



Strengthening community resilience through integrated drought disaster management strategies

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ABSTRACT

Background: In public administration, strategy serves as a mechanism to guide tactical and systemic decision-making. However, its actualization is often problematic due to weaknesses across interconnected dimensions of organizational strategy, institutions, resources, and programs, as Kooten (2015) proposed. **Methods:** This study examines the 2024 Drought Disaster Management Service Strategy in Sikka Regency using a qualitative descriptive approach. Data were obtained from primary sources through semi-structured interviews and from secondary sources through policy and document analysis. The data were analyzed using thematic analysis, with findings systematically mapped onto Kooten's four strategic dimensions. **Findings:** The results indicate that the organizational strategy has generally been implemented effectively. Nevertheless, institutional shortcomings persist, particularly in the functional structure of the Disaster Management Operations Control Center. Resource capacity remains inadequate, marked by limited human resources, facilities, and infrastructure, which constrains service effectiveness. Additionally, the program strategy is mainly situational and reactive, lacking specificity and proportional Design to address drought risks comprehensively. **Conclusion:** The study concludes that drought disaster management in Sikka Regency requires an integrated, infrastructure-aligned strategy that strengthens institutional capacity, optimizes resources, and refines program design across all strategic dimensions. **Novelty/Originality of this article:** This research offers a novel application of Kooten's four-dimensional strategic framework to local drought disaster management, revealing critical gaps and offering a new integrated perspective for improving local disaster management governance.

KEYWORDS: drought disaster management; regional disaster management agency; strategy.

1. Introduction

Natural disaster management, particularly in the context of drought, poses considerable challenges across various regions of Indonesia, particularly in Eastern Indonesia (Kuswanto et al., 2021; Nugroho et al., 2021). These challenges arise from several factors, including the region's inherent vulnerability and ongoing climate issues that local governments have yet to address despite numerous initiatives adequately. These initiatives operate within the framework of regional autonomy, which mandates local authorities to manage disaster response effectively (Elkady et al., 2022; Putra & Matsuyuki, 2019). Coordination of disaster management efforts at both central and regional levels adheres to regulations that delineate specific responsibilities (Syugiarto, 2021). Studies focusing on natural disaster management, especially drought, have proposed scenarios to identify

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critical barriers and develop different technical and systemic strategies to address these issues. Such strategies can be framed within a disaster management service strategy model (Hedayat & Kaboli, 2024; Khan et al., 2023).

In public administration, strategy encompasses the planning and management processes that are essential to achieving specific objectives. Vandersmissen & George (2024) argue that strategy is a directional roadmap and a comprehensive guide detailing the operational tactics necessary for effective concretization. This perspective is supported by Henry (2021), who emphasizes that strategy is closely linked to the methods employed to achieve goals, grounded in an in-depth analysis of internal and external factors that influence an organization's operations. Thus, it is evident that strategy is crucial in enabling organizations to achieve their foundational objectives through a clearly defined, specific, and measurable framework, ensuring that agreements can be assessed and justified in a balanced manner.

Furthermore, related to the drought disaster management service strategy in Indonesia, the subject is initiated by an institution, namely the Regional Disaster Management Agency, which, in terms of its duties and functions, is a non-departmental government institution responsible for disaster management at the regency/city level (Harmain, 2022), by following the policies initiated by the National Disaster Management Agency which is structurally under the central government (Mokoginta et al., 2022). Thus, this context clearly states that the institution responsible for local disaster management is the Regional Disaster Management Agency.

Apart from that, this study detect a gap in disaster management, specifically in local-level drought response. It focuses on Eastern Indonesia, and this basis also underscores that many existing studies that focus on national policy raise significant concerns. It also reveals potential to examine regional issues, so this could be a novelty of this study, and an attempt to offer a new perspective on public administration in the disaster management concept in Sikka Regency, East Nusa Tenggara. Therefore, this study focuses on analyzing the practice of drought disaster management service strategies that are investigated systematically and are loaded through the context of public administration perspectives in regional institutions that, in practice, try to lead a disaster management activity at the local level, namely the Sikka Regency Regional Disaster Management Agency, in addition, this study adopts the theory and dimensions expressed by Kooten referring to Salusu (2015), namely: organizational strategy; institutional strategy; resource strategy; program strategy, which connotation describes how the drought disaster management strategy is carried out and also identifies what factors are linked to the supporters or obstacles of the drought disaster management strategy in Sikka Regency. Regarding the problems faced by the Sikka Regency Regional Disaster Management Agency in its drought disaster management service, the results are less than satisfactory. The data review and analysis revealed that the trend of victims of the drought disaster is severe. The following are the findings:

