developed survey instruments and systematic data collection, enhances the credibility and reliability of the findings. The study's focus on an under-researched region adds valuable, context-specific insights that can inform future disaster response strategies in similar settings. Additionally, the inclusion of various stakeholders such as farmers, local officials, and relief workers enriched the data and ensured diverse perspectives were represented.

While the study employed a robust methodological design, some limitations should be noted. The cross-sectional nature of the study further restricted insights to immediate recovery impacts, precluding analysis of long-term outcomes that would be better captured in longitudinal research. Finally, the study's timing offered only a snapshot of recovery, rather than a comprehensive assessment of the entire recovery process.

1.5 Organization of the Study

This study is organized into five chapters. Chapter one is the introduction, that includes rationale of the study, objectives of the study, method of the study and scope and limitations of the study. Chapter two provides a literature review. Chapter three presents the overview of effected of Mocha Cyclone situation in Myanmar. Chapter four consists of a survey profile, survey design, and survey results. Finally, this study concludes with chapter five, which provide finding, and suggestion.

CHAPTER II

LITERATURE REVIEW

2.1 Concept of Rural Livelihoods

Rural livelihoods refer to the means by which people living in rural areas sustain their lives, typically through a combination of activities involving the use of natural resources, human skills, and social networks. These livelihoods are intricately linked with local environmental, economic, and social conditions, making them particularly sensitive to shocks such as natural disasters, economic changes (IFRC, 2012).

The most widely used framework to understand rural livelihoods is the Sustainable Livelihoods Framework (SLF) developed by the UK Department for International Development (DFID). According to this framework, a livelihood comprises the capabilities, assets (including both material and social resources), and activities required for a means of living (Chambers & Conway, 1992). It is considered sustainable when it can cope with and recover from stresses and shocks, maintain or enhance its capabilities and assets, and provide sustainable livelihood opportunities for the next generation.

Key Components of Rural Livelihoods

1. **Livelihood Assets:** These are the resources people use to pursue their livelihoods. They include:
 - **Human capital:** Skills, knowledge, health, and ability to work.
 - **Natural capital:** Land, water, biodiversity, and other environmental resources.
 - **Financial capital:** Savings, access to credit, and income sources.
 - **Physical capital:** Infrastructure, tools, and technology.
 - **Social capital:** Networks, relationships, and access to institutions.
2. **Vulnerability Context:** This includes external factors that affect livelihoods, such as natural disasters, conflicts, economic trends, and seasonal changes. Cyclones, for example, can destroy physical assets and disrupt agricultural activities, leaving rural populations more vulnerable.

3. **Livelihood Strategies:** These refer to the range and combination of activities and choices that people make to achieve their livelihood goals. In rural areas, this often includes a mix of agriculture, livestock rearing, wage labor, migration, and small businesses.
4. **Institutions and Policies:** Institutions (government bodies, NGOs, local governance) and policies can significantly influence access to resources, services, and opportunities, thus shaping livelihood outcomes.

Rural Livelihoods in Developing Countries

In many developing countries, rural livelihoods are largely dependent on agriculture and natural resource-based activities. However, these are increasingly under threat due to climate change, land degradation, market fluctuations, and limited access to modern technologies and infrastructure. This makes rural households particularly vulnerable to environmental shocks like natural disasters, which can wipe out crops, damage homes, and cut off access to markets and services.

Ellis (2000) emphasizes that diversification of income sources is critical for reducing vulnerability and improving resilience among rural households. This includes expanding non-farm employment, promoting micro-enterprises, and improving access to education and health services (Ellis F, 2000).

Livelihoods and Resilience

Building resilient livelihoods involves enhancing the capacity of rural communities to absorb and recover from shocks. This includes investments in infrastructure, early warning systems, climate-smart agriculture, and social protection schemes. A resilient livelihood system not only ensures survival during crises but also promotes long-term development and stability (DFID, 1999).

In the context of natural disasters impact on regions, understanding rural livelihoods is essential for designing recovery programs that go beyond immediate relief and support long-term well-being and resilience (FAO, 2016).

2.2 Impact of Natural Disasters on Rural Communities

Natural disasters such as cyclones, floods, droughts, and earthquakes have significant and often devastating effects on rural communities. These impacts are particularly severe in developing countries, where rural populations heavily depend

on natural resources for their livelihoods and have limited access to infrastructure, social protection, and emergency services (FAO, 2015).

2.2.1 Economic Impact

The economic consequences of natural disasters on rural communities are immediate and long-term. Agriculture—the backbone of most rural economies—is highly vulnerable to climatic shocks. Disasters destroy crops, livestock, irrigation systems, and storage facilities, leading to food insecurity, reduced incomes, and indebtedness. According to the Food and Agriculture Organization, about 25% of the economic losses caused by disasters in developing countries occur in the agriculture sector, with smallholder farmers often being the most affected (FAO, 2015).

2.2.2 Social and Human Impact

Disasters not only cause physical destruction but also severely affect the social fabric of rural life. They disrupt education, healthcare, and access to clean water and sanitation. Vulnerable groups, such as women, children, the elderly, and people with disabilities, are disproportionately affected. Women, who often bear responsibility for household food security and caregiving, face increased burdens and protection risks during and after disasters (Enarson & Chakrabarti, 2009).

The displacement of rural populations due to damaged homes and loss of livelihoods can also result in long-term social fragmentation, mental health issues, and weakened community resilience. Temporary shelters often lack privacy and adequate services, compounding these challenges.

2.2.3 Environmental Impact

Natural disasters also lead to environmental degradation, which further undermines rural livelihoods. Cyclones and floods can cause soil erosion, salinization, and the destruction of forests and wetlands, reducing land productivity and biodiversity. In dry zone, environmental damage from disasters has exacerbated water scarcity and reduced the fertility of agricultural lands (FAO, 2015).

2.2.4 Institutional and Governance Challenges

The capacity of local and national institutions to respond to disasters significantly influences the extent of their impact. In many rural areas, poor governance, lack of coordination, and limited resources hamper effective disaster response and recovery. When recovery programs are slow or unequally distributed, they can deepen existing inequalities and marginalize already vulnerable groups (Wisner et al., 2004).

2.2.5 Resilience and Adaptive Capacity

The impact of natural disasters is not uniform; it depends on a community's resilience and adaptive capacity. Rural communities with strong social networks, diversified income sources, and knowledge of local risks are generally better able to recover. However, many rural areas lack these protective factors, making them more susceptible to long-term impacts. Building rural resilience requires integrated strategies that include early warning systems, climate-resilient infrastructure, community-based disaster risk reduction, and sustainable livelihood development (Adger, 2000).

2.3 Disaster Resilience and Recovery Strategies

Disaster resilience and recovery strategies are essential for minimizing the long-term impacts of natural disasters and enhancing the ability of communities especially rural ones—to recover, adapt, and thrive. Resilience refers to the capacity of individuals, households, communities, and systems to absorb shocks, adapt to changing conditions, and transform in ways that reduce future risks (Bahadur et al., 2010). Recovery strategies, meanwhile, encompass the policies, programs, and actions taken to restore and improve livelihoods, infrastructure, and services following a disaster.

2.3.1 Understanding Disaster Resilience

Disaster resilience is multidimensional and includes physical, social, economic, institutional, and environmental capacities. The Sendai Framework for Disaster Risk Reduction (2015–2030) outlines four key priorities to strengthen resilience:

1. Understanding disaster risk;
2. Strengthening disaster risk governance;
3. Investing in disaster risk reduction for resilience;
4. Enhancing disaster preparedness and building back better in recovery.

These principles highlight the importance of proactive and inclusive strategies that address both immediate needs and long-term vulnerabilities. In rural settings, resilience is closely tied to sustainable livelihood systems. Communities that have diversified income sources, access to social safety nets, and strong local governance structures are generally more resilient to disasters (Twigg, 2009).

2.3.2 Recovery Strategies: Short-Term vs. Long-Term

Short-term recovery focuses on restoring basic needs such as shelter, food, water, and healthcare. It includes emergency aid, temporary housing, and restoration of essential services. While critical, short-term responses must transition into **long-term recovery**, which involves rebuilding infrastructure, restoring livelihoods, psychosocial support, and institutional strengthening.

In the context of Countries' natural disaster, both types of recovery were initiated, but challenges such as limited local capacity, unequal aid distribution, and lack of coordination often hampered effectiveness especially in remote rural areas.

2.3.3 Community-Based Disaster Risk Management (CBDRM)

Community participation is a cornerstone of effective resilience and recovery strategies. **CBDRM** emphasizes the involvement of local communities in identifying risks, planning mitigation efforts, and implementing recovery activities. This approach enhances ownership, relevance, and sustainability of interventions (Maskrey, 2011).

For instance, training local leaders in disaster preparedness, organizing community disaster response teams, and integrating indigenous knowledge into recovery planning can greatly improve resilience at the grassroots level.

2.3.4 Livelihood Recovery and Economic Resilience

Restoring rural livelihoods is central to long-term disaster recovery. This includes:

- Rebuilding agricultural systems and livestock resources;
- Providing access to microfinance and credit;
- Supporting small businesses and value chain development;
- Training in alternative livelihoods to reduce dependence on vulnerable sectors.

Programs such as **cash-for-work**, **micro-insurance**, and **climate-resilient agriculture** have shown success in various contexts (IFRC, 2012). These strategies not only help communities recover economically but also strengthen their capacity to cope with future shocks.

2.3.5 Institutional and Policy Frameworks

Effective recovery requires a strong institutional framework and coordinated policy approach. National disaster management laws, decentralized planning, and integration of disaster risk reduction into development strategies are crucial. Collaborative efforts between government agencies, NGOs, international

organizations, and local communities are essential to ensure inclusive and equitable recovery (IFRC, 2012).

