GOVERNANCE: Jurnal Ilmiah Kajian Politik Lokal dan Pembangunan
ISSN: 2406-8721 (Media Cetak) dan ISSN: 2406-8985 (Media Online)
Volume 13 Nomor 7 Juli 2026

STRENGTHENING COASTAL RESILIENCE THROUGH TIDAL FLOOD MANAGEMENT POLICIES: EVIDENCE FROM TANJUNGPINANG CITY, INDONESIA

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ABSTRACT

Tidal flooding is one of the most frequent hydrometeorological disasters affecting coastal areas in Tanjungpinang City, Riau Islands Province. This study aims to analyze the implementation of hydrometeorological disaster management policies related to tidal flooding and identify factors influencing their effectiveness. A qualitative descriptive approach was employed, with data collected through interviews, observations, and documentation. The analysis was based on the policy implementation model of Van Meter and Van Horn, which includes policy standards and objectives, resources, communication, implementing agency characteristics, implementers' disposition, and socio-economic conditions. The findings reveal that the Regional Disaster Management Agency (BPBD) has implemented mitigation, preparedness, emergency response, and recovery programs to address tidal flooding. However, policy implementation is constrained by limited resources, inadequate infrastructure, coordination challenges, and the vulnerability of coastal communities. Community participation and institutional commitment have supported disaster management efforts, although improvements are still required. The study concludes that effective tidal flood management requires stronger inter-agency coordination, adequate resources, and active community involvement to enhance disaster resilience in coastal areas.
Keywords: Policy implementation, Hydrometeorological disaster, Tidal flooding.

ABSTRAK

Banjir pasang surut merupakan salah satu bencana hidrometeorologi yang paling sering terjadi di daerah pesisir Kota Tanjungpinang, Provinsi Kepulauan Riau. Studi ini bertujuan untuk menganalisis implementasi kebijakan manajemen bencana hidrometeorologi terkait banjir pasang surut dan mengidentifikasi faktor-faktor yang memengaruhi efektivitasnya. Pendekatan deskriptif kualitatif digunakan, dengan data dikumpulkan melalui wawancara, observasi, dan dokumentasi. Analisis didasarkan pada model implementasi kebijakan Van Meter dan Van Horn, yang mencakup standar dan tujuan kebijakan, sumber daya, komunikasi, karakteristik lembaga pelaksana, disposisi pelaksana, dan kondisi sosial ekonomi. Temuan menunjukkan bahwa Badan Penanggulangan Bencana Daerah (BPBD) telah menerapkan program mitigasi, kesiapsiagaan, tanggap darurat, dan pemulihan untuk mengatasi banjir pasang surut. Namun, implementasi kebijakan dibatasi oleh keterbatasan sumber daya, infrastruktur yang tidak memadai, tantangan koordinasi, dan kerentanan masyarakat pesisir. Partisipasi masyarakat dan komitmen kelembagaan telah mendukung upaya manajemen bencana, meskipun masih diperlukan perbaikan. Studi ini menyimpulkan bahwa manajemen banjir pasang surut yang efektif membutuhkan koordinasi antarlembaga yang lebih kuat, sumber daya yang memadai, dan keterlibatan aktif masyarakat untuk meningkatkan ketahanan bencana di daerah pesisir.
Kata kunci: Implementasi kebijakan, Bencana Hidrometeorologi, Banjir pasang surut.

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INTRODUCTION

Disasters have become one of the most significant challenges affecting sustainable development worldwide. The increasing frequency and intensity of natural disasters have generated substantial social, economic, and environmental consequences, particularly in developing countries. Climate change, environmental degradation, rapid urbanization, and population growth have intensified disaster risks, especially in coastal regions. According to the United Nations Office for Disaster Risk Reduction (UNDRR), hydrometeorological disasters have become the most common type of disaster globally, accounting for a substantial proportion of disaster events over the last two decades. Rising sea levels, changing precipitation patterns, and extreme weather phenomena have increased the vulnerability of coastal communities, making disaster risk reduction and effective policy implementation critical components of sustainable governance.

