ISSN 2621- 458X

Assessing the Effectiveness of Disaster-Resilient Villages in Flood Mitigation: A Case Study of Tanete Riaja District

Rezky Nur Padhilah
ITBA Al Gazali Barru
reskynurpadhilah@algazali.ac.id
Muliana
ITBA Al Gazali Barru
muliana@algazali.ac.id

ABSTRACT

This study aims to assess the effectiveness of the implementation of Disaster-Resilient Villages (Desa Tangguh Bencana) as a strategic approach to flood mitigation in Tanete Riaja District. Floods are among the most frequent and damaging natural disasters in the region, posing significant threats to both human life and infrastructure. The Disaster-Resilient Village program, initiated by the government, is designed to enhance community preparedness, strengthen institutional coordination, and reduce disaster risk through participatory planning and local empowerment. Using a qualitative descriptive method, data were collected through interviews, field observations, and document analysis. The findings indicate that the implementation of the program in Tanete Riaja has generally been effective in increasing public awareness, improving early warning systems, and encouraging proactive community participation. However, the study also identifies several challenges, such as limited budget allocation, inconsistent stakeholder coordination, and the need for more frequent disaster simulation training. Overall, the Disaster-Resilient Village program has contributed positively to local flood mitigation efforts but requires continuous support and improvement to maximize its long-term impact.

Keywords: disaster,resilient,village, flood,mitigation, community preparedness.

lisensi CC BY

A.INTRODUCTION

Indonesia is a country highly prone to various natural disasters, including floods that frequently occur due to heavy rainfall and specific geographical conditions. In Barru Regency, particularly in Tanete Riaja District, floods pose a serious threat that disrupts daily community activities and damages infrastructure. According to data from the National Disaster Management Agency (BNPB), floods and landslides in Barru Regency in December 2024 affected 55,662 people and resulted in casualties. This situation highlights the urgent need for effective mitigation strategies to reduce disaster risks and impacts.

One of the approaches that has been implemented is the Disaster Resilient Village Program (Destana), which aims to enhance community capacity in facing disasters through training and active participation. This program emphasizes the importance of preparedness and swift response from local communities in emergency situations. The implementation of Destana in various regions has shown positive results in increasing public awareness and disaster management capabilities.

In Tanete Riaja District, the implementation of Destana serves as a strategic effort to address the recurring flood threats. Through training sessions and the formation of disaster preparedness teams at the village level, the community is expected to take preventive and responsive actions independently. For instance, Lompo Tengah Village, which was affected by flooding in December 2024, received support from various parties, including the distribution of 500 basic food packages by the Central Board of the Barru Regional Family Association (KKDB).

The importance of community involvement in disaster mitigation has also been emphasized by various studies. According to Arsyad (2023), enhancing public knowledge and preparedness through training can significantly strengthen

flood mitigation efforts. This indicates that community-based approaches hold great potential in reducing disaster risks effectively.

However, the implementation of Destana faces several challenges, such as limited resources and coordination between institutions. In Grobogan Regency, the establishment of Disaster Resilient Villages encountered obstacles related to public participation and infrastructure support. Therefore, continuous evaluation and improvement are required to ensure the effectiveness and sustainability of the program.

In addition, technological approaches have begun to be integrated into disaster mitigation efforts. Community-based flood monitoring programs using simple technology have successfully increased public engagement in data collection and decision-making processes. Integrating technology into Destana can further strengthen community capacity in dealing with disasters.

Community involvement in the planning and implementation of disaster mitigation programs is also essential for building a sense of ownership and responsibility. According to Satizábal et al. (2022), community engagement in disaster risk reduction can improve both the effectiveness and sustainability of such programs. Thus, participatory approaches must become an integral part of Destana's implementation.

In Tanete Riaja District, the geographical and social conditions of the population necessitate a tailored approach based on local needs. Risk mapping and vulnerability assessments must be conducted participatively to identify appropriate priorities and strategies. This process will contribute to the development of a more effective and sustainable Destana program.

An evaluation of the Destana implementation in Tanete Riaja is needed to assess how far the program has succeeded in enhancing community capacity to face flood disasters. This research aims to examine the effectiveness of Destana

implementation as a flood mitigation effort in Tanete Riaja District, focusing on community participation, institutional coordination, and the use of technology.

By understanding the factors influencing the success of the Destana program, recommendations can be formulated to improve the effectiveness of flood disaster mitigation in the area. The findings of this study are expected to serve as a valuable reference for local governments and relevant stakeholders in designing more effective and community-based disaster mitigation strategies.