2.4 Cyclone-Affected Rural Communities

Cyclones are among the most destructive natural disasters, particularly for rural communities in coastal and near-coastal regions. These communities are often highly dependent on agriculture, fisheries, and natural resources, making them especially vulnerable to the sudden and long-lasting impacts of cyclonic storms. The intersection of geographic exposure, socioeconomic fragility, and limited institutional capacity intensifies the effects of cyclones on rural livelihoods, infrastructure, and well-being (FAO, 2023).

2.4.1 Vulnerability of Rural Communities to Cyclones

Rural populations typically have limited resources to prepare for or recover from cyclones. Many live in substandard housing and lack access to reliable early warning systems or evacuation infrastructure. Moreover, their economic activities—especially rain-fed farming, livestock rearing, and fishing—are highly susceptible to weather-related shocks. According to Cutter et al. (2003), vulnerability arises not only from physical exposure to hazards but also from socioeconomic conditions that inhibit the ability to respond and recover (Cutter et al., 2003).

In developing countries, where the majority of people live in rural areas, these vulnerabilities are compounded by underdeveloped infrastructure, low access to financial services, and limited state support. Natural disasters cause widespread devastation in rural regions and result in long-term livelihood disruptions (World Bank, 2008).

2.4.2 Impacts of Cyclones on Rural Livelihoods

Cyclones damage critical livelihood assets including land, crops, livestock, tools, and storage facilities. Cyclones often lead to the loss of seasonal crops just before harvest, destruction of irrigation systems, and significant livestock mortality. This loss results in not only immediate food insecurity but also reduced income and employment opportunities in the long term (FAO, 2023).

Fishing communities also suffer from the destruction of boats and gear, contamination of water bodies, and disruption of coastal ecosystems. These impacts are more severe in areas where communities lack savings, insurance, or diversified sources of income, making recovery extremely difficult (FAO, 2023).

2.4.3 Social and Psychological Effects

The trauma associated with cyclonic disasters extends beyond physical loss. Many affected individuals face psychological distress due to the sudden loss of homes, loved ones, and livelihoods. Children may drop out of school due to displacement or economic hardship, while women often face increased domestic and caregiving burdens in the aftermath (Enarson, 2000).

Social cohesion in rural communities can either be weakened or strengthened post-disaster. While some communities may experience fragmentation, others demonstrate solidarity through collective action and mutual support—highlighting the importance of social capital in disaster resilience (Aldrich, 2012).

2.4.4 Access to Recovery and Support

Cyclone-affected rural communities often face significant barriers to accessing aid and recovery programs. Geographic isolation, poor infrastructure, and bureaucratic delays can limit the speed and reach of support. Moreover, marginalized groups—such as women-headed households, elderly persons, and people with disabilities—often receive less assistance or face greater obstacles in recovery, reinforcing existing inequalities (Wisner et al., 2004).

2.4.5 Long-Term Challenges and Opportunities

While the damage from cyclones is often immediate and visible, the long-term challenges can persist for years. Rebuilding homes, restoring land fertility, replacing livestock, and reestablishing livelihoods are complex and resource-intensive processes. However, disasters also offer an opportunity to “build back better”—by improving infrastructure, promoting climate-resilient farming practices, and strengthening community-based disaster preparedness systems (IFRC, 2012).

Engaging communities in the planning and implementation of recovery is crucial to ensure interventions are relevant, inclusive, and sustainable. Local knowledge and participation enhance not only the efficiency of recovery but also community ownership and resilience to future events (IFRC, 2012).

2.4.6 Disaster Preparedness Activities for Rural Communities to Address Cyclones

Effective disaster preparedness is vital for rural communities to reduce risks and minimize the adverse impacts of cyclones. Preparedness involves a combination of structural, institutional, and community-based activities that empower rural

populations to anticipate, withstand, and recover from cyclonic events. Key preparedness activities include:

➤ ***Early Warning Systems and Communication:***

Establishing robust early warning systems is essential for providing timely and accurate alerts about impending cyclones. These systems should include multiple communication channels such as radio, mobile messaging, community loudspeakers, and local volunteers to ensure information reaches even remote households (WMO, 2019; UNDRR, 2015). Community awareness campaigns should be conducted regularly to ensure that people understand warning messages and know how to respond.

➤ ***Community Education and Training:***

Regular education programs and disaster drills build local knowledge about cyclone risks and appropriate response actions. Training includes first aid, search and rescue, safe evacuation procedures, and strategies for protecting livestock and assets (IFRC, 2012; Paul, 2009). Involving schools, local leaders, and women's groups in preparedness activities helps communities participate more and be more effective (UNDRR, 2015).

➤ ***Evacuation Planning and Safe Shelter Construction:***

Developing clear, community-specific evacuation routes and plans is crucial. Cyclone shelters should be strategically located, accessible to all, and designed to accommodate vulnerable groups, such as the elderly, people with disabilities, and children (Paul, 2009). Pre-identifying transportation resources and conducting evacuation drills can save lives during emergencies.

➤ ***Strengthening Infrastructure and Housing:***

Promoting cyclone-resistant construction techniques and retrofitting existing homes and critical buildings (e.g., schools, health centers) helps reduce structural damage. Local governments and NGOs can provide technical assistance and incentives for resilient construction (UNDRR, 2015).

➤ ***Livelihood Diversification and Risk Transfer Mechanisms:***

Encouraging households to diversify income sources reduces economic vulnerability. Rural communities can benefit from microinsurance for crops and livestock, microfinance programs, and training in alternative skills (FAO, 2015). These measures help families recover more quickly after a cyclone.

➤ ***Community-Based Disaster Risk Reduction (CBDRR):***

Involving community members in hazard mapping, risk assessment, and the development of local disaster preparedness plans ensures that interventions are context-specific and culturally appropriate (IFRC, 2012). Establishing local disaster management committees enhances coordination and resource mobilization during emergencies.

➤ ***Resource Stockpiling and Local Emergency Planning:***

Pre-positioning essential supplies—such as food, water, medicines, and emergency kits—can help communities cope during and after a cyclone. Developing and regularly updating community emergency response plans ensures that roles and responsibilities are clear among local responders (WMO, 2019).

➤ ***Social Support and Inclusive Engagement:***

Special attention should be given to marginalized or vulnerable groups, including women-headed households, the elderly, and people with disabilities, to ensure their needs are addressed in preparedness plans (UNDRR, 2015). Promoting social cohesion through mutual aid groups and community networks enhances resilience and supports faster recovery.

Implementing these activities as an integrated disaster preparedness strategy strengthens rural communities' capacity to anticipate, respond to, and recover from cyclones, thereby reducing losses and supporting long-term resilience.

2.5 Reviews on Previous Studies

Paul B. (2009) examined why relatively fewer people died? The case of Bangladesh's Cyclone Sidr. *Natural Hazards*, Cyclone Sidr, a Category IV storm, hit southwestern Bangladesh on November 15, 2007, resulting in 3,406 deaths. Although it matched the strength of Cyclone Gorky, which caused around 140,000 deaths in 1991, Sidr had significantly fewer casualties. This reduction is largely credited to the Bangladeshi government's improved cyclone forecasts, early warnings, and organized evacuation of coastal populations. Research using both primary and secondary sources also highlights other factors that contributed to the lower death toll. These include specific physical aspects of Cyclone Sidr, such as its storm surge intensity, duration, time and location of landfall, local ecological features, and the presence of coastal embankments. The study suggests further enhancing the warning system, increasing the number of public cyclone shelters, and promoting community

awareness through educational campaigns. These measures aim to improve public response and shelter usage during future cyclones, potentially reducing loss of life in similar natural disasters (Paul B, 2009).

Sadik MS et al. (2018) examined Cyclone Aila recovery in Koyra, Bangladesh, identifying five key areas of vulnerability before the disaster: the physical environment, local economy and livelihoods, social networks, WASH and health, and disaster preparedness. The physical environment was hindered by poor infrastructure, such as weak embankments, fragile housing, and exposure to storm surges, worsened by unsustainable shrimp farming in saline areas. Economic vulnerability stemmed from poverty, reliance on natural resources, and limited means for recovery. Social support systems were weak, with uncoordinated and under-resourced local organizations. WASH and health conditions were compromised due to unsafe water sources, inadequate sanitation awareness, limited medical access, and poor emergency capacity. Disaster preparedness faced issues such as a lack of shelters—particularly for livestock—weak coordination, logistical barriers, and fragmented relief efforts. These compounded vulnerabilities increased the community's exposure to and impact from cyclone-related hazards (Sadik MS, et. al, 2018)..

Ohmar, W., & Kaneko, Y. (2021) examined post disaster recovery in Myanmar: BBB After Cyclone Nargis. Kobe University Monograph Series in Social Science Research. This study explored the Myanmar government's efforts following the 2008 Cyclone Nargis to enhance international cooperation and strengthen collaborative networks. It evaluates the progress and ongoing challenges related to applying the “Build Back Better” strategy in post-disaster recovery. The focus is on government-led recovery planning and how effectively the “Build Back Better” principles have been implemented. The study identifies key obstacles that persist, particularly the need for increased awareness and engagement among local leaders and communities. These challenges highlight the importance of fostering stronger community-based disaster risk management systems to ensure long-term resilience. While steps have been taken to improve coordination and disaster response capabilities, there remains a significant gap in local-level preparedness and understanding. This analysis underscores the necessity for continued efforts to educate and empower local stakeholders, which is critical for building sustainable and effective disaster recovery frameworks in Myanmar (Ohmar W, & Kaneko Y, 2021).

Mollah, AH, et al. (2024) examined assessing socioeconomic vulnerability of cyclone Remal-affected coastal communities in Bangladesh. The study developed a Socioeconomic Vulnerability Index (SeVI) using 34 indicators categorized under sensitivity, exposure, and adaptive capacity. The study focused on four highly disaster-prone Unions, Arpangasia, Patharghata, Dakua, and Baliatali, located in Patuakhali and Barguna Districts. Data from 400 households, gathered through semi-structured questionnaires, highlighted variations in vulnerability levels. Patharghata showed the highest vulnerability score (0.461), while Arpangasia had the lowest (0.389). Baliatali had the lowest sensitivity (0.083), and Dakua ranked high in exposure (0.571). Notably, while 99.25% of respondents were aware of cyclone warnings, only 32.25% evacuated, pointing to issues in communication and evacuation strategies. The study provides a practical framework for policymakers to identify high-risk areas and better allocate resources to enhance resilience in cyclone-affected coastal zones (Mollah AH, et al., 2024).

