

Risk-Based Disaster Financing Governance: Assessing the Effectiveness of On-Call Funds, Village Funds, and Regional Budgets for Disaster Risk Reduction

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Abstract:

This study examines risk-based disaster financing governance by analyzing the effectiveness of on-call funds, village funds, and regional budgets in disaster risk reduction. The study is based on the argument that disaster financing should not be understood only as an emergency response mechanism, but also as a preventive governance instrument for reducing vulnerability, strengthening preparedness, and improving regional resilience. Using a qualitative case study approach, this research analyzes how disaster financing instruments are planned, allocated, coordinated, implemented, and evaluated at the local government level. Data were collected through in-depth interviews, field observations, and document analysis involving local disaster management agencies, regional planning agencies, financial management agencies, village governments, sectoral offices, disaster volunteers, and community representatives in disaster-prone areas. The findings show that on-call funds are effective in supporting rapid emergency response, but their contribution to long-term risk reduction remains limited when not supported by preventive financing. Village funds have significant potential for community-based mitigation and preparedness, yet their effectiveness depends on risk-informed village planning and technical capacity. Regional budgets can finance broader cross-sectoral risk reduction, but their implementation is often fragmented across institutions. This study proposes a risk-based disaster financing governance framework that connects risk assessment, fiscal planning, budget allocation, implementation, monitoring, and outcome-based accountability. The novelty of this study lies in shifting disaster financing analysis from reactive emergency expenditure toward preventive investment for disaster risk reduction and regional resilience.

Keywords: disaster financing; risk-based budgeting; on-call funds; village funds; regional budgets; disaster risk reduction; local government

1. Introduction

Disaster financing has become a crucial issue in public governance because disaster risk is no longer understood merely as an emergency event, but as a development challenge that affects fiscal stability, public service continuity, social protection, infrastructure resilience, and regional economic sustainability. In disaster-prone countries such as Indonesia, the state is required not only to respond after disasters occur, but also to prepare financing instruments that can reduce risk before hazards turn into large-scale losses. Indonesia's exposure to earthquakes, tsunamis, volcanic eruptions, floods, landslides, droughts, forest and land fires, and extreme weather creates repeated fiscal pressure for both central and local governments. This condition shows that disaster governance cannot rely only on emergency response capacity, because the effectiveness of disaster management is also determined by how public budgets are planned, allocated, coordinated, and evaluated before disasters occur (Haris et al., 2023; Halimatussadiyah et al., 2022; Nugroho et al., 2022; Adhasara, 2022).

In the Indonesian disaster governance system, disaster financing is supported by several fiscal instruments, including *Dana Siap Pakai* or on-call funds, *Dana Desa* or village funds, and regional budgets through the *Anggaran Pendapatan dan Belanja Daerah* (APBD). These instruments have different institutional bases, functions, and operational logics. On-call funds are generally associated with rapid financing for emergency response and urgent disaster management needs, while village funds can support community-level development, preparedness, small-scale mitigation infrastructure, social protection, and

local resilience activities within village authority. Regional budgets provide fiscal space for provincial, regency, and municipal governments to finance disaster management programs through mitigation, preparedness, emergency response, rehabilitation, and reconstruction. Studies on disaster budgeting in Indonesia indicate that local fiscal allocation has begun to respond to disaster risk, but the orientation of spending is still often concentrated on emergency response rather than systematic risk reduction (Haris et al., 2023; Noer et al., 2023; Nugroho et al., 2022; Lassa et al., 2022).

The urgency of risk-based disaster financing has increased along with the global shift from reactive disaster spending toward proactive disaster risk financing. The Sendai Framework for Disaster Risk Reduction 2015–2030 emphasizes investment in disaster risk reduction as one of its core priorities, particularly through public and private investment in prevention, mitigation, preparedness, recovery, rehabilitation, and reconstruction. Disaster risk financing literature also emphasizes that governments need layered financing instruments, including reserve funds, contingent credit, insurance, risk pooling, social protection, and budgetary mechanisms, to reduce fiscal shocks and accelerate recovery (Adhasara, 2022; Pleterski, 2025; Purwandari et al., 2024; Feofilovs et al., 2024). In Indonesia, this agenda is reflected in the development of *Pembiayaan dan Asuransi Risiko Bencana* or Disaster Risk Financing and Insurance, which seeks to close the financing gap between disaster needs and available fiscal resources. The establishment of the *Pooling Fund Bencana* also reflects an attempt to build a more sustainable financial reserve for disaster management. These policy directions confirm that disaster financing should not be confined to post-disaster expenditure, but should be positioned as an instrument for reducing risk, protecting public assets, and strengthening regional resilience.