Indonesia, as the world's largest archipelagic nation, faces a unique set of disaster-related challenges due to its geographical location and environmental characteristics. Situated between the Indian and Pacific Oceans and intersected by major climate systems, Indonesia is highly exposed to various natural hazards, including earthquakes, volcanic eruptions, floods, landslides, droughts, and coastal flooding. While geological disasters have historically received considerable attention, hydrometeorological disasters have emerged as the most frequent and widespread threats in recent years. The growing influence of climate change has further exacerbated these risks, resulting in more frequent flooding, coastal inundation, and extreme weather events across the country.

Data from the National Disaster Management Agency (BNPB) indicate that disaster events in Indonesia continue to occur at an alarming rate. During 2024, Indonesia recorded 3,472 disaster incidents, with hydrometeorological disasters accounting for the overwhelming majority of occurrences. Floods represented the most dominant disaster type, highlighting the increasing vulnerability of communities to water-related hazards. These statistics demonstrate that disaster management policies must evolve beyond reactive emergency responses toward proactive strategies emphasizing prevention, mitigation, preparedness, and resilience-building.

Table 1: Disaster Occurrences in Indonesia (2024)

Disaster Indicator	Number
Total Disaster Events	3,472
Hydrometeorological Disaster Proportion	99.34%
Flood Incidents	1,420
Other Disaster Types	2,052

Source: BNPB, 2024.

The dominance of hydrometeorological disasters reflects broader environmental and climatic transformations occurring across Indonesia. Increased rainfall intensity, coastal erosion, sea-level rise, and inadequate urban drainage systems have collectively contributed to growing disaster risks. These conditions are particularly evident in coastal cities where the interaction between marine and terrestrial environments creates complex vulnerabilities. Consequently, local governments are increasingly required to develop integrated disaster management policies capable of addressing both immediate disaster impacts and long-term environmental challenges.

One region that illustrates these challenges is the Riau Islands Province. Located in the western part of Indonesia, the province consists predominantly of islands and coastal settlements that are highly dependent on marine resources and maritime activities. The geographical characteristics of the province make it particularly vulnerable to hydrometeorological hazards, including tidal flooding, coastal erosion, high waves, and extreme weather conditions. Furthermore, the province's strategic role in regional

ISSN: 2406-8721 (Media Cetak) dan ISSN: 2406-8985 (Media Online)
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economic development increases the importance of maintaining resilient infrastructure and ensuring the safety of coastal communities.

According to the Indonesian Disaster Risk Index (IRBI) 2024, the Riau Islands Province falls within the moderate disaster-risk category, with a risk index score of 109.24. Although categorized as moderate risk, the province continues to experience a substantial number of disaster events annually. Disaster occurrences vary significantly among districts and municipalities, reflecting differences in geographical conditions, population concentration, infrastructure quality, and environmental management practices.

Table 2: Disaster Events in the Riau Islands Province (2024)

Regency/City	Number of Events
Tanjungpinang City	270
Bintan Regency	152
Karimun Regency	83
Natuna Regency	58
Batam City	25
Lingga Regency	15
Anambas Islands Regency	11
Total	**614**

Source: Regional Disaster Management Agency (BPBD) of the Riau Islands Province, 2025.

The data indicate that Tanjungpinang City recorded the highest number of disaster events among all districts and municipalities within the province. This finding underscores the strategic importance of examining disaster management practices in Tanjungpinang, particularly regarding hydrometeorological hazards that recurrently affect coastal communities. Tanjungpinang serves as the administrative capital of the Riau Islands Province and functions as a regional center for government, commerce, education, transportation, and public services. Despite its strategic significance, the city faces increasing environmental pressures associated with urban expansion and coastal development. Many residential settlements are located directly along the coastline, exposing communities to recurrent tidal flooding events. The combination of high population density, inadequate drainage systems, and exposure to rising sea levels has significantly increased the vulnerability of coastal neighborhoods.

Tidal flooding, locally known as *banjir rob*, has become one of the most persistent hydrometeorological disasters affecting Tanjungpinang. Unlike conventional flooding caused primarily by rainfall, tidal flooding occurs when seawater inundates coastal land during periods of exceptionally high tides. In many cases, tidal flooding is further intensified by heavy rainfall and poor drainage conditions, resulting in prolonged inundation and greater socioeconomic disruption. Several coastal communities in Tanjungpinang experience tidal flooding regularly, including Pelantar II, Kampung Bugis, Melayu Kota Piring, Kampung Bulang, and Haji Ungar. The impacts of tidal flooding extend beyond physical damage to infrastructure and residential properties. Floodwaters often disrupt transportation networks, commercial activities, educational services, and public health conditions. Households experience financial losses due to property damage, while local businesses face interruptions in economic activities. Moreover, stagnant floodwaters create favorable conditions for waterborne diseases and environmental degradation. Consequently, tidal flooding represents not only an environmental issue but also a social and economic challenge that requires comprehensive policy interventions.