Zakaria A, et al. (2024) studied Indonesia's Humanitarian Diplomacy Contribution to ASEAN Security Stability through the Provision of Cyclone Mocha Disaster Relief in Myanmar. Cyclone Mocha in Myanmar has disrupted government activities in Myanmar. This disruption is one of the security threats that needs to be responded to appropriately so that it does not have an impact on regional security stability. Indonesia as the bearer of the ASEAN chairmanship needs to take a diplomatic stance in providing humanitarian assistance so as not to trigger conflict. Therefore, Indonesia's humanitarian diplomacy efforts at this moment need to be analyzed to become a lesson for the future. The method used in this study is a literature study that analyzes data inductively based on relevant information from sources available on the internet. The study found that Indonesia's humanitarian diplomacy still pays attention to regional security interests. Indonesia sent aid through the AHA Center as an ASEAN disaster agency and directly on behalf of the Indonesian people. Sending aid on behalf of the Indonesian people shows Indonesia's neutrality towards Myanmar's in government. The local government accepts this method because it is considered to have no special tendencies that take advantage of Myanmar's national emergency conditions. Indonesia's humanitarian diplomacy in ASEAN, especially Myanmar, reflects the Indonesian state's efforts to promote and protect human rights, peace, stability, and prosperity in the ASEAN region. This

shows Indonesia's commitment to maintaining regional security stability through mobilizing humanitarian solidarity (Zakaria A, et al.,2024).

CHAPTER III

SOCIOECONOMIC CONDITIONS AND CYCLONE MOCHA IN MAGWAY REGION

3.1 Overview of Cyclone Mocha Affected in Myanmar

Cyclone Mocha was a powerful and catastrophic tropical cyclone that struck Southeast Asia in May 2023, with Myanmar experiencing some of the most severe impacts. As one of the strongest cyclones to form in the Bay of Bengal in recent decades, Mocha caused extensive destruction, particularly in the western coastal regions of Myanmar, including Rakhine State (United Nations OCHA, 2023a). The cyclone’s landfall exposed vulnerable populations to extreme hazards, exacerbating pre-existing humanitarian crises.

Cyclone Mocha originated over the warm waters of the Bay of Bengal and rapidly intensified due to favorable meteorological conditions such as high sea surface temperatures and minimal vertical wind shear. The system reached its peak intensity on May 14, 2023, classified as a very severe cyclonic storm (VSCS), with wind speeds exceeding 200 km/h (125 mph), comparable to a Category 4 hurricane (WMO, 2023). The cyclone made landfall near Sittwe, the capital of Rakhine State, resulting in significant wind damage, storm surge, and flooding (United Nations OCHA, 2023a).

Rakhine State bore the heaviest destruction, with Sittwe experiencing catastrophic damage to homes, schools, hospitals, and other critical infrastructure (ReliefWeb, 2023a). Initial reports indicated that hundreds of thousands of people were displaced, and at least 145 fatalities were recorded, although the real toll is likely higher due to challenges in accessing affected areas (United Nations OCHA, 2023b). The cyclone disproportionately affected internally displaced persons (IDPs) and Rohingya refugees living in overcrowded and poorly constructed camps, heightening their vulnerability to the storm’s effects (IOM, 2023).

Cyclone Mocha caused extensive loss of livelihoods, with severe damage to agricultural land, destruction of fishing boats, and significant livestock mortality (FAO, 2023). Key infrastructure—including roads, bridges, electricity grids, and

telecommunications was disrupted or destroyed, hampering both immediate response and long-term recovery efforts (ReliefWeb, 2023b).

The Myanmar government declared disaster zones and mobilized limited domestic resources, but the response was constrained by ongoing difficulties in granting access to international aid agencies (United Nations OCHA, 2023b). International humanitarian organizations—including the United Nations, International Federation of Red Cross and Red Crescent Societies (IFRC), and local NGOs—provided emergency relief, distributing food, clean water, temporary shelter, and medical supplies. However, access restrictions, logistical challenges, and insecurity substantially slowed aid delivery (IOM, 2023; ReliefWeb, 2023a). Myanmar's response to Cyclone Mocha was hindered by several intersecting challenges and armed conflict complicated disaster preparedness and coordination (United Nations OCHA, 2023b). The cyclone's effects were exacerbated by the humanitarian situation that already existed among the displaced communities. Furthermore, Cyclone Mocha exemplifies the growing threat of severe tropical storms in the context of global climate change, which is expected to increase the frequency and intensity of such events in the Bay of Bengal region (WMO, 2023; IPCC, 2021).

Cyclone Mocha, in addition, stands as a stark reminder of Myanmar's acute vulnerability to natural hazards, especially amid political turmoil and ongoing humanitarian crises. The devastation in Rakhine State and the plight of displaced populations underscore the urgent need for improved disaster preparedness, equitable access to aid, and long-term recovery strategies. These events also reinforce the necessity of international climate action and investment in resilience-building to mitigate future disaster risks.

3.2 Damage Estimation after Cyclone Mocha in Myanmar

Global Rapid Post-Disaster Damage Estimation (GRADE) Report presents a summary of the findings from the GRADE assessment conducted to evaluate the damages resulting from the impact of Cyclone Mocha in Myanmar during May 2023. The median estimate of total direct damage is \$2.24 billion, corresponding to approximately 3.4% of Myanmar's 2021 GDP. This figure encompasses damages to residential and non-residential buildings (including contents), agriculture, and infrastructure, as assessed via the GRADE methodology. Among the affected sectors, the residential housing sector sustained the most significant damage, followed by non-

residential buildings, infrastructure, and then agriculture. Spatial analysis reveals that over 80% of the total damage occurred in Rakhine and Sagaing, with Rakhine being the most severely affected—impacting approximately 1.2 million people across seven districts and 17 townships, including widespread devastation in internally displaced persons camps. The cyclone also caused substantial damage in Magway, Mandalay, and Chin, with wind damage predominant in Rakhine and significant flooding reported in Magway and Sagaing. Infrastructure damage was extensive, affecting health facilities, schools, communication networks, and transportation systems. The ongoing conflict in several regions, notably in Rakhine, has compounded the cyclone’s impacts and is anticipated to hinder response and recovery efforts. The estimation of damages relies on published national, state, and township-level reports, cross-checked with georeferenced images, satellite data, and multiple agency sources. While the current analyses focus on physical capital stock damage and do not include economic flow losses (such as business interruption) outside of agriculture, agricultural losses are calculated based on crop disaggregation and current yield data. The damage estimates indicate that over 70% of the total losses occurred in Rakhine State alone, with housing and non-residential building losses accounting for 49% and 18%, respectively, and infrastructure and agriculture representing 22% and 11%. The highest concentration of damages was found in Rakhine and Sagaing, which together constitute nearly 84% of the total, with Rakhine experiencing damage equivalent to nearly 30% of its total capital stock. This assessment provides a valuable initial estimate to inform recovery planning and complements further damage and loss evaluations involving ground surveys.

Table 3.1 Estimated breakdown of capital damage in absolute values from Cyclone Mocha in Myanmar (2023) (in US\$ millions)

State/ Region	Residential	Non- residential	Infrastructure	Agriculture	Total
Rakhine	898	331	294	99	1,622
Sagaing	74	28	83	68	253
Magway	78	31	57	33	199
Mandalay	18	5	90	9	62
Chin	24	10	0	5	49
Bago	8	3	8	11	30
Ayeyarwaddy	3	1	4	7	15
Shan	1	0	2	3	6
Other States	2	1	2	3	8
Total	1,106	410	490	238	2,244

Source: World Bank (2023)

Table 3.1 provides an estimated breakdown of capital damage from Cyclone Mocha across various states and regions in Myanmar, measured in US\$ millions. The total direct capital damage nationwide is assessed at \$2,244 million, with the largest proportion borne by Rakhine State (\$1,622 million, or approximately 72% of the total). Sagaing Region follows, accounting for \$253 million (11%), while Magway Region is identified as the third most affected area, with an estimated total damage of \$199 million, representing about 9% of the national total (World Bank, 2023).

In Magway Region, the damages are distributed as follows: residential buildings suffered \$78 million in losses, making up the largest share within the region. Non-residential buildings incurred \$31 million in damage, while infrastructure damage stood at \$57 million. The agricultural sector, although not as heavily affected as in some other regions, still experienced substantial losses amounting to \$33 million. This pattern underscores the broad impact of Cyclone Mocha on both urban and rural assets in Magway. While the residential sector absorbed the largest portion of the losses, significant infrastructure damage—second only to the residential sector—indicates considerable disruption to public services and connectivity (World Bank, 2023).

Compared to Rakhine and Sagaing, Magway's share of the total damage is smaller, yet it remains significant in the national context. The relatively high values for residential and infrastructure damage suggest that Cyclone Mocha severely impacted both households and essential services in this region. The total damage in Magway surpasses that of Mandalay, Chin, Bago, Ayeyarwaddy, Shan, and other states combined, highlighting its vulnerability during this event. Overall, these findings point to an urgent need for targeted recovery and reconstruction efforts in Magway, especially in rehabilitating housing, infrastructure, and supporting agricultural recovery to restore livelihood and resilience in the region (World Bank, 2023).