Previous studies have provided important foundations for understanding disaster financing and fiscal resilience. Haris et al. (2023) analyzed Indonesian local government budgeting based on the Disaster Risk Index and found that disaster risk has a positive effect on the allocation of Disaster Response Emergency Funds, suggesting that risk considerations have begun to influence local fiscal behavior. Adhasara (2022) mapped disaster risk financing and insurance literature in Indonesia and emphasized that government fiscal capacity is insufficient when disaster losses exceed available public resources. Nugroho et al. (2022) examined the impact of village funds on post-disaster economic recovery in rural Aceh and showed that village-level fiscal instruments can support recovery when they are linked to local economic empowerment. Noer et al. (2023) also demonstrated that village fund allocation can be used for disaster mitigation, although its effectiveness depends on local planning capacity and the ability of village governments to translate disaster risk into budget priorities. These studies indicate that Indonesia already has several fiscal instruments related to disaster management, but their use remains uneven across levels of government.

Other studies have expanded the discussion by examining disaster finance, insurance, public investment, and resilience from broader comparative perspectives. Purwandari et al. (2024) highlight the potential of community-based catastrophe insurance as a tool for sustainable economic loss risk management. Pleterski (2025) argues that parametric insurance can strengthen sustainable disaster risk finance by providing faster disbursement and reducing uncertainty in post-disaster funding. Feofilovs et al. (2024) show that system dynamics modeling can be used to analyze the limitations of conventional insurance mechanisms and support more adaptive disaster risk financing design. Song et al. (2024) discuss resilience bonds as a financing mechanism for flood-resilient infrastructure, indicating that disaster finance can be linked directly to preventive investment. He et al. (2024) further argue that post-disaster recovery mechanisms should combine legal, economic, and institutional instruments to support resilience and sustainability. These studies are useful for this research because they show that disaster financing is not only about the availability of funds, but also about designing financial mechanisms that incentivize prevention, mitigation, and resilience.

At the local level, disaster financing is closely related to decentralization, governance capacity, and accountability. Village funds provide an important opportunity for villages to finance disaster preparedness, mitigation infrastructure, community-based risk reduction, evacuation facilities, early warning support, and recovery activities when these are integrated into village development planning (Nugroho et al., 2022; Noer et al., 2023). Regional budgets also allow local governments to allocate resources for disaster management through local disaster management agencies, public works agencies, social affairs offices, health offices, and

other related institutions (Haris et al., 2023; Sufri & Elvin, 2025). Studies on disaster risk reduction implementation show that budget availability alone does not guarantee effective risk reduction if it is not supported by institutional coordination, policy compliance, monitoring systems, and risk-informed planning (Kwak, 2021; Paudel et al., 2024; Sufri & Elvin, 2025). This suggests that fiscal decentralization alone does not automatically produce risk-sensitive disaster financing. It requires risk data, planning capacity, budget prioritization, community participation, institutional coordination, and accountability mechanisms.

The literature on disaster risk financing generally discusses financial protection, fiscal resilience, insurance, contingent credit, reserve funds, and post-disaster funding mechanisms (Adhasara, 2022; Pleterski, 2025; Purwandari et al., 2024; Feofilovs et al., 2024). Meanwhile, studies on disaster risk reduction often focus on institutional capacity, community preparedness, local resilience, early warning systems, mitigation infrastructure, and emergency response (Kwak, 2021; Paudel et al., 2024; Sufri & Elvin, 2025). These two bodies of literature have not been sufficiently integrated, particularly in relation to how local fiscal instruments such as on-call funds, village funds, and regional budgets can be governed as preventive instruments for disaster risk reduction. In many cases, disaster financing is still assessed from the perspective of fund availability, budget absorption, and emergency disbursement, rather than its effectiveness in reducing exposure, vulnerability, and future losses (Haris et al., 2023; Halimatussadiah et al., 2022; Dedehouanou et al., 2025). This gap is important because a region may have disaster-related funds, yet still fail to reduce disaster risk if those funds are not allocated based on hazard profiles, vulnerability data, local resilience priorities, and measurable risk reduction outcomes.