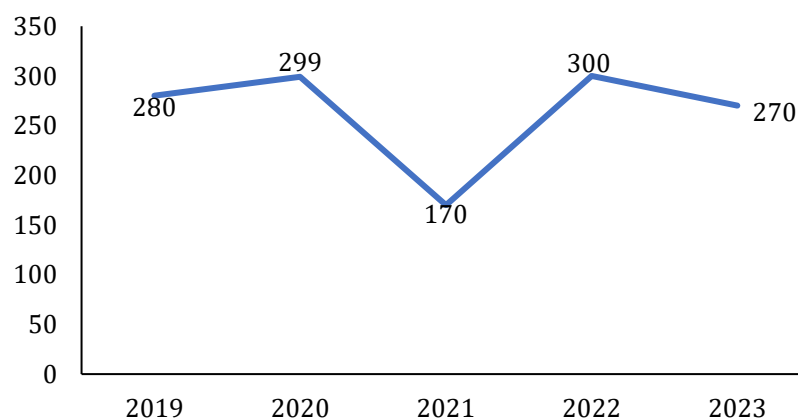


Fig. 1. Trend of drought disaster
(Sikka Regency Regional Disaster Management Agency, 2026)

If comprehensively assessed based on existing data, the Sikka Regency area is highly vulnerable to drought, with 2019 data indicating 280 victims of the natural disaster. Then, in 2020, the number of victims reached 299. In 2021, it reached 170 victims; in 2022, it reached 300 people. At the end of 2023, it again claimed 270 victims, meaning that, in percentage terms, the number of victims of the drought disaster is very high and concerning, and the trend of the catastrophe appears to have fluctuated from 2019 to 2023. Thus, based on the phenomena analyzed and described, implementing a strategy is undoubtedly a foundation for an organization, shaping the process and the results of the approach adopted.

Hence, this interpretation leads to how the plan is designed explicitly by the Sikka Regency Regional Disaster Management Agency (BPBD/*Badan Penanggulangan Bencana Daerah*), which focuses on the drought disaster management service strategy at the local level by considering what is a reference for an organization, notably in making decisions that will have implications for an action or producing a result that refers to an agreement in achieving goals within the organization and to the community affected by the drought disaster.

2. Methods

This essay applied a qualitative type with a descriptive approach (Creswell & Báez, 2020; Salmona & Kaczynski, 2024), which aims to present a systematic and analytical picture of the Drought Disaster Management Service Strategy in Sikka Regency in 2024, while the focus also involves exploring the extent to which the drought disaster management service strategy is provided to the affected community. In addition, this descriptive qualitative approach aims to produce an accurate, in-depth description by providing a structured, precise portrayal of the facts and the relationships among the elements being investigated (Adeoye-Olatunde & Olenik, 2021). Thus, this approach provides easy-to-understand information about the research object while also opening the door to new insights derived from the research model employed. This section compiles data from primary and secondary sources, specifically to support the presentation of a systematic analysis (Tracy, 2024). In practice, primary data are collected through field or empirical studies by interviewing informants considered relevant and possessing characteristics deemed valid competencies (Weber, 2024). Meanwhile, secondary data is obtained from sources that do not include data directly from researchers, but rather from references such as books, research journals, the internet, and other sources. The data analysis involves organizing and classifying data into patterns (models), categories, and basic descriptive units. The goal is to identify key themes and develop hypotheses based on the collected data. Furthermore, in this data analysis technique and validations, the researcher adopts an approach that aligns with Creswell's perspective, comprising five steps: problems, literature review, data collection, interpretation, and reporting, which are used to compare with existing data or reality (Creswell & Poth, 2016). Here is an illustration:



Fig. 2. Creswell analysis model

The description above illustrates the analysis model adopted in this study. Thus, this study define the problem element as an approach or search to investigate, understand, and analyze symptoms or problems. For this reason, researchers aim to explore the issues faced by the Sikka Regency Regional Disaster Management Agency in dealing with drought, which is, in fact, quite vulnerable to it. It serves as a foundation for researchers to focus on the problem stages in identifying the problems faced.

