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Disaster Preparedness and Responsibility Perception In Disaster Situations in Rural Madagascar

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Abstract

This research highlights the needs of rural communities and enhances disaster communication effectiveness. Using qualitative secondary data from tropical storm Filipo's impact on two communes in Madagascar in March 2024, we discovered the community was unprepared to deal with the disaster due to insufficient or absent information. In coping with the disaster, they attributed responsibility to imaginary and proximity entities. We offer two key recommendations: strengthen political will to utilize existing means of communication for rural outreach, and foster public will for community resilience. The findings have broader implications for rural disaster response globally.

Keywords: responsibility, information, disaster preparedness, public will, political will, Madagascar

Préparation aux catastrophes et perception des responsabilités en situation de catastrophe en milieu rural à Madagascar

Résumé

Cette recherche met en évidence les besoins des communautés rurales et améliore l'efficacité de la communication en cas de catastrophe. L'utilisation de données secondaires qualitatives relatives à l'impact de la tempête tropicale Filipo sur deux communes de Madagascar en mars 2024 a révélé que la communauté n'était pas préparée à faire face à la catastrophe en raison d'un manque d'information, voire d'une absence d'information. Face à la catastrophe, les communautés ont attribué la responsabilité à des entités imaginaires et de proximité. Nous proposons deux recommandations clés : renforcer la volonté politique d'utiliser les moyens de communication existants pour atteindre les zones rurales et encourager la volonté publique en faveur de la résilience communautaire. Les résultats ont des implications plus larges pour les interventions en cas de catastrophes rurales à l'échelle mondiale.

Mots-clés : responsabilité, information, préparation aux catastrophes, volonté publique, volonté politique, Madagascar

1.0 Introduction

Madagascar is particularly vulnerable to natural disasters such as cyclones and tropical storms. Between 2000 and 2023, the country experienced 47 of these disasters which devastated the country's infrastructure, economy, society, food security, and displaced more than 740,000 people (Assessment Capacities Project, 2024). On the night of March 10, 2024, Tropical Storm Filipo struck Ambahikily and Morombe in the rural District of Morombe, on the Southwestern coastline of Madagascar. The people were caught off guard and had to hastily flee their collapsing homes, many times with only their lives and nothing else. In the aftermath, they had to build makeshift shelters on higher ground, often in the middle of the highway. They shared shelters with other people and families and in some cases with family's surviving livestock and poultry, as the cattle and poultry pens were buried in thick mud or completely destroyed. Many crops in the fields were ruined, roads and schools flooded, and the bridge connecting the community to the outside world was washed away.

Although the General Directorate of Meteorology and the National Bureau of Risk and Disaster Management are responsible for early warning dissemination, the Morombe community appeared unaware and unprepared. In light of this, this paper addresses the following two questions: Why were residents in the District of Morombe unprepared for the storm? and Who do they perceive as responsible for their preparedness? This study contributes to broader discussions on disaster vulnerability and resilience in rural areas. It highlights the need to clarify the cause of the lack of readiness and community perceptions of collective and institutional responsibilities in disaster preparedness. These findings have policy and practical implications for enhancing disaster readiness and resilience in vulnerable rural communities.

2.0 Literature Review

Reaching a unanimous definition of disaster is challenging because it possesses many different aspects, including its nature, causes, effects, and management (e.g., Kaikini, 2020; Mayner & Arbon, 2015; Tiernan et al., 2018). This paper uses the consensual definition of disaster as:

> a serious disruption of the functioning of a community or a society at any scale due to hazardous events interacting with conditions of exposure, vulnerability, and capacity, leading to one or more of the following: human, material, economic, and environmental losses and impacts (United Nations Office for Disaster Risk Reduction, 2017, para. 1).

More than one type of disaster exists, and these differences have been categorized into three groups.

