



Strengthening Regional Disaster Management Governance through a Risk-Based Policy Framework

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Abstract. This study examines the strengthening of regional disaster management governance through a risk-based policy framework, focusing on the role of local governments in disaster-prone areas. The object of the study is the disaster management system implemented by the Dumai City Regional Disaster Management Agency (BPBD), which faces various potential natural and non-natural disasters. Although national and regional regulatory frameworks are in place, disaster management practices at the regional level still tend to be reactive, partial, and not fully based on comprehensive risk analysis. Therefore, this study aims to identify key issues in regional disaster management governance and analyze the role of risk-based policies in strengthening institutional effectiveness, cross-sectoral coordination, and disaster preparedness. This study uses a qualitative descriptive approach with data collection techniques through in-depth interviews with BPBD officials, relevant stakeholders, and community representatives in disaster-prone areas, supported by field observations and documentation studies of policies, disaster risk assessment documents, and institutional reports. Data analysis was conducted using thematic analysis methods to identify patterns related to governance structures, policy implementation, and disaster risk management practices. The study results indicate that disaster management governance in Dumai City has shown progress in regulatory aspects and emergency response capacity, but there are still weaknesses in the integration of risk into development planning, inter-agency coordination, community participation, and mitigation and prevention efforts. This study concludes that the implementation of a risk-based policy framework can encourage more anticipatory, integrated, and sustainable disaster management governance, and provides important implications for the formulation of public policy at the regional level.

Keywords: Disaster Governance; Disaster Risk Reduction; Local Government; Public Administration; Risk-Based Policy

1. INTRODUCTION

Indonesia is one of the countries with the highest levels of disaster vulnerability in the world due to its complex geographic, geological, hydrometeorological, and social conditions. A report by the United Nations Office for Disaster Risk Reduction (UNDRR) confirms that developing countries, including Indonesia, face a significant increase in disaster risk due to climate change, uncontrolled urbanization, and environmental degradation (UNDRR, 2019). This situation demands disaster management that is not only reactive but also integrated into sustainable regional governance.

The object of this research is regional disaster management governance, specifically how local governments formulate and implement risk-based disaster management policies. Disaster governance encompasses institutional dimensions, policies, cross-sectoral coordination, human resource capacity, and the use of disaster risk data and information as a basis for decision-making (OECD, 2015). In the context of decentralization, local governments have a strategic role in ensuring disaster management policies align with the risk characteristics of their regions.

Previous research has shown that disaster management approaches in many regions are still dominated by the paradigm of emergency response and post-disaster recovery. This approach is relatively effective in mitigating the immediate impacts of disasters, but less than optimal in reducing long-term risk levels (Wisner et al., 2012). As a result, regions tend to experience recurring losses because the root causes of disaster risk are not systematically addressed.

In addition to responsive approaches, several studies have developed structural and technocratic methods, such as the development of disaster mitigation infrastructure and early warning systems. While these methods offer technical and physical advantages, they often face limitations in financing and maintenance, as well as limited integration with regional development policies (World Bank, 2018). This demonstrates that technical solutions alone are insufficient without the support of strong policy governance.

Community-based and collaborative disaster management approaches are also widely implemented, emphasizing the role of communities and non-governmental stakeholders. These approaches are considered effective in increasing local capacity and risk awareness (Shaw, 2014), but in practice, they are often not formally integrated into regional development policies and planning. This weakness leads to low program sustainability and reliance on short-term initiatives.

The main problem in regional disaster management lies in the weak integration of risk analysis into public policy. Many regional policies are not yet based on comprehensive disaster risk mapping, resulting in development planning potentially increasing regional vulnerability (Sendai Framework, 2015). This situation reflects a gap between the concept of disaster risk reduction and policy implementation at the regional level.

Furthermore, regional disaster management governance still faces challenges with inter-agency coordination, limited institutional capacity, and low-quality disaster risk data and information. The OECD (2020) emphasized that weak coordination and the low use of risk data in policy processes are key factors contributing to the failure of disaster risk reduction at the local level.

This study proposes strengthening regional disaster management governance through a risk-based policy framework. This framework emphasizes the importance of integrating disaster risk into the entire public policy cycle, from agenda formulation and development planning to policy implementation and performance evaluation (Howlett, Ramesh, & Perl, 2020). This approach is expected to make disaster management policies more preventative, adaptive, and sustainable.

The scientific contribution of this research lies in developing a public administration perspective in the study of risk-based disaster management, particularly at the local government level. This research not only enriches the academic discourse on disaster governance but also provides applicable policy recommendations for local governments to strengthen regional resilience to disasters.