This study addresses that gap by examining risk-based disaster financing governance through the effectiveness of on-call funds, village funds, and regional budgets in supporting disaster risk reduction. The novelty of this study lies in shifting the analysis of disaster financing from a reactive emergency-response perspective to a preventive governance perspective. Instead of treating disaster funds merely as fiscal instruments used after disasters occur, this study positions disaster financing as a strategic tool for risk reduction, local preparedness, and regional resilience. Accordingly, this study aims to analyze how on-call funds, village funds, and regional budgets are planned, allocated, coordinated, and evaluated in relation to disaster risk reduction. It also seeks to develop a risk-based disaster financing governance framework that can help local governments transform disaster financing from short-term emergency expenditure into long-term investment for resilience.

2. Methodology

This study employed a **qualitative research method** with a **case study approach**. The qualitative method was selected because this research aims to examine how disaster financing is governed, planned, allocated, coordinated, and evaluated as an instrument for disaster risk reduction at the local government level. The study does not seek to statistically measure the amount of disaster financing or calculate fiscal efficiency through econometric modeling. Instead, it focuses on understanding the governance process behind disaster financing, including how on-call funds, village funds, and regional budgets are used, whether they are linked to disaster risk profiles, and how far they contribute to preventive disaster risk reduction and regional resilience.

The case study approach was used because disaster financing governance is strongly influenced by local fiscal capacity, institutional arrangements, disaster risk characteristics, planning documents, bureaucratic coordination, and political budget priorities. The main unit of analysis in this study is the local government disaster financing system, particularly the relationship between *Dana Siap Pakai* or on-call funds, *Dana Desa* or village funds, and regional budgets through the *Anggaran Pendapatan dan Belanja Daerah* (APBD). This approach allows the study to examine how different fiscal instruments are positioned within disaster governance and whether they function only as emergency response funds or as broader instruments for mitigation, preparedness, vulnerability reduction, and resilience building.

The case was selected from a disaster-prone local government area in Indonesia where disaster financing involves multiple fiscal sources and institutional actors. The selected case represents a local government context in which disaster risk is recurrent and requires continuous financing for preparedness, emergency response, rehabilitation, reconstruction, and long-term risk reduction. The case study focuses on

the interaction among local disaster management agencies, regional planning agencies, financial management agencies, village governments, sectoral offices, and community-level institutions involved in disaster financing. This focus enables the study to analyze the extent to which disaster-related funds are aligned with regional disaster risk assessments, medium-term development plans, annual work plans, village development plans, and budget allocation mechanisms.

The research data were collected from both **primary and secondary sources**. Primary data were obtained through in-depth interviews with key informants, including officials from local disaster management agencies, regional development planning agencies, regional financial and asset management agencies, village government officials, local legislative budget committee members, social affairs offices, public works offices, health offices, disaster volunteers, and community representatives in disaster-prone areas. These interviews were designed to explore perceptions of disaster financing effectiveness, budget planning mechanisms, fund allocation priorities, coordination among institutions, obstacles in using disaster funds, and the extent to which financing instruments are used for preventive risk reduction rather than only emergency response.

Field observations were also conducted in selected disaster-prone villages, local government offices, disaster management posts, mitigation infrastructure sites, evacuation facilities, and community preparedness locations. The observations focused on the visible outputs of disaster financing, such as evacuation routes, temporary shelters, early warning facilities, drainage improvement, river normalization, slope reinforcement, community training facilities, disaster information boards, and other mitigation or preparedness activities financed through village funds, regional budgets, or related fiscal instruments. These observations were important to understand whether disaster financing produces concrete risk reduction outcomes at the local level.