A literature review is a process of examining what has been studied and what is related to the problem being discussed. It means that it concerns the collection of various documents related to the Drought Disaster Management Service Strategy in Sikka Regency

in 2024. The meaning here concerns data collection so that the analysis process can limit research, collect information, and Design protocols to explore data clearly and validly. To this end, the researcher seeks to identify several relevant studies on the research theme, aiming to facilitate understanding of strategies that support research results aligned with the research problems under study.

Meanwhile, at this stage, the data collection element focuses on the steps the researcher takes to obtain relevant information about the analyzed research, namely the Drought Disaster Management Service Strategy in Sikka Regency in 2024. The goal is to get accurate, reliable, and valid data to test whether a phenomenon or fact is true. Then, the interpretation stage is understood as obtaining results from the research being analyzed. For example, at the outset of the study, interviews are documented by manually recording the questions to be asked. After that, a recording device or recorder is used to assist the process. Through this process, this research aims to describe the results of primary and secondary data collected from multiple informants and various sources, along with valid interpretations of the facts studied regarding the Drought Disaster Management Service Strategy in Sikka Regency in 2024.

Finally, the elements of the report interpreted as the final result of the analysis process describe the findings and interpretations of the collected data. Here, it includes the final results of the data collection and analysis reviewed during the research process. On this basis, it can be interpreted that the research reporting process aims to provide a more structured understanding and detailed explanation of the research findings. In short, this approach provides a helpful contrast to understand the differences between the situation faced and the existing reality. This analysis can compare opinions and data collected to find relevance to the research objectives and questions.

3. Results and Discussion

3.1 Organizational strategy

The meaning of organizational strategy, as described by Kooten and adopted by Salusu (2015), pertains to a plan that aims to achieve organizational goals efficiently and effectively. It connects to a strategic plan that serves as a reference for the organization, ensuring that its implementation is directed and accountable through fundamental provisions. For the Sikka Regency Regional Disaster Management Agency, this involves concretely implementing structured, well-coordinated actions as part of its disaster management service strategies. To investigate, understand, and analyze this, researchers focus on organizational strategies that, in practice, lead to strategic or operational plans designed and implemented by the Sikka Regency Regional Disaster Management Agency.

Table 1. Strategic plan

Goals/Objective	2024	2025	2026
Disaster Risk Index	129.08	123.38	117.68
Reduction of Vulnerability			
Population Exposed to Disasters	13,548	12,548	10,548
Realization of Risk Reduction Potential			
Physical Risk Loss	2,893,495,540	2,500,000,000	2,000,000,000
Economic Risk Loss	127,200,000,000	120,840,000,000	109,058,100,000
Environmental Area Affected	65,157.93 ha	60,157.93 ha	55,157.93 ha
Quality Index	0.50	0.50	0.54
Public Service by Regional Disaster Management Agency			
Increase in Professionalism Index	64.32	64.32	65.30
Improvement in Quality and Quantity of Services	-	-	-

Infrastructure Index of Regional Disaster Management Agency	0.143	0.143	0.428
SAKIP Regional Disaster Management Agency	54.65	54.65	60.50
Increase in Capacity and Accountability			
Quality of Planning Value	14.59	14.59	15.50
Performance Measurement Value	13.48	13.48	15.50
Budget Reporting	10.65	10.65	11.20
Performance Value			

(Sikka Regency Regional Disaster Management Agency, 2026)

