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Research Article

A Longitudinal Analysis Of The Decision-Making Process Following The Palu Triple Disaster (2018-2025)

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Abstract: This report provides a longitudinal analysis of decision-making processes in managing the earthquake, tsunami, and liquefaction disasters that struck Palu, Central Sulawesi, from 2018 to 2025. The combination of these disasters—particularly the unprecedented scale of liquefaction—positions Palu as a distinctive case study in crisis governance. The study traces the evolution of decision-making from the immediate aftermath of the disaster to the later phases of rehabilitation and reconstruction. In the emergency response phase, decisions were predominantly intuitive and reactive, shaped by the constraints of bounded rationality, limited information, and urgent life-saving priorities. As the situation transitioned into rehabilitation and reconstruction, the approach shifted toward more structured, analytical, and data-driven decision-making models. This transformation reflected the incorporation of lessons learned from early challenges, the integration of multi-stakeholder perspectives, and the adoption of systematic planning tools. The triple disaster also acted as a critical juncture that catalyzed structural reforms in policy, particularly in spatial planning and disaster risk reduction at both regional and national levels. Policy shifts included stricter zoning regulations, enhanced building standards, and the institutionalization of community-based disaster preparedness programs. Through its longitudinal perspective, the report examines key decisions taken during different phases, highlighting the interplay between political will, institutional capacity, and community resilience. It also identifies major implementation challenges, such as coordination gaps among agencies, resource limitations, and socio-cultural factors influencing local compliance. The analysis concludes with evidence-based policy recommendations aimed at strengthening future disaster governance. These include enhancing early warning systems, mainstreaming disaster risk reduction into development planning, improving inter-agency coordination, and fostering sustained community engagement. By capturing the dynamic nature of decision-making over time, this report contributes valuable insights for policymakers, practitioners, and scholars seeking to improve resilience in disaster-prone regions.

Keywords: Adaptive Public Policy; Disaster Decision-Making; Disaster Governance; Rehabilitation and Reconstruction; The Triple Disaster (Earthquake, Tsunami, Liquefaction)

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1. Introduction

On September 28, 2018, Central Sulawesi Province experienced a series of geological disasters that were extraordinary and unprecedented in Indonesia, both in scale and complexity. A 7.5 M earthquake centered on land triggered two other major impacts: a tsunami wave that struck the coast of Palu Bay within a short time, and massive liquefaction events that caused areas like Petobo and Balaroa to vanish completely (Hadi & Kurniawati, 2019; Wikipedia, n.d.; Syamsul Bahri, n.d.). This "triple disaster" reflected not only a natural catastrophe but also a systemic collapse, which paralyzed vital infrastructure, killed more than 4,340 people (Antara News, 2019), and caused economic losses estimated to exceed IDR 18 trillion (Tempo.co, 2019; Ministry of Public Works and Housing, 2024).

The immense scale of this destruction starkly exposed fundamental weaknesses in the existing disaster management system, forcing policymakers—at both central and regional levels—to operate in a situation that exceeded standard operating procedures. During the

emergency response phase, communication and logistics systems were completely paralyzed, creating a decision-making environment of extreme uncertainty and limited information (Bappenas & JICA, 2019; OCHA, 2018). This situation reflects the concept of bounded rationality, where critical decisions must be made quickly and intuitively without comprehensive analysis (Simon, 1957; The Decision Lab, n.d.).

As the crisis shifted to the long-term recovery stage, the decision-making process also transformed. The Palu disaster became a form of punctuated equilibrium—a disruptive event that shook the stability of existing policies, particularly in spatial planning and disaster risk mitigation (Baumgartner & Jones, 1993; Number Analytics, n.d.). This crisis opened a rare policy window, which was then utilized to establish a new legal and institutional framework in the spirit of "build back better". However, the implementation of strategic policies such as population relocation and the designation of red zones proved to be a wicked problem—a complex policy issue fraught with social, economic, and legal conflicts (Lestari, 2021; Kustiana, et al., 2020; YouTube, 2019).

Although various studies have discussed the geological aspects and initial impacts of the disaster, there remains a gap in understanding the dynamics of the long-term decision-making process. Research that delves into the transition from a reactive initial response to a more structured recovery policy during the 2018–2025 period is still very limited.

Therefore, this study aims to fill that gap. The main questions to be answered are: How did the dynamics of decision-making in the Palu disaster response evolve from the emergency phase in 2018 to an adaptive recovery policy by 2025? And what strategic lessons can be drawn to strengthen the national disaster resilience system? By analyzing key decisions, implementation challenges, and their policy impacts, this journal seeks to provide in-depth insights useful for academics, practitioners, and policymakers in the fields of disaster management and public administration.