Secondary data were collected through document analysis. The documents examined included regional disaster management plans, disaster risk assessment documents, contingency plans, regional medium-term development plans, annual local government work plans, APBD documents, budget implementation documents, village medium-term development plans, village annual work plans, village budget documents, reports on the use of village funds, reports on disaster emergency funding, accountability reports, audit findings, and relevant national or regional regulations on disaster financing. These documents were analyzed to assess whether disaster financing is connected to disaster risk data, whether budget allocations are directed toward mitigation and preparedness, and whether financial accountability mechanisms are able to evaluate risk reduction outcomes.

Informants were selected using a **purposive sampling technique**. This technique was considered appropriate because the study required information from actors who have direct authority, experience, or knowledge related to disaster financing, budget planning, village fund management, and disaster risk reduction. The selection of informants was based on their institutional roles, involvement in budget formulation or implementation, experience in disaster response, and knowledge of disaster-prone communities. Snowball sampling was also used when necessary to identify additional informants, particularly village actors, community leaders, disaster volunteers, and local residents who were directly involved in the use or monitoring of disaster-related funds.

Data analysis was conducted using an **interactive qualitative analysis model**, consisting of data condensation, data display, and conclusion drawing. Data condensation was carried out by selecting, simplifying, and categorizing information obtained from interviews, observations, and documents. The data were then organized into several thematic categories, including disaster financing instruments, risk-based budget planning, allocation priorities, institutional coordination, fund utilization, preventive financing, accountability mechanisms, and disaster risk reduction outcomes. Data display was conducted through thematic matrices and narrative analysis to identify patterns, inconsistencies, and relationships among fiscal instruments, institutional actors, and risk reduction objectives.

The effectiveness of disaster financing was analyzed using a governance-based qualitative assessment. Effectiveness was not defined only as budget absorption or the speed of fund disbursement, but also as the extent to which disaster financing contributed to reducing disaster risk. The assessment considered several dimensions: alignment with disaster risk profiles, allocation for mitigation and

preparedness, responsiveness during emergencies, coordination across fiscal instruments, accessibility at the village level, transparency and accountability, and contribution to community resilience. This analytical framework was used to examine whether on-call funds, village funds, and regional budgets operate separately or can be integrated into a risk-based disaster financing governance model.

To ensure data validity, this study applied **source triangulation and method triangulation**. Source triangulation was conducted by comparing information from local government officials, village governments, community representatives, disaster volunteers, and budget-related institutions. Method triangulation was carried out by comparing interview results, field observations, and official documents. This process was used to reduce institutional bias and strengthen the credibility of the findings. Ethical considerations were maintained by ensuring voluntary participation, protecting informants' identities when necessary, and presenting budget-related findings carefully based on verified data and documented evidence.

3. Results and Discussions

1) Disaster Financing Orientation: From Emergency Response to Risk Reduction

The findings indicate that disaster financing at the local government level is still strongly influenced by an emergency-response orientation. Disaster-related funds are generally activated or prioritized when disaster events have occurred, especially for evacuation, logistics, temporary shelter, emergency health services, debris clearance, and immediate recovery needs. This pattern is most visible in the use of Dana Siap Pakai or on-call funds, which are institutionally designed to provide rapid financial support during emergency conditions. In practice, this fund plays an important role in ensuring that local governments can respond quickly to urgent needs when ordinary budget procedures are too slow to address disaster impacts.

The effectiveness of on-call funds is primarily found in their flexibility, speed, and ability to support emergency operations. Local disaster management agencies can use these funds to finance urgent response activities, including emergency logistics, temporary shelters, search and rescue support, emergency equipment, and immediate protection for affected communities. This confirms previous studies which argue that disaster financing must include fast-disbursing instruments to reduce delays in response and recovery (Adhasara, 2022; World Bank & GFDRR, 2019). Haris et al. (2023) also show that disaster risk influences the allocation of disaster response emergency funds in Indonesian local governments, indicating that emergency financing remains a central component of disaster fiscal governance.