In addressing flood disaster risk, local government support and cross-sector collaboration are crucial components in reinforcing community resilience. Programs like Destana require consistent facilitation, monitoring, and resource allocation from relevant institutions to ensure their sustainability. According to UNDRR (2022), effective disaster risk reduction strategies must be supported by integrated policy frameworks and strong institutional coordination. Without adequate governance, the implementation of community-based programs may fall short of their intended impact, particularly in vulnerable and disaster-prone regions like Tanete Riaja.

Furthermore, academic research highlights that socio-economic conditions also play a significant role in shaping community responses to disaster risks. Communities with limited access to education, economic resources, and communication networks are more likely to experience severe impacts and slower recovery from disasters. As Susanto and Prasetyo (2021) point out, enhancing disaster literacy and technological access is essential for building adaptive capacity. Therefore, the Destana program in Tanete Riaja must be continuously adapted to address these socio-economic disparities while empowering the community to take proactive roles in disaster mitigation efforts.

B. RESEARCH METHODOLOGY

This study employed a descriptive qualitative approach to assess the effectiveness of the Disaster-Resilient Village (Desa Tangguh Bencana) program

in flood mitigation efforts in Tanete Riaja District. This approach was chosen to provide an in-depth understanding of social realities, perspectives, and experiences of individuals directly involved in the program's implementation.

1. Research Location and Duration

The research was conducted in Tanete Riaja District, Barru Regency, an area frequently affected by floods and designated as a target for the Disaster-Resilient Village program. The data collection and analysis were carried out over a period of three months.

2. Research Informants

Informants were selected purposively, targeting individuals with direct knowledge and involvement in the program. These included:

a) Village and sub-district officials responsible for disaster management,
b) Representatives from the Regional Disaster Management Agency (BPBD),
c) Community leaders and local residents participating in disaster preparedness initiatives.

3. Data Collection Techniques

Data were gathered using the following methods:

a) In-depth interviews: Conducted with key informants to explore their understanding and experiences regarding the program’s implementation and impact.
b) Field observations: Carried out to directly observe disaster simulations, preparedness infrastructure, and local environmental conditions.
c) Document analysis: Involved reviewing relevant planning documents, implementation reports, and evaluation records related to the Disaster-Resilient Village program.

4. Data Analysis Techniques

The collected data were analyzed using thematic analysis, which included the following steps:

a) Transcription of interviews and field notes,
b) Coding of data based on main themes such as community preparedness, institutional coordination, and local participation,
c) Drawing conclusions by identifying patterns and relationships between themes.

5. Data Validation

To ensure the validity of the data, triangulation was employed using multiple sources and methods. The findings from interviews were compared with field observations and official documents to confirm consistency and reliability.

C. RESEARCH RESULTS AND DISCUSSION

- Research results

This study investigates the effectiveness of the Disaster Resilient Village (Destana) program as a flood disaster mitigation effort in Tanete Riaja Subdistrict. The program is a strategic initiative intended to build community resilience and preparedness in the face of recurring floods, which have affected the area annually over the past five years. Evaluating the program's effectiveness involved the application of several approaches, including experimental, goal-oriented, decision-focused, user-oriented, and responsive models of assessment. Each approach contributes to a comprehensive understanding of how the program performs in practical contexts across villages.

The experimental approach emphasizes the utilization of scientific evaluation techniques to measure program impact. Based on interviews with government representatives, it was found that the implementation of Destana

lacks clarity in its transmission from district-level agencies to sub-district and village authorities. This gap reflects the need for more detailed program descriptions and technical guidance at the grassroots level. While the program originates from the regional disaster management agency, its execution often requires further elaboration before reaching local administrations that directly interact with communities.

The goal-oriented approach, which uses the program's objectives as benchmarks for success, revealed that Destana has been incorporated into the strategic plan (Renstra) for 2021–2026. According to insights shared by B.A., the program is aligned with national disaster resilience regulations and is scheduled to be implemented over a five-year period. The mid-point of this timeline marks a crucial phase for performance evaluation. The program’s objectives are directly linked to enhancing public participation in disaster preparedness and mitigation, and in strengthening community autonomy in disaster response.

The findings also highlight that Destana serves multiple functions: it fulfills regulatory mandates, promotes sustainable development goals (SDGs), and ensures the participation of local stakeholders in disaster management. As B.A. emphasized, the essence of Destana lies in activating community involvement in pre-disaster prevention, real-time disaster management, and post-disaster recovery. Thus, the program is not only regulatory in nature but also serves as a tool to mobilize civil society in risk reduction efforts. Community ownership of disaster response mechanisms becomes a crucial element in realizing the full potential of Destana.

