http://journal.uir.ac.id/index.php/JIAP
E-ISSN : 2622-934X
P-ISSN : 2502-9757

PUBLIKA :
Jurnal Ilmu Administrasi Publik
Vol. 12, No. 2 / 2026

Community-Based Assessment of Local Government and Community Capacity for Flood and Tidal Inundation Disaster Management in Pekalongan City

Shinta Permana Putri*

Urban and Regional Planning Study Program, Universitas Terbuka, South Tangerang

*) Corresponding Author
shintap@ecampus.ut.ac.id

Received : May 5, 2026; Accepted : August 18, 2026
DOI 10.25299/jiap.2026.28199

Abstract

This study aims to identify strategies for strengthening the capacity of local government and communities in managing floods and tidal inundation in Pekalongan City. A qualitative approach was employed in this research. Data were collected through interviews with forty-four community informants from flood-affected urban neighborhoods in Pekalongan City. Content analysis was applied as the main analytical method. The results show that communities in Pekalongan have several strengths in dealing with flooding and tidal inundation, including local knowledge, social solidarity, mutual cooperation, and community self-help initiatives. However, these capacities remain constrained by economic vulnerability, low levels of community participation in environmental management, limited adaptive capacity, and the weak performance of community-based disaster preparedness groups. On the other hand, the government has implemented various flood control programs and infrastructure projects, but their effectiveness is still constrained by limited budgets, slow responses to community needs, unequal distribution of assistance, and infrastructure that has not been able to keep up with land subsidence and land-use change. This study also identifies the potential to strengthen disaster management capacity through collaboration among universities, non-governmental organizations (NGOs), the private sector, and the optimization of the Musrenbang forum as a participatory planning platform. The study concludes that sustainable flood and tidal inundation management requires integrated capacity strengthening between local government and communities through collaborative, participatory, and community empowerment-based approaches. The findings imply that flood and tidal inundation management policies should not only focus on infrastructure development, but also on strengthening social capacity, institutional capacity, and long-term community participation.

Key Words : flood management, tidal flooding, community capacity, collaborative governance, disaster resilience

Introduction

Tidal flooding has become an increasingly serious coastal environmental issue in many coastal cities in Indonesia, including Pekalongan. This phenomenon is not only driven by tidal fluctuations but is also exacerbated by sea-level rise, land subsidence, global climate change, and increasing human pressures in coastal areas (El-fath et al., 2022). In recent years, tidal flooding in Pekalongan has shown an increasing trend in terms of frequency, duration, and inundation extent, significantly affecting the social, economic, and environmental conditions of local communities (Khairulbahri, 2022; Perdinan et al., 2023).

The impacts of tidal flooding in Pekalongan are directly experienced by local communities, particularly those living in coastal settlements. Recurrent seawater inundation has caused infrastructure damage, declining environmental quality in residential areas, disruptions to economic activities, and increased health risks (Ismanto et al., 2021). In addition, tidal flooding has triggered various social changes, including housing adaptation, shifts in livelihoods, and increased vulnerability among low-income communities (Asrofi et al., 2024; Sultana et al., 2025). These conditions indicate that tidal flooding is not merely a hydrological issue but a complex challenge involving governance, social, economic, and institutional dimensions (Zain et al., 2023).

Efforts to manage tidal flooding in Pekalongan have primarily focused on structural measures, such as the construction of embankments, road elevation, and drainage system improvements(Salim & Wibowo, 2024). Although these measures are essential, several studies have shown that structural approaches alone are insufficient to address the long-term and dynamic nature of tidal flooding (Yahya & Putri, 2025). Budget constraints, weak inter-agency coordination, and inadequate infrastructure maintenance often reduce the effectiveness of these policies (Irawan et al., 2025). At the same time, local government capacity in risk-based adaptation and mitigation planning continues to face significant challenges related to institutional capacity, human resources, and the availability of data and information (Rahardjo & Sari, 2025).

Beyond the role of local government, community participation is also a critical factor that has not yet been fully integrated into disaster management policies (Buchori et al., 2022). Coastal communities in Pekalongan have independently developed various adaptation strategies, such as raising house floors, constructing small protective barriers, and adjusting economic activities. However, these efforts are often fragmented, uncoordinated, and insufficiently supported by government policies (Ilmi et al., 2025). Limited community capacity to understand tidal flood risks, along with restricted access to information and resources, further increases vulnerability (Kartyasha, 2024).

In this context, strengthening the capacity of both local government and communities is essential for achieving sustainable tidal flood management (Song et al., 2025). Synergy between local authorities and communities is expected to produce more effective, inclusive, and sustainable management strategies (Buchori et al., 2022). Although several studies have examined tidal flooding in Pekalongan, most have focused primarily on physical and environmental aspects, such as infrastructure, sea-level rise, and land subsidence (Putri et al., 2024; Sarah et al., 2022; Yahya & Putri, 2025). Meanwhile, previous research on tidal flood management strategies has largely relied on document analysis or institutional perspectives, with limited attention to affected communities as the primary source of understanding local

management capacities (Miftakhudin, 2021). Comprehensive studies that examine the strengthening of local government and community capacity in tidal flood management, with particular emphasis on the perspectives of affected communities, remain limited. Therefore, this study aims to identify strategies for strengthening the capacity of local government and communities in managing tidal flooding in Pekalongan through a more participatory and context-specific approach.