Disasters are broadly classified as natural, man-made/technological, or complex emergencies (e.g., Onyango & Uwase, 2017; Prasad & Francescutti, 2017). Natural disasters are extreme and sudden events due to natural hazards such as storms, floods, or earthquakes (McEntire, 2021; Metych, 2024). Meanwhile, man-made/technological disasters result from hazards "induced entirely or predominantly by human activities and choices" (United Nations Office for Disaster Risk

Reduction, 2018, para. 3). They include (a) industrial, (b) technological, (c) war, (d) pollution, (e) nuclear explosions, (f) fires, (g) hazardous materials (h) exposures, (i) explosions, and (j) transportation accidents that could have been prevented (Zakour, 2012; Evan & Manion, 2002). A complex emergency can be an event or series of events due to multiple factors, such as natural disasters, man-made/technological disasters, or a combination of both, that lead to substantial breakdown of government authority and institutions (WHO, 2024, p. 4), mass casualties, extensive societal and economic destruction (World, 1999), and "large-scale population displacements and the disruption of normal life to an extent that is beyond the means of typical coping mechanisms of a society" (Keely & Reed, 2001, Definitions and Typology, para. 1). It necessitates intervention by multiple agencies and actors due to the complexity of the emergencies (Complex Emergencies, n. d.). Among the three categories of disasters, natural disasters have become more prevalent and destructive, affecting rural and urban communities (Barnes et al., 2019; Su et al., 2022).

Rural communities are especially vulnerable to natural disasters due to underdeveloped socioeconomic conditions (Li et al., 2024), inadequate or outdated infrastructure (Kapucu et al., 2013), and the absence or lack of access to disaster-related information (Hansson et al., 2020). These conditions have compromised "their capacity to anticipate, cope, and adapt [to disasters]" (Tierney, 2013, p. xv). In addition, social dysfunctions due to political, economic, and cultural forces at different levels of society contribute to disaster vulnerability, often resulting in insufficient communication and mistrust of local authorities (Hansson et al., 2020). Lack of accountability in the context of disaster risk reduction governance at the community and national levels exacerbates this vulnerability (Newborne, 2008; Wisner et al., 2004, pp. 3–48). The distribution of responsibility for preparing and warning rural communities remains ambiguous in the literature despite the importance of disaster preparedness (Coombs, 2007).

We will address the disconnect between institutional responsibility identified in the literature and community perceptions of who holds that responsibility. Using a qualitative method, we propose that the authorities did not prepare the community for the disaster due to insufficient or the absence of information. They blame imaginary and proximity institutions as responsible for their fate as they deal with the impact of the disaster.

3.0 Methodology

We use secondary data collected by humanitarian aid workers who visited the communes of Ambahikily and Morombe in the District of Morombe one week after the disaster occurred. They collected the data with the intention of understanding the community's experience before, during, and after the storm. The humanitarian aid workers used narrative inquiries to utilize only a few questions, with the order and direction guided by the interviewees' responses. This technique is commonly used in disaster assessment research and desk reviews because it allows survivors to describe their experiences and emotions related to the tropical storm that occurred (Crinson & Leontowitsch, 2006; Morgan, 2016).

To fully understand the experiences of the local community, the humanitarian aid workers collected information from community leaders, teachers, businessmen, farmers, clergy, young adults, and adults, from both men and women, using the Malagasy language. These volunteers were located in various locations such as the busy local marketplace, Taxi brousse (a small bus or van, used by many at once to

navigate rough roads), and Hotely's (local and traditional restaurants). Along with these individuals, three informal groups participated in the informal interviews. The perspectives of these individuals and groups provided insight into the tropical storm that authorities may have otherwise overlooked.

The humanitarian aid workers originally intended the data for initial assessment of the situation and to support strategic planning, response prioritisation, monitoring, evaluation, accountability, and learning (Assessment Capacities Project, 2014). They realized that their data has valuable insights relevant to disaster preparedness in rural communities. The community's accounts—especially their experiences before, during, and after the tropical storm—give insights into understanding gaps in knowledge about disaster preparedness and responsibility attribution. They shared the data with us, and we decided to report the inquiry's findings in this case study. Among the themes that emerged, we are particularly interested in the "what and how the phenomenon is experienced" (Pickering et al., n.d.). Secondary analysis research is common in disaster research because it is an invaluable resource that informs disaster management (Omukuti et al., 2021).

