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Multi-level policy Design in Bandar Lampung City Flood Management

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ABSTRACT

Bandar Lampung City, as the capital and showcase of Lampung Province, faces significant challenges in addressing the flooding issues that damage the region's image. In 2024, out of a total of 140 flood events in Indonesia, four occurred in Bandar Lampung City. The flood problem is not only due to environmental management issues within the city itself but is also influenced by changes in the upstream areas located in Pesawaran Regency and downstream areas in South Lampung Regency. Environmental degradation in the upstream areas, such as deforestation and the conversion of hillside land, as well as the narrowing of river basins due to uncontrolled urbanization, have led to excessive water flow, exacerbating flood risks in the city. Therefore, this study aims to formulate policy recommendations between the Provincial Government of Lampung and the Governments of Bandar Lampung City, Pesawaran Regency, and South Lampung Regency. The findings of this study are expected to result in comprehensive and sustainable policies, enhance inter-regional collaboration, and strengthen Bandar Lampung City's resilience to flood disasters. This research employs a qualitative descriptive method, which includes a literature review and in-depth interviews with relevant stakeholders. The study shows that effective flood management in Bandar Lampung City can only be achieved through cross-regional collaboration, considering the roles, responsibilities, and cooperation among various government agencies. According to the study, there is a need for an inter-regional cooperation forum, changes in environmental revitalization policies, and the enhancement of government and community capacity to address flooding. These policies can reduce the frequency and impact of floods and improve Bandar Lampung City's image as the showcase of Lampung Province.

1. Introduction

Bandar Lampung, as the showcase of Lampung Province, frequently faces severe flooding during the rainy season. Despite various efforts to address this issue, floods remain a serious threat, disrupting economic activities, damaging infrastructure, and posing health risks to the population. Flooding in Bandar Lampung is often attributed solely to poor local environmental management. However, this view is overly narrow, as the floods are influenced by broader ecosystem dynamics, including the upstream conditions in Pesawaran Regency and downstream conditions in South

Lampung Regency. Deforestation in the upstream areas of Pesawaran has reduced the soil's capacity to absorb rainwater, accelerating the flow of water toward Bandar Lampung. Simultaneously, in the downstream areas and river channels, changes in absorption areas in Natar District, South Lampung, and sedimentation in the rivers have slowed the flow of water to the sea, increasing water retention in Bandar Lampung. This indicates that flooding in Bandar Lampung is not an isolated phenomenon but part of a larger environmental issue involving multiple administrative regions. Thus far, flood management policies have been fragmented and focused on local solutions. The city government has built embankments and widened rivers, but without significant efforts in upstream and downstream areas, these measures remain ineffective. This raises critical questions: Why do floods persist despite the implementation of various infrastructure projects? Is it possible that the current approaches fail to address the root causes? Criticism of traditional approaches is highly relevant here. Flood management cannot be resolved within a single region, especially when the flooding itself results from interactions between various environmental factors across interconnected river systems. Without a comprehensive and integrated policy framework, flood mitigation efforts will continue to be reactive and short-term. This underscores the need for a multi-level policy approach in flood management.

A multi-level policy approach necessitates strong collaboration between central, provincial, and local governments in formulating coordinated policies. Each level of government has distinct roles, but they must complement one another in managing river basins. In Pesawaran Regency, the primary focus is reforestation and establishing water absorption areas to reduce water flow downstream. In Bandar Lampung, river normalization and naturalization, along with the construction of embankments and retention ponds, are crucial to increase water capacity and reduce flood risks in urban areas. Meanwhile, South Lampung Regency must prioritize river basin revitalization and drainage system improvements to ensure more efficient water flow. Although implementing a multi-level policy approach presents challenges, particularly in inter-regional coordination and responsibility sharing, the potential benefits far outweigh the difficulties. The Lampung Provincial Government can serve as a facilitator, providing administrative support and ensuring that policies across regions align with broader flood mitigation goals. Public participation is also a critical element for the success of these policies, especially in maintaining and restoring water absorption areas and supporting environmental policy implementation.