Method

This study employed a qualitative research approach. The research was conducted in urban sub-districts affected by flooding and tidal inundation in Pekalongan, including Kandangpanjang, Klego, Bandengan, Panjang Wetan, Krapyak, Panjang Baru, Degayu, Pasirkratonkramat, Padukuhankraton, Kauman, and Tirto. Data were collected through in-depth interviews with 44 informants and field observations. The informants were distributed across eleven urban sub-districts, with an average of three to four informants selected from each sub-district to represent the predefined participant criteria. Most informants were between 40 and 60 years old and had diverse occupational backgrounds, including private-sector employees, homemakers, informal workers, fishermen, traders, entrepreneurs, and religious leaders. In addition, several informants held leadership roles within their communities, such as heads of neighborhood associations (RT/RW), and were actively involved in community-based disaster preparedness organizations. The number of informants was considered sufficient as the data obtained had reached the point of saturation. This was indicated by the fact that additional interviews no longer yielded new themes, categories, or substantial insights into community perceptions of flood and tidal inundation management. The informants were selected based on several criteria, including local residents who had direct experience with flooding and tidal inundation for more than five years, community representatives actively involved in disaster preparedness groups and environmental activities, and community leaders with experience in coordinating emergency response efforts. Interviews lasted between 45 and 90 minutes, depending on the depth of information provided by the informants and their experiences with flood and tidal inundation. Prior to the interviews, all informants were informed about the purpose of the study, the voluntary nature of their participation, and their right to withdraw from the study at any stage of the interview. Content analysis was employed as the analytical method in this study through the following stages: (1) determining the units of analysis by selecting data relevant to the research focus, such as interview excerpts, statements, and paragraphs containing significant meanings; (2) classifying data into thematic categories based on similarities in issues, themes, or meanings; (3) coding each category to facilitate data identification, management, and tracing during the analytical process; (4) interpreting the data to identify patterns, trends, relationships, and implications emerging from the findings; and (5) verifying the results through member checking with informants and peer debriefing with colleagues or other parties to ensure the validity of interpretations and maintain the credibility of the analysis.

Results and Discussion

A. Community Strengths in Flood and Tidal Inundation Management in Pekalongan City

Community strengths represent internal factors that serve as essential assets in enhancing adaptive capacity and resilience to flood and tidal inundation disasters. In the context of Pekalongan City, communities have demonstrated several strengths that can serve as key resources in flood and tidal inundation management. First, the communities in Pekalongan possess local knowledge regarding flood and tidal inundation patterns. This knowledge has been developed through their long-term direct experience in dealing with recurrent flooding and tidal inundation. Such knowledge enables communities to improve their responses to flooding and anticipate potential losses and damages.

These findings are supported by statements from community informants, who explained that residents are generally able to predict when flooding is likely to occur. In addition, the community understands that certain conditions, such as embankment failures in specific areas of Pekalongan, can become major indicators of more severe flooding in surrounding areas. Information regarding potential hazards is commonly disseminated through loudspeakers by local administrative authorities or informally among residents. As a result, communities are able to prepare for flooding by securing important belongings, protecting houses from water intrusion, and preparing for evacuation when necessary.

The second strength identified among communities in Pekalongan is social capital. In this context, social capital is reflected in social solidarity and mutual cooperation practices established among community members during the prevention, emergency response, and post-disaster recovery phases. Informants explained that communities do not rely solely on government assistance but also initiate independent resource mobilization through their social networks, including family members, neighbors, and relatives outside the area. Communities also actively utilize social media to seek assistance from external parties, which is then collectively managed and distributed to affected residents during flood events as expressed below:

> *"No, it was all self-funded by the community. The assistance came from local residents. I posted our situation on Facebook, and people from other regions, including my friends outside Java, donated money. I used those donations to help the affected community".*

Furthermore, community social solidarity is reflected in aid distribution mechanisms based on fairness and collective concern. Informants stated that when government assistance was insufficient, residents who received larger amounts of aid were willing to share with those who had not yet received support, even though the assistance was formally considered an individual entitlement. This finding is illustrated by the following interview excerpt:

> *"For example, if ten households receive aid packages while others receive nothing, I ask those who received assistance to share a small portion—about one kilogram each—so I can distribute it to those who were left out. As the neighborhood leader, I feel responsible for everyone. Some people say, 'That's their entitlement,' and that's true. But we had already submitted the list of beneficiaries, so why were some people excluded? In the end, the same people keep receiving assistance, even the names of those who have already passed away are still on the list".*

This practice demonstrates strong values of togetherness and social concern within the community.

During the prevention phase, social capital is also reflected in community mutual cooperation activities, such as cleaning drainage channels and removing waste that obstructs

water flow. In the recovery phase, communities also demonstrated collective action through joint efforts to repair damaged embankments. These activities not only help reduce flood impacts but also strengthen social cohesion among residents.

In addition to social capital, communities in Pekalongan have also demonstrated self-help initiatives in flood and tidal inundation management. This is reflected in their ability to independently fulfill community needs through fundraising, the utilization of community group funds, and direct labor contributions, as illustrated in informant statements. Under limited conditions, residents collect contributions to meet basic needs not covered by external assistance, such as purchasing gas for cooking donated food supplies. Moreover, the use of community group funds has become a collective strategy to address logistical shortages during disasters.