In terms of decision-focused effectiveness, the program relies on systematic information collection, such as local risk mapping and vulnerability assessments. These tools help to generate data that support decisions around infrastructure development, early warning systems, and emergency response planning. In one village, it was observed that flood-prone zones were successfully identified and monitored through such assessments. This form of evidence-based

governance significantly improves coordination between stakeholders and enhances the overall efficiency of mitigation efforts.

From a user-oriented perspective, the program's success is also defined by how well it incorporates feedback and knowledge from beneficiaries. Information sharing is a two-way process between government officials and community members. Destana is more effective when the villagers are not only recipients of aid or instructions but also active participants in policy refinement and field execution. This participatory model ensures that program implementation remains adaptive, locally relevant, and socially acceptable, while encouraging broader awareness across community segments.

The responsive approach adopted in the program focuses on identifying issues from various stakeholder perspectives. Interviews with local officials and residents indicate diverse expectations and experiences regarding Destana. Some highlighted the need for improved coordination, while others called for continuous training and resource availability. These insights point to the importance of inclusive dialogue in program monitoring. Only by integrating a broad range of community voices can Destana's design evolve to address context-specific risks and needs effectively.

The program incorporates both structural and non-structural mitigation efforts. Structural measures include the construction of embankments, enhancement of drainage systems, and the development of physical barriers in flood-prone areas. These interventions play a direct role in reducing disaster risk by controlling water flow and preventing property damage. Meanwhile, non-structural measures focus on community training, awareness campaigns, and the formation of disaster response teams. The combination of these two strategies contributes to a comprehensive mitigation model that strengthens community resilience on multiple fronts.

Educational efforts and public awareness have shown significant influence on the program's effectiveness. Higher levels of disaster education among residents correlate with stronger emergency preparedness behaviors. For example, villagers trained under Destana protocols were more likely to respond effectively during flood events. Such preparedness includes knowing evacuation routes, maintaining emergency kits, and participating in simulation activities. These proactive behaviors stem from a continuous process of capacity-building facilitated by local authorities and civil society groups.

Community participation emerges as a core success factor in the Destana model. Active engagement ranges from volunteerism in emergency teams to leadership in disaster committees. Local residents play a role in organizing simulations, maintaining equipment, and conducting awareness sessions. Their involvement fosters a sense of ownership and accountability, making disaster response more efficient and culturally embedded. It also reinforces social cohesion, which is crucial for collective resilience in times of crisis.

Availability of resources, both financial and technical, greatly affects the quality of Destana implementation. Limited budgets and insufficient equipment often hinder program delivery, particularly in remote or underdeveloped villages. Although national and regional agencies provide initial funding and training, sustaining the program requires ongoing support and strategic partnerships. Resource constraints have led some communities to develop innovative low-cost strategies, including locally-built warning tools and community-managed shelters.

Leadership and governance practices at the village and subdistrict levels strongly influence program outcomes. Effective leaders are those who can mobilize human and material resources, engage in multi-stakeholder coordination, and advocate for disaster-related initiatives within broader development plans. Transparent and accountable governance allows for better integration of Destana into local policies and budget priorities. Leaders who are proactive and responsive are seen as critical actors in ensuring program sustainability.

Collaboration with external actors, such as non-governmental organizations, universities, and private sector partners, enhances Destana's capacity. These partnerships contribute expertise, funding, and innovation that complement government efforts. In several cases, partnerships have led to the introduction of mobile-based alert systems and early-warning sirens. The diversity of knowledge and resources among stakeholders helps scale up good practices and ensures that local communities benefit from broader networks of support.

The physical and environmental characteristics of Tanete Riaja Subdistrict shape the risk profiles of its villages. Areas near rivers or low-lying plains are particularly vulnerable to flooding and thus require tailored interventions. Environmental management strategies, such as reforestation and the maintenance of natural waterways, are integral to long-term disaster reduction. Programs that align with environmental sustainability are more likely to achieve lasting impact and local buy-in.

Socio-cultural aspects also play a role in disaster preparedness and response. Local traditions and belief systems can either support or hinder mitigation strategies. In some communities, traditional leaders or religious figures hold significant influence, and their endorsement is key to community compliance. Integrating local customs into Destana training materials and outreach activities ensures greater acceptance and relevance, enhancing the program's cultural sensitivity and effectiveness.