With an integrated, cross-regional policy approach, Bandar Lampung and its surrounding areas can build greater resilience to flood risks. Effective coordination between upstream, midstream, and downstream areas will create synergy that not only reduces the impact of flooding but also improves the overall quality of life for the population. Thus, the multi-level policy approach offers a more sustainable and effective solution to future flood challenges. To gain deeper insights into the cross-regional policy dynamics in flood management, this study employs a qualitative methodology. Data collection involved in-depth interviews and Focus Group Discussions (FGDs) with stakeholders across different regions, including local government officials, local communities, and environmental experts. This approach aims to explore the perspectives, experiences, and perceptions of key actors involved in flood management in these regions. The collected data is then analyzed descriptively to identify the challenges and opportunities in implementing an integrated multi-level policy.

Through an in-depth qualitative approach focused on stakeholder engagement across various regions, this study aims to provide a comprehensive understanding of the cross-regional policy dynamics in flood management. The study also seeks to formulate more coordinated, effective, and sustainable policy recommendations to strengthen Bandar Lampung's resilience to flood risks in the future.

2. Theoretical Framework

Multi-Level Policy, The concept of multi-level policy refers to policies that involve various levels of government in their formulation, from the central government down to local or sub-national levels. (Scharpf, 1994). In the formulation of multi-level policy, the agents (actors) involved in policy transfer play a crucial role in facilitating or hindering the transfer of policies between one region and another (Evans & Davies, 1999). The interaction between structure and agents is a key factor in the dynamics of cross-level policy. This policy aims to address issues that are cross-

regional or cross-sectoral in nature, where a single level of government cannot effectively resolve them on its own. According to Scharf (Newig & Koontz, 2014), the key element in Multi-level policy: (1) Inter-Level Coordination; There exists a coordination chain that operates both vertically and horizontally across regions. The relevant local governments must coordinate across levels while preserving their autonomy to collectively address shared issues. (2) Subsidarity; Each region must understand that the problems at hand are a shared responsibility and will be more effectively addressed if policy formulation is conducted at an inter-regional level. (3) Non-Governmental Actor Participation; There must be involvement from non-governmental entities to enhance accountability and improve the effectiveness of policy implementation. (4) Phased Policy Cycle; The stages of policy planning, implementation, and evaluation must be carried out periodically to ensure alignment with long-term goals and flexibility in responding to evolving circumstances.

Government to Government Theory, G2G (Government-to-Government) refers to interactions between governmental institutions that leverage information and communication technology to enhance the efficiency and effectiveness of governance processes. This includes data sharing, coordination, and collaboration between governmental bodies. G2G encompasses horizontal interactions between government agencies at the same level, as well as vertical interactions between central, provincial, and local governments (Al-khafaji, Shittu, & Osman, 2014). G2G aims to enhance government efficiency, performance, and outcomes by streamlining the flow of information between governmental entities. Technology facilitates faster and more accurate interactions, reducing operational costs and improving governmental productivity (Joia, 2008).

The Government-to-Government (G2G) theory refers to the relationships and interactions established between various levels of government to achieve common goals, typically in public administration management or policy implementation. G2G is highly relevant in the modern context where inter-agency efficiency is increasingly critical for improving public services and resource management. Newig & Koontz discuss the role of G2G within environmental management through cross-government policies. In the G2G approach, Newig emphasizes the importance of collaboration between different levels of government to manage resources in an integrated manner, particularly for issues that transcend administrative jurisdiction boundaries. (Newig & Koontz, 2014). The key elements in the management of Government-to-Government (G2G) theory include: (1) Cross-Administrative Boundary Coordination: Effective management requires close coordination between local and central governments to ensure policy continuity. (2) Participation and Integration: While this theory involves non-governmental actors, G2G interactions remain the foundation for integrating government policies across various levels, particularly for global or national issues such as climate change and resource conservation.