However, the findings also reveal that the dominance of emergency-oriented financing creates a structural limitation. When disaster funds are mostly understood as post-disaster expenditure, local governments tend to focus on financing after-impact activities rather than investing in risk reduction before disasters occur. This creates a reactive budget cycle in which financing increases after a disaster, but mitigation and preparedness programs remain underfunded during normal periods. Such a pattern is problematic because disaster risk accumulates over time through unsafe settlements, weak drainage systems, environmental degradation, poor spatial planning, limited early warning infrastructure, and insufficient community preparedness. Halimatussadiah et al. (2022) emphasize that disasters generate significant economic and development consequences, particularly when preventive investment is insufficient.

The study found that risk-based disaster financing requires a shift in budget logic. Disaster funds should not be assessed only by how quickly they can be disbursed during emergencies, but also by how effectively they reduce future exposure and vulnerability. This means that budget effectiveness must be connected to disaster risk assessment, hazard mapping, vulnerability data, mitigation priorities, and resilience indicators. In this sense, disaster financing should operate along the full disaster management cycle, including prevention, mitigation, preparedness, emergency response, rehabilitation, and reconstruction. This finding is consistent with the Sendai Framework's emphasis on investment in disaster risk reduction and with disaster risk financing literature that encourages governments to combine risk retention, risk transfer, and risk reduction investment (UNDRR, 2015; Pleterski, 2025; Purwandari et al., 2024).

The findings also show that local governments often face difficulties in translating disaster risk data into budget priorities. Although disaster risk assessment documents and disaster management plans may exist, they are not always directly connected to annual budgeting processes. Disaster risk data may remain as

planning documents, while budget allocations are shaped by routine programs, political priorities, sectoral interests, and short-term development agendas. This weak connection between risk information and fiscal decision-making reduces the preventive function of disaster financing. Kwak (2021) argues that the implementation of disaster risk reduction requires policy compliance, institutional capacity, and resource allocation, not merely formal planning documents.

The emergency-response orientation also affects how effectiveness is understood. In many local government practices, effectiveness is often measured through budget absorption, speed of procurement, completion of emergency activities, or compliance with administrative reporting. These indicators are important, but they do not fully capture whether disaster financing has reduced vulnerability or strengthened community resilience. For disaster risk reduction, effectiveness should also be measured by the extent to which financing reduces hazard exposure, protects vulnerable groups, improves infrastructure resilience, strengthens preparedness, and prevents future losses. This broader understanding of effectiveness is necessary to transform disaster financing from a short-term fiscal response into a long-term resilience investment.

2) The Role of Village Funds and Regional Budgets in Preventive Disaster Financing

The findings indicate that Dana Desa or village funds have significant potential to support preventive disaster financing because villages are the closest governance units to disaster-prone communities. Village governments have direct knowledge of local hazards, vulnerable households, evacuation routes, community capacities, and small-scale infrastructure needs. Through village planning and budgeting mechanisms, village funds can be used to finance community-based mitigation, preparedness training, evacuation facilities, early warning support, drainage improvement, slope reinforcement, riverbank protection, disaster information boards, and community volunteer activities. This shows that village funds can become an important fiscal instrument for localized disaster risk reduction when they are integrated into risk-informed village development planning.

The study found that village funds are most effective when disaster risk is explicitly included in village planning documents. When village medium-term development plans and annual village work plans recognize disaster risk, village budgets are more likely to allocate funds for mitigation and preparedness. In some cases, village funds support concrete risk reduction activities such as repairing drainage channels, constructing small retaining walls, improving access roads for evacuation, purchasing emergency equipment, strengthening community-based disaster preparedness groups, and supporting disaster education activities. This finding is consistent with Nugroho et al. (2022), who show that village funds can contribute to post-disaster economic recovery in rural Aceh when linked to local needs and community empowerment. It also supports Noer et al. (2023), who found that village fund allocation can be used for disaster mitigation, although its effectiveness depends on planning capacity and local governance quality.

