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Impacts of Climate Change on Food Security after Mocha Cyclone in Rakhine State: Case Study on Accessibility of Food Security in Sittwe and Kyauk Phyu

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Abstract

This research investigates the impacts of Cyclone Mocha and the broader challenges of climate change and environmental degradation on food security in Rakhine State, Myanmar. Focusing on case studies in Sittwe and Kyauk Phyu, the study highlights how Cyclone Mocha, which struck in May 2023, caused widespread destruction of infrastructure, agricultural lands, and livelihoods, worsening the region's food insecurity. Key issues include the socio-economic impacts of displacement and unemployment, exacerbated by ongoing political instability and restricted humanitarian access. The study employs qualitative research methods, such as in-depth interviews with affected communities, to assess the immediate and long-term impacts on food accessibility. Additionally, it explores the adaptive strategies employed by affected populations to achieve sustainable food security amid the challenges posed by recurring climate-related disasters. The findings reveal the interconnected nature of environmental, socio-economic, and political factors in worsening food insecurity in Sittwe and Kyauk Phyu. This study highlights the critical importance of ensuring food security by prioritizing the needs of vulnerable populations, integrating sustainable development practices, and addressing systemic barriers to recovery. By deepening the understanding of how climate change and natural disasters affect food security, this research provides actionable insights for building resilient food systems in climate-vulnerable regions like Sittwe and Kyauk Phyu.

Keywords: Accessibility, Climate Change, Cyclone Mocha, Food Security and Political Instability

Introduction

Myanmar has long faced complex challenges exacerbated by climate change, which includes extreme weather events and environmental degradation. According to the 2021 Global Climate Risk Index, Myanmar ranks as the second most sensitive country among 183 nations in terms of exposure to severe weather events such as heat waves, floods, and cyclones. These extreme events profoundly threaten food security by worsening land shortages and diminishing agricultural productivity (Global Climate Risk Index, 2021). Additionally, Myanmar's lack of infrastructure and unsustainable agricultural practices increase the nation's susceptibility to the effects of climate change, increasing threats to livelihoods and food security (Helene M.K. et al., 2023).

Cyclone Nargis and Cyclone Mocha, both of which were attributed to climate change, made notable impacts upon Myanmar. Cyclone Nargis in 2008 was Myanmar's deadliest recorded natural disaster. Over 2.4 million people were impacted by this severe cyclone, which caused a 12-foot storm surge and gusts of over 200 km/h in multiple townships, including Labutta, Bogale, and Pyin Sa Lu (International Medical Relief, 2023). An estimated 84,537 were confirmed dead, with nearly 54,000 missing, and approximately 3 million displaced. Cyclone Nargis revealed Myanmar’s need for improved disaster preparedness and highlighted the severe consequences of insufficient infrastructure and response capabilities (ISDR, 2008)

More recently, Cyclone Mocha struck on May 14, 2023, with winds reaching 250 km/h, impacting regions already burdened by climate challenges, political instability, and weak economic conditions. The cyclone’s damage was most severe in Rakhine State, which experienced extensive infrastructure loss, with over 200,000 buildings destroyed across eight townships, including Sittwe and Kyauk Phyu (United Nations Myanmar, 2023). The compounded challenges in Rakhine’s armed conflict, economic distress, and the Rohingya crisis—have further weakened infrastructure and livelihoods, rendering it particularly vulnerable to natural disasters and subsequent food insecurity.

Both Cyclone Nargis in 2008 and Cyclone Mocha in 2023 show how Myanmar remains vulnerable to climate-related disasters. Cyclone Nargis led to greater awareness about disaster preparedness, but food security is still a major problem. Many affected communities continue to

face food shortages and economic struggles, lacking the knowledge and resources needed to secure sustainable food supplies after such disasters.

Myanmar people have significant experience with the effects of climate change, especially after Cyclone Nargis in 2008, which caused widespread destruction and loss of life. Over the years, they have developed better ways to prepare and protect themselves from cyclones. However, there is still a gap in understanding how climate change impacts food security, especially during and after extreme events like cyclones. For example, Cyclone Nargis disrupted agriculture, destroyed rice fields, and caused food shortages that lasted for months. Similarly, Cyclone Mocha has worsened food insecurity in Rakhine State, particularly for vulnerable groups like women, children, and the poor. This gap in knowledge about food security during climate-related disasters is the key focus of my research. This qualitative data provides a deeper understanding of how Cyclone Mocha and political instability have disrupted food security, revealing the human impact and highlighting gaps in existing systems.

Rakhine State was the hardest-hit region during Cyclone Mocha, accounting for nearly 30% of its total capital stock in damage (Naing Lin Soe, 2023).The cyclone struck regions already struggling with problems like armed conflicts, climate challenges, and a weak economy (OCHA, 2023). Political instability after the 2021 military coup made these issues worse, especially in Rakhine State. This area has faced long-standing difficulties, including the Rohingya crisis, which displaced many people, strained the economy, and created tension among communities (Naing Lin Soe, 2023). These issues weakened local infrastructure, hurt people's livelihoods, and made food insecurity worse, making Rakhine especially vulnerable to natural disasters and political disruptions.