The increasing frequency of tidal flooding in Tanjungpinang can be attributed to multiple interconnected factors. Environmental changes such as sea-level rise, coastal erosion, and climate variability have amplified coastal vulnerabilities. Simultaneously, rapid urbanization and land-use changes have reduced the capacity of natural ecosystems to absorb and regulate water flows. In densely populated

ISSN: 2406-8721 (Media Cetak) dan ISSN: 2406-8985 (Media Online)
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coastal settlements, limited infrastructure capacity further constrains effective disaster risk reduction efforts. These circumstances emphasize the need for integrated disaster management approaches that combine structural measures, institutional coordination, and community participation.

Recognizing the importance of disaster risk reduction, the Government of the Riau Islands Province enacted Governor Regulation Number 5 of 2024 concerning the Regional Disaster Management Plan for 2023–2027. This regulation provides a comprehensive framework for disaster management activities, encompassing pre-disaster, emergency response, and post-disaster phases. The regulation emphasizes the importance of disaster mitigation, preparedness, early warning systems, emergency response coordination, rehabilitation, and reconstruction. It also highlights the necessity of collaboration among government agencies, local communities, academic institutions, non-governmental organizations, and the private sector through a multi-stakeholder approach.

Within this framework, the Regional Disaster Management Agency (BPBD) of the Riau Islands Province plays a central role in coordinating disaster management activities. BPBD is responsible for implementing disaster mitigation programs, facilitating emergency response operations, conducting public awareness campaigns, and supporting recovery efforts following disaster events. However, despite the existence of comprehensive policy frameworks, challenges remain in translating policy objectives into effective actions at the local level.

Several obstacles continue to affect disaster management implementation in Tanjungpinang. These include limited financial resources, shortages of qualified personnel, inadequate disaster mitigation infrastructure, coordination challenges among implementing agencies, and varying levels of community awareness regarding disaster preparedness. Additionally, the socioeconomic characteristics of coastal communities, including relatively low household incomes and dependence on coastal livelihoods, increase vulnerability and complicate disaster management efforts. These challenges suggest that policy implementation effectiveness depends not only on regulatory frameworks but also on institutional capacity, resource availability, stakeholder collaboration, and community engagement.

To analyze these issues comprehensively, this study adopts the policy implementation model developed by Van Meter and Van Horn. The model identifies six key variables influencing policy implementation: policy standards and objectives, resources, inter-organizational communication, characteristics of implementing agencies, implementers' dispositions, and social, economic, and political conditions. These variables provide a useful analytical framework for understanding how disaster management policies are implemented and identifying factors that facilitate or hinder policy effectiveness in the context of tidal flood management.

Therefore, this research seeks to examine the implementation of hydrometeorological disaster management policies related to tidal flooding in the coastal areas of Tanjungpinang City by the Regional Disaster Management Agency (BPBD) of the Riau Islands Province. Specifically, the study aims to analyze the effectiveness of policy implementation, identify supporting and inhibiting factors, and formulate recommendations for strengthening disaster governance and coastal resilience. The findings are expected to contribute both theoretically to the field of public policy implementation and practically to the improvement of disaster management strategies in coastal regions vulnerable to hydrometeorological hazards. Through enhanced policy implementation, stronger institutional coordination, and active community participation, Tanjungpinang can better prepare for future disaster risks while promoting sustainable and resilient coastal development.

METHOD

This study employed a descriptive qualitative approach to examine the implementation of hydrometeorological disaster management policies related to tidal flooding in the coastal areas of Tanjungpinang City, Riau Islands Province. The qualitative approach was selected because it enables an in-depth understanding of policy implementation processes, stakeholder interactions, and challenges

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encountered in disaster management practices. The study was conducted in several coastal areas frequently affected by tidal flooding, including Pelantar II, Kampung Bugis, Melayu Kota Piring, Kampung Bulang, and Haji Ungar. These locations were purposively selected due to their high vulnerability to recurring tidal flood events and their relevance to the implementation of regional disaster management policies.