Nevertheless, the study also found several limitations in the use of village funds for disaster risk reduction. First, village governments do not always have adequate technical capacity to interpret disaster risk data and translate it into budget programs. Second, disaster mitigation is often competing with other village priorities, such as roads, economic empowerment, social assistance, health, education, and administrative needs. Third, village fund regulations and guidance may be interpreted narrowly, causing village governments to prioritize visible physical development rather than integrated risk reduction. Fourth, monitoring and evaluation still tend to focus on administrative compliance and physical outputs, rather than whether funded activities actually reduce disaster risk. These findings indicate that village funds require stronger technical guidance, risk-based planning assistance, and coordination with local disaster management agencies.

Regional budgets or APBD play a broader role because they finance disaster management across sectors and institutions. The findings show that APBD can support disaster risk reduction through local disaster management agencies, public works, spatial planning, health services, social protection, education, environmental management, housing, and infrastructure programs. Unlike on-call funds, which are mainly activated during emergencies, APBD has the potential to finance long-term mitigation and preparedness. For example, APBD can support flood control infrastructure, landslide mitigation, evacuation route development, early warning systems, community training, contingency planning, resilient public facilities,

and disaster education programs. This confirms Sufri and Elvin's (2025) argument that disaster risk reduction requires cross-sectoral policy support and sustainable local budgeting.

The problem is that APBD-based disaster financing is often fragmented across sectors. Disaster risk reduction programs may be spread across different offices without a unified risk-based financing framework. Public works may finance drainage or embankments, social affairs may finance emergency logistics, health offices may finance emergency medical services, education offices may support school safety, and local disaster management agencies may coordinate preparedness and response. While these programs are relevant, they may not be integrated under a common disaster risk reduction strategy. As a result, local governments may spend money on disaster-related activities without clearly measuring their combined contribution to reducing risk. This finding supports Paudel et al. (2024), who emphasize that disaster risk reduction policies require integration across institutions, knowledge systems, and planning mechanisms.

The findings further reveal that budget politics influence disaster financing priorities. Preventive disaster financing often competes with politically visible programs that produce immediate results. Mitigation and preparedness investments may be less attractive because their benefits are preventive and long-term, while emergency response activities are more visible when disasters occur. This creates a tendency for local governments to allocate funds after disasters rather than before them. Disaster financing therefore requires stronger political commitment, evidence-based advocacy, and fiscal incentives that encourage local governments to invest in prevention. Song et al. (2024) argue that resilience-oriented financing mechanisms can link investment decisions directly to risk reduction outcomes, particularly when financial instruments are designed to reward preventive action.

Based on these findings, village funds and regional budgets should be positioned as complementary instruments. Village funds are useful for community-level and small-scale mitigation, while APBD is necessary for larger infrastructure, institutional capacity, multi-sectoral coordination, and regional-scale risk reduction. On-call funds remain important for emergency response, but they should be supported by preventive financing through village funds and APBD. The effectiveness of disaster financing therefore depends not only on each fiscal instrument, but also on how these instruments are coordinated across the disaster management cycle.

3) Toward a Risk-Based Disaster Financing Governance Model

The findings suggest that risk-based disaster financing governance requires an integrated framework that connects risk assessment, fiscal planning, budget allocation, implementation, monitoring, and evaluation. Disaster financing cannot be considered effective only because funds are available or disbursed. It becomes effective when fiscal instruments are able to reduce exposure, lower vulnerability, strengthen preparedness, protect public assets, and increase community resilience. This requires a governance model that shifts disaster financing from reactive spending to preventive investment.

The first component of the proposed model is risk-informed planning. Local governments need to ensure that disaster risk assessments, hazard maps, vulnerability profiles, and resilience priorities are directly connected to development planning and budgeting documents. Regional disaster management plans, medium-term development plans, annual work plans, spatial plans, APBD documents, village development plans, and village budgets should refer to the same risk information. Without this integration, disaster risk data will remain technical documents that do not influence fiscal decisions. This finding is consistent with Haris et al. (2023), who show that the Disaster Risk Index can influence emergency fund allocation, but this study extends the argument by emphasizing that risk indices should also guide preventive budget allocation.

