

THE ROLE OF THE PUBLIC WORKS AND SPATIAL PLANNING DEPARTMENT IN HANDLING PUBLIC INFRASTRUCTURE AFTER NATURAL DISASTERS IN TANJUNGPINANG CITY IN 2024

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Abstract

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This study analyzes the role of the Tanjungpinang City Public Works and Spatial Planning Agency in handling public infrastructure following natural disasters using Soekanto's role theory, which includes policy formulation, policy implementation, guidance, supervision, and evaluation. A descriptive qualitative research method was used with data collection techniques through interviews and documentation. The results show that policy formulation is carried out based on the regulatory framework of Law Number 24 of 2007 and Mayoral Regulation Number 49 of 2023 through the stages of receiving reports, field verification, damage identification, cross-agency coordination, and determining disaster status through a Mayoral Decree. Policy implementation is carried out through a self-management mechanism for small to medium damage and construction service providers for large-scale reconstruction with coordination involving the Regional Disaster Management Agency (BPBD), the Environmental Agency, the Regional Water Company (PDAM), and the National Road Agency. Guidance, supervision, and evaluation are carried out in layers through supervisory consultants and internal technical teams, with the evaluation results used as the basis for subsequent budget planning. Limitations were found in the budget aspect, geographical conditions, and limited community participation.

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INTRODUCTION

The government has a crucial responsibility in managing public infrastructure affected by natural disasters to accelerate the recovery of public services and maintain

socioeconomic stability (Permana, 2023). This effort aims to ensure that the public can quickly return to their daily activities safely and comfortably. Disaster-damaged public infrastructure, such as roads, bridges, and public facilities, is crucial for mobility and aid distribution. Accelerating infrastructure recovery helps minimize subsequent impacts, such as economic disruption and potential social disasters. This action reflects the government's significant role in ensuring that development continues unabated, even in the midst of emergencies.

The primary functions of government encompass aspects of service, regulation, and development, including handling infrastructure affected by natural disasters. The state carries out this responsibility through regional government apparatuses, which play a role in ensuring the continuity of public services and meeting the community's basic needs (Dwiyanto, 2021). Damaged infrastructure due to disasters disrupts the continuity of service functions, requiring the government to take immediate action. The Public Works and Spatial Planning Agency (PUPR) is one of the regional agencies with the technical authority to handle infrastructure development and repairs. The PUPR Agency plays a role in implementing government functions, ensuring the return of public services to normal and supporting the sustainability of regional development.

Addressing public infrastructure affected by natural disasters requires an active role from local governments as public service providers. Suwitri (2020) states that public policy encompasses problem formulation, implementation, and evaluation to address community needs. This series of processes serves as a guide for technical agencies, such as the Public Works and Public Housing Agency, in responding to infrastructure damage in a planned and measured manner. Repairing damage is not simply a matter of rebuilding, but rather a matter of managing resources sensibly to restore stability to public services. This stage must be handled carefully to ensure that the infrastructure built can address the problem (Haryanto, 2012).

Based on Tanjungpinang Mayoral Regulation Number 49 of 2023 concerning the Description of the Main Duties, Functions, Work Procedures, and Organizational Structure of the Public Works and Spatial Planning Agency in Article 9, the authority in the field of highway construction includes implementing road and bridge management due to natural disasters. This responsibility includes policy formulation, construction implementation, and technical supervision of regional infrastructure. When damage occurs due to disasters, activities such as repairing roads, drainage, and other public infrastructure are part of the functions carried out by the PUPR Agency. This assignment shows that the agency is not only a technical implementer but also responsible for ensuring that infrastructure continues to support the continuity of public services.

Tanjungpinang City, as part of a coastal area, remains at risk of public infrastructure damage due to small to moderate-scale natural disasters, requiring a swift government response to recover (Damri, 2025). Disasters not only cause losses to the community but also damage public infrastructure such as roads, bridges, drainage systems, and other public facilities. This situation demands an active role from the Public Works and Spatial Planning Agency in handling infrastructure affected by natural disasters. As the agency responsible for infrastructure development and repair, PUPR has a strategic role in the rehabilitation and reconstruction of public infrastructure so that it can function properly again.