Data were collected through in-depth interviews, field observations, and document analysis. Interviews were conducted with key informants, including officials of the Regional Disaster Management Agency (BPBD) of the Riau Islands Province and Tanjungpinang City, local government representatives, community leaders, and residents living in disaster-prone coastal areas. Field observations were undertaken to assess environmental conditions, disaster mitigation facilities, and community preparedness. Documentary data were obtained from government regulations, disaster reports, statistical records, and relevant literature. The analytical framework was based on the Van Meter and Van Horn policy implementation model, which examines six variables influencing policy implementation: (1) policy standards and objectives, (2) resources, (3) inter-organizational communication, (4) characteristics of implementing agencies, (5) implementers' disposition, and (6) social, economic, and political conditions. Data analysis followed the interactive model of Miles, Huberman, and Saldaña, consisting of data reduction, data display, and conclusion drawing. To ensure data validity, source triangulation and method triangulation were applied by comparing information obtained from different informants and data collection techniques. This approach enabled a comprehensive assessment of the effectiveness of disaster management policy implementation and the identification of factors supporting and constraining tidal flood mitigation efforts in coastal communities of Tanjungpinang City.

DISCUSSION

Policy Standards and Objectives

Policy standards and objectives are fundamental components that determine the direction of policy implementation. The Governor Regulation of the Riau Islands Province Number 5 of 2024 clearly outlines the objectives of disaster management, namely reducing disaster risk, protecting communities, strengthening preparedness, improving emergency response capacity, and accelerating recovery after disasters. The study found that BPBD officials generally understand the objectives and priorities established within the policy framework. Annual work plans, disaster preparedness activities, public awareness campaigns, emergency response procedures, and mitigation programs are formulated based on these policy guidelines.

The Head of Disaster Management Division of BPBD explained:

"The disaster management policy provides a clear framework for all stakeholders. Every disaster management activity, from mitigation to emergency response, refers to the Regional Disaster Management Plan."

Similarly, the Head of BPBD Tanjungpinang stated:

"The main objective is not only responding to disasters but also reducing community vulnerability through preparedness and mitigation programs."

Field observations revealed that several activities have been implemented to support policy objectives, including community awareness programs, emergency simulation exercises, dissemination of disaster information, monitoring of vulnerable coastal areas, and coordination meetings among relevant institutions. However, despite the clarity of policy objectives, several communities reported that disaster mitigation activities are still conducted periodically rather than continuously. Some residents stated that preparedness programs often intensify only during periods of high tidal activity.

A community leader in Kampung Bugis stated:

"The government has conducted disaster awareness activities, but residents expect more frequent programs because tidal flooding occurs almost every year."

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These findings indicate that policy standards and objectives are relatively clear and understood by implementing agencies. Nevertheless, translating policy goals into sustainable community-based programs remains a challenge.

Resources

Resources are among the most important determinants of policy implementation success. Effective disaster management requires adequate human resources, financial support, equipment, infrastructure, information systems, and logistics. The findings indicate that BPBD faces several resource limitations that affect disaster management activities. The availability of personnel remains insufficient compared to the extensive coastal areas requiring monitoring and intervention.

Table 3: Availability of Disaster Management Resources

Resource Component	Existing Condition	Assessment
Human Resources	Limited Personnel	Less Optimal
Budget Allocation	Annual Budget Available	Moderate
Emergency Equipment	Available but Limited	Moderate
Early Warning Facilities	Limited Coverage	Less Optimal
Evacuation Facilities	Available in Several Areas	Moderate
Community Volunteers	Active	Good

Source: Research Findings, 2026.

The Head of Emergency Response Division explained:

"One of our major challenges is the limited number of personnel. The disaster-prone areas are extensive, while available staff members are relatively few."

Budget constraints also influence implementation effectiveness. Although disaster management activities receive annual budget allocations, funding is often insufficient to address all mitigation needs and infrastructure improvements.

A BPBD staff member explained:

"Budget limitations affect the scale of mitigation programs. Some activities must be prioritized based on urgency."

Observations further revealed that several coastal communities still lack adequate flood barriers, drainage improvements, and modern early warning systems. Consequently, local residents continue to experience recurring impacts whenever high tides occur.