Figure 1. Community Self-Help Activities in Road Elevation Efforts in Pekalongan City

Source: Field Observation, 2025

On the other hand, some communities also organize fundraising activities for elevating inundated roads and conducting regular maintenance of drainage systems, as shown in Figure 1. These contributions are provided not only in material form but also through labor participation. These findings indicate that communities are not entirely dependent on external assistance; instead, they actively mobilize available local resources. Labor participation represents a tangible form of active community involvement in disaster management, particularly when financial limitations become a major constraint.

B. Community Weaknesses in Flood and Tidal Inundation Management in Pekalongan City

In managing floods and tidal inundation, communities in Pekalongan still face several limitations identified through this study. The first limitation can be observed in the community's high dependence on vulnerable economic sectors. This condition is reflected in informants' statements indicating that most residents work as batik laborers, construction workers, or informal workers whose livelihoods are highly dependent on environmental conditions. When flooding occurs, work activities are disrupted or even completely halted, causing communities to lose their daily income. This finding is supported by the following quotation:

"Almost 80% of us make our living from batik, while about 20% work in factories. But once the floods come, our livelihoods are thrown into chaos".

Furthermore, based on informants' accounts, the impacts of flooding and tidal inundation on employment activities are particularly evident in the batik sector, which is one of the dominant livelihoods in Pekalongan. Informants explained that during flooding events, production processes such as nyolet (batik coloring) and drying activities cannot be carried out, resulting in the suspension of the entire production process. This condition affects not only workers but also business owners, who experience material losses and, in some cases, temporary business collapse.

These impacts have also triggered a broader domino effect on the economy of Pekalongan. Informants stated that flooding and tidal inundation occurring in one particular area can affect many other areas within the city, as expressed below:

"The flooding mainly affects Pasirsari and Tegaldowo, but the economic impact can be felt across almost half of Pekalongan City. That's because many of the batik production centers and batik business owners are based in Tegaldowo and Pasirsari. When these areas are flooded, work comes to a halt because the business owners themselves are also flooded."

This situation occurs because batik production in Pekalongan operates through an interconnected production chain involving multiple areas in each stage of the process. Therefore, it can be concluded that community limitations in dealing with floods and tidal inundation are caused not only by environmental factors but also by vulnerable economic structures, limited livelihood alternatives, and restricted accessibility.

The second limitation relates to the availability of resources in responding to floods. The high dependence of Pekalongan communities on vulnerable economic sectors directly affects their limited financial capacity to respond to flooding and tidal inundation. This is reflected in the fact that most affected residents do not have emergency savings to survive during flood events. Informants revealed that household financial allocations are still primarily focused on meeting daily basic needs, leaving little or no room for emergency funds. This finding is illustrated by the following interview excerpt:

"Our income is already low, so there's nothing left to save. We've simply come to accept the situation. Instead of spending our money on other necessities, we have to use it to buy fill soil to raise our homes."

"At that time, people weren't thinking about rice. They were more concerned about saving their homes. They could go without eating—as long as they were safe first."

In this context, the absence of financial reserves is not merely caused by a lack of awareness regarding disaster risks, but rather by limited and unstable incomes. Informants explained that uncertain earnings only allow them to fulfill daily consumption needs and often place them in financially precarious conditions. Under such circumstances, allocating a specific budget for disaster preparedness becomes difficult to achieve. These financial limitations also contribute to the community's low adaptive capacity in dealing with floods.

Based on informants' statements, communities attempt to survive by collectively saving money or setting aside expenditures to purchase construction materials. In many cases, residents sacrifice basic daily needs, such as food expenses, to support these adaptation efforts. This condition indicates that the adaptation strategies adopted by the community are survival-based rather than supported by adequate capacity. The situation is further exacerbated by land subsidence, which continuously forces residents to elevate their houses and results in repeated

financial losses. These impacts are felt more severely by vulnerable groups, such as elderly residents who are no longer economically productive. In such cases, they often no longer possess the capacity to improve or repair their housing conditions.

Another limitation can be observed in community participation in environmental management. Not all residents are actively involved in collective community work activities within their neighborhoods, and youth participation generally remains limited. This condition is influenced by both awareness and economic factors. Informants stated that community clean-up activities are not conducted regularly and that participation among residents tends to be uneven. This finding is supported by the following quotation:

""No, public awareness is still very low. Even though people have been told not to throw their garbage into the river, they still keep doing it".

"Yes, but not on a regular schedule. It's usually about once a month. If there's nothing that needs to be done through community work, then it doesn't happen very often".

Although some residents recognize the importance of environmental management in reducing flood risks, this awareness is not equally distributed across the community. While certain individuals actively participate in environmental management efforts, others remain passive and expect flood-free conditions without directly contributing to mitigation efforts. As a result, many residential areas are still poorly maintained in terms of environmental cleanliness, as illustrated in Figure 2.

Figure 2. Environmental Conditions Surrounding Residential Areas in Pekalongan City

Source: Field Observation, 2025

Another limitation identified in this study is the still-low level of community participation in expressing aspirations regarding flood and tidal inundation management in Pekalongan. Not all residents actively voice their concerns or suggestions related to disaster management efforts. Community perspectives toward flood management also vary considerably. This condition is influenced by the perception that flood management is solely the government's responsibility, as well as by feelings of pessimism regarding the effectiveness of flood mitigation efforts. Informants' statements below reveal tendencies toward individualism, limited participation in community forums, and minimal involvement in socialization activities.

"When a disaster happens, the government is the one that should handle it".

"No, I never have. I've never attended any disaster preparedness awareness sessions".