On the other hand, other affected areas such as Chin and Magway, although impacted, experienced a different scale and type of damage. Being more inland, these regions did not endure the direct brunt of storm surges and coastal flooding seen in Rakhine. While they faced their own challenges, the level of infrastructure and food system disruption in Rakhine was notably more pronounced (OCHA, 2023). Focusing research exclusively on Sittwe and Kyauk Phyu within Rakhine State provides a concentrated study on regions that received heightened attention from humanitarian responses and had greater reported difficulties in relief delivery.

According to the World Food Summit (1996), food security is achieved when all people, at all times, have physical and economic access to sufficient, safe, and nutritious food that meets their dietary needs. Food security comprises four dimensions: availability, accessibility, utilization, and stability. Availability refers to the supply of food through production and trade; accessibility addresses individuals' capacity to obtain food; utilization emphasizes proper nutrition and distribution within households; and stability stresses the importance of sustained food access despite potential disruptions (World Bank Group, 2024). This research particularly examines accessibility, as physical and economic access to food is critical to ensuring that all individuals have the resources to secure sufficient and nutritious food at all times.

This research asserts that climate change, as evidenced by the severe impacts of Cyclone Mocha, has significantly disrupted both physical and economic access to food in Sittwe and Kyauk Phyu. It argues that addressing these barriers through community-based strategies, sustainable policy integration, and a human rights-based approach is essential to achieving long-term food security and legal protection in disaster-affected regions of Rakhine State. To measure food accessibility in the context of food security, particularly following the impact of Cyclone Mocha in Rakhine State's Sittwe and Kyauk Phyu cities, this research focuses on both physical and economic dimensions. Physical accessibility is examined in terms of the cyclone's disruption of food supply chains, infrastructure, and transportation, assessing how effectively food reaches consumers despite natural disasters. Economic accessibility considers the affordability of food for local residents by analyzing factors such as income levels, food prices, and employment rates, which influence purchasing power post-cyclone. Moreover, this study aims to identify sustainability indicators essential for building resilient food systems, proposing strategies to integrate these factors into regional and global policies. Such an approach helps ensure that food security efforts are effective in the short term while remaining sustainable in the face of future environmental or economic disruptions.

Poor people face bigger problems when dealing with food insecurity or recovering from disasters because they often don't have enough money or resources to rebuild their lives. Wealthier people, on the other hand, can recover more easily since they have savings and access to better support.

However, communities can help by coming together and supporting each other during difficult times. Local support networks, such as neighbors helping neighbors, play a big role in helping poorer individuals survive crises. According to the Natural Disaster Management Law, 2013, the government needs to provide some protection, ensuring that those in need get some level of assistance. Interviews show that poor people rely a lot on their communities, while wealthier people can recover on their own because of their financial stability.

Research Questions

- How has climate change affected the accessibility of food security in Sittwe and Kyauk Phyu after the Mocha Cyclone?
- What strategies are being used by affected populations in Rakhine State to achieve sustainable food security after Cyclone Mocha?
- What human rights are being impacted by food insecurity in Sittwe and Kyauk Phyu, and how do these relate to international and domestic legal frameworks?

Methodology

This research used qualitative methods, with in-depth interviews serving as the primary data collection technique. The study's objectives are to assess the impacts of Cyclone Mocha on food security in Rakhine State, specifically focusing on the physical and economic accessibility of food in Sittwe and Kyauk Phyu, and to identify sustainability indicators and strategies for strengthening food security resilience in the face of climate induced disruptions.

The study used snowball sampling, beginning with key participants who were directly impacted by Cyclone Mocha in Sittwe and Kyauk Phyu. When selecting Sittwe as a primary research area, its severity of impact compared to Kyaukpyu underscores its importance for study. Sittwe, being one of the worst-affected townships in Rakhine State, experienced extensive damage, with thousands of residents suffering from the destruction of homes and infrastructure. This level of devastation justifies focusing on Sittwe to gain a deep understanding of food security issues following Cyclone Mocha, especially given the high population density and critical infrastructure impacted there.

In contrast, Kyaukpyu was less affected than Sittwe, facing comparatively limited infrastructure damage. While Kyaukpyu experienced challenges, the extent and intensity of these impacts were lower, providing a meaningful contrast to Sittwe. By focusing on both areas, the research can yield insights into how varying levels of impact shape local recovery efforts and access to resources, particularly in areas essential to Rakhine's economy and community resilience. This approach also highlighted the differences in response needs between heavily impacted areas and those that sustained milder effects.

A total of thirteen participants with a diverse range of experiences were selected, encompassing individuals who faced food access challenges, lost agricultural resources, or had their livelihoods disrupted. From these participants, the study aims to capture a variety of experiences and perspectives on food accessibility, economic challenges, and resilience strategies. This qualitative approach provides a comprehensive understanding of local challenges, factors influencing food security, and potential avenues for improving resilience.

Due to security and travel restrictions in Myanmar, most interviews could not be conducted in person. However, we were able to conduct in-person interviews with 5 participants who had been transferred from Rakhine to Yangon. The remaining 8 interviews were conducted by phone. Among these, 5 interviewees were also relocated from Rakhine to Yangon, while 3 interviewees remain in Rakhine and were interviewed remotely. Interviews were semi-structured and lasted approximately 45 minutes, allowing flexibility in discussing key topics while capturing participants' personal experiences.