2. LITERATURE REVIEW

Regional Disaster Management Governance

Disaster management governance is an integral part of governmental governance, emphasizing actor coordination, clarity of authority, policy transparency, and accountability throughout the disaster management cycle, from pre-disaster, emergency response, to post-disaster. Law Number 24 of 2007 emphasizes that disaster management is not solely the responsibility of the central government but also the obligation of regional governments, in accordance with the principle of regional autonomy. In this context, regional governments have a strategic role in planning, implementing, and evaluating disaster management policies based on the risk characteristics of their respective regions (BNPB, 2012).

Dwiyanto (2014) stated that effective public governance requires synergy between policies, institutions, and human resource capacity. In regional disaster management, weak inter-agency coordination, overlapping authority, and limited institutional capacity are often the main obstacles to achieving effective and responsive disaster governance.

Public Policy in Disaster Management

Public policy in the field of disaster management is essentially a government response to potential threats and vulnerabilities faced by the community. This policy must be formulated systematically, based on data, and oriented towards prevention and risk reduction, not solely on disaster response (Keban, 2014). However, various studies indicate that disaster management policies at the regional level still tend to be reactive and have not been fully integrated into regional development planning documents (BNPB, 2020).

Handmer & Dovers (2007) emphasized that effective disaster policies must integrate the dimensions of risk, institutions, and community participation. Without a clear, risk-based policy framework, policy implementation at the regional level will face various obstacles, such as weak preparedness and low community resilience to disasters.

The Concept of Risk in Disaster Management

Disaster risk is the result of the interaction between hazard, vulnerability, and capacity. A risk-based approach emphasizes the importance of risk identification and analysis as the primary basis for formulating disaster management policies (Wisner et al., 2012). The National Disaster Management Agency (BNPB) (2016), through its Indonesian Disaster Risk Index, emphasized that risk mapping is a crucial instrument in determining policy priorities and allocating disaster management resources in the regions.

A risk-based approach is considered more comprehensive because it focuses not only on the type of disaster threat but also considers social, economic, and environmental aspects that influence a community's level of vulnerability. Therefore, risk-based disaster management policies are expected to increase the effectiveness of disaster prevention and preparedness at the regional level.

Risk-Based Governance

Risk-based governance is an approach that places risk as the basis for public decision-making. In the context of disaster management, this approach requires local governments to integrate risk analysis into planning, budgeting, and policy implementation (UNDRR, 2015). The Sendai Framework for Disaster Risk Reduction 2015–2030 emphasizes that strengthening disaster risk governance is a key priority in sustainable disaster risk reduction efforts.

However, various studies show that the implementation of risk-based governance at the regional level still faces challenges, such as limited risk data, low levels of understanding of risk concepts among officials, and suboptimal cross-sector integration (Miles & Huberman, 2014; BNPB, 2020). This indicates a gap between the normative policy framework and implementation practices on the ground.

Research Gap

Based on the literature review, it can be concluded that although the concept of risk-based disaster management has been widely discussed in international regulations and literature, its implementation at the regional level remains suboptimal. Previous studies have tended to focus on technical aspects of disaster management or partial program evaluation, while studies specifically addressing strengthening regional disaster management governance through a risk-based policy framework are still limited.

Therefore, this research has both academic and practical urgency to examine in depth how regional disaster management governance can be strengthened through a risk-based policy framework, particularly in the context of local government. The research findings are expected to provide theoretical contributions to the development of public administration studies and

provide applicable policy recommendations for local governments in enhancing regional resilience to disasters.

3. METHODOLOGY

This research was conducted in Dumai City, with a focus on the Dumai City Regional Disaster Management Agency (BPBD) as the institution responsible for implementing regional disaster management.

This research was conducted in Dumai City, focusing on the Dumai City Regional Disaster Management Agency (BPBD). Five informants were purposively selected: the Head of the BPBD, two heads of disaster management divisions, one BPBD technical staff member, and one community representative in a disaster-prone area. Informant selection was based on direct involvement and understanding of regional disaster management policies and practices.

The data in this study were collected using several techniques, namely:

- a. Interview, which is carried out with BPBD employees, related regional apparatus, and the community to obtain information regarding disaster management governance, risk-based policies, and obstacles to their implementation;
- b. Observation, namely direct observation of the implementation of disaster management activities and inter-agency coordination at the Dumai City BPBD;
- c. Documentation, in the form of collecting relevant documents such as disaster management plans, disaster risk maps, activity reports, and related regulations and policies.