"Back when I was in Tirto, I used to call the residents together. Here, that doesn't happen. People just look after themselves. It's more like, 'I don't care.' That's how things are in this neighborhood".

C. Opportunities in Flood and Tidal Inundation Management in Pekalongan City

In the management of floods and tidal inundation in Pekalongan, several opportunities were identified through this study. The first opportunity lies in the existence of various government programs and interventions aimed at flood and tidal inundation control at the national, provincial, and municipal levels. These interventions have been implemented through strategic programs and infrastructure development initiatives, including flood and tidal inundation control projects, river system development, coastal protection infrastructure, and the improvement of urban facilities and infrastructure. The existence of these programs, policies, and cross-level governmental interventions represents an important external opportunity to support flood and tidal inundation management efforts in Pekalongan. This potential can be optimized through the integration of government policies with community capacity and participation, thereby creating a more effective, integrated, and sustainable flood management system.

The second opportunity is reflected in the potential for collaboration with universities, non-governmental organizations (NGOs), and the private sector. In practice, based on informants' statements, assistance during flood and tidal inundation events has involved various external actors, such as religious organizations, social foundations, and universities that have provided logistical support to affected communities. In addition, the private sector has also been involved through Corporate Social Responsibility (CSR) programs, although such involvement has not yet been fully optimized. This finding is illustrated by the following interview excerpt:

"When flooding occurs, the assistance usually comes from organizations like Muhammadiyah, Nahdlatul Ulama, or other charitable and community organizations. We did receive support from a corporate social responsibility (CSR) program once, but we no longer have access to it. We don't really know how to connect with them."

However, the findings also indicate that existing collaborative practices remain sporadic and have not been institutionalized effectively. Communities still have limited access to information regarding assistance mechanisms, particularly those related to private sector CSR programs, resulting in the underutilization of available support opportunities. In fact, the presence of these external actors represents a significant opportunity for strengthening flood and tidal inundation management in Pekalongan if managed more systematically through network strengthening, government facilitation, and increased community capacity for partnership development.

The third opportunity is the availability of the Musrenbang forum as a formal channel for community aspirations and participation. Based on informants' statements, communities have utilized the Musrenbang forum to propose various needs related to flood and tidal inundation management, such as road elevation projects and environmental infrastructure improvements. This finding indicates that an institutionalized participatory mechanism for involving communities in development planning processes is already in place. Although the utilization of the Musrenbang forum has not yet produced optimal outcomes, its existence remains an important opportunity if managed more effectively.

D. Challenges in Flood and Tidal Inundation Management in Pekalongan City

Based on this study, several challenges remain in flood and tidal inundation management in Pekalongan. The first challenge is the suboptimal implementation of disaster awareness programs and emergency response training organized by the government. This condition may be caused by several factors, including the limited frequency of training programs, approaches that remain largely theoretical, unequal participant coverage, and the lack of continuity and follow-up after training activities. This finding is reflected in informants' statements below:

> *"There have been training sessions, but they are mostly theoretical. Besides, they are not conducted regularly, not even once a year."*

According to informants, the implementation of training activities has not fully reached all segments of the community. Participants tend to be limited to certain groups closely connected to local administrative structures, such as neighborhood associations (RT/RW), resulting in unequal participation. There are even indications that the same individuals repeatedly participate in these activities, limiting the transfer of knowledge to the wider community. This finding demonstrates weaknesses in information dissemination mechanisms and program inclusiveness. On the other hand, informants also emphasized that disaster awareness and outreach activities remain a major weakness. Information regarding training and disaster education has not been disseminated widely and evenly across the community. In some cases, awareness and training activities are perceived as being conducted only after flooding has already occurred, making them appear reactive and less beneficial for disaster mitigation efforts.

The second challenge is the absence of a well-organized community-based early warning system. This finding is supported by informants' statements consistently indicating that there is no structured and reliable early warning mechanism before flood events occur. Warnings are generally delivered only when flooding has already started or immediately before the impacts are felt. Furthermore, informants explained that information dissemination usually occurs only during specific emergency situations, such as embankment failures, as one informant explained:

> *"No, there is usually no warning. The only time we receive a warning is when an embankment breaches. The announcement is made through the loudspeakers, telling residents to be careful because an embankment has collapsed and asking them to join the community in emergency response efforts. However, for regular tidal flooding, even if it occurs repeatedly, there is usually no warning".*

However, for routine and gradually occurring floods or tidal inundation events, such warnings are generally absent, forcing communities to rely mainly on personal experience as a reference.

The third challenge is the suboptimal performance of community-based disaster preparedness groups. Informants indicated that although such groups have been established at the urban sub-district level, their implementation in practice has not been effective. According to informants, disaster preparedness groups have not functioned optimally due to weak coordination and management. Existing teams are considered "not well-controlled," resulting in ineffective performance. In addition, informants suggested that the low effectiveness of these groups is influenced by the limited capacity of individual members. During emergency situations, members tend to prioritize personal or household interests, such

as securing their own belongings, thereby reducing the effectiveness of collective disaster response efforts. Furthermore, the limited performance of disaster preparedness groups is also related to the lack of continuous guidance and capacity strengthening from relevant institutions.