To ensure confidentiality and protect participants' identities, pseudonyms were used, and video turned off upon request. For those who prefer full anonymity, phone interviews were conducted without asking for names. All participants were informed of their right to withdraw from the study at any time without consequences.

The study prioritized data security using both digital and physical measures. Digital data, including audio recordings and transcripts, were stored on encrypted external hard drives and password-protected devices. Cloud services were not used to reduce the risk of data breaches. Physical notes and other materials were stored in locked, restricted-access areas, available only to the primary researchers, who signed confidentiality agreements.

For data processing, personal identifiers were replaced with pseudonyms, and transcription was done using secure offline software. Analysis was conducted on encrypted devices, with regular backups on secure drives. Any external sharing of data involved only anonymized information. Participants were asked for additional consent if specific quotes were to be used in published findings.

After the research is complete, sensitive data will be securely destroyed. Digital files will be permanently deleted using secure deletion software, and physical materials will be shredded. A detailed log of data access will be kept, and in the case of a data breach, participants will be promptly notified, and corrective actions will be taken.
The research prioritized informed consent, confidentiality, and data protection. Participants were fully informed of any risks, and steps were taken to ensure their identities remain anonymous. This methodology addresses ethical standards, data protection needs, and the reviewers' concerns about the research's scope and sensitivity, ensuring the study meets high ethical and professional standards.

Literature Review

This literature review examines existing research on climate change, extreme weather events, and food security at both global and national levels to position the present study within the broader academic and policy discourse. It highlights the current understanding of how climate-related events affect food systems while identifying significant gaps in knowledge, particularly concerning the localized impacts of Cyclone Mocha on food security in coastal communities of Rakhine State, Myanmar. By reviewing both global frameworks and Myanmar-specific challenges, this section provides the foundation for the study's focus on the physical and economic accessibility of food in the cyclone-affected areas of Sittwe and Kyauk Phyu.

Cheikh M et al. (2022), in their study on "Food Security," highlight that climate change is already impacting food security globally by increasing temperatures, altering precipitation patterns, and intensifying the frequency of extreme weather events. They emphasize that climate change impacts vary among diverse social groups depending on age, ethnicity, gender, wealth, and class. Climate extremes have immediate and long-term impacts on the livelihoods of poor

and vulnerable communities, contributing to greater risks of food insecurity, which can also act as a stress multiplier for migration. The study underscores the need for enabling conditions such as policies, markets, institutions, and governance to adapt and mitigate climate impacts on the food system. While this research provides a comprehensive global perspective, it does not focus specifically on localized impacts of extreme weather events, such as Cyclone Mocha, on food security in Myanmar.

Sharon et al. (2022), in their paper "Myanmar's Environment and Climate Change Challenges," offer an overview of Myanmar's environmental status and governance hurdles, emphasizing the country's vulnerability to climate change and its lack of internal capacity to enhance resilience without external assistance. They highlight the disruptions caused by the military coup in 2021, which halted the nation's efforts to balance economic and social development with environmental sustainability. While the paper provides important insights into Myanmar's overall environmental governance and policy challenges, it does not specifically explore how climate-related disasters, such as Cyclone Mocha, affect food security in vulnerable communities like those in Sittwe and Kyauk Phyu.

Helene M.K. and Justine Chambers (2023), in their article "Climate Change Actions in Conflict-Affected Contexts: Insights from Myanmar after the Military Coup," emphasize the importance of integrating conflict analysis into climate change programming. They discuss how violent conflict and state oppression following Myanmar's military coup have exacerbated environmental destruction, displacement, and food shortages, significantly diminishing local communities' ability to adapt to climate change. While their research is valuable for understanding the intersection of conflict and environmental issues, it does not focus on the specific dimensions of food security, particularly in the context of post-cyclone recovery in Myanmar's coastal regions.

In the article "Cyclone Mocha makes the dire situation worse for millions of women and children in Myanmar, UN Women, Asia and the Pacific," Alexandra Peard (2023) highlights how Cyclone Mocha disproportionately affected women and children due to heightened issues of poverty, conflict, and relocation. The study underscores the importance of gender-responsive disaster relief and recovery initiatives, particularly in addressing the unique vulnerabilities of

women and children during crises. Although the article provides critical insights into gender-specific impacts, it does not delve into the broader aspects of food security or examine the physical and economic accessibility of food in the cyclone-affected areas of Sittwe and Kyauk Phyu.

The report "Extremely Severe Cyclonic Storm Mocha, May 2023, Myanmar: Global Rapid Post-Disaster Damage Estimation (GRADE) Report," by Naing Lin Soe (2023), offers an analysis of the damage caused by Cyclone Mocha using the Global Rapid Post-Disaster Damage Estimation approach. While the report provides crucial data on the scale of destruction, it does not examine how the cyclone has specifically impacted food security, particularly in terms of access and affordability in coastal regions like Sittwe and Kyauk Phyu.