Based on the explanation above, the organizational strategy implemented by the Sikka Regency Regional Disaster Management Agency includes several key objectives: realizing disaster risk reduction, which aims to reduce disaster risk, measured by the disaster risk index; increasing the performance of the agency's public service apparatus, to enhance both the staff and services provided by the agency, evaluated through the public service quality index; and boosting the capability and accountability of the agency's performance and budget, measured by the Government Agency Performance Accountability System (*Sistem Akuntabilitas Kinerja Instansi Pemerintahan/SAKIP*). These objectives are part of a strategic plan with specific targets and weightings, reflecting a practical and well-designed approach. To validate the data described, the researcher attempts to confirm the results of the interview with Informant 1 and Informant 2, namely:

"From an organizational perspective, the Regional Disaster Management Agency itself, in terms of its duties and functions, is at the forefront in dealing with natural disasters, particularly the current drought. So far, it has engaged in various collaborations with different Regional Work Units to support technical implementation in the field, anticipating the drought in June through studies conducted, including strategy designs, strategic plans, and the like". (Informant 1)

"Regarding the drought, we in the village have experienced a shortage of clean water several times this year. Therefore, we believe that the government, through the Regional Disaster Management Agency, has not been optimal in addressing our needs. As a result, we, as a community, have had to work together to buy clean water for our needs". (Informant 2)

Based on the inspection above, the strategy adopted by the Sikka Regency Regional Disaster Management Agency (*Badan Penanggulangan Bencana Daerah/BPBD Sikka*) can be considered institutionally adequate, as it complies with regulatory mandates and is translated into formal planning instruments. Yet, when interpreted through Kooten's theoretical constructs, particularly the distinction between strategic intent, operational capacity, and contextual responsiveness, the findings reveal a critical actualisation gap. Kooten emphasizes that strategy effectiveness is not determined solely by formal alignment with regulations, but by the organization's adaptive capacity to respond to spatially uneven risks. In this sense, Sikka's Regional Disaster Management Agency strategy reflects strong strategic intent but weaker operational penetration in drought-prone areas, indicating a partial rather than holistic realization of strategic coherence.

This finding resonates with Maleki et al. (2025) and Ogundeji & Okolie (2022), who argue that disaster governance frameworks, especially those integrating nature-based solutions (NBS), require multi-actor collaboration to translate policy rhetoric into field-level impact. Compared to these studies, Sikka's Regional Disaster Management Agency appears to remain largely state-centric, with limited evidence that partnerships with local communities, NGOs, or private actors are systematically leveraged to address drought vulnerability. From a Kooten perspective, this suggests an underutilization of network-

based strategic resources, which weakens the agency's capacity to translate plans into differentiated, location-specific interventions.

Moreover, Kooten's construct of "strategy as practice" stresses that organizational strategies must be enacted consistently through daily routines, monitoring systems, and feedback mechanisms. Even though Sikka's Regional Disaster Management Agency demonstrates compliance through a clearly articulated vision, mission, budget allocations, and activity targets in its 2024 strategic plan, the lived experiences of drought-affected communities expose a disconnect between formal planning and practical outcomes. It aligns with Haigh et al. (2023), who emphasize that planners' authority should facilitate cross-sectoral collaboration and integration of drought mitigation into land-use and daily policy decisions. In comparison, Sikka's Regional Disaster Management Agency approach appears less integrated, as planners' strategic authority has not fully translated into coordinated action at vulnerable sites.

The contrasting narratives from institutional informants and community members further underscore this analytical point. While internal actors emphasize procedural fulfillment and structured preparation, community testimonies reveal delayed responses, uneven resource distribution, and insufficient monitoring. These discrepancies reflect what Kooten identifies as a failure of strategic feedback loops, where field-level signals are not adequately incorporated into strategic recalibration. Such gaps not only reduce policy effectiveness but also risk eroding public trust, a factor widely recognized in disaster management literature as central to long-term resilience.

In sum, the discussion moves beyond a descriptive account by demonstrating that Sikka's Regional Disaster Management Agency challenge lies not in the absence of strategy, but in its limited adaptive execution and comparative weakness in collaborative governance when measured against existing studies. Addressing these shortcomings requires deliberate human judgment, contextual knowledge, and participatory decision-making. In disaster management cases such as this, strategic interpretation and policy redesign should rely on grounded empirical insight and professional expertise, and avoid AI-driven decision-making tools that cannot adequately capture local vulnerability, social dynamics, and ethical responsibility.