3.3 National and International Response to Cyclone Mocha in Myanmar

3.3.1 Health Sector Collaboration

Following Cyclone Mocha, the Ministry of Health worked closely with UN agencies to coordinate an effective emergency response. Rapid response teams and emergency medical teams were established, and essential health supplies were stockpiled in anticipation of urgent needs. The World Health Organization (WHO) and

United Nations Children's Fund (UNICEF) played pivotal roles by delivering significant health commodities to affected communities in May and June 2023. These collaborative efforts ensured timely medical support and helped mitigate public health risks in cyclone-impacted areas (NDMC, 2023).

3.3.2 Collaboration with ASEAN

Consistent with the “One ASEAN, One Response” principle, the ASEAN Coordinating Center for Humanitarian Assistance (AHA Center) took immediate action after the cyclone. On 14 May 2023, an in-country liaison team was deployed to Nay Pyi Taw to assist the Disaster Management Committee (DMC) with needs and damage assessments and to support the coordination of humanitarian relief. The AHA Center also activated the Web Emergency Operations Center (WebEOC) to facilitate real-time information sharing between its headquarters in Jakarta and the in-country team. Substantial relief supplies—totaling 84.7 tons and valued at USD 1.65 million—were airlifted from the ASEAN-DELSA warehouse in Malaysia to Yangon and distributed, especially in Rakhine State, with further supplies shipped by sea. From 21 to 24 May, a 14-member ASEAN Emergency Response and Assessment Team (ASEAN-ERAT) conducted detailed needs and damage assessments in several Rakhine townships, working jointly with Myanmar officials. The team’s findings and recommendations were submitted to the National Disaster Management Committee (NDMC) and State Administration Council, supporting the activation of the ASEAN Secretary-General as the ASEAN Humanitarian Assistance Coordinator for Cyclone Mocha to ensure an effective and timely response (NDMC, 2023).

3.3.3 Myanmar Red Cross Society and International Federation of Red Cross and Red Crescent Societies

The Myanmar Red Cross Society (MRCS), in partnership with the International Federation of Red Cross and Red Crescent Societies (IFRC), played a vital role before, during, and after the cyclone’s landfall. Prior to the cyclone, MRCS volunteers facilitated evacuations, conducted awareness campaigns, and collected preliminary data in at-risk areas. After the cyclone struck, MRCS rapidly mobilized 962 volunteers for rescue operations, clearing debris, providing first aid and psychosocial support, and gathering on-the-ground information. As of 14 June 2023, MRCS, with IFRC support, reached 147,142 people (28,694 households) with relief assistance such as shelter kits, clean water, and essential household items. In Rakhine State, MRCS distributed over

549,000 liters of safe drinking water and delivered hygiene and dignity kits to almost 7,000 individuals. Furthermore, MRCS provided children's clothing and operated mobile health clinics, serving over 1,600 individuals in the hardest-hit regions (IFRC, 2023).

3.3.4 Other International Assistance

Myanmar received additional humanitarian support from neighboring countries and international organizations. Governments of Bangladesh, Cambodia, China, India, Indonesia, and Pakistan, as well as the King and Queen of Thailand, contributed either in-kind or financial aid. Civil society groups, associations, and private sector donors from countries such as China, Thailand, and Japan, along with Myanmar diaspora communities, channeled donations through the Ministry of Foreign Affairs and Ministry of International Cooperation. This diverse international assistance significantly bolstered local response efforts and supported recovery for communities most affected by Cyclone Mocha (NDMC, 2023).

3.4. Impact and Recovery of Rural Livelihoods Following Cyclone Mocha in Myanmar

3.4.1 Livelihood Losses and Immediate Needs

Cyclone Mocha, which made landfall in Myanmar and Bangladesh in May 2023, stands out as one of the most devastating storms to hit the region in recent memory. The cyclone inflicted widespread destruction on rural communities, particularly those reliant on agriculture, fisheries, and livestock. In Rakhine State alone, more than 800,000 individuals were affected, with at least 435,000 people identified as being in urgent need of humanitarian support (United Nations OCHA, 2023). The disaster resulted in the destruction of nearly 80% of shelters in the hardest-hit townships and caused severe losses to vital agricultural infrastructure. According to the Food and Agriculture Organization (FAO), more than 3,000 hectares of crops were lost, and over 40,000 livestock perished. Fishing communities were also heavily impacted, losing hundreds of boats and significant quantities of fishing gear, which critically undermined their livelihoods (FAO, 2023).

3.4.2 Recovery Activities and Their Effectiveness

In response, international organizations launched a suite of recovery initiatives targeting the restoration of rural livelihoods. The FAO distributed rice seeds, farming

tools, and fertilizers to over 10,000 affected farming households, facilitating timely replanting during the essential cropping period. For livestock keepers, more than 5,000 families received animal feed and basic veterinary services to support the recovery of surviving animals, thereby helping to stabilize both nutrition and household income. In the fisheries sector, the International Organization for Migration (IOM) and its partners supplied fishing equipment to more than 2,000 impacted fishers, enabling them to resume income-generating activities (IOM, 2023). The United Nations Development Programme (UNDP) implemented cash-for-work projects, employing over 3,500 rural residents in debris removal and the repair of community infrastructure, thus injecting cash into the recovering local economies (UNDP, 2023). Humanitarian agencies also worked to restore safe housing by repairing or reconstructing over 17,000 homes and community shelters, providing secure living conditions and safeguarding essential assets for continued livelihood recovery.

3.4.3 Effectiveness and Remaining Challenges

These interventions played a significant role in alleviating both the immediate and medium-term impacts of Cyclone Mocha. FAO monitoring data indicated that by August 2023, 80% of farmers who received assistance had successfully replanted their crops, and household incomes in supported communities had risen by an average of 30% compared to immediately after the cyclone. Nonetheless, several challenges persist, including restricted access to credit, ongoing food insecurity, and the continued vulnerability of communities to climate-related hazards. While recovery efforts have yielded substantial progress, addressing these remaining barriers is crucial for ensuring the long-term resilience and sustainability of rural livelihoods in the region.

3.5 Cyclone Mocha affected in Magway Region and Salin Township

Cyclone Mocha had a profound and multifaceted impact on Salin Township, resulting in extensive damage to infrastructure, agricultural systems, and livelihoods. The cyclone's high winds and torrential rainfall led to widespread flooding, causing significant destruction to homes, schools, and essential infrastructure such as roads and bridges. Many households experienced severe losses in agricultural production, as fields were inundated and livestock were adversely affected. These losses have dire implications for food security and economic stability, as agriculture is a primary livelihood source for the residents of Salin Township.

In the immediate aftermath of the cyclone, the affected communities faced substantial challenges, including disruptions to access to essential services such as healthcare and education. The urgency for humanitarian assistance grew, with many residents requiring food, clean water, medical care, and shelter. The response to the disaster highlighted the necessity of coordinated efforts among government agencies, NGOs, and international organizations to deliver timely and effective support. The long-term recovery process in Salin Township will depend on addressing not only the immediate humanitarian needs but also on rebuilding infrastructure and enhancing community resilience against future disasters (Regional Disaster Management Department, Magway Region, 2023).

Table 3.2 Cyclone Mocha affected Townships in Magway Region (2023)

Sr. No.	Township	No. of Wards affected	No. of Village affected	No. of Home affected	No. of Population affected	No. of Population Displaced
1	Magway	1	1	5	26	-
2	TaungTwinGyi	-	1	19	77	57
3	MyoThit	-	10	10	35	-
4	NatMauk	-	5	6	30	-
5	Chauk	3	-	-	-	382
6	YeNanChaung	3	6	12	50	728
7	MinBu	6	6	6	29	1,666
8	Pwint Phyu	-	2	2	6	-
9	Salin	3	60	6,354	28,425	1,115
10	NgaPhae	-	1	-	-	20
11	ThaYat	4	1	2	10	36
12	KanMa	6	8	17	57	202
13	MinHla	2	-	2	8	86
14	SinPaungWe	2	3	18	3	163
15	AungLan	-	2	-	-	75
16	Pokokku	8	1	6	34	820
17	Pauk	1	2	3	12	-

Sr. No.	Township	No. of Wards affected	No. of Village affected	No. of Home affected	No. of Population affected	No. of Population Displaced
18	SeikPhyu	-	1	-	-	-
19	Myaing	1	-	1	4	-
20	GanGaw	2	-	-	-	71
Total		43	105	6,463	28,806	5,421

Source: Regional Disaster Management Department, Magway Region (2023)

In 2023, Cyclone Mocha impacted 20 townships across Magway Region, resulting in widespread disruption to communities and infrastructure. According to Table 3.2, Salin Township in Magway Region was one of the most severely affected areas by Cyclone Mocha in 2023. The township experienced significant impacts across multiple indicators. Notably, Salin had 3 wards and 60 villages affected—the highest number of villages impacted among all townships listed in the table. This widespread geographic impact translated into substantial damage at the household and population level: Salin reported 6,354 homes affected, which constitutes the overwhelming majority of home damages in the entire Magway Region. The number of people affected in Salin was also exceptionally high, reaching 28,425 individuals. This figure accounts for nearly the total population affected across all Magway’s townships, underscoring the disproportionate burden borne by Salin. Furthermore, 1,115 residents were displaced from their homes, making Salin one of the top contributors to overall displacement in the region (Regional Disaster Management Department, Magway Region, 2023).

In summary, Salin Township stands out as the most heavily impacted township in Magway Region in terms of both the scale of housing damage and the number of people affected and displaced. The data indicate an urgent need for focused humanitarian response and recovery measures in Salin, prioritizing housing reconstruction, support for displaced individuals, and restoration of community infrastructure to address the extensive disruption caused by Cyclone Mocha (Regional Disaster Management Department, Magway Region, 2023).

CHAPTER IV

SURVEY ANALYSIS

4.1 Survey Profile

This study explores the deffects of post-Cyclone Mocha recovery initiatives on rural livelihoods in Salin Township. Data were collected from 385 households, selected at random from 20 villages within the cyclone-impacted area. The research aims to thoroughly assess how recovery efforts have shaped agricultural productivity, livestock management, financial support, and other key income-generating activities in Magway region.