A resident of Pelantar II stated:

"Floodwater still enters our homes during high tides because there are not enough protective facilities."

These findings suggest that resource limitations remain a major obstacle to effective policy implementation.

Inter-Organizational Communication

Disaster management requires intensive communication and coordination among various stakeholders. BPBD collaborates with local governments, health agencies, social service agencies, military and police institutions, village administrations, and community organizations. The findings indicate that communication mechanisms have generally been established through coordination meetings, emergency response procedures, WhatsApp groups, radio communication systems, and public information dissemination.

The Head of BPBD Tanjungpinang stated:

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"Coordination among institutions is conducted regularly, especially before periods of high tidal activity and extreme weather conditions."

Field observations showed that coordination meetings are frequently conducted to discuss preparedness measures and emergency response planning.

However, communication challenges still occur, particularly regarding the speed of information dissemination to local communities.

A village official explained:

"Sometimes weather information is received quickly at the government level, but not all residents receive the information at the same time."

Similarly, a resident from Kampung Bulang stated:

"We usually know about high tides through social media or neighbors, but sometimes information arrives too late."

The findings indicate that communication among government agencies is relatively effective. However, communication between institutions and communities requires further improvement to ensure timely dissemination of disaster information.

Characteristics of Implementing Agencies

The effectiveness of policy implementation is influenced by the organizational characteristics of implementing agencies, including organizational structure, authority, coordination mechanisms, and institutional capacity. BPBD possesses a formal organizational structure that supports disaster management implementation. Responsibilities are distributed among divisions responsible for prevention and preparedness, emergency response, rehabilitation, reconstruction, and logistics.

The Head of BPBD explained:

"Each division has specific responsibilities, allowing disaster management activities to be conducted systematically."

Field findings show that BPBD personnel demonstrate strong commitment to disaster management activities. Regular coordination, preparedness training, and emergency simulations are conducted to improve organizational readiness. Nevertheless, institutional limitations remain evident. The increasing number of disaster events has expanded the workload of BPBD personnel.

A BPBD staff member stated:

"The frequency of disaster events continues to increase, creating additional demands on available personnel and resources."

These findings suggest that while organizational structures are functioning effectively, institutional strengthening remains necessary.

Implementers' Disposition

The attitudes, commitment, and motivation of implementers significantly affect policy implementation outcomes. The findings reveal that BPBD officials generally demonstrate positive attitudes toward disaster management responsibilities. Government personnel view disaster management as an important public service obligation.

A disaster management officer explained:

"Protecting communities from disaster risks is our responsibility. We try to respond as quickly as possible despite resource limitations."

Community members also expressed positive perceptions regarding government disaster management efforts.

A resident of Melayu Kota Piring stated:

"BPBD officers usually come directly to affected areas during flooding and provide assistance."

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Another resident from Haji Ungar explained:

"The officers are responsive and coordinate with local leaders during emergency situations."

Observations during field visits further revealed active participation by community volunteers in preparedness activities, emergency response, and recovery efforts. These findings indicate that positive attitudes and strong commitment among implementers contribute significantly to policy implementation effectiveness.

Social, Economic, and Political Conditions

Social, economic, and political conditions represent external factors that influence policy implementation. The study found that coastal communities remain highly vulnerable to tidal flooding due to their geographical location and socioeconomic characteristics. Many residents depend on fisheries, small-scale trading, transportation services, and informal economic activities.

Table 4: Impacts of Tidal Flooding on Coastal Communities

Impact Category	Impact Description
Economic	Reduced income and business interruptions
Social	Disruption of daily activities
Infrastructure	Damage to roads and housing
Education	Learning disruptions
Health	Increased environmental health risks
Transportation	Restricted accessibility

Source: Research Findings, 2026.

A resident of Kampung Bugis stated:

"When tidal flooding occurs, many shops cannot operate normally because customers cannot access the area."

A fisherman from Haji Ungar explained:

"Flooding often affects our work activities because access roads become inundated."

Observations revealed that some coastal settlements continue to experience poor drainage conditions, inadequate infrastructure, and limited adaptation measures. From a political perspective, local governments generally demonstrate support for disaster management initiatives through policy formulation and budget allocation. However, increasing disaster risks require stronger collaboration among government institutions, communities, and other stakeholders.