The fourth challenge concerns limited government budgets for flood and tidal inundation management in Pekalongan. Informants revealed that government funding capacity, particularly at the urban sub-district level, remains insufficient to address all flood management needs comprehensively. This finding is illustrated by the following interview excerpt:

> *"The government has made various efforts, but they still have not been fully effective. Perhaps budget constraints are one of the reasons. We also understand that the urban village administration receives only a limited budget, and once it is divided among all the neighborhood associations (RWs), it is simply not sufficient".*

Available budget allocations must be distributed across various neighborhood units (RW), resulting in relatively small funding amounts that are inadequate for managing complex flood-related problems. Consequently, many disaster management programs cannot be implemented optimally or evenly across affected areas.

On the other hand, informants also noted that although the government has attempted to implement various flood management programs, many initiatives remain incomplete. Budget limitations that have not significantly increased over time have caused several programs to stop midway or become unsustainable. As a result, the outcomes achieved have not been sufficient to significantly reduce flood and tidal inundation risks. These findings emphasize that budget constraints remain one of the key factors hindering the effectiveness of flood and tidal inundation management.

Another challenge relates to the effectiveness of flood control infrastructure constructed by the government. From the community perspective, flood and tidal inundation control infrastructure has not yet demonstrated optimal performance. Informants explained that various infrastructures, such as embankments, water pumps, drainage systems, and elevated roads, still face limitations in terms of quality, capacity, and integration as reflected in the following quotes:

> *"Nowadays, Kramatsari and Pasirsari rely entirely on the pumps. Even when it isn't raining, the river level is high, so if the embankment cracks or breaches, the area will flood anyway".*
>
> *"The problem now is that the embankment isn't high enough. Another issue is that the irrigation channels or drainage leading to the pumps are still not functioning properly".*

In addition to technical issues, informants also highlighted problems related to unequal infrastructure development. As a result, some areas must wait for years before receiving infrastructure interventions, despite already facing urgent conditions. In some cases, certain roads have not been elevated for more than a decade, even though proposals have repeatedly been submitted.

Another major challenge in flood and tidal inundation management in Pekalongan is land subsidence. Informants indicated that continuous land subsidence directly affects the effectiveness of existing flood control infrastructure. According to informants, land subsidence causes infrastructure such as embankments to decrease in elevation within a relatively short period after construction. Consequently, embankments originally designed to prevent flooding become inadequate, allowing water to overflow into residential areas.

Another challenge is land-use change, which further exacerbates flood and tidal inundation conditions in Pekalongan. Informants explained that the conversion of water catchment areas, such as rice fields, fishponds, and open spaces, into built-up areas has reduced the environment's capacity to absorb and retain water. Rapid urban development, including the construction of housing complexes, commercial areas, and hotels, has replaced the natural functions of these lands as water absorption areas. In addition, groundwater extraction by these developments is also believed to contribute to land subsidence, which ultimately worsens flood and tidal inundation risks.

The suboptimal distribution of government assistance also represents a challenge in flood and tidal inundation management in Pekalongan. Informants stated that the assistance provided has not been distributed evenly in terms of quantity, target beneficiaries, or types of support delivered. According to informants, disparities in aid distribution remain evident, with some communities receiving limited assistance while others receive none at all as expressed by one of the informants in the following quotation:

> *"We didn't receive anything from the government—not even boxed meals or other basic assistance".*

In several cases, the assistance provided was also not proportional to actual needs in the field. These findings indicate that disaster assistance has not yet been designed comprehensively in accordance with the real needs of communities during emergency situations.

In addition, the Pekalongan City Government is perceived as insufficiently responsive in addressing community concerns and conditions related to flood and tidal inundation management. This condition also poses a challenge to the effectiveness of disaster management. Informants indicated that follow-up processes regarding community reports and proposals are often slow, repetitive, and do not always result in concrete action. Communities frequently have to submit repeated reports before receiving responses from the government. At the same time, informants noted that government responses tend to be reactive, with action often taken only after severe damage or emergency situations, as reflected in the following quote:

> *"Yes, the response is very slow. They only come after the embankment has already failed"*
>
> *"We have to report it not just once or twice, but at least three times before any action is taken. They don't respond immediately."*
>
> *"Nothing ever seems to get done. They keep coming to conduct surveys, but no action is ever taken"*

In several cases, interventions were only implemented after incidents became viral or attracted widespread public attention. These findings suggest that low government responsiveness not only delays technical disaster management efforts but also reduces public trust. This limitation represents a significant challenge in flood and tidal inundation management because, without rapid, accurate, and sustainable responses, mitigation and adaptation efforts cannot be implemented effectively.

E. Strategies for Strengthening the Capacity of Local Government and Communities in Flood and Tidal Inundation Management in Pekalongan City

Strengthening the capacity of local government and communities in flood and tidal inundation management in Pekalongan is a crucial aspect of developing an effective and sustainable disaster management system. Based on the SWOT analysis presented in Table 1,

communities possess several key strengths, including direct experience in dealing with floods and tidal inundation, contextual local knowledge, and social capital reflected in solidarity and mutual cooperation. These conditions reinforce previous studies highlighting that community adaptation strategies based on local knowledge and social capital play an important role in improving resilience to coastal flooding and enhancing the effectiveness of disaster risk reduction efforts (Aksa & Afrian, 2022; Gisevius et al., 2024; Sawaneh et al., 2024; Setiawan, 2023).

In addition, the existence of community self-help initiatives indicates that communities are not entirely dependent on government assistance but already possess basic capacities to adapt independently. These findings demonstrate that communities should not merely be viewed as aid recipients, but also as important actors capable of developing local adaptation mechanisms through the utilization of their knowledge and social networks. This finding expands previous perspectives that tended to position communities primarily as beneficiaries of government programs (Miftakhudin, 2021).