Elizabeth Bryant (2023), in the article "Cyclone Mocha Survivors Face New Perils: Monsoon Season and Shrinking Funds," discusses the ongoing challenges faced by survivors of Cyclone Mocha, including food shortages, displacement, and limited access to shelter and medical aid. Bryant explains that the World Food Programme (WFP) and other groups are trying to help but are running out of money. While the article highlights the need for sustained humanitarian assistance, it does not explore the structural and systemic challenges affecting food security in the aftermath of the cyclone.

These previous studies provide valuable insights into global and local challenges related to climate change, disaster impacts, and food security. However, they do not specifically address the issues at the core of this analysis: the impacts of Cyclone Mocha on the physical and economic accessibility of food in Sittwe and Kyauk Phyu. This study seeks to fill this gap by focusing on how the cyclone disrupted food systems in these vulnerable coastal communities and by identifying sustainability indicators and strategies to strengthen food security resilience. By centering on these aspects, the research aims to contribute to the broader discourse on disaster recovery and sustainable food systems in Myanmar.

Findings and Discussion

Assessing Food Security Challenges after Climate Change and Cyclone Mocha

Food access is a key component of food security and includes two important aspects: physical access and economic access.Physical access refers to how easily people can reach food sources, such as markets or shops. Even when individuals have enough money to buy food, they may face challenges if food markets are far away, transportation is unavailable, or infrastructure is damaged (Pinerua, 2023).

After Cyclone Mocha, many areas in Rakhine State experienced severe disruptions in physical access. For instance, Sittwe Airport was closed for four days, and the main road between Yangon and Sittwe was blocked for three days (Naing Lin Soe, 2023). These transport blockages delayed food transportation and limited aid delivery. One interviewee shared that transportation issues make food availability more difficult, saying that certain items can only be brought in by air and water routes, which only once a month (IS-5, 20.12.2024). Furthermore, conflict worsened the situation. Interviewees reported that Sittwe City has been surrounded by landmines during ongoing armed conflict, cutting it off from other areas and turning it into an isolated zone. As a result, food became even scarcer (IS-6, 5.1.2025).

Additionally, many roads were blocked by fallen trees and collapsed electricity poles, making transportation extremely difficult in rural areas (IS-1, 2, 4, 6, 26.10.2024). Interviewee also reported that "*Apart from the city of Sittwe, it is difficult to access the countryside and has become very challenging, affecting food delivery efforts*" (IS-4, 15.11.2024). Markets were not functioning normally, and movement restrictions further limited physical access to food. Moreover, damage to local markets and storage facilities caused food shortages and made staple foods expensive (UNDP, 2023).

Telecommunications services in northwestern areas were also unavailable, making it harder to coordinate responses and assess needs (OCHA, 2023). These disruptions in physical access, infrastructure, and market operations significantly worsened food insecurity in the region.

Economic access to food refers to a person's ability to afford food, which depends on their income, food prices, and market conditions (Pinerua, 2023). After Cyclone Mocha, this access has been severely disrupted. Many livelihoods were destroyed—fishing boats, nets, and prawn ponds were washed away; agricultural land was damaged by saltwater and strong winds; and hundreds of livestock were killed (Naing Lin Soe, 2023). In many villages, casual labor opportunities have vanished. As one interviewee from Kyauk Phyu shared, "*Most people depend on the sea and fishing, but they couldn't work for about a month*" (IKP-1, 3.12.2024).

At the same time, prices of food and basic services have doubled or tripled in the worst-hit areas. Transportation contracts had to be renegotiated, and market fragmentation led to price disparities across regions (UNDP, 2023). In Sittwe, a market assessment is being planned to determine appropriate levels of cash assistance in response to the rising cost of living (OCHA, 2023). Although rice is being sent from Yangon for emergency distribution, widespread damage to food stocks from flooding and limited cash availability due to damaged banks and withdrawal limits are affecting people's ability to buy food (Naing Lin Soe, 2023).

Overall, Cyclone Mocha has structurally weakened economic access to food by destroying income sources, increasing food prices, and limiting financial resources. Without integrated recovery measures and social protection, many households risk long-term food insecurity (Naing Linn Soe, 2023).

Cyclone Mocha significantly disrupted food security in Myanmar, particularly in Rakhine State. The storm devastated the agriculture and fishery sectors, which are critical to local livelihoods. In Sittwe and other coastal regions, more than half of the production capacity was lost due to the destruction of assets such as fishing equipment, seeds, fertilizers, and livestock. These losses not only impacted immediate food availability but also posed long-term threats to food production and household survival (OCHA, 2023).

Already-vulnerable communities, facing years of conflict, displacement, statelessness, and economic instability, saw their situation worsen after the cyclone (OCHA, 2023). The cyclone's aftermath caused basic food prices and essential commodities to double or triple in the worst-hit areas, straining the purchasing power of low-income households. Market fragmentation and

transportation challenges have further contributed to price volatility, with transportation contracts being renegotiated and deliveries delayed (OCHA, 2023).

Economic disparities played a key role in food insecurity. While wealthier individuals and civil servants were able to prepare by purchasing and storing food in advance, poorer families struggled. A resident of Kyauk Phyu reported, "*I didn't feel so bad about food right after the storm, but the situation gradually worsened. Jobs have become scarce, and I can't sell fish. Some people ask friends and neighbors for food, but it's not always enough*" (IKP-1, 3.12.2024).