Upon receiving the data, we listened to the recordings, transcribed conversations, and cleaned the data from 175 individuals, of which we kept 131 narratives. The 131 conversations included in this case study were from individual meetings and the three informal support groups. While the humanitarian aid workers did not initially collect this data for research purposes, it revealed how insufficient information, or a lack of information contributed to the extent of the storm damage. These findings led to further questions we will answer in the next section.

4.0 Results

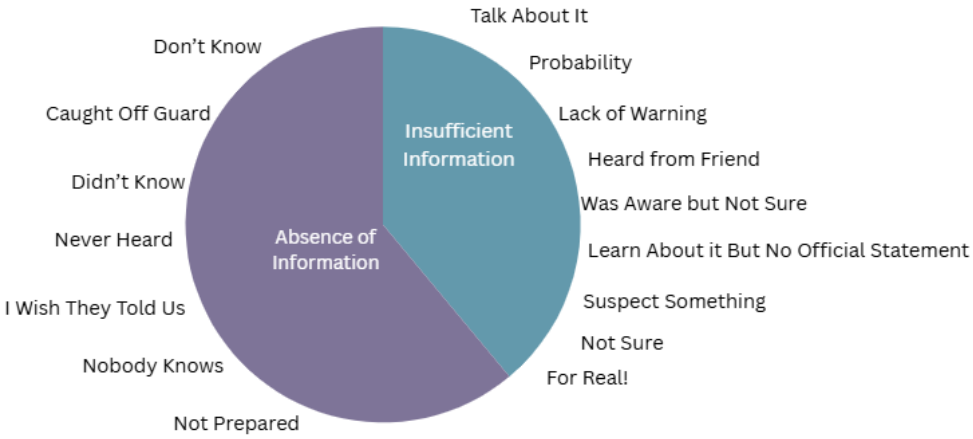
4.1 Community Preparedness

The first question we want to answer through this research focuses on community preparedness: 'Why are rural communities not prepared for disasters, especially in remote areas?' Our findings showed that all participants attributed their lack of knowledge related to the imminent tropical storm as the result of information deficiency. The deficiency can be grouped under two categories when we study the summary of people's expressions describing their lack of preparation. The categories include insufficient and absent information regarding the storm. The following graph (see Figure 1) contains the two categories of preparedness: teal for insufficient information and plum for absence of information.

The first category is insufficient information. About 38.9% (51/131) of participants said that they didn't have enough information about the storm. They learned about the coming storm from relatives or friends outside of the community and weren't sure if it was true because no official or formal source confirmed it. Consequently, their awareness was insufficient to move them to take action to prepare for the storm.

The second category is an absence of information. About 61.1% (80/131) of participants said they heard nothing about the impending storm. Community members typically receive information through various channels such as social networks, social media, and primarily rely on official or formal sources. In this case, there was total silence from the authorities. They lacked knowledge about the upcoming storm, directly contributing to a lack of preparedness.

Figure 1. Expressions used by the people.



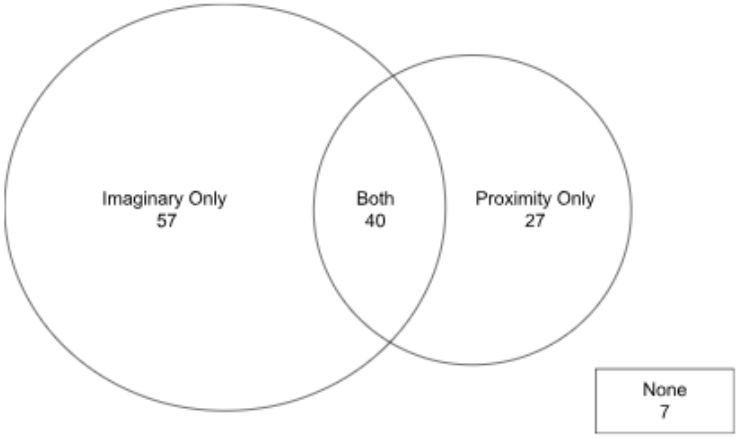
Note: Collected and calculated by the authors from the secondary data.