Furthermore, existing opportunities, such as government programs and interventions as well as collaboration potential with universities, non-governmental organizations (NGOs), and the private sector, can be utilized to strengthen synergy between government and communities. The development of community-based flood management systems supported by multi-stakeholder collaboration represents an important strategy for improving disaster management effectiveness. In addition, the Musrenbang forum can be optimized as a platform to bridge community aspirations with government policies, thereby producing planning processes that are more participatory and responsive to local needs. These findings complement previous studies that primarily focused on infrastructure and government policies by demonstrating that the effectiveness of flood and tidal inundation management is also strongly influenced by the quality of social collaboration and active community involvement in decision-making processes (Miftakhudin, 2021; Putri et al., 2024).

However, capacity strengthening efforts still face various weaknesses, both at the community and institutional levels. Consistent with previous studies, low levels of community participation in planning and environmental management, the suboptimal performance of disaster preparedness groups, and limited community financial and adaptive capacities remain important challenges that need to be addressed (Dewa et al., 2023; Kirugumi & Reyes, 2025). In this context, local governments play a strategic role in improving community technical capacities through training, assistance, and strengthening community-based institutions. At the same time, economic diversification efforts should also be encouraged to reduce community dependence on vulnerable economic sectors that are highly affected by flooding and tidal inundation. This finding is in line with previous research emphasizing that the diversity of livelihood assets plays an important role in improving community adaptive capacity in responding to environmental shocks and disasters (Prayitno et al., 2025).

Moreover, various external threats, such as limited disaster awareness programs, inadequate flood control infrastructure, land subsidence, and the slow government response to community aspirations, indicate governance gaps in disaster management. Therefore, stronger coordination between government and communities is needed, particularly in enhancing community preparedness based on local knowledge and strengthening social networks within emergency response mechanisms. Information transparency, especially in

the distribution of assistance, is also an important aspect in increasing public trust in government institutions.

Thus, strengthening the capacity of local government and communities should be carried out in an integrated manner through collaborative and participatory approaches. The government should not only function as a provider of policies and infrastructure but also as a facilitator that encourages community empowerment. Meanwhile, communities should act as key actors in field-level implementation through the utilization of local knowledge and social capital. These findings are consistent with previous studies emphasizing that disaster management capacity strengthening becomes more effective when implemented through collaboration between government and communities by utilizing local knowledge, active community participation, and responsive and sustainable institutional support to improve regional resilience adaptively (Binta et al., 2026).

Table 1. SWOT Analysis of Strategies for Strengthening the Capacity of Local Government and Communities in Flood and Tidal Inundation Management in Pekalongan City

	STRENGHTS	WEAKNESS
	S1. Communities possess direct experience and local knowledge regarding flood and tidal inundation patterns. S2. Communities have strong social capital reflected in social solidarity and mutual cooperation during flood events. S3. Community self-help initiatives for collective interests have already been established.	W1. Limited community financial capacity in responding to floods. W2. Low community participation in expressing aspirations and concerns. W3. Low community participation in environmental management. W4. The role of community-based disaster preparedness groups has not yet been optimized. W5. Limited involvement of younger generations in flood management efforts. W6. High community dependence on vulnerable economic sectors. W7. Low adaptive capacity of communities in dealing with floods.
OPPORTUNITIES	S-O	W-O
O1. The existence of government programs and interventions related to flood and	1. Strengthening community-based flood management systems (S1–S3, O1). 2. Developing multi-stakeholder community-	1. Enhancing community technical capacity and adaptive capability through cross-sector collaboration (W3, W4, W7, O1, O2).

tidal inundation control. O2. Opportunities for collaboration with universities, non-governmental organizations (NGOs), and the private sector. O3. The availability of the Musrenbang forum as a formal channel for community aspirations.	based collaboration in flood management systems (S1–S3, O1, O2). 3. Optimizing the Musrenbang forum through active community participation (S1, O3).	2. Strengthening community participation in flood management planning through the utilization of the Musrenbang forum (W2, O3). 3. Promoting adaptive economic diversification through government programs and Corporate Social Responsibility (CSR) support (W1, W6, O1, O2). 4. Strengthening youth involvement through collaboration with universities and community organizations (W5, O2).
THREATS	S-T	W-T
T1. Limited disaster awareness programs and emergency response training provided by the government. T2. Ongoing land subsidence. T3. Land-use change and the development of housing, industrial, and hotel areas. T4. Flood and tidal inundation control infrastructure provided by the government has not yet functioned optimally. T5. The distribution of flood assistance by the government remains suboptimal. T6. Limited government budgets for flood management efforts.	1. Strengthening community preparedness based on local knowledge, self-help initiatives, and social capital in addressing limited disaster awareness programs, unequal aid distribution, and slow government responses (S1–S3, T1, T5, T7). 2. Strengthening social capital, self-help initiatives, and local innovation as adaptive solutions to respond to limited infrastructure and structural government support (S2, S3, T4, T6). 3. Strengthening social networks and community-based emergency response mechanisms to ensure effective emergency responses and the fulfillment of basic needs during flood events (S2, T5, T7).	1. Strengthening disaster preparedness institutions in response to limited government support (W4, T1, T5, T7). 2. Improving access to information and transparency in aid distribution (W2, T5). 3. Strengthening the economy of vulnerable communities facing recurring disasters and budget limitations (W1, W6, T2, T6). 4. Enhancing community adaptive capacity. 5. Strengthening the role of communities and youth in environmental management and land-use monitoring to minimize the impacts of uncontrolled development (W3, W4, W5, T3). 6. Increasing community involvement in non-

T7. Slow government response to community aspirations and concerns.	4. Strengthening local adaptive capacity in responding to environmental change threats (S1, T2, T3).	structural flood mitigation as a response to the limited effectiveness of flood and tidal inundation control infrastructure (W4, T4, T6). 7. Enhancing community adaptive capacity to address the impacts of land subsidence through adjustments in settlement behavior and the utilization of local resources (W1, W7, T2).