The second component is fiscal instrument alignment. On-call funds, village funds, and APBD should not operate as separate financing mechanisms. On-call funds should ensure rapid emergency response, village funds should support community-based mitigation and preparedness, and APBD should finance regional-scale mitigation, institutional capacity, and cross-sectoral disaster risk reduction. These instruments need to be aligned through planning forums, budget coordination meetings, disaster management plans, and accountability mechanisms. Such alignment can prevent duplication, reduce financing gaps, and ensure that disaster financing supports the entire disaster management cycle.

The third component is preventive budget prioritization. Local governments should allocate a clearer portion of disaster-related spending to mitigation and preparedness. Preventive financing may include

strengthening early warning systems, improving drainage, protecting watersheds, reinforcing landslide-prone slopes, developing evacuation routes, preparing shelters, training community volunteers, supporting disaster education, and improving resilient public infrastructure. Purwandari et al. (2024) and Pleterski (2025) show that disaster risk financing becomes more sustainable when financial mechanisms reduce future losses and support risk transfer or risk reduction. This study adds that local public budgets must also function as preventive instruments, not only as emergency fiscal buffers.

The fourth component is community-based fiscal participation. Disaster financing should involve communities, especially those living in high-risk areas. Community participation is important because local residents understand everyday vulnerabilities, unsafe infrastructure, evacuation constraints, and social risks that may not be fully captured in official documents. In village fund planning, participation can help ensure that disaster risk reduction is included in village priorities. In regional budgeting, public consultation can strengthen accountability and align programs with local risk realities. This finding is consistent with studies on local disaster governance which argue that community participation strengthens preparedness, legitimacy, and resilience (Kusumasari & Alam, 2021; Paudel et al., 2024).

The fifth component is performance-based accountability. Disaster financing should be evaluated not only through financial compliance, procurement completion, or budget absorption, but also through risk reduction outcomes. Local governments need indicators that measure whether funded programs reduce flood frequency, improve evacuation access, increase preparedness capacity, protect vulnerable groups, reduce damage to public assets, or strengthen recovery capacity. Dedehouanou et al. (2025) argue that financing mechanisms should be assessed in relation to household resilience and vulnerability reduction. This study extends that view by proposing that local government disaster financing should also be evaluated through institutional and territorial resilience indicators.

The sixth component is transparency and data integration. Risk-based disaster financing requires accessible data on disaster risk, budget allocation, fund utilization, program outputs, and risk reduction outcomes. Digital budget dashboards, open data systems, participatory monitoring, and integrated planning platforms can help citizens and oversight institutions assess whether disaster funds are being used effectively. Transparency is particularly important because disaster funds are often used under urgent conditions and may be vulnerable to weak accountability. Feofilovs et al. (2024) note that disaster financing systems require adaptive governance because risk, fiscal capacity, and institutional behavior interact dynamically. Transparent data systems can support this adaptive governance by allowing local governments to learn from budget performance and disaster outcomes.

The proposed model offers a contribution to disaster financing and disaster risk reduction literature. Previous studies have discussed disaster risk financing, insurance, emergency funds, village funds, and disaster budgeting separately. This study integrates these issues into a risk-based governance framework that positions financing as an instrument for prevention, preparedness, and resilience. The model also responds to the practical problem that local governments often have multiple disaster-related funding sources, but lack an integrated mechanism to align them with risk reduction objectives.

The central argument of this study is that effective disaster financing is not determined only by how much money is available, but by how well fiscal instruments are governed according to risk. On-call funds are effective when they accelerate emergency response, village funds are effective when they strengthen community-level mitigation, and APBD is effective when it supports cross-sectoral and long-term risk reduction. Their combined effectiveness depends on risk-informed planning, institutional coordination, preventive allocation, community participation, and outcome-based accountability. Through this framework, disaster financing can be transformed from fragmented emergency spending into a strategic investment for regional resilience.

