



Evidence from the 2023 Derna Floods in Libya: Institutional Capability for Disaster Response in Fragile States

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Abstract

In fragile and conflict-affected governments, where governance flaws frequently turn environmental hazards into humanitarian catastrophes, disasters increasingly test the institutional capabilities of these states. This report uses a detailed case study of the 2023 Derna floods to assess Libya's institutional readiness and response capability. Data from documentary sources and semi-structured interviews with frontline rescuers and local officials directly involved in rescue and relief efforts were gathered using a qualitative case study design. The results show that long-standing institutional flaws, such as disjointed governance, deteriorating vital infrastructure, a lack of early warning systems, and poor inter-agency coordination, greatly exacerbated the extent of the destruction in Derna. Despite these limitations, the emergency phase was significantly mitigated by strong community cohesion and outside support. The study comes to the conclusion that proactive institutional transformation, such as unified national coordinating mechanisms, infrastructure governance, responder training, and integrated early warning systems, is necessary to improve catastrophe outcomes in Libya rather than reactive crisis management.

Keywords: Libya, Derna floods, institutional capability, disaster preparedness, fragile states, Response to emergencies.

Introduction

Natural catastrophes are a crucial stress test for state institutions, especially in nations where political division and protracted instability are prevalent. (Jaramillo, 2023) the frequency and severity of climate-related calamities have increased globally, highlighting the critical role that institutional preparedness plays in preventing material and human losses. The legal, organizational, technical, and human resources needed to foresee, handle, and recover from emergencies in a coordinated manner are all included in institutional readiness (Ashoor and Abdelgader, 2024).

The situation for disaster management in Libya is especially complicated. The nation has seen ongoing political division, deteriorated public sector capacity, and weakened governance systems since 2011. The devastating floods that hit the city of Derna in September 2023 after Storm Daniel brought these structural vulnerabilities to light. Massive amounts of water were released when two upstream dams collapsed, flooding a significant portion of the city and resulting in an enormous loss of infrastructure and lives (Oduoye et al., 2024).

Although the disaster was caused by excessive rainfall, later analyses show that institutional and governance shortcomings were crucial in turning a natural danger

into a massive humanitarian catastrophe. The response capacity of Libyan institutions was severely limited by inadequate early warning systems, disjointed emergency coordination, and neglected infrastructure (World Bank, UN, EU, 2024). By answering the following central issue, this study aims to assess these institutional dimensions: How well-prepared were Libyan institutions to handle the Derna flood disaster, and how did institutional flaws affect the response and results?

The purpose of this study is to assess Libya's institutional preparedness for disaster management before the Derna floods. Additionally, to pinpoint the main coordination, communication, and operational difficulties that arise during emergency response. Lastly, to draw conclusions and recommendations that are pertinent to policy in order to improve institutional resilience and catastrophe governance in Libya (Jones & Tanner, 2017).

There is very little research on disaster management in Libya, especially when it comes to institutional and governance aspects. The majority of previous research has concentrated on the Derna floods' hydrological, environmental, or humanitarian elements (Nemnem et al., 2025). By emphasizing institutional preparedness and reaction capability in a fragile-state setting, this study adds to the body of literature. Policymakers, foreign partners, and humanitarian actors looking to create long-term catastrophe risk reduction plans in Libya and similar contexts can benefit from its conclusions.

Theoretical Framework and Literature Review

Disaster Management Cycle and Institutional Readiness

The Disaster Management Cycle, which views disaster governance as a continuum of mitigation, readiness, response, and recovery, serves as the foundation for the study (Mushtaha et al., 2025), (Nations Office for Disaster Risk Reduction, 2015), (Tierney, 2012). Institutional readiness, which is essential to the preparedness phase, is the presence of operational plans, skilled staff, up-to-date infrastructure, and coordination mechanisms that facilitate efficient response (Ahrens, J., & Rudolph, 2006).

Political instability, weak economic capacity, and fragmented governance frequently compromise institutional preparedness in fragile governments. Research regularly shows that nations impacted by conflict are more vulnerable to disasters because of inadequate early warning systems, neglected infrastructure, and lax regulatory control (Hagenlocher et al., 2023), (Schleussner et al., 2016).

Disaster Governance in Libya

Structural limitations in emergency management are shown by empirical study on Libya. Research on the health sector shows that there is a lack of regular exercises, poor institutional understanding of emergency plans, and little training for disaster preparedness among healthcare personnel (Al Thobaity et al., 2015), (Bennur et al., 2025). According to political studies, coordinated infrastructure maintenance and crisis preparedness have been hampered by the institutional separation between eastern and western authority (Ali Bin Musa, 2024).

After the Derna floods, international evaluations highlighted the absence of a cohesive national identity (World Bank, UN, EU, 2024), (OCHA, 2024) These results are consistent with a larger body of research on the hazards of disasters in areas plagued by conflict.

Methods

Research Design

The qualitative case study design used in this work is especially well-suited for analyzing intricate institutional procedures in actual settings (Sirilakshmi et al., 2024). The Derna floods are viewed as a crucial case that can be used to examine more general problems with disaster governance in fragile governments.