4.2 Responsibility Attribution

The second question focuses on responsibility attribution: 'Who does the community perceive to have the responsibility to prepare them'? After disasters, affected individuals often assign responsibility for perceived preventable harms when they process pain, suffering, and losses (e.g., Kumagai et al., 2006; Oz et al., 2018). Rural residents, in particular, tend to use a spatial framework to distinguish between proximate and imaginary actors to attribute responsibility for disaster preparedness and responses according to conceptual and empirical studies (e.g., Bickerstaff & Simmons, 2009; Massazza et al., 2019). This framework is shaped by different factors such as (a) accessibility to information, (b) support and resources, (c) collective belief systems and cultures, (d) policy expectations, and (e) institutional roles (e.g., Farny & Dentoni, 2025; Li et al., 2024). They distinguish between proximate responsibles—physically and socially close—and imaginary responsibles–distant and abstract (Taylor, 2002; see also Laliberté, 2015; Oz & Bisgin, 2016). When analyzing the data, we found that the people of Ambahikily and Morombe use this dual attribution associated with the question related to assigning responsibility, as illustrated in Figure 2.

Upon examining the data, it was found that roughly 44% (57/131) of participants assigned blame to imaginary authorities that were out of their direct reach. In contrast, 21% (27/131) stated that they assign blame to local authorities who are in closer physical proximity to the people. These two categories were blamed the most often, with participants assigning responsibility to companies in charge of warning the populace. The same individuals named both imaginary and proximity categories, meaning that one person blamed multiple categories, and because of this, they were counted multiple times. Roughly 31% (40/131) of participants fit into this section, as the people were widely uncertain who held the most responsibility. While the majority of those interviewed named responsible parties, 0.5% (7/131) of those interviewed failed to mention any specific party to whom blame was assigned.

Figure 2. Assigning imaginary vs. proximity responsibilities (n=131 statements).



5.0 Discussions and Recommendations

We can use Lindell & Perry's (2004, 2011) protective action decision model to interpret the widespread lack of preparedness in Tropical Storm Filipo. They posit that individuals receive disaster information from three sources—environmental cues, social interactions, and formal warnings in the pre-decision stage (Heath et al., 2018). They then connect their perceptions of threats, protective measures, and stakeholders to frame their protective choices (Fischer et al., 2023; Lindell & Perry, 2011; Molan et al., 2022). Our findings support such a framework, demonstrating how these perceptions influence community responses.

5.1 Threat Perceptions

Threat perceptions refer to assessing the probability and impact of potential dangers using the risk information received from environmental cues, social interactions, and formal warnings (Lindell & Perry, 2004). In the context of Tropical Storm Filipo, narrative data revealed that threat perceptions were minimal or almost absent, as illustrated in Figure 1. Residents' assessment corroborated these findings. For instance, Participant 2, "We were caught off-guard." Also, from Participant 9, who said, "My granddaughter told me that it's getting really dark outside and there might be a storm. I thought she was right, but since we did not know about it, we did not take her seriously".