Interviewees also described how the destruction of shelters and blocked roads limited access to markets and delayed food deliveries. One person noted, "*Since we cannot use roads, we mainly use waterways and air routes. We have to wait a long time for goods to arrive from Yangon. Due to high demand, the prices have increased exponentially*" (IS-7, 6.1.2025). Another explained, "*Food became scarce, and I had to wait 10 to 15 days for work. We could only eat the food we had stored*" (IKP-2, 25.12.2024).

As one resident stated, "*Access to food is gradually getting worse. The necessary food is not easily available, and prices have increased exponentially*" (IS-3, 6.11.2024). These testimonies highlight how economic hardship, transport disruption, and infrastructure damage collectively worsened food insecurity in the cyclone's aftermath.

Resilience Strategies

In the aftermath of Cyclone Mocha, affected communities in Rakhine State demonstrated remarkable resilience in the face of extensive damage, economic hardship, and restricted humanitarian access. Both institutional and community-level responses played a crucial role in addressing immediate needs and supporting recovery efforts. Individuals and families employed their own resourceful strategies to overcome food insecurity, loss of income, and disruptions to daily life. This section explores these multifaceted resilience strategies, highlighting the collaboration between formal assistance and grassroots adaptation in the recovery process.

While official reports highlight significant institutional responses to Cyclone Mocha—such as food distribution to over 380,000 people, nutritional aid for children, and water purification efforts in Rakhine State, interview data from affected individuals reveal a more nuanced and

often contradictory reality. Many respondents expressed dissatisfaction with the level and consistency of governmental assistance.

According to the "*OCHA Myanmar Cyclone Mocha Situation Report No. 5 (15 June 2023)"*, food assistance reached nearly 380,000 people in Rakhine State, and nutrition support was provided to more than 7,000 children under five. It also noted efforts to de-water contaminated ponds and conduct evacuations in high-risk areas, with support from national and international organizations such as the ASEAN Centre for Humanitarian Assistance (AHA) and the Department of Disaster Management (DDM).

However, interviews conducted with residents in affected areas said that these formal strategies were either inconsistently implemented or inaccessible to many. One interviewee (IS-1, 26.10.2024) stated, *"There is a vehicle equipped with a water purifier machine distributing clean water, but I don't know the exact organization responsible. I heard that the government distributes rice and oil to households every three months, but I have only received it once."* Another interviewee (IKP-1, 3.12.2024) expressed the absence of institutional support: *"There is no support from the government or international organizations. However, a charity association formed by young people (both single boys and girls) in my area has been able to help and provide food to those in need using funds collected in advance before the cyclone."*

Other interviewees shared similarly limited experiences with government aid. One university staff member (IS-5, 20.12.2024) explained, *"The government gives each employee in Sittwe University 2 packets of noodles, 3 eggs, 1 bread and 1 piece of rice. I never got the rest from anywhere."* Another (IS-6, 5.1.2025) simply said, *"After the storm, we got nothing. Later, the employees received 8 pieces of rice per month from the government."*

These testimonies highlight a critical gap between the official report and ground realities. While the government and humanitarian agencies may have mobilized resources, these did not always reach the most vulnerable in a timely or sufficient manner. Instead, community-based responses—what interviewees called "people-to-people" support became the main source of resilience for many. (IS-4, 15.11.2024) said *"I don't know which organization provided it, but they distributed rice and money once or twice. Personally, I don't face any difficulties because we bought the necessary food in advance before Cyclone Nargis. However, many people don't*

have enough food. We try to help as much as we can by providing food to those who ask for assistance. There are cases where elderly people and sick individuals cannot afford medicine or eat regular meals daily." Therefore, understanding resilience in the aftermath of Cyclone Mocha requires looking beyond official statistics to consider grassroots initiatives and localized coping strategies that sustained communities during the crisis.

Before the cyclone's landfall, the National Natural Disaster Management Committee had been activated in Nay Pyi Taw, and local authorities carried out evacuations in high-risk areas. In the State Administration Council (SAC) controlled regions, personnel were deployed to begin debris clearance, restore communications, and distribute emergency aid. Regional collaboration was also evident: the ASEAN Centre for Humanitarian Assistance (AHA) supported the Emergency Operations Centre in Nay Pyi Taw, and a 14-member ASEAN Emergency Response and Assessment Team (ERAT) was sent to Rakhine to assist the Department of Disaster Management (DDM) (Naing Linn Soe, 2023).

The Cluster Response Plan aimed to save lives and support rural vulnerable households through food aid, agricultural support, livestock recovery, and restoration of basic livelihoods infrastructure. Analysis revealed that households without productive assets were more severely impacted by food insecurity and more likely to resort to harmful coping mechanisms. Supporting these livelihoods is vital to preventing a further decline in food security. Though fishermen were not included in the 2023 Humanitarian Response Plan (HRP), they are now being prioritized due to their significant losses.