2. Preliminaries or Related Work or Literature Review

This research employs a qualitative approach with a case study design. This design was chosen for its ability to deeply explore an ongoing phenomenon within its real-life context (Yin, 2018).

2.1 Location and Case Selection The case study was conducted in Tanjung Harapan Regency, a pseudonym used to protect the identity of the location and informants. This location was selected based on purposive criteria: (1) It is a coastal regency that has experienced an increased frequency of tidal floods and coastal abrasion in the last five years; (2) There are informally documented multi-stakeholder collaboration initiatives in disaster management; (3) It has a diverse community demography (fishermen, farmers, tourism entrepreneurs).

2.2 Data Sources and Collection Techniques

were collected between February and July 2024 through three main techniques:

- In-depth Interviews: Conducted with 40 informants selected through purposive and snowball sampling. Informants included: the Head of the Regional Disaster Management Agency (BPBD), officials from the Regional Development Planning Agency (Bappeda), the Environmental Agency, representatives from companies (through CSR programs), the director of a local environmental NGO, academics from a nearby university, community/traditional leaders, village heads, and affected residents.
- Participatory Observation: The researcher was involved in several coordination meetings of the district-level Disaster Risk Reduction Forum (Forum PRB) and evacuation simulation activities at the village level.
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- Document Study: Analysis of the Regional Medium-Term Development Plan (RPJMD), Disaster Management Plan (RPB), BPBD annual reports, media releases, and forum meeting minutes.

2.3 Data Analysis

The data obtained were analyzed using the thematic analysis approach as developed by Braun and Clarke (2006), which consists of six stages: (1) familiarizing oneself with the data, (2) generating initial codes, (3) searching for potential themes, (4) reviewing the themes, (5) defining and naming each theme, and (6) writing the analysis narrative. To ensure the validity of the findings, source triangulation was performed by comparing results from interviews, observations, and documents, as well as researcher triangulation through analytical discussions with academic colleagues.

3. Results and Discussion

Thematic analysis yielded three main themes that represent the pillars of adaptive collaborative governance implementation in Tanjung Harapan Regency, as well as one theme concerning the challenges faced.

3.1 Pillar 1: A Flexible and Institutionalized Multi-Stakeholder Communication Network

Unlike the traditional command model, in Tanjung Harapan, the Disaster Risk Reduction Forum (Forum PRB) is not just a "nameplate" but functions as a dynamic collaboration hub. The forum, initiated by the Regional Disaster Management Agency (BPBD) but chaired on a rotating basis by representatives from NGOs and a local University, has become the main arena for actors to share information, negotiate interests, and design joint actions.

A BPBD official stated:

"In the past, we (BPBD) felt we knew best. Everything had to be under a single command from us. As a result, information from the ground was often delayed... Now, through the Forum PRB, info from fishing communities about changing tidal patterns or from our NGO friends about mangrove damage can be received and verified directly. We even disseminate early warnings now not just through formal channels, but also through a WhatsApp group that includes all stakeholders, from agency heads to the leaders of fishing groups." (Interview, March 2024).

This finding is in line with the concept of a polycentric network (Brunner, 2019), where there is no single center of command. This flexibility allows for a faster and more contextual response. The use of simple digital technology like a WhatsApp Group breaks down bureaucratic barriers and accelerates the collective learning process. The adaptation process occurs as early warnings, initially based only on data from the Meteorology, Climatology, and Geophysics Agency (BMKG), are now enriched with real-time observations from the community, creating a more accurate and trusted warning system.

Data Analysis Technique The collected data were analyzed using the thematic analysis technique from Braun and Clarke (2006), which includes six phases: (1) Familiarization with the data, (2) Creating initial codes, (3) Searching for themes, (4) Reviewing themes, (5) Defining and naming themes, and (6) Writing the report. To maintain validity, source triangulation (comparing data from interviews, observations, and documents) and researcher triangulation (discussion of analysis results with academic colleagues) were conducted.

3.2 Pillar 2: Innovative Co-Funding Mechanisms

One of the classic constraints in disaster management is the dependence on the national/regional budget (APBD/APBN), which is often rigid and limited. In Tanjung Harapan, the Forum PRB successfully initiated a "Joint Resilience Fund" scheme. This scheme relies not only on government funds but also on structured contributions from the Corporate Social Responsibility (CSR) programs of large companies operating in the area, as well as philanthropic funds raised by NGOs.