4. Conclusion

This study concludes that disaster financing governance at the local government level should not be understood merely as a mechanism for funding emergency response, but as a strategic instrument for disaster risk reduction and regional resilience. The findings show that *Dana Siap Pakai*, *Dana Desa*, and regional budgets through APBD have different but complementary roles in disaster governance. *Dana Siap*

Pakai is effective in supporting rapid emergency response, particularly for urgent logistics, temporary shelter, emergency operations, and immediate protection for affected communities. However, its dominant emergency-response orientation limits its contribution to long-term disaster risk reduction when it is not supported by preventive financing instruments.

The study found that *Dana Desa* has significant potential to finance community-level disaster risk reduction because villages are the closest governance units to disaster-prone communities. Village funds can support small-scale mitigation infrastructure, evacuation facilities, disaster preparedness groups, early warning support, drainage improvement, and community-based resilience programs. Its effectiveness depends on whether disaster risk is explicitly integrated into village development planning and budgeting. When village planning documents do not include hazard profiles, vulnerability data, and local resilience priorities, village funds tend to be used for general development programs rather than targeted risk reduction.

Regional budgets or APBD have a broader role in financing cross-sectoral and long-term disaster risk reduction. APBD can support mitigation infrastructure, institutional capacity building, early warning systems, contingency planning, public facility resilience, health preparedness, social protection, and disaster education. The findings show, however, that APBD-based disaster financing is often fragmented across sectoral offices and not always governed under an integrated risk-based financing framework. As a result, local governments may finance disaster-related programs without clearly measuring their collective contribution to reducing exposure, vulnerability, and future losses.

The contribution of this study lies in proposing risk-based disaster financing governance as a framework that integrates emergency response financing, village-level fiscal instruments, and regional budget allocations into one disaster risk reduction cycle. The novelty of this study is found in shifting the analysis of disaster financing from a reactive emergency expenditure perspective to a preventive governance perspective. Previous studies have generally examined disaster funds, village funds, emergency financing, insurance, or regional budgeting separately. This study extends those discussions by positioning disaster financing as an integrated governance instrument for prevention, preparedness, mitigation, emergency response, recovery, and resilience building.

The findings imply that local governments need to strengthen the connection between disaster risk data and fiscal decision-making. Disaster risk assessments, hazard maps, vulnerability profiles, and resilience priorities should not remain as technical planning documents; they must guide budget allocation, program design, and performance evaluation. Disaster financing effectiveness should also be measured beyond budget absorption and administrative compliance. It should be assessed through its contribution to reducing disaster exposure, protecting vulnerable communities, improving preparedness, strengthening infrastructure resilience, and minimizing future losses.

This study also emphasizes the need for stronger coordination among fiscal instruments. *Dana Siap Pakai*, *Dana Desa*, and APBD should not operate as separate funding mechanisms. They need to be aligned through risk-informed planning, inter-agency coordination, participatory budgeting, transparent reporting, and outcome-based accountability. In this framework, *Dana Siap Pakai* supports rapid response, *Dana Desa* strengthens community-based prevention and preparedness, while APBD finances broader institutional and territorial resilience. Their combined effectiveness depends on whether local governments can govern these instruments according to risk rather than merely according to routine administrative procedures.

This study has several limitations. Its qualitative case study design provides an in-depth understanding of disaster financing governance, but it does not statistically measure the fiscal efficiency or cost-benefit ratio of each financing instrument. The study also focuses on the local government level, while the relationship between national fiscal policy, provincial budget support, regional fiscal capacity, and village-level financing requires further analysis. In addition, the effectiveness of disaster financing may vary depending on hazard type, regional fiscal capacity, political commitment, institutional quality, community participation, and the availability of reliable risk data.

Future research should examine comparative cases across different disaster-prone regions in Indonesia to identify variations in risk-based disaster financing practices. Further studies may use mixed-method or quantitative approaches to measure the relationship between disaster risk levels, budget

allocation, fund absorption, mitigation outcomes, and resilience indicators. Research is also needed to develop measurable indicators for evaluating the effectiveness of *Dana Siap Pakai*, *Dana Desa*, and APBD in reducing disaster risk. In addition, future studies should explore how digital budgeting systems, disaster risk dashboards, participatory monitoring, and fiscal transparency mechanisms can strengthen accountability in disaster financing governance.

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