The outcomes of this study hold considerable importance for stakeholders such as policymakers, recovery organizations, and local leaders. The insights generated will shed light on the specific needs and obstacles facing rural households in the wake of Cyclone Mocha, enabling policymakers to design more responsive and effective disaster management strategies. Additionally, the findings can assist recovery organizations in developing targeted and inclusive programs that strengthen community resilience.

Ultimately, the knowledge gained will support efforts to build long-term resilience, improve economic opportunities, and empower communities in the Magway Region. The overarching goal is to ensure that recovery not only restores pre-disaster conditions but also establishes a foundation for stronger, more adaptable communities capable of facing future challenges.

4.2 Survey Design

The survey employed a cross-sectional quantitative approach to gather data from households affected by the cyclone. The research was conducted in the Magway Region, specifically targeting the area impacted by Cyclone Mocha.

The standard formula used for estimating the sample size in survey research is:

$$N = Z^2 p (1-p)/d^2$$

Where:

- n = required sample size
- Z = Z-score for the desired confidence level (1.96 for 95%)
- p = estimated proportion of the population with the attribute of interest (assumed as 0.5 for maximum variability)
- d = margin of error (5%, or 0.05)

$$n = (1.96)^2 (0.5) (1-0.5) / (0.05)^2 = 0.9604/0.0025 = 384.16 = 385$$

To ensure a representative sample, 20 villages were randomly selected from a pool of 60 villages within the cyclone-affected area. This random selection process aimed to minimize bias and enhance the generalizability of the findings. From each of the selected villages, a total of 385 households were randomly chosen to participate in the study. The sampling strategy involved selecting between 15 to 20 households from each village, ensuring that the sample was sufficiently diverse and reflective of the community's demographics.

Data collection was conducted through face-to-face interviews using a semi-structured questionnaire. This method was chosen to facilitate in-depth responses while allowing for flexibility in the interview process. The questionnaire consisted of four sections: (1) Socio-demographic Factors: (2) Effects of Cyclone Mocha on Livelihoods: (3) Effectiveness of Recovery Activities: and (4) Opportunities, Challenges, and Requirements for Additional Recovery Activities. Respondents were asked to express their views on the ongoing needs for recovery support and the effectiveness of the activities implemented.

The last two sections of the questionnaire utilized a 5-point Likert scale to assess respondents' perceptions. For positive direction questions, scores were assigned as follows: 1 for "strongly disagree," 2 for "disagree," 3 for "neutral," 4 for "agree," and 5 for "strongly agree." Conversely, for negative direction questions, the scoring was reversed to ensure that higher scores consistently reflected positive perceptions.

Data analysis involved presenting categorical data as frequency and percentage, while numerical data were summarized using mean and standard deviation. To further explore the relationships between variables, correlation tests and linear regression analyses were performed. These statistical methods aimed to identify the effectiveness of recovery activities and their impact on the livelihoods of households affected by Cyclone Mocha.

Overall, this cross-sectional quantitative design provided a robust framework for assessing the effects of recovery activities on rural livelihoods, enabling researchers to draw meaningful conclusions that can inform future disaster recovery strategies and enhance community resilience.

4.3 Analysis of Survey Results

4.3.1 Demographic Characteristics of Respondents

Table 4.1 presents a detailed overview of the demographic and household information of the respondents surveyed, totaling 385 individuals. This table serves to illuminate key characteristics such as age, gender, marital status, education level, household size, occupation, land ownership, and housing type. Understanding these demographics is essential for analyzing the socio-economic context of the population, which can inform further research, policy-making, and community development initiatives.

The age distribution reveals a significant concentration of respondents in the 40–49 age range, accounting for 41.0% of the sample, followed by those aged 50–59 at 24.7%. Younger age groups, particularly individuals under 20, represent a mere 1.8%, indicating a predominantly middle-aged demographic.

In terms of gender, the sample consists of 55.1% males and 44.9% females, suggesting a slight male predominance. Marital status data shows that the majority of respondents are married (57.1%), followed by widowed individuals at 19.2%. This may reflect societal norms where marriage is a common institution, potentially impacting household dynamics and support systems within the community.

Educational attainment among the respondents varies, with 28.1% having completed middle school, while 24.2% hold a university or college degree. Notably, 6.8% of respondents possess no formal education, which may influence their employment opportunities and socio-economic status. The household size indicates that half of the respondents (50.1%) live in households of 3 to 5 individuals, suggesting a common family structure that likely affects resource allocation and social interactions.

Occupation data reveals that 26.2% of respondents are crop farmers, followed by 21.6% working as daily wage laborers. This highlights the agricultural nature of the local economy. Land ownership is significant, with 55.1% of respondents owning land, which may correlate with their occupations and economic stability. Lastly,

regarding housing types, semi-permanent structures dominate, comprising 47.5% of the sample, while 25.5% reside in permanent housing. This information reflects the living conditions and economic realities of the respondents, providing a foundation for further analysis of their socio-economic challenges and opportunities.

Table 4.1 Demographic and Household Information of Respondents (n=385)

No.	Demographic and Household Information	Response	No. of Respondents	Percentage (%)
1	Age	Under 20	7	1.8
		20–29	24	6.2
		30–39	70	18.2
		40–49	158	41.0
		50–59	95	24.7
		60 and above	31	8.1
2	Gender	Male	212	55.1
		Female	173	44.9
3	Marital Status	Single	48	12.5
		Married	220	57.1
		Widowed	74	19.2
		Divorced/Separated	43	11.2
4	Education level	No formal education	26	6.8
		Primary school	58	15.1
		Middle school	108	28.1
		High school	100	26
		University/College	93	24.2
5	Household size	1–2	37	9.6
		3–5	193	50.1
		6–8	132	34.3
		9 or more	23	6.0

Continued from Table 4.1

6	Occupation	Crop farmer	101	26.2
		Livestock farmer	54	14
		Daily wage laborer	83	21.6
		Business owner/trader	65	16.9
		Government employee	47	12.2
		Unemployed	27	7
		Other	8	2.1
7	Land Ownership	Own land	212	55.1
		Rent land	115	29.9
		No land	58	15.1
8	Type of Housing	Permanent (brick/cement)	98	25.5
		Semi-permanent (wood/tin)	183	47.5
		Temporary (bamboo/thatch)	104	27.0

Source: Survey Data (2025)

4.3.2 Effects of the Cyclone on Livelihoods on the Respondents

Table 4.2 provides a detailed account of the effects of Cyclone Mocha on the livelihoods of respondents, encompassing a total of 385 individuals. The data captures the multifaceted impacts of the cyclone, highlighting not only the immediate losses experienced by households but also the longer-term consequences for their livelihoods and well-being.

Table 4.2 Effects of the Cyclone on Livelihoods on the Respondents (n=385)

No.	Effects of the Cyclone on Livelihoods	Response	No. of Respondents	Percentage (%)
1	Did Cyclone Mocha cause any of the following losses in your household? *	Crop loss	171	44.4
		Livestock loss	147	38.2
		Loss or damage to house	122	31.7
		Loss of business or job	111	28.8
		Stored food /seeds Loss	94	24.4
		Injury or health issues	70	18.2
		No significant loss	20	5.2

Continued from Table 4.2

2	If you experienced crop loss, what proportion of your crops were lost?	0%	100	26.0
		1–25%	67	17.4
		26–50%	95	24.7
		51–75%	76	19.7
		76–100%	22	5.7
		Not applicable	25	6.5
3	If you experienced livestock loss, how many animals were lost?	None	140	36.4
		1–5	93	24.2
		6–10	67	17.4
		11–20	26	6.8
		More than 20	13	3.4
		Not applicable	46	11.9
4	How was your main source of household income affected by Cyclone Mocha?*	Not affected	33	8.6
		Slightly affected	151	39.2
		Moderately affected	118	30.6
		Severely affected	78	20.3
		Completely lost	5	1.3

*Multiple Response Questions, Source: Survey Data (2025)

The table indicates that a significant proportion of respondents faced substantial losses due to the cyclone, with 44.4% reporting crop loss. This figure suggests that agricultural productivity was severely impacted, which is particularly concerning for a community likely dependent on farming as a primary source of income. Livestock loss was reported by 38.2% of respondents, which further exacerbates food security and economic stability, as livestock can serve as both a source of protein and a financial asset.

Damage to housing was noted by 31.7% of respondents, indicating that many families not only lost their livelihoods but also faced displacement or unsafe living conditions. The loss of business or job was reported by 28.8% of the respondents, highlighting the cyclone's broader economic implications beyond agriculture. The loss of stored food or seeds affected 24.4%, which could have long-lasting repercussions on the community's food supply and recovery efforts. Additionally, 18.2% reported

injuries or health issues, underscoring the human cost of the disaster. In contrast, only 5.2% of respondents indicated no significant losses, demonstrating that the cyclone had widespread adverse effects on the population.

For those who experienced crop loss, the extent of loss varied significantly. While 26.0% reported losing none of their crops, 24.7% indicated losses of 26% to 50%. This variation may reflect differences in crop resilience, farming practices, or the timing of the cyclone's impact relative to the growth cycle of the crops. In terms of livestock loss, 36.4% of respondents reported no losses, suggesting that some were able to protect their animals, while 24.2% lost between 1 and 5 animals, indicating a more moderate impact for those households.

The cyclone's impact on household income was substantial, with only 8.6% of respondents reporting that their main source of income was not affected. The majority experienced varying degrees of impact: 39.2% reported a slight effect, 30.6% a moderate effect, and 20.3% a severe effect, with 1.3% stating they completely lost their income source. This distribution illustrates that while some households were able to maintain a level of income, many faced significant challenges in sustaining their livelihoods.