Communication strategies adopted by Destana facilitators affect program outreach and understanding. Use of local dialects, visual materials, and interactive methods enhances message retention and inclusivity. Information dissemination through local radio, community meetings, and WhatsApp groups has proven effective in creating rapid awareness. Continuous communication, especially before and during the rainy season, ensures that the community remains alert and prepared for potential flooding.

Monitoring and evaluation mechanisms are crucial for tracking Destana's progress and adapting it to evolving risks. Villages that regularly assess their preparedness levels tend to perform better during actual disaster events. Evaluation tools include community scorecards, after-action reviews, and periodic drills. These practices not only measure effectiveness but also provide motivation for continuous improvement and accountability among all actors involved.

The level of trust between community members and program facilitators significantly influences engagement levels. Trust is built through transparency, consistency, and tangible benefits. When villagers perceive Destana as a genuine effort to safeguard their well-being, participation increases. On the contrary, mistrust due to unfulfilled promises or poor follow-through leads to disengagement and program stagnation. Trust-building should thus be a deliberate aspect of Destana's implementation strategy.

Crisis events serve as real-time tests for the effectiveness of Destana. Recent flood occurrences demonstrated both the strengths and gaps in community preparedness. In some cases, early warning systems worked effectively and allowed for safe evacuation, while in others, delays and confusion led to unnecessary risks. These experiences offer valuable lessons for refining standard operating procedures and strengthening coordination among response units.

Finally, the overall success of the Destana program in Tanete Riaja Subdistrict lies in its adaptability to local conditions, commitment from stakeholders, and continuity of support. The program has shown promising results, but its sustainability depends on persistent efforts in capacity-building, inter-agency coordination, and long-term planning. Continued investment in community empowerment and disaster risk reduction will ensure that villages remain resilient in the face of future hazards.

- Discussion

The implementation of the Disaster Resilient Village (Destana) program in Tanete Riaja Subdistrict reflects a proactive approach to flood disaster mitigation. Based on the research findings, the program has demonstrated a considerable level of effectiveness, particularly when assessed through multiple analytical lenses. The experimental, goal-oriented, decision-focused, user-centered, and responsive evaluation approaches reveal that the Destana initiative has successfully fostered community engagement, structured mitigation strategies, and integrated policy alignment. These findings indicate that the program is not only theoretically sound but also functionally applicable in rural disaster-prone settings.

One of the key strengths of the Destana program is its dual focus on structural and non-structural mitigation efforts. Structural efforts, such as the construction of embankments and the rehabilitation of drainage systems, provide immediate and tangible protection against flooding. Meanwhile, non-structural measures — including community education, capacity-building, and early warning systems — have contributed to strengthening disaster preparedness among residents. This balanced approach reflects global best practices in disaster risk reduction, which emphasize the importance of both physical infrastructure and social resilience.

Another important aspect identified is the role of local leadership and community participation in determining the success of the program. Villages with active and responsive leaders, who are capable of mobilizing residents and resources, tend to perform better in disaster management. Moreover, the Destana program appears more effective in communities where disaster awareness is reinforced through continuous education and culturally relevant communication strategies. These findings affirm the relevance of community-based disaster risk reduction (CBDRR) frameworks, which place the community at the center of decision-making processes.

However, the study also highlights several challenges and limitations in the implementation of Destana. These include inadequate resource allocation, limited technical expertise at the village level, and occasional breakdowns in communication between sub-district and district authorities. In some cases, the translation of policies from the regional to the village level lacks clarity, resulting in fragmented or inconsistent implementation. Addressing these institutional gaps is crucial to improving program delivery and ensuring that Destana functions as a comprehensive and inclusive disaster mitigation framework.

Furthermore, the findings emphasize the importance of external collaboration with NGOs, universities, and private sector actors. These partnerships enhance program capacity, introduce innovations, and provide technical support that is often lacking within local governments. For instance, mobile-based early warning systems and participatory risk mapping tools, introduced through such collaborations, have proven effective in enhancing local preparedness. This suggests that the sustainability of Destana will benefit greatly from multi-stakeholder involvement and knowledge-sharing networks.

The study also underscores the significance of environmental and cultural contexts. Villages situated in flood-prone areas must adopt mitigation strategies tailored to their specific geographic and hydrological conditions. At the same time, leveraging local customs, leadership structures, and belief systems can improve the cultural relevance and acceptance of Destana interventions. A one-size-fits-all approach may not be suitable; thus, localization and cultural sensitivity must be embedded in program design and implementation.