Tanjungpinang City's geographical terrain is diverse, encompassing lowlands, hills, and coastal areas with elevations varying between 1 and 20 meters above sea level.

Tanjungpinang Timur District is one of the areas dominated by sloping areas, while sub-districts such as Bukit Bestari and Tanjungpinang Kota are located in the lowlands and near the coastline. The tropical climate, with an average temperature of 27.5°C, air humidity of 86%, and annual rainfall of 288 mm, contributes to the increased risk of disasters (Central Statistics Agency, 2025). The combination of land and climate conditions makes this region prone to flooding and landslides. In 2024, the highest number of floods occurred in Bukit Bestari and Tanjungpinang Timur Districts, while landslides were recorded in sloping areas such as West Tanjungpinang and East Tanjungpinang, indicating that geographic conditions are directly related to the level of disaster risk in this city.

Public infrastructure management and disaster management are part of the regional government's mandatory duties related to basic services. This is regulated in Law Number 23 of 2014 concerning Regional Government, specifically in Article 11 paragraph (2). Regional governments, through regional agencies such as the Public Works and Public Housing Agency, are responsible for handling infrastructure affected by natural disasters. This task includes restoring infrastructure function and protecting affected communities. This role is crucial given that the impact of disasters can disrupt social and economic activities and public services broadly.

Based on data from the Tanjungpinang City Public Works and Spatial Planning Agency in 2021, a number of public infrastructure facilities were affected by the disaster, spread across almost all sub-districts, as shown in Table 1. Tanjungpinang Timur Sub-district was the area with the highest number of affected areas, including Cendrawasih, Pinang Hijau (Sidojadi), Mekar Sari, Karang Rejo, and Taman Harapan Indah and Kuantan. Infrastructure affected in this area included residential canals, neighborhood roads, drainage, and housing, with the types of disasters being floods and landslides.

Table 1. Data on Infrastructure Affected by Floods and Landslides in Tanjungpinang City in 2021

No	Subdistrict	Affected Areas	Affected Infrastructure	Consequences of Disaster
1	East Tanjungpinang	- Bird of Paradise - Green Pine (Sidojadi) - Blooming Sari - Karang Rejo - Wonoyoso - Sidomakmur - Beautiful Hope Park - Kuantan	- Settlement - Channel - Neighborhood Road - Housing area - Drainage	- Flood - Landslide
2	West Tanjungpinang	- Youth - Likes Swimming - Sulaiman Abdullah - Community Health Center - Bintan Center	- Major Arterial Road - Drainage Channel - Public Facilities - Housing area	- Flood

		- Sidojasa		
3	Bestari Hill	- Asri Airport - Sri Andana Channel - Gem of Charisma	- Road - Drainage Channel - Residential housing	- Flood - Landslide
4	Tanjungpinang City	- Police - Pasupati - Rawasari - New City-Bintan Plaza - Daeng Celak - New Bloom	- Road - Drainage Channel - Government Office	- Tidal Flood

Source: Tanjungpinang City Public Works and Public Housing Agency, 2021 (reprocessed)

Based on the table above, similar conditions were also found in Tanjungpinang Barat District, where areas such as Pemuda, Suka Berenang, and Bintan Center experienced disruptions to drainage channels, main roads, and public facilities due to widespread flooding. Bukit Bestari District showed damage to main roads, drainage channels, and residents' homes, even causing landslides in several areas. Meanwhile, Tanjungpinang Kota District was also affected by tidal flooding, which disrupted infrastructure in coastal areas. These various damages indicate that urban infrastructure in Tanjungpinang City is not fully prepared to face natural disasters, especially recurring flooding.

