

# **ASSESSING NADMA'S ROLES IN ENVIRONMENTAL DISASTERS MANAGEMENT IN MALAYSIA**

**Lt Col Samsul Asmadi bin Mohamed Amin**

## **Abstract**

This paper examines NADMA's role in managing environmental disasters in Malaysia, focusing on its collaboration with other agencies, power dynamics, and their broader implications. Using a mixed-methods approach, it assesses NADMA's operational frameworks and decision-making processes. The findings highlight the importance of inter-agency collaboration for disaster preparedness and response, while also revealing bureaucratic challenges and hierarchical structures that can delay emergency actions and weaken public trust. These challenges impact state authorities and affected communities, influencing political legitimacy and social cohesion. The study advocates for reforms to enhance NADMA's effectiveness, emphasizing community engagement and sustainable recovery efforts. Its insights contribute to improving Malaysia's disaster management framework and resilience against environmental challenges.

## **Introduction**

Disasters, as defined by the UNDDR, are significant disruptions to communities or societies due to hazardous events, influenced by exposure, vulnerability, and capacity. They cause human, material, economic, and environmental losses, differing from emergencies, which may not severely disrupt societal functions. Disasters can be natural, like earthquakes and floods, or human-caused, such as industrial accidents and terrorism. Environmental disasters, including tsunamis, droughts, and oil spills, have severe ecological and human impacts (Coetzee & Niekerk, 2012).

Malaysia is highly vulnerable to environmental hazards due to its geography and climate, frequently facing floods, landslides, haze, and coastal erosion. The 2021 floods affected over 125,000 people, revealing weaknesses in disaster management (Bernama, 2021). Landslides, particularly in hilly areas, have caused fatalities and property damage, emphasizing the need for better land use planning (Zainal et al., 2023). Transboundary haze from Indonesian forest fires severely impacts air quality, requiring regional cooperation (Abdul Rahman et al., 2016). Coastal erosion threatens communities, necessitating proactive climate adaptation measures.

These disasters have profound human, economic, and environmental consequences, including loss of life, infrastructure damage, and ecological degradation. Effective disaster management is crucial to mitigating these effects and enhancing community resilience. Malaysia's National Disaster Management Agency (NADMA) was established in 2015 to improve disaster response following the devastating 2014 floods. It oversees disaster policies, coordinates response efforts, conducts public awareness programs, and leads humanitarian aid. NADMA collaborates with agencies like the National Disaster Command Centre (NDCC) and the Special Malaysia Disaster Assistance and Rescue Team (SMART) to enhance disaster preparedness and response.

## **NADMA's Coordination with Agencies**

NADMA's effectiveness relies on coordination with key governmental agencies, including the Malaysian Meteorological Department (MetMalaysia), Fire and Rescue Department (BOMBA), Royal Malaysia Police (PDRM), Malaysian Armed Forces (ATM), and Malaysia Civil Defence Department (APM). Each agency plays a crucial role in disaster response, from early warning systems to rescue operations, resource mobilization, and post-disaster recovery efforts. Effective inter-agency coordination ensures a streamlined response to disasters, minimizing casualties and damages while enhancing the resilience of affected communities.

MetMalaysia provides crucial meteorological data, including weather forecasts, early warning alerts, and climate predictions, enabling proactive disaster preparedness. BOMBA is responsible for firefighting, search-and-rescue operations, and hazardous material management, playing a key role in mitigating fire-related disasters. PDRM ensures public safety, maintains law and order, and assists in evacuations during disaster events. ATM provides logistical support, including the deployment of personnel, equipment, and aircraft for large-scale rescue and relief operations. APM focuses on community-level disaster preparedness, first aid, and public awareness initiatives, fostering grassroots resilience and local participation in disaster management efforts.

Despite this multi-agency collaboration, challenges in communication, resource allocation, and overlapping jurisdictional responsibilities hinder NADMA's ability to execute a seamless disaster response. Delays in decision-making, inconsistent data sharing, and bureaucratic hurdles can impede rapid action during emergencies. Strengthening inter-agency coordination through standardized protocols, integrated communication systems, and joint training exercises can enhance operational efficiency and response effectiveness.

## **Challenges in Disaster Management**

To facilitate efficient disaster management, NADMA operates through the National Disaster Command Centre (NDCC), which serves as the central hub for coordination. The Disaster Management Information System (DMIS) further enhances communication by integrating real-time data, ensuring that agencies have access to critical information during emergencies. Despite these efforts, inter-agency coordination remains a challenge, with issues such as delayed response times, inconsistent communication protocols, and infrastructure limitations, particularly in remote areas.

Hierarchical structures within NADMA contribute to slow decision-making, delaying disaster response efforts (Nadzir et al., 2017). Bureaucratic red tape often leads to miscommunication between different government levels and agencies, causing inefficiencies in mobilizing resources and deploying emergency teams. Rigid administrative procedures further hinder flexibility, making it difficult for NADMA to adapt swiftly to rapidly evolving disaster situations. Fragmented responsibilities among various agencies create inefficiencies in disaster relief operations (Omar & Kamarudin, 2018). Overlapping mandates between NADMA, local governments, and response agencies often result in confusion regarding roles during emergencies. In some instances, agencies operate independently without proper synchronization, leading to

duplicated efforts or critical gaps in response. The absence of a centralized coordination mechanism remains a significant challenge in ensuring a swift and cohesive disaster response.