Prior to the cyclone, over 360,000 displaced and highly vulnerable individuals in Myanmar were already reliant on food aid. The post-cyclone Flash Appeal expanded this to an additional 500,000 people in the worst-affected areas. Nearly 10,000 people already included in the 2023 HRP will also require expanded support due to worsening conditions (Naing Linn Soe, 2023).

To meet these needs, a combination of in-kind and cash assistance is planned, providing full rations for up to three months based on the severity of household needs. Where feasible, procurement will be done locally. One major intervention includes cash-for-work programs, which not only inject income into local economies but also aid in rebuilding community infrastructure—such as roads and markets—helping restore access to services and markets.

Widespread damage to farmland and coastal infrastructure—alongside heavy losses of boats, fishing gear, seeds, and fertilizers—has created serious long-term risks to livelihoods. Many affected households are expected to adopt negative coping strategies in the coming months if sufficient support is not provided.

Interview data corroborate these findings. Residents reported limited aid distribution—some receiving rice and eggs only twice. Distribution was uneven, with wealthier community members sometimes redistributing extra aid among themselves (IS-1, IS-3, 26.10.2024 & 6.11.2024).

Economic hardships prompted a variety of resilience strategies. Shopkeepers adjusted their product lines or shut down entirely due to unsustainable operating costs. Civil servants and salaried workers adopted frugal lifestyles, and families rationed food more strictly—for example, feeding children bread once a day instead of twice. Some households diversified their food intake by purchasing small amounts of various cheaper items to stretch their budget.

Fishing communities, reliant on the sea for income, were severely affected. Boats remained unusable for nearly a month. Many people sought alternative income sources, relied on limited savings, or depended on mutual community support to survive. In urban areas, transport disruptions and delayed shipments created major challenges in accessing food. Some individuals, facing mounting economic pressure and insecurity, relocated—particularly to Yangon—in search of better opportunities or to escape conflict zones (IKP-2, 25.12.2024; IS-6, 5.1.2025).

These situations show how resilient and strong impacted communities are, as they have overcome post-cyclone obstacles and started to reconstruct their lives by relying on one another, collaborative efforts, and creative coping mechanisms.

Legal and Human Rights Analysis on Food Access in Sittwe and Kyauk Phyu Post-Mocha

To effectively address these issues, it is essential to implement a well-developed strategy grounded in the country's existing legal framework related to natural disaster management.

Myanmar, as a signatory to the Universal Declaration of Human Rights (UDHR), 1948, and the International Covenant on Economic, Social, and Cultural Rights (ICESCR), 1966, is internationally obligated to uphold fundamental human rights, including the right to adequate

food and the right to a safe and healthy environment. These international commitments must be reflected in national legislation and effectively implemented, particularly during times of natural disasters. Domestically, the Constitution of the Republic of the Union of Myanmar, 2008, mandates the protection and conservation of the environment, while the Environmental Conservation Law, 2012, establishes a legal framework to promote sustainable development and environmental protection.

Furthermore, the Natural Disaster Management Law, 2013, outlines specific responsibilities of authorities and organizations in preparing for, responding to, and recovering from disasters.

According to Sections 13 and 14 of the Natural Disaster Management Law, 2013, designated departments and organizations are responsible for implementing risk reduction measures prior to disasters, such as building storm-resistant infrastructure and stockpiling emergency food and relief supplies. However, interview indicates these duties were largely neglected in the case of Cyclone Mocha:

Interviewees stated that "*they had experienced storms before, but no storm-resistant buildings or life-saving mounds had been constructed in the area as precautionary measures*".

There was also no evidence of advance food stockpiling or relief materials as required by Section 15(f). Interviewee (IS-6, 5.1.2025) stated plainly, "*After the storm, we got nothing*", underscoring the lack of preparatory support.

Section 15(e) of the Natural Disaster Management Law, 2013, mandates issuing early warnings and facilitating evacuation. While all interviewees confirmed receiving early warning information before the cyclone, the practical preparations to accompany such warnings were insufficient. For instance, evacuation plans, shelter arrangements, and emergency food supplies were either not provided or inadequately delivered.

Interviewee (IS-5, 20.12.2024) mentioned, "*The government gave each employee in Sittwe University 2 packets of noodles, 3 eggs, 1 bread, and 1 piece of rice at once. I never got the rest from anywhere*" — reflecting a very limited and inconsistent response.

Section 17 of the Natural Disaster Management Law, 2013, outlines emergency response responsibilities, including search and rescue operations, temporary shelters, and emergency food provision. However, interviewee (IKP-1, 3.12.2024) reported, "*There is no support from the government or international organizations. However, a charity association formed by young people in my area provided food using pre-collected funds*."

Interviewee (IKP-2, 25.12.2024) added, "*I heard the government distributes rice and oil to households every three months, but I have only received it once*."

Section 15(h) of the Natural Disaster Management Law, 2013, permits coordination with international organizations for relief efforts. Most interviewees, however, claimed they did not receive any international assistance, indicating that while aid was deployed, its distribution was either highly selective or poorly managed.