Data obtained from various data collection techniques were analyzed using thematic analysis, with the following stages:

- a. Transcription of interview and observation data;
- b. Data coding according to research focus
- c. Identify main themes;
- d. Grouping themes into broader categories; and
- e. Data interpretation by linking research findings to the theoretical framework and risk-based disaster management policies.

4. RESULTS

The research results show that disaster management governance at the Dumai City BPBD has been running in accordance with the national policy framework, but its implementation still faces a number of challenges. In general, the research findings can be grouped into several main themes, as summarized in Table 1 (summary of research result

themes), namely: (1) disaster management policy and institutional framework, (2) application of a risk-based approach, (3) cross-sector coordination and collaboration, and (4) community involvement in disaster risk reduction.

First, in terms of policy framework, the Dumai City Regional Disaster Management Agency (BPBD) has a disaster planning document that serves as a guideline for implementing disaster management. However, field findings indicate that the integration of risk-based policies into regional development planning is still suboptimal. Disaster risk assessments have not yet fully become the primary basis for determining program priorities.

Second, regarding the risk-based approach, interviews revealed that the apparatus' understanding of the concept of disaster risk is quite good, especially at the leadership and division head levels. However, at the technical implementation level, this approach remains more reactive than preventative. Mitigation and preparedness efforts are not fully supported by regularly updated risk data.

Third, in terms of coordination and collaboration, the Dumai City Regional Disaster Management Agency (BPBD) has established partnerships with relevant agencies and the community. However, cross-sector coordination mechanisms still face challenges, particularly in data synchronization and role allocation during disasters.

Fourth, research results also show that community participation in disaster-prone areas is growing, but it is not yet evenly distributed. Communities still tend to act as objects of policy, rather than active subjects in the disaster risk reduction process.

5. DISCUSSION

The findings of this study indicate that regional disaster management governance in Dumai City has an adequate institutional and policy foundation, but still requires strengthening in the implementation of risk-based policies. These results align with the research objective of examining how disaster management policies are implemented in practice and the extent to which risk principles are used as a basis for decision-making.

Conceptually, a risk-based policy approach emphasizes the importance of using threat, vulnerability, and capacity data as a basis for planning. However, research shows a gap between normative policy and field practice. This gap is primarily due to limited resources, suboptimal risk data integration, and work patterns that are still focused on emergency response.

From a governance perspective, these findings demonstrate that strengthening the role of the Regional Disaster Management Agency (BPBD) depends not only on regulations but also on effective cross-sectoral coordination and the involvement of non-governmental actors.

The relationship between risk-based policies and disaster management governance is crucial, as policies without strong coordination mechanisms will be difficult to implement consistently.

Furthermore, community involvement is a crucial factor in strengthening disaster governance. Research shows that when communities are actively involved in preparedness activities, local capacity to respond to disasters increases. This reinforces the argument that strengthening regional disaster management governance must be inclusive and participatory.

Thus, the results and discussion of this study confirm that strengthening regional disaster management governance through a risk-based policy framework requires policy integration, strengthening institutional capacity, improving cross-sectoral coordination, and expanding community participation. These findings provide an important contribution to the development of more adaptive, preventative, and sustainable disaster management policies at the regional level.

6. CONCLUSION

This study concludes that regional disaster management in Dumai City has an adequate regulatory framework and organizational structure. However, its implementation has not been fully oriented towards a risk-based policy framework. The results indicate that disaster management still tends to be reactive, with data utilization and risk analysis not yet optimally integrated into disaster planning, mitigation, and preparedness. Formal inter-agency coordination has been implemented, but still faces limitations in synchronizing roles and utilizing cross-sectoral information.

The synthesis of research findings demonstrates a strong link between the research objectives and the results. Strengthening disaster management governance through risk-based policies requires not only regulatory compliance but also strengthening institutional capacity, integrating risk information into decision-making, and increasing public participation. These findings support the argument that disaster management effectiveness depends heavily on alignment between policies, institutional practices, and stakeholder engagement, not solely on emergency response capabilities.

Theoretically, this research contributes to the development of disaster governance studies by emphasizing the importance of a risk-based approach in public policy at the regional level. Practically, the research findings provide implications for local governments in formulating more preventative, planned, and resilient disaster management strategies. The implementation of a risk-based policy framework is expected to increase the effectiveness of mitigation efforts and minimize the social, economic, and environmental impacts of disasters.

This study has limitations, including its limited scope to a single region and the use of a qualitative approach that does not yet accommodate quantitative risk analysis. Therefore, further research is recommended to develop comparative studies across regions, employ a mixed-methods approach, and integrate quantitative disaster risk data to strengthen the resulting analysis and policy recommendations.

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