3.2 Institutional strategy

In academic terms, the concept of institutional strategy, as developed by Kooten in Salusu (2015), refers to the organizational structure and governance that regulate how organizational activities are conducted. In this context, institutional aspects are determined based on regulations that are both structurally and functionally designed to execute duties and functions within an institution. Consequently, strengthening institutional factors in disaster management can work in a coordinated manner to respond actively, as the actions initiated or attempted will have implications for the roles assigned to each structural and functional element. For this purpose, the researcher gathered information through the implementation designed by the institutional structure of the Sikka Regency Drought Disaster Management Agency in responding to field operations as follows:

Table 2. Duties and functions of the Sikka' Regional Disaster Management Agency Institution

Position	Responsibilities
Head of the Implementation (Head of Regional Disaster Management Agency)	<ol style="list-style-type: none"> 1. Coordinate and command disaster response and management. 2. Coordinate the formulation of disaster prevention policies and programs. 3. Coordinate the formulation of policies and programs for identifying and assessing potential disaster threats. 4. Coordinate the formulation of policies and programs for disaster risk analysis and reduction. 5. Coordinate the integration of disaster management into regional development planning.

Head of Prevention and Preparedness (<i>Badan Penanggulangan Bencana Daerah/BPBD</i>) Sikka	<ol style="list-style-type: none"> 6. Coordinate the formulation of disaster preparedness policies and programs. 7. Coordinate the development of early warning systems in disaster management. 8. Coordinate the formulation of policies and programs for disaster mitigation and response. 9. Coordinate the formulation of emergency response handling policies and programs. 1. Develop and establish programs and activities for the Prevention and Preparedness Sector. 2. Coordinate section heads for administrative organization. 3. Implement activities in the field of Prevention and Preparedness. 4. Distribute tasks to functional officials. 5. Monitor and evaluate the implementation of activities and tasks. 6. Report the results of task and activity implementation to the Head of the Regional Disaster Management Agency. 7. Conduct staff meetings to improve performance. 8. Evaluate work performance. 9. Carry out additional tasks assigned by the Head of the Regional Disaster Management Agency of Sikka Regency.
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(Sikka Regency Regional Disaster Management Agency, 2026)

Based on the above provisions related to the duties and functions of the Sikka Regency Regional Disaster Management Agency, the agency has endeavored to fulfill its mandate effectively, particularly in addressing drought disasters. The head of the agency ensures compliance with regulations and guidelines, while the heads of prevention and preparedness follow leadership directives to implement practical drought disaster management actions. The institutional strategy formulated by the Sikka Regency Regional Disaster Management Agency aligns with the organizational governance to clearly and measurably define its duties and functions in managing drought disasters in Sikka Regency. To confirm the implementation actions of the institutional strategy initiated by the Sikka Regency Regional Disaster Management Agency, the researcher validates the described data and seeks to confirm the interview results with Informant 1 and Informant 2, as follows:

"In this regard, we are guided by local regulations and established Standard Operating Procedures, which serve as the framework for drought disaster management in Sikka Regency. Equally important, we at the Regional Disaster Management Agency engage in cross-sector collaboration to maximize the tasks and functions of the institution in compliance with the prevailing regulations". (Informant 1)

"Although the government has made efforts to address the drought disaster, these efforts have not been maximized. For instance, only a few people have access to clean water. Hence, we believe that the institution needs to be more focused and attentive on a broader scale". (Informant 2)

In light of the inspection above, the institutional strategy of the Sikka Regency Regional Disaster Management Agency (*Badan Penanggulangan Bencana Daerah/BPBD* Sikka) can be interpreted as formally compliant with Sikka Regency Regional Regulation No. 3 of 2009. From a descriptive standpoint, the agency has fulfilled its mandated duties, structures, and functions, particularly in addressing drought as a recurrent regional hazard. But, when examined through Kooten's theoretical constructs, this compliance represents only the foundational layer of strategy. Kooten differentiates between formal strategic alignment, organizational capacity, and adaptive performance.