Perceived inadequacies in NADMA's disaster response have diminished public confidence. Delays in assistance, inconsistent communication, and logistical challenges contribute to dissatisfaction among affected communities. Additionally, a lack of transparency in decision-making and accountability for past shortcomings has further eroded trust in the agency's capabilities (Zainal & Ahmad, 2021). Strengthening public engagement through proactive communication, community involvement, and trust-building initiatives is essential for restoring confidence in NADMA's disaster management efforts.

Funding shortages and manpower constraints hinder NADMA's ability to implement long-term disaster mitigation strategies. Limited budgets restrict investments in advanced preparedness technology, training programs, and infrastructural resilience projects. Furthermore, a shortage of skilled personnel within NADMA and its affiliated agencies leads to operational inefficiencies, with insufficient human resources available for large-scale emergencies. Expanding financial support, capacity-building initiatives, and workforce development programs is crucial for enhancing NADMA's effectiveness and disaster preparedness.

To address these challenges and improve NADMA's disaster management capabilities, a comprehensive approach is necessary. Strengthening inter-agency collaboration through clearer coordination mechanisms, joint training exercises, and inter-agency agreements will enhance efficiency and reduce redundancies. Improving communication infrastructure with advanced digital tools such as Geographic Information Systems (GIS), Artificial Intelligence (AI)-powered predictive analytics, and Internet of Things (IoT)-enabled monitoring systems can ensure real-time data for faster decision-making. Additionally, fostering community participation through education, workshops, and volunteer response teams can empower local populations to act effectively during emergencies.

Policy reforms are also critical in granting NADMA greater authority and operational autonomy, allowing for quicker and more effective responses. Reducing bureaucratic delays, increasing funding allocations, and integrating climate adaptation policies into national disaster management strategies will further strengthen NADMA's ability to handle environmental disasters. By addressing these structural and operational shortcomings, NADMA can enhance its role in disaster preparedness and response, ultimately improving resilience against future disasters in Malaysia.

## **Implications of NADMA's Strategies and Actions**

The findings highlight key challenges and consequences at three levels: agency, state, and societal. At the agency level, bureaucratic inefficiencies and overlapping mandates create operational redundancies that hinder timely decision-making and resource allocation. The presence of multiple agencies with similar responsibilities leads to confusion over jurisdiction and accountability, weakening NADMA's role as a centralized coordinating body. Additionally, procedural delays in

budget approvals and policy implementation further limit the agency's responsiveness, reducing its disaster preparedness and mitigation capabilities.

At the state level, delays in disaster response affect political stability and governance credibility. Poor management of environmental disasters has led to public dissatisfaction with governmental agencies, raising concerns about transparency and competency. State authorities struggle to mobilize resources and coordinate efforts between federal and local agencies, exacerbating disaster impacts. The absence of a standardized disaster response framework further complicates efforts, leading to inconsistent policies and response measures across different states.

At the societal level, inadequate disaster preparedness results in long-term socio-economic disruptions. Many affected communities face prolonged displacement, loss of livelihoods, and limited access to essential services such as healthcare, education, and financial aid. Weak communication between NADMA and local communities contributes to insufficient early warning systems and a lack of public awareness regarding disaster risks. Moreover, the economic burden of environmental disasters extends beyond immediate recovery efforts, affecting industries, local businesses, and infrastructure development. Strengthening community resilience through educational programs, improved early warning systems, and greater involvement of local stakeholders in disaster planning can significantly reduce the adverse effects on society.

### **Recommendations for Enhancing NADMA's Effectiveness**

To strengthen NADMA's disaster management capabilities and overall efficiency, a comprehensive approach is necessary to address existing gaps and challenges. Establishing clearer coordination mechanisms among disaster response agencies can enhance efficiency and response time. A centralized disaster response framework should be developed, clearly defining roles and responsibilities at all levels of government. Regular joint training exercises, simulations, and drills will ensure seamless coordination during emergencies. Additionally, forming inter-agency agreements and task forces with well-defined operational protocols can improve cooperation and minimize redundancies in disaster response efforts.

Implementing advanced digital communication tools can enhance real-time disaster monitoring and response. Developing an integrated communication network that links federal, state, and local agencies will facilitate efficient information dissemination. The use of Geographic Information Systems (GIS), Artificial Intelligence (AI)-powered predictive analytics, and Internet of Things (IoT)-enabled monitoring systems can provide real-time data for more accurate decision-making. Investments in early warning systems, including mobile alerts, social media updates, and emergency broadcast channels, will help keep the public informed and prepared.

Community participation in disaster preparedness is essential for effective response efforts. NADMA should promote public awareness through educational initiatives, community workshops, and disaster simulation exercises. Collaborations with schools, universities, and community centers can help integrate disaster risk education into curriculums, ensuring that citizens understand disaster risks and response measures. Establishing volunteer response teams within communities and equipping them with basic training and resources will further empower local populations to act swiftly during emergencies.

Amending legal frameworks to grant NADMA greater authority and operational autonomy can significantly enhance its effectiveness. Reforms should focus on reducing bureaucratic delays and improving decision-making efficiency, allowing NADMA to make independent, time-sensitive decisions during disasters. Legislative amendments should also increase funding allocations for disaster management programs, ensuring adequate resources for preparedness, mitigation, and recovery. Additionally, integrating climate adaptation policies into national disaster management strategies will strengthen long-term resilience against environmental disasters.

## Conclusion

NADMA plays a crucial role in Malaysia's disaster management landscape. However, significant challenges hinder its operational efficiency. By improving inter-agency coordination, streamlining bureaucratic processes, and enhancing community engagement, NADMA can strengthen Malaysia's disaster resilience. This research contributes to a deeper understanding of disaster management in Malaysia and offers recommendations for policy reforms to optimize NADMA's effectiveness in mitigating environmental disasters.

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