3. Method

This study employs a qualitative approach to understand the dynamics of cross-regional policy in the implementation of multi-level policy. The qualitative approach was chosen because the study focuses on exploring the perspectives, experiences, and perceptions of stakeholders involved in the formulation and implementation of policies at various levels of government. Additionally, this approach aids in comprehending the complexity of cross-sector and cross-regional coordination. The case study design allows for an in-depth exploration of how multi-level policies are applied and how each region contributes to flood management. Furthermore, the case study provides an opportunity to explore how inter-regional coordination can be conducted more effectively.

4. Result and Discussion

4.1. Result

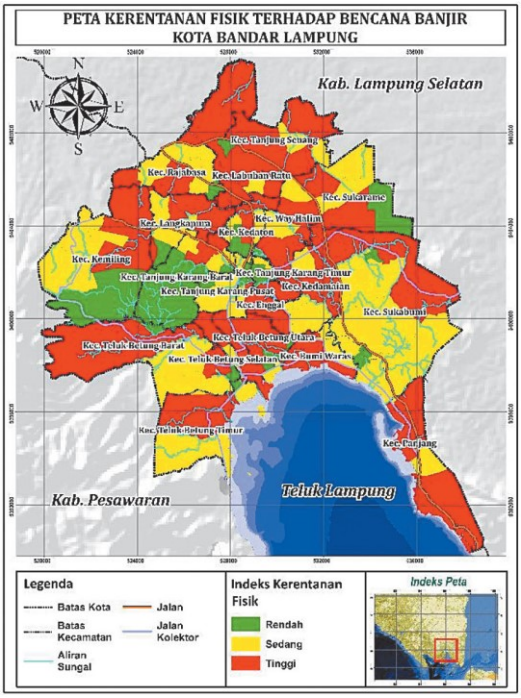

Figure 1. Flood Hazard Map of Bandar Lampung City
Source: BPBD Kota Bandar Lampung, 2020

Bandar Lampung, as the showcase of Lampung Province, faces a serious threat of flooding during every rainy season. Despite various efforts to address this issue, floods remain a significant concern, disrupting economic activities, damaging infrastructure, and posing health risks to the population. According to data from the Regional Disaster Management Agency (BPBD) of Bandar Lampung, out of the 20 districts in the city, only Kemiling District is free from the threat of flooding during the rainy season (Wibisono & Asbi, 2020). Various approaches and policies have been undertaken by the Bandar Lampung City Government to address the issue of flooding and its impacts on the community; however, the construction of embankments, river widening, and deepening have yet to resolve the problem. This failure reflects a fundamental flaw in the approach to formulating flood management policies, which are inherently complex and systemic. The approach taken has consistently been fragmented, involving operational policies where the main objectives are mutually agreed upon, but with very low levels of commitment and participation in their implementation (Suman et al., 2019). Flooding in Bandar Lampung is not solely caused by local factors but is also influenced by the dynamics of upstream and downstream areas. According to data from Global Forest Watch (2023), there has been a significant loss of tree cover or deforestation in Lampung Province, with one of the most affected areas being Pesawaran Regency.

Deforestation in the upstream areas, particularly in Pesawaran Regency, has become one of the primary factors accelerating water flow towards the midstream and downstream regions, including Bandar Lampung. The conversion of upstream land from forests into agricultural, residential, and plantation areas has significantly reduced the land's capacity to absorb water (Romlah, Yuwono, Hilmanto, & Banuwa, 2018). The loss of forest cover has diminished the soil's ability to optimally absorb rainwater, thereby accelerating surface water runoff towards downstream areas (Mardiatno & Marfai, 2021).