Source: Data Processing, 2026

Conclusion

The main findings of this study indicate that communities possess important assets in the form of experience-based local knowledge, social solidarity, and self-help initiatives, which serve as the primary foundation for building resilience to flooding and tidal inundation. However, these capacities have not yet been fully optimized due to economic vulnerability, low participation in environmental management, limited adaptive capacity, and the ineffective performance of community institutions such as disaster preparedness groups. On the other hand, the government has implemented various flood control programs and infrastructure projects. However, from the community's perspective, their effectiveness remains constrained by limited budgets, low responsiveness, unequal distribution of assistance, and infrastructure that has not been able to keep pace with land subsidence and land-use change. Theoretically, these findings underscore the importance of a community-based disaster management perspective, particularly the roles of social capital, local knowledge, community participation, and collaboration between communities and government in strengthening disaster resilience. The findings provide additional empirical evidence from the context of recurrent flooding and tidal inundation in Pekalongan City, thereby supporting previous studies that emphasize collaborative and community-centered approaches to disaster management. Practically, the findings highlight the importance of strengthening synergy between government and communities in flood and tidal inundation management systems. Based on the research findings, flood and tidal inundation management policies in Pekalongan should be directed toward: (1) strengthening community adaptive capacity through economic empowerment programs and sustainable disaster training; (2) strengthening community-based disaster preparedness institutions through government funding support and assistance; (3) integrating flood management planning through multi-stakeholder collaboration; (4) improving government responsiveness to community aspirations; and (5) implementing spatial planning control to reduce land-use change and strengthen water infiltration functions. In addition, long-term policies should consider adaptation strategies to address land subsidence as a key disaster risk factor in the region. Future research should incorporate the perspectives of government agencies, disaster

management agencies, and other relevant stakeholders, as well as documentary and technical evidence, to provide a more comprehensive assessment of disaster management capacity.

Acknowledgement

The authors would like to express their sincere gratitude to LPPM Universitas Terbuka for the financial support provided for this research. The authors also extend their appreciation to all informants in Pekalongan for their valuable information and support throughout the research process.

References

Aksa, F. I., & Afrian, R. (2022). Community adaptation strategies toward tidal flood: A Case study in Langsa, Indonesia. *Jamba: Journal of Disaster Risk Studies*, *14*(1), 1–9. https://doi.org/10.4102/JAMBA.V14I1.1258

Asrofi, A., Giyarsih, S. R., & Hadmoko, D. S. (2024). The Impact Of Tidal Floods On Poor Households In The Sayung Coast, Demak Regency, Indonesia. *Indonesian Journal of Geography*, *54*(3), 456–465. https://doi.org/10.22146/ijg.94063

Binta, R., Paavola, J., Ford, J. D., & Novo, P. (2026). Progress in Disaster Science Improving disaster preparedness and recovery of Bangladesh riverbank erosion areas : Insights from household perceptions and practices. *Progress in Disaster Science*, *29*(100526), 1–15. https://doi.org/10.1016/j.pdisas.2026.100526

Buchori, I., Zaki, A., Pangi, P., Sejati, A. W., Pramitasari, A., & Liu, Y. (2022). Adaptation strategies and community participation in government-led mitigation projects: A comparison between urban and suburban communities in Pekalongan, Indonesia. *International Journal of Disaster Risk Reduction*, *81*(June), 103271. https://doi.org/10.1016/j.ijdrr.2022.103271

Dewa, O., Makoka, D., & Yusuf, O. A. A. (2023). Measuring community flood resilience and associated factors in rural Malawi. *Journal of Flood Risk Management*, *16*(1), 1–21. https://doi.org/10.1111/jfr3.12874

El-fath, D. D. I., Atmodjo, W., Helmi, M., Widada, S., & Rochaddi, B. (2022). Analisis Spasial Area Genangan Banjir Rob Setelah Pembangunan Tanggul di Kabupaten Nilai MAPE =. *Indonesian Journal of Oceanography (IJOCE)*, *04*(01), 96–110. https://doi.org/10.14710/ijoce.v4i1.13254

Gisevius, K., Niesters, L. M., Larasati, A., & Braun, B. (2024). Local and translocal social capital in flood adaptation: evidence from Indonesian coastal communities. *Environmental Hazards*, *7891*, 1–21. https://doi.org/10.1080/17477891.2024.2424310

Ilmi, W. Z., Sunarharum, T. M., Santoso, H., & Prihanto, Y. (2025). Narrative Research in Climate Change Adaptation - Learning from Communities Resilience in Informal Area. *IOP Conf. Series: Earth and Environmental Science*, *1447*(012005), 1–11. https://doi.org/10.1088/1755-1315/1447/1/012005

Irawan, B., Syarifudin, & Budihardjo, M. A. (2025). Evaluation of drainage system and flood management in Semarang city : A case study of kali Semarang and its impact on flood and tidal flood reduction. *Edelweiss Applied Science and Technology*, *9*(2), 1609–1619. https://doi.org/10.55214/25768484.v9i2.4848

Ismanto, K., Pratikwo, S., Madusari, B. D., & Christianto, A. (2021). Analisis Kebutuhan Masyarakat Terdampak Banjir Rob: Studi Kasus Kota Pekalongan. *Jurnal Litbang Kota*

Pekalongan, *19*(1), 20–28.