According to Article 11 of the International Covenant on Economic, Social and Cultural Rights (ICESCR), 1966, to which Myanmar is a State Party, the right to adequate food is recognized as a fundamental human right. The Committee on Economic, Social and Cultural Rights, in its General Comment No. 12, elaborates that the obligations under this article are threefold: the duties to respect, protect, and fulfill the right to food. The obligation to respect requires states to refrain from taking actions that directly or indirectly interfere with existing access to adequate food. The duty to protect requires regulation of third parties to ensure they do not obstruct access to food, while the obligation to fulfill includes both facilitating and directly providing food when people are unable to secure it themselves particularly in emergency contexts such as natural disasters.

In the aftermath of Cyclone Mocha, these obligations appear to have been inadequately met. Interviewee IS-7 (6.1.2025) noted, *"There is no government support."* underscoring the absence of direct food provision. General Comment No. 12 also stresses that the right to food requires availability, accessibility (both physical and economic), and adequacy in terms of quantity and nutritional value. However, the compounded impact of disaster and conflict severely disrupted food accessibility in Rakhine State. Interviewee IS 5 (4.1.25) stated, *"Transportation issues make food availability more difficult. You can get the item you want only when you arrive by air and once a month,"* while interviewee IS 6 (4.1.25) added, *"There are only air and water routes,*

so the price of goods has increased exponentially. When the war is going on, Sittwe is surrounded by landmines and is cut off from other areas like a separate city." Similarly, interviewee IS 7 (6.1.2025) observed that *"road closures have delayed the flow of goods, and rising prices have made food distribution more difficult."*

Adding to this, interviewee IS 3 (6.11.2024) explained, *"After the storm, traffic jams made it more difficult to get food. Because only one air route can travel, the price of goods has increased exponentially. At present, due to the political situation, the country has been cut off from four essential items, and the situation of access to food is getting worse."* These collective testimonies reflect serious and sustained limitations in physical infrastructure, market supply, and affordability, indicating a violation of the state's obligation to ensure the economic and physical accessibility of adequate food, particularly for vulnerable communities in disaster-affected and conflict-affected areas.

While Myanmar remains legally bound as a state party to the ICESCR, the lack of timely, sufficient, and equitable food access following Cyclone Mocha—combined with political and logistical barriers—raises critical concerns regarding its compliance with Article 11 of the ICESCR. This underscores the urgent need for a rights-based, well-coordinated disaster response that not only includes emergency food distribution but also strengthens long-term infrastructure and governance mechanisms to protect food security for all, particularly in times of crisis.

In addition to the right to adequate food, the right to water is also protected under international human rights law and is closely linked to the realization of other rights, including health, food, and an adequate standard of living. The Committee on Economic, Social and Cultural Rights, in its General Comment No. 15, recognizes the right to water as indispensable for leading a life in human dignity. States are required to ensure that water is available, accessible, safe, acceptable, and affordable for personal and domestic use. In post-disaster settings, these obligations become even more urgent, as access to clean water is often compromised by infrastructure damage and public service breakdowns.

In the context of Cyclone Mocha's aftermath in Sittwe and Kyauk Phyu, interviewee IS 3 (6.11.2024) described, *"Almost all the houses were destroyed, but there were no casualties. There is no food, especially clean water. Communication channels are cut and employment*

opportunities are scarce." This statement underscores the absence of essential public services, particularly the non-availability of clean water, which constitutes a breach of the minimum core obligations outlined in General Comment No. 15. While some limited efforts appear to have been made, the lack of clarity and coordination further complicates the response. Interviewee IS 2 (30.10.2024) noted, *"There is a vehicle equipped with a water purifier machine distributing clean water, but I don't know the exact organization responsible. I heard that the government distributes rice and oil to households every three months, but I have only received it once."* This suggests a lack of transparency and regularity in service delivery, and it also reflects a breakdown in institutional accountability for securing water and food access in line with international obligations.

The failure to provide reliable, safe, and sufficient water to disaster-affected communities especially when compounded by disrupted communication systems and economic hardship represents a serious gap in the fulfillment of Myanmar's obligations under Article 11 of the ICESCR, as interpreted through General Comment No. 15. A rights-based approach to disaster response should ensure that all persons, regardless of location or status, are guaranteed dignified access to clean water and essential resources without discrimination, especially in emergency contexts where state action is most critically needed.

Recommendation

In the aftermath of Cyclone Mocha, food security in Sittwe and Kyauk Phyu has been severely impacted, highlighting the urgent need for coordinated action from all sectors of society. The government of Myanmar has a critical role to play in ensuring the accessibility and distribution of food aid in affected areas. It should reduce the existing limitations on local and international donations and allow unrestricted access for humanitarian aid to reach those in need. Furthermore, the government must strengthen and enforce laws and policies related to food access and disaster response. Effective strategies must be adopted that support both short-term relief and long-term food security, including climate-resilient agriculture, sustainable supply chains, and local food production systems. Public awareness campaigns should also be conducted to educate communities about disaster preparedness, the effects of climate change, and methods to protect and store food in times of crisis.

Non-Governmental Organizations (NGOs) should continue to play a vital role in assisting communities by providing emergency food aid, livelihood opportunities, and awareness programs. In addition to distributing food, NGOs should offer cash assistance or job creation programs that help affected families rebuild their lives and support themselves independently. Education and training should be provided on food storage, nutrition, and sustainable living practices. NGOs must also work closely with local leaders and community groups to ensure their efforts are inclusive, equitable, and sustainable in the long term.