Supporting and Inhibiting Factors

The findings reveal several supporting factors contributing to policy implementation success, including clear policy objectives, strong institutional commitment, active community participation, inter-agency cooperation, and the existence of disaster management regulations. Meanwhile, inhibiting factors include limited financial resources, insufficient personnel, inadequate mitigation infrastructure, communication barriers, and the high vulnerability of coastal communities.

Overall, the implementation of hydrometeorological disaster management policies in Tanjungpinang City can be categorized as moderately effective. Although significant efforts have been undertaken by BPBD and related stakeholders, improvements are still needed in resource allocation, infrastructure development, disaster communication systems, and community-based mitigation programs to strengthen resilience against recurring tidal flooding in coastal areas.

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Policy Standards and Objectives in Coastal Disaster Management

The findings reveal that disaster management policies in Tanjungpinang have been implemented based on clearly defined regulatory frameworks. The existence of regional disaster management plans provides direction for government agencies in conducting mitigation, preparedness, response, and recovery activities. However, the effectiveness of policy implementation is not solely determined by the clarity of policy objectives but also by the extent to which these objectives are understood and translated into operational programs at the local level.

According to Van Meter and Van Horn, clearly defined policy standards and objectives are essential because they provide measurable indicators for implementation performance. In the context of Tanjungpinang, although disaster risk reduction objectives have been formally established, the findings indicate a gap between policy formulation and implementation outcomes. This gap is partly caused by the perception among coastal residents that tidal flooding is a normal seasonal occurrence rather than a significant disaster risk. Similar findings have been reported in coastal disaster studies, which suggest that public perception significantly influences the success of disaster risk reduction policies. Consequently, strengthening risk awareness and integrating disaster mitigation into local development planning remain critical challenges for policymakers.

Resource Capacity and Policy Effectiveness

Resource availability emerged as one of the most significant determinants of policy implementation. The study found that human resources, financial support, and technological infrastructure remain limited compared to the growing disaster risks faced by coastal communities. These findings support the argument of policy implementation theory that adequate resources are necessary for transforming policy intentions into effective actions.

The limited number of disaster management personnel reduces the capacity of implementing agencies to conduct continuous monitoring, community engagement, and emergency response activities. Likewise, budget constraints affect the government's ability to implement structural mitigation projects such as seawalls, drainage improvement systems, and coastal protection infrastructure. As a result, disaster management efforts tend to prioritize non-structural approaches, including public awareness campaigns and preparedness training.

From a disaster governance perspective, insufficient resources often create implementation gaps even when policy objectives are clearly defined. Therefore, enhancing institutional capacity through increased budget allocations, recruitment of qualified personnel, and investment in disaster technology is essential to strengthen the effectiveness of tidal flood management programs.

Inter-Organizational Communication and Coordination

Effective communication is fundamental to successful disaster management because disasters require coordinated responses from multiple stakeholders. The findings indicate that BPBD has established communication networks involving government agencies, community organizations, security institutions, and disaster volunteers. Such collaborative arrangements reflect the principles of contemporary disaster governance, which emphasize multi-stakeholder participation and shared responsibility.

However, the study also identifies challenges related to information dissemination and institutional coordination. Delays in communication and inconsistencies in information delivery can reduce the effectiveness of preparedness and emergency response measures. These findings are consistent with implementation theories that highlight communication as a critical factor influencing policy performance. In disaster-prone coastal areas, communication systems must function not only during emergencies but also throughout the preparedness phase. The development of community-based early warning systems, digital information platforms, and integrated communication networks could significantly improve the

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responsiveness of both institutions and residents. Therefore, strengthening communication mechanisms should be considered a strategic priority for disaster management agencies.

Organizational Characteristics and Institutional Capacity

The characteristics of implementing agencies significantly affect policy implementation outcomes. The findings suggest that BPBD possesses a relatively clear organizational structure and demonstrates strong commitment toward disaster management responsibilities. This organizational clarity facilitates coordination and accountability within the institution.

Nevertheless, organizational effectiveness is constrained by limited personnel and increasing workloads. During periods of multiple disaster occurrences, available staff members are often required to perform various functions simultaneously, reducing operational efficiency. This situation illustrates the importance of institutional capacity in public policy implementation.