In 2024–2025, several public infrastructures in Tanjungpinang City were damaged by floods and tidal flooding that hit several sub-districts. Based on Table 2, Tanjungpinang Timur Sub-district was the most significantly impacted area, particularly on Jalan DI Panjaitan and Jalan Nusantara Km.12, where roads, drainage, and PDAM pipes suffered moderate to severe damage. Bukit Bestari experienced flooding that inundated the Puspondari housing complex and disrupted local roads. Damage was also recorded in Tanjungpinang Barat Sub-district, specifically at the airport intersection towards Kijang, which serves as a vital transportation access point. Meanwhile, tidal flooding in Pelantar II, Tanjungpinang Kota Sub-district, severely damaged the platform and coastal road.

Table 2. Infrastructure Damage Affected by Disasters in Tanjungpinang City
Source: Local News Media, 2025 (reworked)

No.	Subdistrict	Road Location	Types of Disasters	Affected Infrastructure	Level of Damage	Year
1	East Tanjungpinang	Jl. DI Panjaitan	Flood – Heavy Rain	Roads & Drainage	Medium – Heavy	2024
		Jl. Nusantara Km. 12	Flood – Heavy Rain	PDAM Roads & Pipes	Currently	2024
2	Bestari Hill	Puspondari Housing	Rain Flood	Neighborhood Road	Currently	2025
3	West Tanjungpinang	Airport intersection towards Kijang	Flood	Public Roads	Currently	2025
4	Tanjungpinang City	Platform II – Old Town	Tidal Flood	Coastal Walkways & Roads	Medium – Heavy	2024

As seen in the table above, this data demonstrates the crucial role of the Public Works and Spatial Planning Department as the frontline in handling and strengthening public infrastructure following natural disasters in Tanjungpinang City. Infrastructure damage became a concern when two landslides occurred at Simpang Melayu, Kota Piring, causing road damage and the collapse of traffic light poles. In the first incident, the response failed to include permanent repairs, leaving the area vulnerable to further landslides. Only after the second incident were repairs carried out quickly, although the process disrupted access to the main road and the activities of the surrounding community (Apriyani, 2025).

Based on the above explanation, this study will examine the steps that have been taken, the obstacles faced, and the strategies that can be implemented to increase the effectiveness of infrastructure recovery due to disasters with the title "The Role of the Public Works and Spatial Planning Agency in Handling Public Infrastructure Due to Natural Disasters in Tanjungpinang City in 2024".

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Role

A role can be defined as a set of behaviors expected of a person based on their position in society, reflecting the primary duties and responsibilities that must be carried out in accordance with applicable norms and regulations (Wawan Rahmadi, 2022). Roles also relate to the social function of individuals within a group or organization to effectively achieve common goals. T. Coser & Anthony Rosenberg in (Firdaus, 2022) define a role as a series of structural demands that include norms, expectations, prohibitions, and responsibilities that guide and support individuals in carrying out their functions within an organization. According to Soekanto (Soerjano Soekanto, 2013), there are several stages in carrying out a role, namely policy formulation, policy implementation, and coaching, supervision, and evaluation.

Policy formulation is the stage where the role begins with the formulation of policies that serve as the basis for the direction of action. This process includes identifying the problems faced, formulating the objectives to be achieved, and planning appropriate strategies or programs. The policy implementation stage is the stage where the role is actually carried out through concrete actions involving the utilization of available resources such as budget, workforce, and infrastructure. The coaching, monitoring, and evaluation stages are crucial to ensure the sustainability and improvement of the role's implementation going forward. Coaching is carried out to strengthen the capacity of implementers and improve the quality of performance. Supervision aims to monitor the extent to which policy implementation aligns with the established plan. Evaluation is conducted to assess the effectiveness and efficiency of role implementation and to provide a basis for improvements for the following period.