4.3.3 Receiving Financial or Recovery Support by the Respondents

Table 4.3 presents data on the receipt of financial or recovery support among the study respondents (n=385) following Cyclone Mocha. This table summarizes the extent to which individuals affected by the disaster received various forms of assistance aimed at supporting their recovery. The information provides valuable insights into the distribution and accessibility of post-cyclone support, which is essential for assessing the effectiveness of recovery efforts and identifying potential gaps in aid delivery within the affected population.

Table 4.3 Receiving Financial or Recovery Support by the Respondents (n=385)

No.	Receiving Financial or Recovery Support	Response	No. of Respondents	Percentage (%)
1	Receive any financial support or compensation	Yes	159	41.3
		No	226	58.7
2	If yes, From whom did you receive support?*(n=159)	Government	31	19.5
		Local NGO	89	56
		International NGO	56	35.2
		Religious organization	15	9.4
		Community group	39	24.5
		Family/friends	30	18.9
		Other	3	1.9
3	Which of the following types of recovery support did your household receive after Cyclone Mocha? *	Emergency food assistance	197	51.2
		Drinking water supply	233	80.5
		Temporary shelter or housing materials	99	25.7
		Seeds, fertilizers, or farming tools	66	17.1
		Livestock restocking or veterinary services	50	13
		Cash assistance or financial aid	104	27
		Medical or health services	85	22.1
		Psychosocial support or counseling	24	6.2
		Training for new income-generating activities	26	6.8
		Reconstruction of infrastructure (roads, schools, etc.)	23	6
		Other	9	2.3
My household did not receive any recovery support	34	8.8		

Continued from Table 4.3

4	How soon after the cyclone did your household start receiving recovery support?	Within 1 week	149	38.7
		Within 2–4 weeks	130	33.8
		Within 2–3 months	43	11.2
		After > 3 months	30	7.8
		My household did not receive any recovery support	33	8.6

*Multiple Response Questions, Source: Survey Data (2025)

Regarding external support, 41.3% of respondents reported receiving financial assistance or compensation after the cyclone. Notably, local NGOs were the primary source of support, offering assistance to 56.0% of those who received help. This reliance on local organizations highlights the importance of community-based responses in disaster recovery. Government support accounted for 19.5% of assistance received, suggesting a potential area for improvement in governmental response strategies.

Recovery support types varied widely, with drinking water supply and emergency food assistance being the most commonly provided, at 80.5% and 51.2%, respectively. These figures indicate a strong focus on addressing immediate needs following the cyclone. However, only 17.1% received seeds, fertilizers, or farming tools, which are essential for agricultural recovery. This discrepancy may hinder longer-term recovery efforts, as households may struggle to re-establish their farming operations without adequate resources.

Timeliness of recovery support was also a critical factor, with 38.7% of respondents receiving assistance within one week of the cyclone. However, 8.6% reported not receiving any recovery support at all, which may leave some households vulnerable and struggling to regain stability.

4.3.4 The Usefulness and Sufficiency of Financial or Recovery Support Program

Table 4.4 presents respondents' perceptions regarding the usefulness and sufficiency of financial or recovery support programs provided following Cyclone Mocha, as reported by a sample of 385 individuals. This table offers valuable insights into how affected community members evaluated both the adequacy and practical impact of the support they received, shedding light on the effectiveness of post-disaster interventions.

Table 4.4 Usefulness and Sufficiency of Financial or Recovery Support Program to the Respondents (n=385)

No.	Receiving Financial or Recovery Support	Response	No. of Respondents	Percentage (%)
1	How would you rate the overall usefulness of the recovery support your household received?	Not useful at all	21	5.5
		Slightly useful	132	34.3
		Moderately useful	102	26.5
		Very useful	75	19.5
		Extremely useful	24	6.2
		Not applicable (did not receive any support)	31	8.1
2	How sufficient was the financial or material support you received?	Not sufficient at all	41	10.6
		Slightly sufficient	142	36.9
		Moderately sufficient	110	28.6
		Sufficient	41	10.6
		Completely sufficient	15	3.9
		Not applicable	36	9.4
3	Has your household recovered its main income-generating activities to pre-cyclone levels?	Fully recovered	76	19.7
		Mostly recovered	80	20.8
		Partially recovered	191	49.6
		Not recovered at all	38	9.9
4	Has your household been able to return to normal food consumption since the cyclone?	Yes, completely	61	15.8
		Yes, partially	281	73.0
		No	43	11.2

Continued from Table 4.4

5	Did Cyclone Mocha cause any family member to migrate for work/livelihood?	Yes	134	34.8
		No	251	65.2

* Multiple Response Questions

Source: Survey Data (2025)

In terms of the overall usefulness of the recovery support received, 34.3% found it slightly useful, while 19.5% rated it as very useful. However, 10.6% felt that the support was not sufficient at all, indicating that while assistance was appreciated, it may not have fully addressed the needs of affected households.

When assessing the recovery of income-generating activities, 49.6% of respondents reported only partial recovery, while 9.9% stated they had not recovered at all. This suggests that many households continue to face challenges in returning to pre-cyclone economic levels. Food consumption patterns reflect similar struggles, with 73.0% of respondents indicating only partial return to normal consumption. This ongoing challenge may affect overall nutrition and well-being within the community.

Finally, the migration of family members for work or livelihood was reported by 34.8% of respondents, indicating that the cyclone's effects may have prompted individuals to seek alternative sources of income elsewhere. This migration could have broader social implications, including changes in household dynamics and community structures.

In summary, the effects of Cyclone Mocha on respondents' livelihoods are profound and multifaceted, encompassing immediate losses, long-term recovery challenges, and changes in household dynamics. The data highlights the critical need for targeted recovery efforts that address both short-term needs and long-term resilience, ensuring that affected households can rebuild their lives effectively.

4.3.5 Perceived Effectiveness of Recovery Activities

Table 4.5 presents the perceived effectiveness of recovery activities among respondents, providing a quantitative assessment of their experiences and satisfaction levels following Cyclone Mocha. The data, gathered from 385 individuals, includes mean scores and standard deviations for various aspects of recovery support, helping to gauge the overall effectiveness of the interventions implemented in the aftermath of

the disaster. The effectiveness of recovery activities was measured using a 5-point Likert scale, where respondents rated their agreement with ten statements: "strongly disagree" (1), "disagree" (2), "neutral" (3), "agree" (4), and "strongly agree" (5). Importantly, no negatively framed questions were included in this assessment, ensuring that all responses reflected positive perceptions of recovery efforts.

**Table 4.5 Perceived Effectiveness of Recovery Activities among Respondents
(n=385)**

No.	Perceived Effectiveness of Recovery Activities	Mean Score	SD
1	Assistance was provided in a timely manner after the cyclone.	2.96	1.00
2	The support I received matched the needs of my household.	3.22	0.97
3	Recovery activities helped restore my agricultural activities.	3.26	0.99
4	Recovery activities helped restore my livestock or animal husbandry.	3.25	0.99
5	Recovery activities helped restore my small business or non-farm income activities.	3.19	1.02
6	The amount of aid/support provided was sufficient.	3.04	0.97
7	I was able to participate in planning or decision-making for recovery activities.	3.28	0.96
8	Information about available support was clear and accessible.	3.29	0.88
9	Local authorities were effective in coordinating recovery activities.	3.22	0.97
10	NGO or community-based organizations were effective in providing support.	3.39	0.96
11	Overall Mean for Perceived Effectiveness of Recovery Activities	3.21	0.97

Source: Survey Data (2025)

The overall mean score for perceived effectiveness of recovery activities stands at 3.21, indicating a moderate level of satisfaction among respondents. This score suggests that while there were positive perceptions of the recovery efforts, there remain areas for improvement to enhance overall effectiveness.

Examining specific aspects of recovery activities, the statement regarding the timeliness of assistance received a mean score of 2.96, with a standard deviation of 1.00. This score, which is below the overall mean, suggests that many respondents felt that support was not provided as promptly as needed, which could hinder the immediate recovery process.

Respondents reported a mean score of 3.22 for the statement that the support received matched their household needs. While this score indicates a generally favorable assessment, it also suggests that some households may still feel that their specific needs were not adequately addressed, highlighting an opportunity for more tailored support in future recovery initiatives.

The effectiveness of recovery activities in restoring agricultural activities garnered a mean score of 3.26, while the restoration of livestock or animal husbandry was rated similarly at 3.25. These scores indicate that recovery efforts were perceived as somewhat effective in revitalizing these essential aspects of the livelihoods of many respondents, reflecting the importance of agricultural recovery in the context of post-cyclone rehabilitation.

Support for small businesses and non-farm income activities received a mean score of 3.19, demonstrating a recognition of the importance of diversifying income sources in recovery efforts. However, this score also implies that there is room for enhancing support for non-agricultural livelihoods, which are critical for economic resilience.

The sufficiency of aid and support provided was rated with a mean score of 3.04, suggesting that while many respondents found the support adequate, a significant number may have felt it was insufficient for their recovery needs. This perception underscores the importance of assessing the quantity and quality of aid distributed to ensure it meets the varied needs of affected households.

Participation in planning and decision-making for recovery activities received a mean score of 3.28, indicating that many respondents felt involved in the recovery process. This engagement is crucial for fostering community ownership and ensuring that recovery efforts align with local priorities.

Information accessibility regarding available support was rated at a mean score of 3.29, suggesting that communication about recovery resources was generally clear. However, the score also indicates that there may be instances where information could have been conveyed more effectively, which is vital for ensuring that affected individuals can access the support they need.

Local authorities received a mean score of 3.22 for their effectiveness in coordinating recovery activities, indicating a generally positive perception of their role in the recovery process. In contrast, NGO or community-based organizations were rated higher, with a mean score of 3.39, reflecting respondents' recognition of the critical role these entities played in providing support and facilitating recovery efforts.