Media framing of weather alerts influences the public's perception of the potential threat level, and in this case, it results in dismissal and unpreparedness (Parida et al., 2021). To the extent that people dismiss or ignore warnings from friends or neighbors if official sources do not back up their claim. In this case, the National Weather Forecast Office briefly announced Tropical Storm Filipo in their daily report. It said the storm would not affect Madagascar (Foibe Famantarana ny toetry ny andro, 2024). Further analysis revealed that other storms occurring during 2024 were announced and hit Madagascar and the neighboring countries during that year's cyclone season. However, the lists did not include Tropical Storm Filipo (Alerte Meteo Madagasikara, 2024; Bureau National de Gestion des Risques et des Catastrophes, n.d.; Orange actu Madagascar, 2022; Radio Madagasikara RNM 99.2 MHz, n.d.; TVM, n.d.). The lack of announcement before the storm was reflected in these findings, showing that authorities also overlooked the aftermath of the tropical storm.

5.2 Protective Action Perceptions

People evaluate potential hazard mitigation in protective action perceptions (Sellnow, 2013). They consider factors such as efficacy, cost, safety, and feasibility (Lindell & Perry, 2004; MacPherson-Krutsky et al., 2022; Sellnow, 2013; Zhang et al., 2024). In this case, community members based their decisions mainly on how they perceived their peers' actions or inactions. Residents' statements showed a consensus on the low probability of impending storm danger. For example, Participant 5 said, "I heard from a friend that a storm would come. I thought he was joking." Participant 7 said, "I thought he was joking because it did not come from an official channel." This community-wide sentiment, compounded by insufficient support from authorities in the aftermath, has eroded trust between the public and government institutions.

5.3 Stakeholder Perceptions

Stakeholder perceptions pertain to individuals' evaluations of the credibility, reliability, and intentionality of the institutions responsible for risk communication and disaster management regarding protective recommendations (Lindell & Perry, 2011). In Madagascar, stakeholders include the institutions and organizations at various levels of the Malagasy society, such as the government, political institutions, media, social media, and civil society. For this case, the residents of Ambahikily and Morombe developed two perceptions of stakeholders' responsibilities, such as proximity responsibility and imaginary responsibility, based on their distance from the communes.

Proximate stakeholders are local authority figures and organizations within the community. They include administrative and political authorities and leaders, civil society organizations, local and national radio, family, friends, and social media, specifically, Facebook. According to the data, 20.6% of participants mentioned only them, while this figure rises to 51.1% when considering the responses of those who said both 'imaginary' and 'proximity' responsibilities. The residents felt that they had failed in their duties to inform and prepare the community. Participant 11 said, "I lost my house, lost my goats, my poor tree, just overnight because of not being prepared. I wish they told us. I meant–the mayor, the MP, the president of our community, or even Facebook, did not tell us." Others echoed this sentiment, blaming local radio, churches, and leaders for not providing warnings.

Imaginary responsibility holders are those not directly involved or connected to the community. They include the National Government, Members of Parliament, the National Radio Station, the National Weather Services, public servants, and the Facebook pages operated outside of Ambahikily and Morombe. These organizations mainly exist in Antananarivo, the distant capital of Madagascar. The data shows that 43.5% of participants mention the 'imaginary responsibility' category alone. This number increases to 74% when participants who selected both categories are included. The residents of Ambahikily and Morombe blamed these imaginary responsible groups for failing to prepare them before the storm and to assist them in repairs after the storm. For example, they shared the following sentiments. Participant 15 (Male) said:

> We are not just prepared. It would take me years to rebuild our house and our lives…I blame the government for this. Nobody has come to survey the area so far. I don't think we can expect anything or any help from them.

Participant 19a (Female) says: "We were not ready. We didn't know! The storm was too heavy. We had to evacuate our house and move to my parents. The government, the radio, and Facebook didn't say anything or warn us."

In summary, residents of Ambahikily and Morombe have an unclear perception of institutions responsible for risk communication and disaster management. Of the 131 statements, 64.1% indicate a clear distinction between the two responsibilities—proximity vs. imaginary. Conversely, 30.5% provided responses overlapping both categories, implying that participants saw some connection or ambiguity between 'imaginary' and 'proximity' responsibilities. This complex understanding underscores the need for comprehensive stakeholder engagement in community disaster preparedness.