The local people of Rakhine State, particularly those in Sittwe and Kyauk Phyu, also have a responsibility in strengthening food security and building resilience to climate change. They should actively seek and pay attention to early warnings and weather updates, and take necessary precautions before and after natural disasters. Storing food in advance, sharing knowledge about food access, and participating in community-based disaster preparedness activities are important steps. Community cooperation with both the government and NGOs is essential to ensure efficient aid distribution and long-term recovery. By working together and staying informed, regional communities can better withstand future climate events and improve their access to food even during emergencies.

These collective efforts from the government, NGOs, and local people will be key in rebuilding a more resilient and food-secure future for the affected populations in Rakhine State.

Conclusion

This research explored the complex challenges of food security in the aftermath of Cyclone Mocha, with a particular focus on Sittwe and Kyauk Phyu in Rakhine State, Myanmar. Drawing on both primary sources interviews with local residents and secondary data from reports by OCHA, UNDP, and GRADE, the study highlighted how a combination of climate vulnerability, political instability, and economic hardship continues to threaten both physical and economic access to food in these areas.

The physical accessibility of food was significantly disrupted after the cyclone due to damaged infrastructure, poor transportation networks, and unsafe roads. In the city of Sittwe, residents continue to struggle to access local markets or receive aid due to damaged bridges, landslides,

and unpaved roads that become impassable during heavy rains. Even in affected areas, unstable electricity and water supply systems further affect the functioning of food markets and refrigeration systems, adding to food insecurity. While some short-term humanitarian assistance reached communities shortly after the cyclone, long-term rebuilding of transportation and supply chains remains limited.

Economic accessibility also emerged as a key concern. Many households in both Sittwe and Kyauk Phyu suffered income losses due to destruction of farmland, loss of fishing boats, and widespread unemployment. Food prices have increased significantly since the disaster, while income sources have become more unpredictable. This has led to a growing affordability gap, where even when food is available in local markets, many families are unable to purchase enough to meet their nutritional needs. This problem is more severe for vulnerable groups, including women-headed households, the elderly, and displaced populations.

The study also underscored the interconnection between environmental vulnerability and ongoing political challenges. Decades of underinvestment in Rakhine's infrastructure, coupled with conflict and limited state presence, have weakened institutional capacity to respond effectively to natural disasters. Local communities often rely on informal networks, charity-based assistance, and international organizations rather than coordinated government action. These systemic weaknesses have made the food system in Sittwe and Kyauk Phyu particularly fragile in the face of climate shocks like Cyclone Mocha.

Importantly, the human side of the crisis was seen clearly in the interviews with local people. Many respondents shared that they felt left behind, worried, and afraid of facing more disasters in the future. This fear comes from the lack of good warning systems and poor planning for long-term recovery. People talked about their daily struggles—losing their jobs and incomes, dealing with higher food prices, and facing health problems caused by not having enough nutritious food or clean water.

Looking ahead, ensuring food security in Rakhine State requires a multifaceted, long-term approach. Key priorities should include rebuilding roads, bridges, and markets; supporting sustainable livelihoods in agriculture and fisheries; implementing social protection programs to help low-income families; and strengthening local disaster response capacity. Moreover,

promoting inclusive governance and addressing regional inequalities will be essential to reduce vulnerability and build community resilience.

In conclusion, Cyclone Mocha has exposed deep structural weaknesses in the food systems of Sittwe and Kyauk Phyu, highlighting the urgent need for integrated recovery strategies that combine disaster risk reduction, economic empowerment, and social equity. While humanitarian aid plays an important short-term role, lasting food security will depend on sustained investments, inclusive development policies, and attention to the voices of affected communities. This case study of post-disaster food insecurity in Rakhine serves as a critical example of how climate change and conflict intersect to disproportionately impact marginalized populations and the necessity of addressing both physical and economic access to food as a matter of basic human rights.

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Tables

Table 1. Profile of Interviewees in Sittwe

o.	Occupation	Age	Address	Date
IS-1	Seller	45 years	Sittwe	26.10.2024
IS-2	Primary School Teacher	30 years	Sittwe	30.10.2024
IS-3	Seller	35 years	Sittwe	6.11.2024
IS-4	Factory Worker	24 years	Sittwe	15.11.2024
IS-5	Associate Professor	40 years	Sittwe	20.12.2024

IS-6	Lecturer	49 years	Sittwe	5.1.2025
IS-7	Student	23 years	Sittwe	6.1.2025
IS-8	Business Man	56 years	Sittwe	12.1.2025

Table 2. Profile of Interviewees in Kyauk Phyu

No.	**Occupation**	**Age**	**Address**	**Date**
IKP-1	First year master student	20 years	Kyauk Phyu	3.12.2024
IKP-2	Seller	50 years	Kyauk Phyu	25.12.2024
IKP-3	Public Servant	24 years	Kyauk Phyu	2.1.2025
IKP-4	Business man	55 years	Kyauk Phyu	15.2.2025
IKP-5	Business man	60 years	Kyauk Phyu	20.2.2025

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