In summary, Table 4.5 reveals a moderate overall perception of the effectiveness of recovery activities following Cyclone Mocha, with specific strengths and areas for improvement identified. While respondents acknowledged the efforts made to support their recovery, the data indicates a need for enhanced timeliness, sufficiency of aid, and tailored support to better address the diverse needs of the affected population. This analysis underscores the importance of continuous feedback and adaptation in recovery strategies to ensure that they are responsive and effective in supporting community resilience

4.3.6 Opportunities or Positive Improvements of Recovery Activities

Table 4.6 outlines the perceived opportunities or positive improvements of recovery activities among respondents, providing insights into the perceived benefits and advancements resulting from the recovery efforts following Cyclone Mocha. The data, collected from 387 individuals, employs a 5-point Likert scale to measure responses, where eight statements were scored with "strongly disagree" (1) to "strongly agree" (5). Notably, the last statement was framed negatively, with its scoring reversed to reflect a positive perception (i.e., "strongly disagree" correlates with a higher score).

Table 4.6 Perceived Opportunities or Positive Improvements of Recovery Activities among Respondents (n=385)

No.	Perceived Opportunities or Positive Improvements of Recovery Activities	Mean Score	SD
1	I have learned improved agricultural practices as a result of recovery activities.	3.17	1.01
2	I have better access to markets or agricultural inputs now.	3.3	1.01
3	Community organizations in my area have been strengthened.	3.44	0.94
4	I have been able to start new income-generating activities.	3.35	0.98
5	Infrastructure in my community, such as roads or water systems, has improved.	3.28	1.04
6	There is increased cooperation and unity within the community.	3.38	0.96
7	I have received training or capacity building that has been beneficial.	3.37	0.95
8	I have not observed any significant positive developments	2.49	0.93
9	Overall Mean for Perceived Opportunities or Positive Improvements of Recovery Activities	3.22	0.98

Source: Survey Data (2025)

The overall mean score for perceived opportunities or positive improvements is 3.22, indicating a moderate level of perceived benefit among respondents. This suggests that while some positive changes have been recognized, there remains room for further enhancements to maximize the effectiveness of recovery activities.

The first statement, "I have learned improved agricultural practices as a result of recovery activities," received a mean score of 3.17, indicating that respondents generally feel they have gained valuable knowledge through recovery efforts. The standard deviation of 1.01 suggests a moderate level of agreement, with some variability in respondents' experiences regarding knowledge acquisition.

Access to markets or agricultural inputs was rated with a mean score of 3.30, reflecting a recognition of improved accessibility. This development is crucial for enhancing economic opportunities and ensuring that farmers can effectively sell their products and obtain necessary resources. The similar standard deviation indicates consistent perceptions among respondents.

The statement regarding the strengthening of community organizations received a mean score of 3.44, the highest among the positive statements. This suggests that recovery activities have fostered greater community cohesion and enhanced the capacity of local organizations, which is vital for collective recovery and resilience.

The ability to start new income-generating activities garnered a mean score of 3.35, indicating that respondents feel positively about the opportunities created for economic diversification. This is essential for building resilience in the face of future shocks, as it allows households to reduce reliance on single sources of income.

Infrastructure improvements, such as roads or water systems, were perceived positively, with a mean score of 3.28. This enhancement is critical for supporting economic activities and improving overall quality of life in the community. The standard deviation of 1.04 suggests a slightly wider range of opinions regarding the extent of these improvements.

Increased cooperation and unity within the community received a mean score of 3.38, reflecting a positive shift in social dynamics that can enhance collective action and support networks. This change is particularly important in times of recovery, as it fosters collaboration and mutual assistance among community members.

The statement, "I have received training or capacity building that has been beneficial," scored a mean of 3.37, indicating that many respondents value the training opportunities provided through recovery activities. Such capacity-building efforts are essential for empowering individuals and enhancing their skills for future resilience.

In contrast, the negatively framed statement, "I have not observed any significant positive developments," received a mean score of 2.49, indicating that respondents largely disagree with this assertion. The lower score reflects a general sentiment that significant positive changes have indeed been observed in the community as a result of recovery efforts.

In summary, Table 4.6 demonstrates that respondents perceive various positive improvements resulting from recovery activities, with an overall mean score of 3.22 suggesting moderate satisfaction. Key areas of improvement highlighted include enhanced agricultural practices, better access to markets, strengthened community organizations, and increased cooperation. However, the analysis also indicates that there is still potential for further positive developments, particularly in ensuring that all respondents feel the benefits of recovery efforts. This assessment underscores the importance of ongoing evaluation and adaptation of recovery strategies to maximize their impact on community resilience and growth.

4.3.7 Challenges of Recovery Activities

Table 4.7 presents the perceived challenges of recovery activities among respondents, providing valuable insights into the obstacles faced during the recovery process following Cyclone Mocha. The data, collected from 387 individuals, utilizes a 5-point Likert scale to assess responses, where nine statements were scored from "strongly disagree" (1) to "strongly agree" (5). Notably, the last statement was negatively framed, with its scoring reversed, reflecting a positive perception when respondents disagreed with the assertion.

Table 4.7 Perceived Challenges of Recovery Activities among Responde (n=385)

No.	Perceived Challenges of Recovery Activities	Mean Score	SD
1	I received insufficient aid or support.	3.46	1.02
2	There was a delay in receiving aid or support.	3.52	0.93
3	I did not have enough information on available assistance	3.40	0.88
4	The distribution of aid was not equitable.	3.40	0.97
5	I could not access markets or services easily	3.43	0.86
6	There was poor coordination among agencies involved in recovery.	3.40	0.90
7	There was a lack of skilled labor for reconstruction.	3.55	0.85
8	I had concerns about security or safety during the recovery process.	3.47	0.94
9	I did not experience any major challenges.	2.64	0.95
10	Overall Mean for Perceived Challenges of Recovery Activities	3.36	0.92

Source: Survey Data (2025)

The overall mean score for perceived challenges of recovery activities is 3.36, indicating a moderate level of concern among respondents regarding the obstacles encountered during the recovery phase. This score suggests that while challenges are acknowledged, there is also recognition of some progress made in the recovery efforts.

The statement "I received insufficient aid or support" received a mean score of 3.46, indicating that many respondents felt the aid provided was inadequate to meet their needs. The standard deviation of 1.02 suggests a moderate level of agreement, with some variability in perceptions regarding the sufficiency of support.

A higher mean score of 3.52 was reported for the statement "There was a delay in receiving aid or support." This score indicates a significant concern among respondents about the timeliness of assistance, which can critically impact recovery efforts. Delays in receiving aid may hinder the ability of households to recover quickly and effectively.

The statement "I did not have enough information on available assistance" garnered a mean score of 3.40, suggesting that a notable number of respondents felt uninformed about the resources available to them. This lack of information can create barriers to accessing support, further complicating recovery efforts.

Respondents also expressed concerns about the distribution of aid, with a mean score of 3.40 for the statement "The distribution of aid was not equitable." This perception of inequity in aid distribution can lead to feelings of frustration and mistrust among community members, potentially undermining social cohesion and collective recovery initiatives.

The statement "I could not access markets or services easily" received a mean score of 3.43, indicating that many respondents faced challenges in accessing essential services and markets. This barrier can significantly affect individuals' ability to rebuild their livelihoods and achieve economic stability.

The perceived lack of coordination among agencies involved in recovery efforts received a mean score of 3.40, suggesting that respondents felt there were inefficiencies and disorganization in the recovery response. Effective coordination is crucial for maximizing the impact of recovery activities and ensuring that support reaches those who need it most.

The statement regarding a lack of skilled labor for reconstruction received the highest mean score among the challenges at 3.55. This indicates a significant concern

regarding the availability of skilled workers necessary for effective recovery and rebuilding efforts, which could delay progress and result in suboptimal reconstruction outcomes.

Concerns about security or safety during the recovery process scored a mean of 3.47, highlighting that respondents felt apprehensive about their safety while navigating recovery activities. Such concerns can hinder participation in recovery efforts and impact overall community morale.

In contrast, the negatively framed statement, "I did not experience any major challenges," received a mean score of 2.64. This lower score suggests that respondents largely disagreed with the notion that they encountered no significant challenges, reinforcing the overall finding that many faced considerable difficulties during the recovery process.

In summary, Table 4.7 highlights the perceived challenges of recovery activities among respondents, with an overall mean score of 3.36 indicating moderate concern regarding various obstacles. Key challenges identified include insufficient aid, delays in assistance, lack of information, inequitable distribution of aid, and difficulties accessing markets and services. These findings underscore the need for improved coordination, timely support, and equitable distribution of resources to enhance the effectiveness of recovery efforts and promote community resilience in the aftermath of disasters.

CHAPTER V

CONCLUSION

5.1 Findings

In examining the effects of Cyclone Mocha on livelihoods, a substantial proportion of respondents reported significant losses, particularly in agriculture and livestock. Crop loss was reported by a notable percentage of individuals, which directly impacts food security and economic stability within the community. The analysis highlights that while some households received recovery support, the effectiveness of this assistance varied widely. This finding emphasizes the necessity for targeted interventions that not only address immediate needs but also focus on long-term agricultural recovery and enhance food security. Ensuring that recovery efforts prioritize agricultural sustainability is vital for rebuilding resilient communities capable of withstanding future disasters.

The perceptions of the effectiveness of recovery activities revealed a moderate level of satisfaction among respondents, indicating that while some aspects of the recovery process were successful, there remains significant room for improvement. Key components such as the timeliness of assistance and the alignment of support with household needs emerged as critical factors influencing perceived effectiveness. Engaging community members in the planning and decision-making processes for recovery activities can enhance effectiveness. By involving the community, recovery strategies can be better aligned with the specific needs and preferences of those affected, leading to more meaningful and impactful recovery experiences.

Moreover, the insights regarding perceived opportunities and positive improvements from recovery activities illustrate the community's recognition of benefits such as improved agricultural practices and better access to markets. However, the overall sentiment remains mixed, indicating progress alongside persistent challenges. This finding emphasizes the importance of fostering an environment that encourages continuous learning and adaptation in recovery efforts. Recovery programs should not only focus on immediate relief but also facilitate skill

development and market access, empowering individuals to thrive in their post-disaster context.