Public Works and Spatial Planning

Public works and spatial planning are fields related to the provision of basic infrastructure and the arrangement of regional space that supports social, economic, and environmental activities in a sustainable manner. The field of public works includes the construction and maintenance of physical facilities such as roads, bridges, drainage, and clean water and sanitation systems. Spatial planning focuses on the process of planning and controlling the use of space so that its use is in accordance with the function and carrying capacity of the environment. Law No. 26 of 2007 concerning Spatial Planning states that spatial planning is a system that includes spatial planning, spatial utilization, and control of spatial utilization. The goal of spatial planning is to create a safe, comfortable, productive, and sustainable regional spatial order.

The Public Works and Spatial Planning Agency (PUPR) is a technical agency under the regional government that handles government affairs in the fields of public works and spatial planning. This agency plays a crucial role in supporting regional development by providing basic infrastructure that supports the smooth flow of social and economic activities. The PUPR Agency's functions encompass the entire infrastructure development cycle, from planning and implementation to monitoring and evaluation (Febrianika, 2022). These functions include technical infrastructure planning, physical implementation (rehabilitation and reconstruction), and project supervision, guidance, and evaluation.

Public Infrastructure

Public infrastructure is the basic facilities and infrastructure provided by the government to support social, economic, and public service activities such as roads, bridges, drainage, and clean water. This infrastructure is important for improving the quality of life, supporting economic growth, and accelerating disaster recovery (Agustin, 2023). Based on Presidential Regulation Number 38 of 2015 concerning Government Cooperation with Business Entities in the Provision of Infrastructure, Article 1 Paragraph (2), it is stated that infrastructure is a public facility that includes the fields of transportation, roads, water resources, sanitation, telecommunications and informatics, electricity, energy, as well as education and health.

Public infrastructure is a physical facility built to support the functioning of a community's social and economic systems and ensure the sustainability of human activities in interaction with their environment (Wirabrata, 2011). The World Bank (1994) divides public infrastructure into three categories: economic public infrastructure that supports economic activities, social public infrastructure that supports social

activities, and administrative public infrastructure used for public administration services. Public infrastructure plays a crucial role in opening public access to basic resources and services, thus directly driving productivity and economic growth (Ritonga, 2020).

Handling Infrastructure Due to Natural Disasters

Managing public infrastructure after natural disasters is an integral part of the disaster-affected area management process. When a disaster occurs, damage to infrastructure not only hampers social and economic activities but also prolongs the community's recovery period (Febiola, 2024). Law Number 24 of 2007 concerning Disaster Management states that disaster infrastructure management consists of two main stages: rehabilitation and reconstruction. Rehabilitation aims to address minor to moderate damage and quickly restore basic services. Reconstruction is the process of rebuilding severely damaged infrastructure with an approach that considers improving its quality and resilience to future disaster risks.

Managing public infrastructure after a disaster aims to ensure that people can return to a decent, safe, and dignified life (Yulianto, 2023). Prompt infrastructure management allows for the resumption of basic public services such as access to education, health care, transportation, and clean water, which are crucial during the transition period. Infrastructure management also helps accelerate inter-regional connectivity, which is crucial for logistics distribution, the movement of people, and accessibility in affected areas. Disaster recovery is understood as a series of processes to restore the overall condition of an area and the functioning of basic public services (Yunus, 2024).

RESEARCH METHODS

This research uses a descriptive method with a qualitative approach to gain a deep understanding of the phenomenon under study. This approach is used because the problem under study relates to the role of institutions in managing post-disaster public infrastructure, which requires descriptive analysis to understand the process and its impacts. Qualitative research is a method based on an inductive mindset based on objective and participatory observation, aimed at understanding the meaning behind social phenomena (Suyitno, 2018). Qualitative research methods are approaches used to examine objects in their natural state, with the researcher as the primary tool in the data collection process, which is carried out through triangulation and employs inductive data analysis (Abdussamad, 2021).