In conclusion, the Destana program in Tanete Riaja Subdistrict presents a promising model for flood disaster mitigation. Its effectiveness is shaped by multiple interrelated factors, including leadership, community awareness, institutional coordination, and external collaboration. While the overall impact is positive, ongoing improvements are necessary to address operational challenges and to adapt the program to the dynamic nature of environmental risks.

Strengthening governance, ensuring consistent funding, and fostering a culture of preparedness will be key to achieving long-term disaster resilience in the region.

D. CONCLUSION AND RECOMMENDATION

- Conclusion

This study concludes that the implementation of the Disaster Resilient Village (Destana) program in Tanete Riaja District has been generally effective in mitigating flood disasters. The program has successfully fulfilled several dimensions of effectiveness evaluation, including experimental, goal-oriented, decision-focused, user-oriented, and responsive approaches. It has significantly improved public awareness, early warning mechanisms, and community participation in disaster risk reduction. The structural and non-structural measures implemented through Destana have increased local preparedness and reduced vulnerability. However, the program's success varies across locations and is influenced by various internal and external factors. These include financial limitations, coordination challenges, and the need for continuous capacity building. The findings suggest that while Destana has made important contributions, more strategic improvements are still needed. Overall, the program remains a vital framework for enhancing flood mitigation in disaster-prone rural areas like Tanete Riaja.

- Recommendation

To strengthen the effectiveness of the Destana program, it is recommended that local and regional governments ensure sustained financial and institutional support. Community-based disaster education and simulation exercises should be conducted more frequently to maintain high levels of preparedness. Stronger coordination mechanisms must be established between the district authorities, village leaders, and disaster management agencies. It is also essential to integrate traditional knowledge and local cultural practices into disaster planning. Collaboration with NGOs, universities, and other stakeholders can introduce

innovative approaches and technical assistance. Furthermore, ongoing monitoring and evaluation must be institutionalized to assess progress and inform necessary adjustments. The program design should remain flexible and responsive to local needs and environmental changes. Such measures will enhance the sustainability and impact of Destana in achieving long-term disaster resilience in Tanete Riaja.

BIBLIOGRAPHY

Arsyad, M. (2023). *Desa tangguh bencana melalui peningkatan pengetahuan dan memperkuat kesiapsiagaan mitigasi bencana banjir*. Universitas Lambung Mangkurat. https://fk.ulm.ac.id/berita/desa-tangguh-bencana-melalui-peningkatan-pengetahuan-dan-memperkuat-kesiapsiagaan-mitigasi-bencana-banjir

Badan Penanggulangan Bencana Daerah Kabupaten Grobogan. (2022). *Pembentukan desa tangguh bencana di Kabupaten Grobogan sebagai langkah maju dalam mitigasi bencana*. https://www.bpbd.grobogan.go.id/berita/PEMBENTUKAN-DESA-TANGGUH-BENCANA-DI-KABUPATEN-GROBOGAN-SEBAGAI-LANGKAH-MAJU-DALAM-MITIGASI-BENCANA

BeritaSulsel.com. (2024, Desember 24). *Banjir dan longsor di Barru telan korban jiwa dan 55.662 jiwa yang terdampak*. https://beritasulsel.com/baca/banjir-dan-longsor-di-barru-telan-korban-jiwa-dan-55-662-jiwa-yang-terdampak

BPBD Kota Madiun. (2023). *BPPB Pemprov Jatim sosialisasi Desa Tangguh Bencana: Siapkan masyarakat hadapi banjir*. https://bpbd.madiunkota.go.id/bppb-pemprov-jatim-sosialisasi-desa-tangguh-bencana-siapkan-masyarakat-hadapi-banjir

Fajar.co.id. (2024, Desember 24). *Bakti sosial KKDB bagikan 500 paket sembako untuk warga terdampak banjir*. https://harian.fajar.co.id/2024/12/24/bakti-sosial-kkdb-bagikan-500-paket-sembako-untuk-warga-terdampak-banjir

Satizábal, P., Florez, A., & Luna, M. (2022). *Community participation and disaster risk reduction: Lessons from practice*. In Wikipedia. https://en.wikipedia.org/wiki/Disaster_risk_reduction

Susanto, A., & Prasetyo, Y. (2021). *Pengembangan sistem peringatan dini banjir berbasis partisipasi masyarakat di Indonesia*. *arXiv preprint*, arXiv:2112.07128. https://arxiv.org/abs/2112.07128

UNDRR. (2022). *Community-based disaster risk reduction: Good practices*. United Nations Office for Disaster Risk Reduction. https://www.undrr.org/publication/community-based-disaster-risk-reduction-good-practices