In contrast, the challenges faced during the recovery process were notable, with many respondents reporting issues such as insufficient aid, delays in receiving support, and concerns about the equitable distribution of resources. These challenges can significantly undermine recovery efforts and highlight the need for improved coordination among agencies involved in disaster recovery. Effective coordination is essential to ensure that resources are distributed equitably and that the specific needs of the community are addressed in a timely manner. Proactively addressing these challenges is crucial for fostering community resilience and ensuring that recovery initiatives are both effective and just.

In conclusion, the findings from the analysis of the recovery process following Cyclone Mocha reveal a complex interplay of factors influencing the effectiveness of recovery activities. The insights gained underscore the importance of tailoring recovery strategies to the specific needs of the community, addressing challenges proactively, and fostering an environment that encourages continuous learning and adaptation. By focusing on enhancing opportunities and addressing challenges, recovery efforts can significantly improve community resilience and ensure that individuals are better prepared to face future disasters. The comprehensive understanding provided by this analysis serves as a vital resource for policymakers and recovery organizations seeking to improve disaster response strategies and promote long-term community sustainability. Ultimately, the findings emphasize that recovery is not merely about restoring what was lost but about building a stronger, more resilient community capable of thriving in the face of future challenges.

5.2 Suggestions

Based on the findings from the analysis of the recovery process following Cyclone Mocha, several actionable recommendations can be made to enhance the effectiveness of recovery activities and bolster community resilience.

First and foremost, it is crucial to prioritize the development and dissemination of targeted recovery programs that emphasize opportunities and positive improvements. Given the strong positive correlation between perceived opportunities and the effectiveness of recovery activities, recovery planners should implement initiatives that focus on capacity building within the community. This may include

providing training sessions on improved agricultural practices, facilitating workshops on financial literacy, and offering resources that enhance market access for local producers. By empowering community members with the knowledge and skills necessary to leverage opportunities, recovery efforts can lead to sustainable growth and enhanced resilience.

Additionally, addressing the challenges faced during the recovery process is imperative. Many respondents reported issues such as insufficient aid, delays in support, and inequitable distribution of resources. To mitigate these challenges, recovery agencies must enhance coordination among different stakeholders, including government entities, non-governmental organizations, and community groups. Establishing a centralized coordination mechanism can streamline communication and resource allocation, ensuring that assistance is delivered more efficiently and equitably. Regular community consultations should also be conducted to gather feedback on the recovery process, allowing for adjustments based on the evolving needs of the population.

Furthermore, it is essential to create a robust system for monitoring and evaluating recovery activities. Implementing a feedback loop that allows community members to voice their experiences and concerns can help identify gaps in support and inform future interventions. This participatory approach not only fosters a sense of ownership among community members but also ensures that recovery efforts are aligned with their needs and expectations. Feedback mechanisms can include surveys, focus group discussions, and community meetings that encourage open dialogue about the recovery process.

Lastly, fostering a culture of continuous learning and adaptation within recovery efforts is essential. Recovery programs should incorporate mechanisms for ongoing evaluation and adjustment based on the evolving context and feedback from the community. This approach ensures that recovery activities remain relevant and effective in addressing the needs of the population. By cultivating an adaptive mindset, recovery organizations can respond more effectively to unforeseen challenges and changes, ensuring that the community is better prepared for the future.

In summary, the recommendations derived from the findings emphasize a multifaceted approach to recovery that prioritizes empowerment, coordination, ongoing support, confidence building, and adaptability. By implementing these actionable strategies, recovery efforts can enhance their effectiveness, promote long-

term resilience, and ultimately contribute to the sustainable development of communities affected by disasters.

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APPENDIX
A STUDY ON THE EFFECT OF RECOVERY ACTIVITIES OF CYCLONE
MOCHA FOR RURAL LIVELIHOODS IN THE MAGWAY REGION
RESEARCH QUESTIONNAIRE

Section (1)

Demographic and Household Information

Sr. no.	Demographic and Household Information
1	Age 1) Under 20 2) 20–29 3) 30–39 4) 40–49 5) 50–59 6) 60 and above
2	Gender 1) Male 2) Female
3	Marital Status 1) Single 2) Married 3) Widowed 4) Divorced/Separated
4	Education level 1) No formal education 2) Primary school 3) Middle school 4) High school 5) University/College
5	Household size 1) 1–2 2) 3–5 3) 6–8 4) 9 or more
6	Occupation 1) Crop farmer 2) Livestock farmer 3) Daily wage laborer 4) Business owner/trader 5) Government employee 6) Unemployed 7) Other (Please Specify)
7	Land Ownership 1) Own land 2) Rent land 3) No land

Sr. no.	Demographic and Household Information
8	Type of Housing 1) Permanent (brick/cement) 2) Semi-permanent (wood/tin) 3) Temporary (bamboo/thatch)

Section (2)

Effects of the Cyclone on Livelihoods

Sr. no.	Effects of the Cyclone on Livelihoods
9	Did Cyclone Mocha cause any of the following losses in your household? (Select all that apply) 1) Crop loss 2) Livestock loss 3) Loss or damage to house 4) Loss of business or job 5) Loss of stored food or seeds 6) Injury or health issues 7) No significant loss
10	If you experienced crop loss, what proportion of your crops were lost? 1) 0% 2) 1–25% 3) 26–50% 4) 51–75% 5) 76–100% 6) Not applicable
11	If you experienced livestock loss, how many animals were lost? 1) None 2) 1–5 3) 6–10 4) 11–20 5) More than 20 6) Not applicable
12	How was your main source of household income affected by Cyclone Mocha? 1) Not affected 2) Slightly affected 3) Moderately affected 4) Severely affected 5) Completely lost
13	Did you receive any financial support or compensation after the cyclone? 1) Yes 2) No
14	If yes, from whom did you receive support? (Select all that apply) 1) Government 2) Local NGO 3) International NGO 4) Religious organization

Sr. no.	Effects of the Cyclone on Livelihoods
	5) Community group 6) Family/friends 7) Other (Please Specify)
15	Which of the following types of recovery support did your household receive after Cyclone Mocha? (Select all that apply) 1) Emergency food assistance 2) Drinking water supply 3) Temporary shelter or housing materials 4) Seeds, fertilizers, or farming tools 5) Livestock restocking or veterinary services 6) Cash assistance or financial aid 7) Medical or health services 8) Psychosocial support or counseling 9) Training for new income-generating activities 10) Reconstruction of infrastructure (roads, schools, etc.) 11) Other (Please Specify) 12) My household did not receive any recovery support
16	How soon after the cyclone did your household start receiving recovery support? 1) Within 1 week 2) Within 2–4 weeks 3) Within 2–3 months 4) After more than 3 months 5) My household did not receive any recovery support
17	How would you rate the overall usefulness of the recovery support your household received? 1) Not useful at all 2) Slightly useful 3) Moderately useful 4) Very useful 5) Extremely useful 6) Not applicable (did not receive any support)
18	How sufficient was the financial or material support you received? 1) Not sufficient at all 2) Slightly sufficient 3) Moderately sufficient 4) Sufficient 5) Completely sufficient 6) Not applicable
19	Has your household recovered its main income-generating activities to pre-cyclone levels? 1) Fully recovered 2) Mostly recovered 3) Partially recovered 4) Not recovered at all
20	Has your household been able to return to normal food consumption since the cyclone? 1) Yes, completely

Sr. no.	Effects of the Cyclone on Livelihoods
	2) Yes, partially 3) No
21	Did Cyclone Mocha cause any family member to migrate for work or livelihood? 1) Yes 2) No

Section (3)

Perceived Effectiveness of Recovery Activities

For each statement, please indicate your agreement using this scale:

1 = Strongly Disagree 2 = Disagree 3 = Neutral 4 = Agree 5 = Strongly

Agree

Sr. no.	Perceived Effectiveness of Recovery Activities	SDA	DA	N	A	SA
1	Assistance was provided in a timely manner after the cyclone.					
2	The support I received matched the needs of my household.					
3	Recovery activities helped restore my agricultural activities.					
4	Recovery activities helped restore my livestock or animal husbandry.					
5	Recovery activities helped restore my small business or non-farm income activities.					
6	The amount of aid/support provided was sufficient.					
7	I was able to participate in planning or decision-making for recovery activities.					
8	Information about available support was clear and accessible.					
9	Local authorities were effective in coordinating recovery activities.					
10	NGO or community-based organizations were effective in providing support.					

Section (4)

Opportunities and Challenges in Recovery Activities

For each statement, please indicate your agreement using this scale:

1 = Strongly Disagree 2 = Disagree 3 = Neutral 4 = Agree 5 = Strongly Agree

Sr. no.	Opportunities and Challenges in Recovery Activities	SDA	DA	N	A	SA
1	<p>Challenges</p> <p>1) I received insufficient aid or support.</p> <p>2) There was a delay in receiving aid or support.</p> <p>3) I did not have enough information on available assistance.</p> <p>4) The distribution of aid was not equitable.</p> <p>5) I could not access markets or services easily.</p> <p>6) There was poor coordination among agencies involved in recovery.</p> <p>7) There was a lack of skilled labor for reconstruction.</p> <p>8) I had concerns about security or safety during the recovery process.</p> <p>9) I did not experience any major challenges.</p>					
2	<p>Opportunities or Positive Improvements</p> <p>1) I have learned improved agricultural practices as a result of recovery activities.</p> <p>2) I have better access to markets or agricultural inputs now.</p> <p>3) Community organizations in my area have been strengthened.</p> <p>4) I have been able to start new income-generating activities.</p> <p>5) Infrastructure in my community, such as roads or water systems, has improved.</p> <p>6) There is increased cooperation and unity within the community.</p> <p>7) I have received training or capacity building that has been beneficial.</p> <p>8) I have not observed any significant positive developments</p>					