The object of this research is the Role of the PUPR Agency in Handling Public Infrastructure Due to Natural Disasters in Tanjungpinang City located at Jl. Peralatan No.1 Km.7 Melayu Kota Piring, Tanjungpinang Timur District. The focus of the research is directed at the role of the Public Works and Spatial Planning Agency in handling public infrastructure due to natural disasters using Soekanto's role theory which includes policy formulation, policy implementation, as well as guidance, supervision, and evaluation. This research uses two types of data, namely primary data obtained through direct interviews with parties who have authority and are technically involved in handling infrastructure (Hasan, 2002) and secondary data obtained from various written documentation sources such as the Central Statistics Agency, internal agency reports, laws and regulations, academic literature, journals, and other official documents.

Data collection techniques were conducted through interviews and documentation. Interviews were conducted through face-to-face interactions between

researchers and informants relevant to the research topic (Fadhallah, 2021). Documentation was used to obtain data from various written or visual sources such as archives, official reports, books, photographs, or other documents. Data analysis used the Miles and Huberman model, which includes data reduction, data presentation, and conclusion drawing (Saleh, 2017).

Table 3. Research Informants

No	Informant	Amount
1	Head of Highways Division of the Public Works and Public Housing Agency	1 Person
2	Functional Road and Bridge Management Expert, DPUPR	1 Person
3	Head of Water Resources Division of DPUPR	1 Person
4	Head of the Rehabilitation and Reconstruction Section of BPBD	1 Person
5	Public	2 persons

Source: Researcher's Process, 2025

Based on the table above, informants were selected purposively, considering their involvement and knowledge in implementing disaster-related infrastructure management. The Head of the Highways Division and the Head of the Water Resources Division play strategic roles in formulating technical policies and making decisions. The Road and Bridge Management Functional Officer is directly involved in damage identification and technical supervision. The Head of the Rehabilitation and Reconstruction Section of the Regional Disaster Management Agency (BPBD) plays a role in disaster coordination. The community serves as informants to understand the impacts and responses to infrastructure management.

RESULTS AND DISCUSSION

Policy Formulation

The development of disaster-related infrastructure management policies in Tanjungpinang City is based on the applicable regulatory framework as a legal and technical basis. Law Number 24 of 2007 concerning Disaster Management serves as the primary legal umbrella governing the authority and responsibilities of local governments in disaster management. This regulation is reinforced by the Minister of Public Works and Public Housing Regulation concerning urban drainage and tidal flood management, the Regional Medium-Term Development Plan, and Tanjungpinang Mayor Regulation Number 49 of 2023, which explicitly states that the Highways Division has the authority to manage roads and bridges affected by natural disasters. The limitation of authority based on regulations is clearly evident in the division of infrastructure management responsibilities based on road status, whereby city roads are the full responsibility of the Public Works and Public Housing Agency, while national roads are under the authority of the National Road Implementation Agency.

The policy development process involves a series of systematic steps, starting with receiving a disaster report and ending with the policy being established and ready for implementation. These steps begin with receiving reports from the community, sub-districts, and relevant agencies, followed by verification through investigations and field

surveys. Following verification, the next step is a detailed identification of infrastructure damage, including measuring the extent of damage, documenting conditions, and compiling minutes or technical reports. The identification results are presented to internal and cross-agency coordination meetings to synchronize data, determine the division of authority, and establish priority locations for handling. A crucial step is the determination of disaster status through a Mayoral Decree, which serves as the legal basis for the use of disaster funds and the rapid implementation of infrastructure management measures. Once disaster status is established, the next step is the preparation of draft technical policies and planning documents, which serve as the basis for the Agency Work Plan, Regional Government Work Plan, and Budget Work Plan.

Policy Implementation

The infrastructure management policy is implemented through two mechanisms: self-management and construction service providers, depending on the extent of damage and the nature of the emergency. The self-management mechanism is applied to handle minor to medium damage requiring a rapid response, with a budget allocated for routine maintenance. Self-management allows the Public Works and Housing Agency (PUPR) to immediately undertake repairs without a time-consuming tender process, allowing for rapid restoration of infrastructure function. Meanwhile, large-scale reconstruction is carried out through construction service providers with a larger total construction budget to ensure the technical quality and resilience of the infrastructure to future disasters.