Data Collection

Two main sources of information were used:

Documentary Analysis: Contextual and factual background was provided by official reports from UN agencies, the World Bank, government pronouncements, and media coverage (Morgan, 2022).

Semi-structured Interviews: Seven interviews with local responders and civil defense professionals engaged in Derna search and rescue activities were carried out. Informed consent and confidentiality were guaranteed during the August and September of 2025 interviews.

Data Analysis

Data from interviews were transcribed and subjected to a thematic analysis. Recurring codes were categorized into more general themes, such as operational difficulties, poor coordination, communication breakdowns, safety issues, and psychological effects. Analytical reliability was improved through triangulation with documentary sources (Meydan & Akkaş, 2024).

Results

Operational and Logistical Constraints

Respondents frequently reported significant access restrictions brought on by damaged roads and destroyed bridges, which delayed rescue efforts during crucial early hours. Responders were forced to use makeshift tools due to shortages of search technology, rescue equipment, ambulances, and protective gear (UNICEF, 2023).

Institutional Fragmentation and Coordination Failures

Different agencies responded in parallel and occasionally overlapping ways due to the lack of a single command structure. Because there was no official national focal point for disaster response, initial coordination with foreign rescue teams was haphazard (Abdel Malik A. A., 2024).

Communication and Information Gaps

Situational awareness was seriously hampered by the failure of telecommunications and energy networks. Responders relied on sporadic radio contact, and the lack of a centralized information management system allowed false information to proliferate and delayed proper assessments of damage and casualties (Assessment Capacities Project, 2023).

Safety and Psychological Impact on Responders

Responders frequently lacked the necessary personal protective equipment while working in dangerous conditions with unstable buildings, tainted floodwaters, and decaying remains. Due to extended exposure to unpleasant scenes and the lack of structured psychological support during the reaction phase, participants reported substantial psychological suffering (ACAPS, 2024).

Community Solidarity and Adaptive Capacity

Strong community mobilization became an essential coping strategy despite institutional flaws. Initial rescues were carried out by local volunteers, and displaced people received refuge and assistance from national solidarity networks. Later on, reaction capability was further reinforced by international support (Ahmad Korabi, 2024).

Discussion

The Derna floods provide as an example of how institutional issues, in addition to natural elements, influence disasters in fragile governments. A severe storm turned into a catastrophic occurrence due to long-standing neglect of vital infrastructure, poor risk governance, and disjointed authority. Comparative experiences from other disaster-prone nations show that institutional coordination and political commitment are more important in lessening the effects of disasters than economic affluence alone.

The example of Libya highlights a recurring "knowledge-action gap," in which risk assessments and technological warnings do not result in preventive measures. Instead of using ad hoc emergency remedies, institutional reform is needed to close this gap.

Conclusion

The Derna floods of 2023 are a crucial example for comprehending the possibility of disaster in states that are politically divided and weak. Although an extreme weather event was the starting hazard, this study shows that institutional variables played a major role in determining the extent of material and human losses. Long-term disregard for vital infrastructure, a lack of efficient early warning systems, and disjointed emergency administration severely limited response capabilities and increased the effects of disasters.

In situations where formal institutions are inadequate, the Derna case also highlights the compensatory role of social capital and community resilience. Early rescue operations and humanitarian assistance were greatly aided by local volunteer programs and national solidarity networks, which partially compensated for institutional flaws. However, relying solely on impromptu social mobilization as a disaster risk reduction method is neither enough nor sustainable.

From the standpoint of catastrophe risk reduction, the results support the claim that, rather than being inevitable natural occurrences, disasters in fragile governments are essentially governance failures. Reactive crisis reaction must give way to proactive institutional reform in order to lower Libya's future flood risk. Establishing a unified national disaster management authority, strengthening accountability for infrastructure maintenance, investing in early warning systems, and institutionalizing responder training and psychosocial support are essential steps toward enhancing preparedness and resilience. As climate-related hazards intensify across the Mediterranean region, strengthening institutional readiness must be treated as a central pillar of national safety and human security.

Limitations and Future Research

There are a number of limitations to this study that should be noted. First, the results' applicability outside of the Derna example is restricted by the qualitative design and small interview sample. The study does not seek to draw findings that are statistically representative, even if it offers comprehensive insights on institutional response patterns. Second, the post-disaster and politically delicate setting in which data collection took place may have limited respondents' openness to discussing some institutional or political issues. Third, a portion of the research is based on secondary reports that were created in the immediate wake of the

catastrophe, which can represent changing estimations and interpretations. These restrictions highlight significant directions for further study. Finding structural patterns and context-specific elements would be aided by comparative studies that look at disaster governance in several Libyan towns or in unstable governments in the Middle East and North Africa. Causal inference may be strengthened by mixed-methods research that combines quantitative risk and infrastructure data with qualitative institutional analysis.

The long-term recovery and reconstruction phase in Derna should be investigated in future research, especially the political economy of rebuilding and its consequences for institutional transformation. Lastly, incorporating local knowledge into formal governance institutions and paying more attention to community-based disaster risk reduction would offer important insights for creating inclusive and long-lasting preparedness plans.

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