Kartyasha, A. A. (2024). Penilaian Keterkaitan Kerentanan Sosial terhadap Kapasitas Masyarakat pada Bencana Banjir Rob di Kecamatan Wonokerto. *Kajen: Jurnal Penelitian Dan Pengembangan Pembangunan*, *8*(1), 1–18.

Khairulbahri, M. (2022). The qualitative analysis of the nexus dynamics in the Pekalongan coastal area, Indonesia. *Scientific Reports*, *12*(1), 1–16. https://doi.org/10.1038/s41598-022-15683-9

Kirugumi, G., & Reyes, M. (2025). Assessing Adaptive Capacity of Urban Coastal Communities to Flooding: The Case of La Paz District, Philippines. *Environment and Urbanization ASIA*, *16*. https://doi.org/10.1177/09754253251397216

Miftakhudin, S. (2021). STRATEGI PENANGANAN BANJIR ROB KOTA PEKALONGAN. *Jurnal Litbang Kota Pekalongan*, *19*(1), 29–38.

Perdinan, Ryco, F. A., Syafararisa, D. P., Suvany, A., Sabilla, C. J., Revia, M., & Ikrom, M. (2023). Tidal Flood Hazard Assessment in Pekalongan City, Central Java. *IOP Conf. Series: Earth and Environmental Science*, *1266*(012058), 1–12. https://doi.org/10.1088/1755-1315/1266/1/012058

Prayitno, G., Auliah, A., Efendi, A., Hayat, A., & Subagiyo, A. (2025). The Role of Livelihood Assets in Affecting Community Adaptive Capacity in Facing Shocks in Karangrejo Village , Indonesia. *Economies*, *13*(1), 1–17.

Putri, S. P., Yahya, W., & Hidayah, U. (2024). Kajian Respon Masyarakat terhadap Pembangunan Infrastruktur Pengendali Banjir dan Rob di Kota Pekalongan. *Jurnal Litbang Kota Pekalongan*, *22*(1), 1–13. https://doi.org/10.54911/litbang.v22i1.292

Rahardjo, P. T., & Sari, S. R. (2025). Adaptasi Permukiman Berkelanjutan di Daerah Banjir Rob: Studi Kasus di Kelurahan Panjang Baru Pekalongan. *Jurnal Arsitektir ARCADE*, *9*(3), 490–493.

Salim, M. A., & Wibowo, K. (2024). Rob Flood Control on the North Coast of Java (Study on coastal areas of Pekalongan and Semarang). *IOP Conf. Series: Earth and Environmental Science*, *1321*(012026 IOP), 1–9. https://doi.org/10.1088/1755-1315/1321/1/012026

Sarah, D., Soebowo, E., Sudrajat, Y., Satriyo, N. A., Putra, M. H. Z., & Wahyudin. (2022). Mapping the environmental impacts from land subsidence hazard in Pekalongan City and its correlation with the subsurface condition. *IOP Conf. Series: Earth and Environmental Science*, *1201*(012044), 1–8. https://doi.org/10.1088/1755-1315/1201/1/012044

Sawaneh, I. A., Fan, L., & Sesay, B. (2024). Nature-Based Solutions Investigating the influence of residents ' attitudes , perceptions of risk , and subjective norms on their willingness to engage in flood prevention efforts in Freetown , Sierra Leone. *Nature-Based Solutions*, *6*(100143), 1–15. https://doi.org/10.1016/j.nbsj.2024.100143

Setiawan, H. H. (2023). *Social Resilience of Local Communities Due to Tidal Flooding on the North Coast of Semarang City, Indonesia BT - Climate Crisis: Adaptive Approaches and Sustainability* (U. Chatterjee, R. Shaw, S. Kumar, A. D. Raj, & S. Das (eds.); pp. 137–150). Springer Nature Switzerland. https://doi.org/10.1007/978-3-031-44397-8_8

Song, M., Hwang, J., & Seo, I. (2025). Collaboration risk , vulnerability , and resource sharing in disaster management networks. *Australian Journal of Public Administration*, *84*, 48–68. https://doi.org/10.1111/1467-8500.12642

Sultana, T., Islam, M. R., Mustafa, F. B., & Sim, J. O. L. (2025). Assessing the impact of tidal inundation on the livelihoods of the Chattogram City dwellers in Bangladesh. *Research*

Square, *121*, 18715–18742. https://doi.org/https://doi.org/10.1007/s11069-025-07535-2

Yahya, W., & Putri, P. (2025). Evaluasi Pembangunan Infrastruktur Pengendalian Banjir Rob di Kota Pekalongan. *Jurnal Ilmu Lingkungan*, *23*(1), 141–151. https://doi.org/10.14710/jil.23.1.141-151

Zain, H. M., Idrus, I. A., Pangestu, A. R., & Ramadhan, M. (2023). Politik Ekologi: Kebijakan Penanganan Banjir Rob di Pekalongan. *IJPA - The Indonesian Journal of Public Administration*, *9*(1), 1–14.