Cross-agency coordination is key to implementing infrastructure management policies. The Public Works and Housing Agency (PUPR) collaborates with the Regional Disaster Management Agency (BPBD) as the leading sector in disaster management, the Environmental Agency (Dishub) regarding waste and disaster-related material management, the Regional Water Company (PDAM) when infrastructure damage impacts clean water pipelines, and the National Road Agency (BRI) when damage occurs in border areas. This coordination is formalized through the establishment of a Post-Disaster Needs Assessment Team based on Tanjungpinang Mayoral Decree Number 462 of 2024. The team comprises a Coordination Team and an Implementation Team tasked with identifying infrastructure needs, collecting and clarifying post-disaster data, and compiling reports as the basis for determining priority infrastructure.

Guidance, Supervision, and Evaluation

Supervision of infrastructure implementation is carried out in layers through supervisory consultants and the internal technical team of the PUPR Agency, supported by monitoring by the Regional Disaster Management Agency (BPBD). Supervision aims to ensure the quality and compliance of the work with the technical standards stipulated in the planning documents. The technical team conducts regular inspections of the work site to monitor progress, identify technical obstacles in the field, and ensure that the materials used meet specifications. Supervision also covers administrative aspects such as compliance with the work volume and the contract, punctuality of implementation, and budget utilization according to the established plan.

Evaluation of work results is carried out through the preparation of a technical report containing the level of success of the handling, problems encountered during implementation, and recommendations for improvements for subsequent handling. The evaluation results are used as the basis for budget planning and infrastructure management policies in the following year. Community participation in the evaluation stage is still limited, primarily as a source of complaints and field information through

the RT/RW (neighborhood unit), but they still play an important role in providing feedback on the results of infrastructure management. Coaching is provided to the work implementers and the community regarding the maintenance of the repaired infrastructure to ensure optimal function and longevity.

CONCLUSION

The role of the Tanjungpinang City Public Works and Spatial Planning Agency in handling infrastructure affected by natural disasters has been carried out through three main stages: policy formulation, policy implementation, and guidance, supervision, and evaluation. This role has generally been carried out in accordance with the applicable regulatory framework such as Law Number 24 of 2007 concerning Disaster Management and technical regulations within the Ministry of Public Works and Public Housing (PUPR), although in practice a number of limitations have been found, especially related to the budget and geographical conditions of the region. Policy formulation is carried out based on the level of urgency, the impact on community mobility, and the availability of regional budgets through cross-sectoral coordination with the Regional Disaster Management Agency (BPBD), sub-districts, and neighborhood associations (RT/RW) as initial sources of information. Policy implementation is carried out through self-management mechanisms or construction service providers depending on the level of damage and the nature of the disaster emergency with adjustments to the geographical conditions of the Tanjungpinang region, which is dominated by coastal and hilly areas. Guidance, supervision, and evaluation are carried out in layers through supervisory consultants and the PUPR Agency's internal technical team and are supported by BPBD monitoring with evaluation of work results used as the basis for budget planning and subsequent handling policies.

The Tanjungpinang City Public Works and Public Housing Agency is advised to strengthen its disaster infrastructure management policy planning system by improving its comprehensive and sustainable disaster database so that policies are not only reactive but also preventive and long-term oriented. Post-work supervision intensity needs to be increased through regular inspections, especially in locations with high levels of vulnerability, such as coastal areas and slopes, by strengthening construction quality aspects from the early planning stages. The role of the Regional Disaster Management Agency (BPBD) as the leading sector in disaster management needs to be optimized, especially in coordinating cross-agency evaluation results into more integrated policy recommendations. Public participation needs to be strengthened through more systematic reporting mechanisms and involvement in the evaluation process so that disaster infrastructure management can be more effective, adaptive, and in accordance with real needs on the ground.

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