In addition, deforested open land is more vulnerable to soil erosion (Jainuddin, 2023). The eroded soil is carried by water flow into the rivers, increasing sedimentation in downstream rivers, including those in Bandar Lampung and South Lampung. River siltation in the downstream areas, particularly in Panjang District, Bandar Lampung, and Natar District, South Lampung, exacerbates the flooding situation in Bandar Lampung. This siltation is caused by sedimentation from soil erosion in the upstream areas. The soil and sand carried by the water flow settle at the riverbeds,

ultimately reducing the river's capacity to hold water (Hariati, Taqwa, Alimuddin, Salman, & Sulaeman, 2022). As a result, during heavy rainfall, the rivers are unable to accommodate the large volume of water, causing overflow into surrounding areas and triggering floods. River siltation also slows the water's flow to the sea, leading to prolonged water retention in the downstream areas and increasing the risk of inundation (Marsudi & Lufira, 2021). In addition, the lack of regular river basin revitalization and periodic river dredging in South Lampung Regency exacerbates this problem.

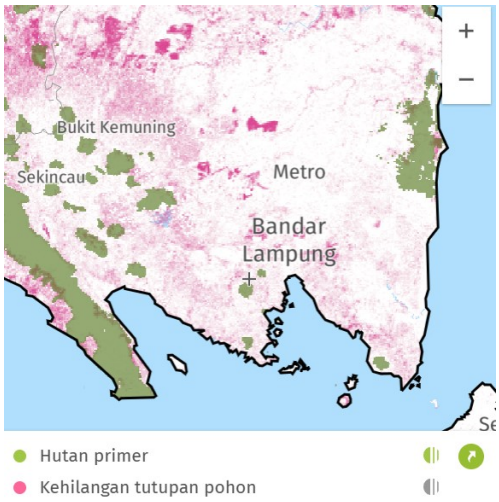

Figure 2. Deforestation Map of Lampung Province
Source: Green Forest Watch, 2023

The research findings also indicate that flood management efforts in Bandar Lampung are still dominated by reactive and technical policies. Measures such as the construction of embankments, river widening, and deepening have been implemented but fail to provide comprehensive long-term solutions. Furthermore, the lack of coordination between upstream, midstream, and downstream local governments has resulted in a fragmented approach to flood management. Each region implements operational policies independently, without considering the broader cross-regional impacts. Additionally, interviews with stakeholders reveal a gap in commitment and participation across regions in managing the river basin (DAS). In the upstream areas, large-scale deforestation continues due to weak enforcement of land conservation policies. In the midstream region, Bandar Lampung continues to expand flood control infrastructure; however, without mitigation efforts in the upstream areas, this infrastructure cannot handle the increasing water volume. In the downstream region, river sedimentation and siltation further exacerbate the flood risk, while river dredging and basin revitalization are not consistently carried out.

4.2. Discussion

In addressing the complex flood management issues in Bandar Lampung, a multi-level policy-making approach can serve as a relevant policy framework by providing a clear coordination flow and role distribution between the Lampung Provincial Government, Bandar Lampung City, Pesawaran Regency, and South Lampung Regency. As a primary step, it is essential to establish a clear division of roles between these regions.

Figure 3. Diagram of Government Role Distribution in Flood Management Design Based on Multi-level Policy
Source: Data Processed by Researcher, 2024

In addressing flood management in Bandar Lampung using a multi-level policy-making approach, the Lampung Provincial Government acts as the coordinator to ensure the harmonization of cross-regional policies. In policy formulation, the provincial government must also facilitate cooperation between the upstream, midstream, and downstream regions to establish long-term, harmonized, and integrated policies that are clearly budgeted in the Regional Government Work Plan (RKPD) and Regional Revenue and Expenditure Budget (RAPBD) of Lampung Province.

The Pesawaran Regency Government, responsible for the upstream area, is tasked with reforestation efforts and controlling land-use changes in the upstream regions. The management of water absorption areas must be prioritized to prevent excessive water flow into the midstream region. South Lampung Regency, responsible for the downstream area, must enhance consistency and persistence in river basin revitalization (DAS) and regular river dredging to reduce the risk of floods caused by upstream sedimentation. As the central policy area, the Bandar Lampung City Government must take serious measures in normalizing and naturalizing the river basin, developing adaptive drainage infrastructure, and providing green open spaces (RTH) in accordance with the minimum standard set in Undang-Undang No. 26 of 2007 on Spatial Planning, which mandates that 30% of the city's area must consist of green open spaces.