The findings support the argument that organizational structures must be adaptive and responsive to environmental challenges. In the context of disaster management, institutional resilience depends not only on formal structures but also on the agency's ability to mobilize resources, coordinate stakeholders, and respond quickly to emerging risks. Consequently, strengthening institutional capacity through training programs, organizational development initiatives, and inter-agency collaboration is necessary to improve disaster governance performance.

Implementers' Disposition and Community Participation

The study demonstrates that the attitudes and commitment of implementers contribute positively to policy implementation. Government officials generally support disaster risk reduction objectives and actively participate in policy implementation processes. Such positive dispositions facilitate program continuity and strengthen institutional performance. However, community attitudes toward disaster mitigation remain diverse. While some residents actively participate in preparedness programs and disaster simulations, others continue to perceive tidal flooding as an unavoidable natural phenomenon. This variation in community attitudes influences the effectiveness of disaster risk reduction initiatives.

Van Meter and Van Horn emphasize that implementers' acceptance and commitment toward policy objectives are essential for successful implementation. In addition, disaster management literature highlights the importance of community participation as a key component of resilience-building efforts. Therefore, increasing public awareness through continuous education, community engagement programs, and participatory disaster planning is necessary to foster a culture of preparedness within coastal communities.

Environmental Factors and Coastal Vulnerability

The findings reveal that economic, social, and political conditions significantly influence disaster policy implementation. Coastal communities in Tanjungpinang face various socioeconomic challenges, including limited financial capacity, dependence on climate-sensitive livelihoods, and high exposure to environmental hazards. These conditions increase vulnerability to tidal flooding and reduce adaptive capacity. From a social perspective, strong community solidarity represents an important source of resilience. Collective actions such as mutual assistance, community clean-up activities, and local emergency response efforts contribute positively to disaster preparedness and recovery. These findings support resilience theory, which emphasizes the role of social capital in enhancing community adaptive capacity.

Politically, local government commitment has facilitated the implementation of disaster management policies. Nevertheless, sustainable policy implementation requires long-term political support and consistent budgetary commitments. Without sustained governmental investment, disaster risk reduction initiatives may struggle to achieve their intended outcomes.

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Implications for Coastal Disaster Governance

The overall findings indicate that disaster policy implementation in Tanjungpinang has produced positive outcomes but remains constrained by several structural and operational challenges. The interaction among policy standards, resources, communication systems, institutional capacity, implementers' attitudes, and environmental conditions ultimately determines implementation effectiveness. The study suggests that future disaster governance strategies should prioritize strengthening institutional capacity, expanding resource availability, improving inter-organizational coordination, and enhancing community participation. Furthermore, integrating disaster risk reduction into broader coastal development policies is essential to address the underlying vulnerabilities that contribute to tidal flood risks.

In line with contemporary disaster governance approaches, effective tidal flood management requires collaboration among government institutions, communities, the private sector, academic institutions, and civil society organizations. Such collaborative governance mechanisms can contribute to building long-term coastal resilience and ensuring the sustainability of disaster risk reduction efforts in Tanjungpinang City.

CONCLUSION

This study concludes that the implementation of hydrometeorological disaster management policies for tidal flooding in the coastal areas of Tanjungpinang City has generally been carried out in accordance with the Regional Disaster Management Plan established by the Government of the Riau Islands Province. The Regional Disaster Management Agency (BPBD), in collaboration with local governments and community stakeholders, has implemented various disaster management activities, including mitigation, preparedness, emergency response, and recovery programs aimed at reducing disaster risks and protecting vulnerable coastal communities.

The findings indicate that the implementation process is supported by clear policy objectives, strong institutional commitment, positive attitudes among implementers, and active community participation. However, several challenges continue to affect policy effectiveness, including limited human and financial resources, inadequate disaster mitigation infrastructure, constraints in information dissemination and coordination, and the high socioeconomic vulnerability of coastal residents. These challenges reduce the capacity of implementing agencies to achieve optimal disaster risk reduction outcomes.

Overall, the effectiveness of tidal flood management in Tanjungpinang depends not only on the existence of disaster management policies but also on the availability of resources, institutional capacity, stakeholder collaboration, and community resilience. Therefore, strengthening inter-agency coordination, increasing resource allocation, improving disaster preparedness infrastructure, and enhancing community-based disaster risk reduction programs are essential to building a more resilient and sustainable coastal disaster management system.

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