6.0 Implications and Recommendations

Given the findings from the data, we have two proposals to ensure disaster readiness and stakeholder engagement. First, the government must have the political will to enhance communication between the government and the community. Second, it demands public will to foster a sense of personal and collective responsibility for disaster preparedness. Together, these two elements contribute to building community resilience to natural disasters.

6.1 Political Will to Use Existing Resources

Timely, accurate, and engaging communication is essential for motivating the community to take proactive measures for disaster preparedness. The Malagasy government can achieve this by capitalizing on a dual approach that integrates traditional and digital communication. These improvements require a strong political will to revise information policies and change budget allocations for disaster preparedness infrastructure. Efforts should be strategic to expand public access to hazardous weather information (Cabañero-Verzosa & Garcia, 2011).

Effective communication is also enhanced by traditionally used or culturally typical communication systems. Interpersonal communication and personal interactions characterize the rural Malagasy community (Øyvind, 1999). Therefore, the government should explore ways of reinforcing traditional methods of communication. This includes the use of colored flags to indicate different levels of emergency, word-of-mouth transmission, and information dissemination through different civil society organizations, especially faith-based organizations, which are highly effective in rural communities (Neußner, 2021). Concurrently, the growing reliance on digital platforms presents new opportunities. The government and National Weather Stations already use these platforms to convey information, and residents commonly use Facebook and SMS messaging to communicate despite challenges related to limited phone and internet access in some regions (International Telecommunication Union, 2022). Authorities should utilize these channels and promote collaboration between the private and national radio and television stations. Local and regional stations should also be leveraged and adapted

to enhance communication outreach. These two approaches can strengthen disaster communication and community resilience across Madagascar.

6.2 Public Will for Responsibility

During disasters, individuals shift responsibility onto others as a source of consolation from losses and possible guilt to personal accountability. We can begin developing targeted programs for different age groups or community members to address this. These programs should promote critical thinking, practical safety skills, and both personal and collective responsibility for preparedness (Cabañero-Verzosa & Garcia, 2011). These programs can be created through a partnership involving the national government and civil society organizations specializing in disaster risk reduction at the international, national, and local levels.

Trusted local organizations, such as schools, churches, and community groups, should lead the programs. To encourage participation and long-lasting impact, implementers can provide material incentives relevant to the local community to attend training. Incentives might include food packages, emergency preparedness kits, farming tools or seeds, and vouchers to support the local market. These rewards help participants adopt preparedness measures but also strengthen community support networks. The goal is to empower communities to lead preparedness initiatives, foster ownership, and promote collective action, which improves long-term resilience.

7.0 Conclusion

The purpose of our study is to investigate the underlying cause of the lack of disaster preparedness and examine community perceptions regarding the responsibility of such unpreparedness. We focus on rural communities in Southwest Madagascar that were affected by Tropical Storm Filipo in March 2024. Our findings revealed that the communities of Ambahikily and Morombe were unprepared due to a lack of timely and reliable information. These gaps in communication and responsibility taking resulted in the community members blaming random leaders of the local and national government. This dual blame reaction shows a larger issue of distrust in local and national disaster management systems, emphasizing a gap between what institutions do and what the community expects.

This gap can be overcome by using traditional communication methods such as word of mouth, colored flags, and community center announcements. Utilizing these already established systems of communication will boost public engagement and competence in areas of disaster preparedness. Allowing the community at large to begin assuming roles and responsibilities for their street and homes. Personal responsibility may increase community attendance of incentive-based programs and targeted education. These programs will have the goal of raising personal responsibility and resilience in vulnerable rural communities.

Building resilience in vulnerable rural communities is not just about infrastructure or resources. Trust, accountability, and collaboration between institutions and the people they serve are equally important. Addressing the complex issues of information sharing, trustworthiness of stakeholders, and community involvement is essential for lessening the severe impacts of future disasters and promoting sustainable recovery and resilience in Madagascar's rural areas.

Statement

Research contribution was equally distributed between the two authors, and the order of names is of no significance.

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