In this case, Sikka's Regional Disaster Management Agency demonstrates strong alignment at the institutional level but struggles to translate it into adaptive, context-

sensitive action on the ground. The distinction between formal compliance and practical effectiveness becomes analytically significant. Regulatory instruments define authority, coordination mechanisms, and functional responsibilities, but Kooten argues that strategy effectiveness depends on how these formal elements are enacted under real conditions of uncertainty and risk. Then, field informants' accounts indicate that drought responses in specific areas remain suboptimal, suggesting that Sikka's Regional Disaster Management Agency operational capacity has not fully matched its structural Design. This finding supports the argument that institutional soundness does not automatically guarantee strategic effectiveness, particularly in geographically uneven and resource-constrained environments. So, compared with other theoretical debates, this gap aligns with broader theoretical debates in disaster governance. Studies by Walker et al. (2022), Savelli et al. (2022), and Otkin et al. (2022) emphasize that contemporary drought management, especially in the context of flash droughts, requires dynamic decision-making tools, continuous learning, and policy flexibility. In contrast, Sikka's Regional Disaster Management Agency current approach appears largely procedural, relying heavily on predefined roles and plans rather than adaptive, data-informed responses. From a Kooten perspective, this indicates a static rather than evolutionary strategy, limiting its ability to respond to rapidly changing drought conditions. The agency's organizational structure, including the roles of the Head of Regional Disaster Management Agency and the Head of Prevention and Preparedness, reflects compliance with legal mandates and demonstrates internal coordination at the planning level.

Nevertheless, community-level evidence reveals uneven service delivery, delayed responses, and limited intervention in highly drought-prone areas. This divergence illustrates what Kooten conceptualizes as a misalignment between strategic intent and operational execution. While leadership functions are formally in place, their impact is not uniformly felt across vulnerable locations, suggesting weaknesses in monitoring, feedback, and field-level coordination.

To conclude, the findings suggest that Sikka's Regional Disaster Management Agency must move beyond regulatory adherence toward strengthening adaptive capacity and operational responsiveness. Enhancing coordination in vulnerable areas, refining decision-making mechanisms, and improving field-level implementation are essential to close the gap between planning and practice. Importantly, strategic interpretation and policy adjustment in disaster management contexts such as this must rely on human judgment, contextual understanding, and empirical field engagement. The complexity and ethical responsibility involved in managing drought impacts make it critical to avoid reliance on artificial intelligence for strategic decision-making in such cases.

3.3 Resource strategy

The urgency regarding resource strategies, as outlined by Kooten and adopted by Salusu (2015), is understood as an approach that focuses on the management and utilisation of resources themselves to reduce the impact of disasters, both financially and humanely. To investigate the implementation results of the resource strategy, the researcher outlines the data related to the resources owned by the Sikka Regency Regional Disaster Management Agency, specifically human resources, as follows Table 3.

Table 3. Human Resources

No	Employment Status	Gender		
		Male	Female	Total
1	State Civil Servant	21 (55.32%)	6 (15.78%)	71.1%
2	Honorary Officer	11 (28.9%)	-	28.9%
Total		32 (84.22%)	6 (15.78%)	100%

(Sikka Regency Regional Disaster Management Agency, 2026)

The data indicates that 71.1% of the employees at the Sikka Regency Disaster Management Agency are Civil Servants, while the remaining 28.9% are contract workers. Among the 11 contract workers, two are assigned to specific roles that fill various positions, while the other nine work in several areas, including administration. Overall, 84.22% of the employees are male, and the remaining 15.78% are female.

Based on the analysis of the resource strategy data, it is evident that the Sikka Regency Disaster Management Agency faces several human resource challenges in the context of drought disaster management in 2024. The analysis stresses the following: First, Composition and Educational Qualifications: The majority of employees have diverse educational backgrounds, ranging from elementary school to university graduates. Yet, effective drought disaster management requires specialised skills and proportional capabilities to design resource allocation specifically for drought management in 2024, as well as practical risk mitigation. Thus, educational levels are a critical factor in drought disaster management.