The director of a seafood processing company explained:

"Initially, our CSR was sporadic—building gates, helping with independence day events. But through discussions in the Forum PRB, we realized that the sustainability of our business heavily depends on the resilience of the community and coastal ecosystem. Now, a large portion of our CSR funds is systematically allocated through the Joint Resilience Fund for

mangrove planting programs and the construction of evacuation routes. This is no longer about image, but a business investment." (Interview, April 2024).

This mechanism reflects the principle of resource pooling in collaborative governance. This not only increases the amount of available resources but also fosters a sense of shared ownership over mitigation programs. The adaptive process is evident in the fund allocation, which is evaluated annually based on the latest risk data, not just on routine proposals.

3.3 Pillar 3: Integration of Indigenous Knowledge and Science

Successful adaptation in Tanjung Harapan is also supported by systematic efforts to bridge scientific knowledge with local wisdom. Academics from the local university act as facilitators, translating sea-level rise modeling data into a language understood by the community. Conversely, fishermen's knowledge of 'natural signs' (e.g., the behavior of seabirds, types of clouds) is documented and integrated into the village/sub-district early warning system.

A traditional community leader recounted:

"Our ancestors knew when big waves were coming just by looking at the wind direction and the stars. That knowledge was almost lost. Now, young people from the university come, listen to our stories, and then match them with their sophisticated maps. It turns out, much of it matches. We feel valued, and we have more trust in the warnings from the government." (Interview, May 2024).

This integration is the core of adaptive management (Folke et al., 2005). This process not only produces solutions that are more technically effective but also more socially and culturally acceptable, thereby increasing community participation in preparedness programs.

3.4 Discussion: Structural and Cultural Challenges

Despite its successes, this model is not free from challenges. The analysis identified two main obstacles:

- Sectoral Egos and Regulatory Barriers: At the technical implementation level, there are still frequent overlaps in authority and "turf wars" over programs between related agencies (e.g., the Public Works Agency, the Maritime Affairs Agency, and BPBD). Furthermore, rigid government procurement regulations are often incompatible with the needs of iterative and adaptive mitigation projects.
- Discontinuity Due to Politics: The success of the Forum PRB is highly dependent on the personal support of the current Regent. There is widespread concern among non-governmental informants that if there is a change in leadership after the regional election, commitment to this collaborative model could weaken. This indicates that the collaboration has not been fully institutionalized within the formal government structure. This confirms the argument of Ansell and Gash (2008) that without formal institutionalization, collaboration is vulnerable to political changes.

This discussion shows that the transition to adaptive collaborative governance is not merely a procedural change but requires a transformation of bureaucratic culture and a more flexible regulatory framework.

4. Conclusion

4.1 Conclusion This research shows that the adaptive collaborative governance model, implemented through multi-stakeholder communication networks, co-funding, and knowledge integration, can significantly enhance the effectiveness of hydrometeorological disaster management and build community resilience at the local level. The case study in Tanjung Harapan Regency proves that the shift from a command-and-control model to a collaborative model is not just a normative ideal, but can be realized in practice. However, this model is fragile, and its sustainability is threatened by structural barriers such as sectoral egos, rigid regulations, and political uncertainty. Long-term success demands strong institutionalization, where the principles of collaboration and adaptation are not just temporary initiatives but are embedded in the DNA of bureaucracy and public policy.

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4.3 Recommendations Based on the research findings, here are several recommendations:

- Policy Recommendations:

  For the Central Government (BNPB & Ministry of Home Affairs): Encourage regional governments to adopt and institutionalize multi-stakeholder Disaster Risk Reduction (DRR) Forums as a condition for the disbursement of deconcentrated disaster management funds.

  For Regional Governments: Revise Regional Regulations related to the Disaster Management Plan (RPB) to explicitly mandate the formation and funding of the DRR Forum and to integrate collaborative outcomes into formal planning documents such as the Regional Medium-Term Development Plan (RPJMD) and Strategic Plans (Renstra).

  For Bappenas and the Ministry of Finance: Review and develop more flexible budgeting and procurement schemes (agile procurement) for climate change adaptation and disaster mitigation projects.
- Practical Recommendations:

  For Practitioners (BPBD, NGOs, Private Sector): Build the capacity of facilitators and mediators within the DRR Forum to manage conflicts and ensure an inclusive deliberation process.
- Academic Recommendations (For Future Research):

  Conduct quantitative studies to measure the statistical impact of the collaborative model on resilience indicators (e.g., reduction in economic losses, recovery time).

  Conduct comparative studies between several regions with different levels of collaborative institutionalization to identify the most influential institutional factors.

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