Tabel 1. Role Distribution Based on Government-to-Government Theory

Role Distribution Based on Government-to-Government Theory		
Pesawaran Regency (Upstream)	**Bandar Lampung City (Midstream)**	**South Lampung Regency (Downstream)**
1. Reforestation;	5. River Normalization and Naturalization;	9. River Basin (DAS) Revitalization;
2. Control of Land-Use Changes;	6. Development of Urban Drainage Infrastructure;	10. Coastal Drainage System Improvement;
3. River Basin (DAS) Management;	7. Embarkment and Retention Pond Construction;	11. Sedimentation And Erosion Control in Downstream;
4. Community Participation in Conservation.	8. Provision of Gree Open Space (RTH).	12. Coastal Ecosystem Management

Source: Data Processed by Researcher, 2024

Coordination between the Lampung Provincial Government and the governments of Pesawaran Regency, Bandar Lampung City, and South Lampung Regency is the key to the successful implementation of multi-level policy. To support the application of long-term solutions in addressing flooding in Bandar Lampung, policies related to river basin (DAS) management, reforestation, and drainage infrastructure must be integrated into the Regional Long-Term Development Plan (RPJPD) for each respective region. The Lampung Provincial Government must ensure that budget allocations for flood mitigation programs formulated by the Pesawaran Regency Government, Bandar Lampung City Government, and South Lampung Regency Government are prioritized.

As the coordinator, the Provincial Government must also emphasize regular monitoring and evaluation at each policy area level to minimize the risk of failure in program implementation. Beyond intergovernmental participation, the communities in the upstream, midstream, and downstream areas must also be actively educated and involved. Communities in upstream regions should participate in forest conservation and reforestation programs to ensure the sustainability of water catchment areas. Meanwhile, communities in the midstream and downstream areas must be educated on the impacts of flooding and how to mitigate them. Thus, cross-regional collaboration in managing flooding in Bandar Lampung, through effective coordination between the Lampung Provincial Government, Pesawaran Regency Government, Bandar Lampung City Government, and South Lampung Regency Government, can result in holistic, comprehensive, and sustainable policies.

5. Conclusion

Bandar Lampung, as the showcase of Lampung Province, is shrouded by the threat of flooding during every rainy season. Flooding in Bandar Lampung is not solely caused by local factors but is also influenced by the dynamics of upstream and downstream areas. Deforestation in the upstream areas of Pesawaran Regency leads to erosion, which deposits sediment that causes river siltation in downstream areas and in the watercourses passing through Bandar Lampung. River siltation in the downstream regions, particularly in Panjang District, Bandar Lampung, and Natar District, South Lampung Regency, exacerbates the flood situation in Bandar Lampung. Thus far, flood management in Bandar Lampung has been dominated by reactive and technical policies, which have not provided solutions that effectively resolve the issue. Flooding in Bandar Lampung is a complex interregional problem, requiring an advanced approach to policy formulation—namely, through multi-level policy making. The Lampung Provincial Government serves as the main coordinator, tasked with ensuring the harmonization and integration of cross-regional policies. The provincial government must facilitate cooperation between the upstream, midstream, and downstream regions. Pesawaran Regency, as the upstream area, is responsible for reforestation and controlling land-use changes in the upper reaches. South Lampung Regency, as the downstream area, focuses on river basin (DAS) revitalization and regular river dredging. Meanwhile, Bandar Lampung, as the midstream area and the central focus of policy, must provide adaptive drainage infrastructure and green open spaces (RTH) in accordance with the minimum requirement of 30% of the city's total area. Beyond intergovernmental participation, communities in the upstream, midstream, and downstream areas must also be actively educated and involved. With cross-regional cooperation in flood management in Bandar Lampung, through effective coordination between the Lampung Provincial Government, Pesawaran Regency Government, Bandar Lampung City Government, and South Lampung Regency Government, a holistic, comprehensive, and sustainable policy can be achieved.

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