Second, relevant educational background: The data shows that only a few employees possess relevant educational backgrounds, such as diplomas or bachelor's degrees in pertinent fields, which impacts the effectiveness of their work. Third, Employment Status: The majority of employees are Civil Servants (71.05%), with the remainder being contract workers (28.94%). This composition can affect the availability and stability of human resources in the long term, notably in the concrete actualisation of disaster management programs that require sustainability and effective coordination, specifically in the context of drought. Therefore, the human resource strategy in 2024 is still limited and suboptimal in addressing drought disaster management. Regarding the above description, the researcher validates the described data and seeks to confirm the interview results with Informant 1 and Informant 2, namely:

"In terms of resource allocation, I strive to empower everything we have through effective scheduling concerning who will work in the event of a disaster. Essentially, every member works to ensure that all needs are met, both in terms of facilities and infrastructure, in alignment with our budget and good management practices". (Informant 1)

"Indeed, it is true that the resources provided, particularly the water tanks, have not been maximised in their utilisation. Only a few households received them, while many others did not. We wish for the available resources to be distributed more effectively, such as providing clean water for those who do not have access to it or other supportive measures for our community". (Informant 2)

The scrutiny of the resource strategy indicates that the Sikka Regency Regional Disaster Management Agency (*Badan Penanggulangan Bencana Daerah/BPBD Sikka*) has formally complied with established provisions, yet its outcomes remain suboptimal. Interpreted through Kooten's theoretical constructs, this situation reflects a misalignment between strategic resources and organizational capacity. Kooten emphasizes that resources, particularly human resources, are not merely inputs but strategic assets whose distribution, competence, and coordination determine whether institutional strategies can be operationalized effectively.

In Sikka's Regional Disaster Management Agency case, limited personnel numbers and uneven distribution of capabilities weaken the agency's adaptive capacity, especially in drought-prone areas that require continuous monitoring and rapid response. The findings yield that disaster management effectiveness hinges less on procedural adherence than on the practical availability and deployment of skilled actors. Although regulations and plans are followed, the limited human resource base constrains Sikka's Regional Disaster Management Agency ability to translate strategy into action. It supports Kooten's argument that formal compliance does not equate to strategic effectiveness when organizational capacity is insufficient. The imbalance between workload and personnel availability creates operational bottlenecks, undermining preparedness, early warning, and response functions.

Consequently, supervision and evaluation mechanisms become reactive rather than corrective, reinforcing inefficiencies over time. These findings close with those of Tung et al. (2025), Gacitua et al. (2025), and Wandabwa (2025), who stress that fragmented capacity and the weak integration of disaster-related resources limit effective decision-making. Their work emphasizes the need for standardized, interoperable systems that transform fragmented information and human effort into coordinated action. In contrast, Sikka's Regional Disaster Management Agency resource strategy appears administratively complete but functionally constrained, lacking the integrative mechanisms needed to maximize limited personnel and institutional knowledge. From a Kooten perspective, this reflects underutilized strategic resources and insufficient feedback on learning within the organization. Further inspection shows that while resource allocation structures exist, their impact is diluted by shortages of skilled personnel in high-risk locations. This uneven distribution contributes to inefficient budget absorption and delayed program execution, reinforcing the gap between planning and implementation. Kooten's framework suggests that without continuous evaluation and strategic redeployment of resources, organizations risk perpetuating structural weaknesses despite formal compliance. The persistence of these issues indicates that Sikka's Regional Disaster Management Agency resource strategy has not yet evolved into a fully adaptive system capable of responding to recurring drought risks.

In short, the findings display that strengthening human resource management is critical for improving Sikka's Regional Disaster Management Agency disaster management performance. Enhancing supervision, refining evaluation processes, and optimizing personnel deployment would allow the agency to convert formal strategies into tangible outcomes. Importantly, addressing these challenges requires contextual judgment, institutional learning, and ethical responsibility grounded in local realities. For disaster management cases of this nature, strategic decisions should rely on human expertise and field-based understanding, and avoid the use of artificial intelligence, which cannot adequately account for social vulnerability, cultural context, and accountability in resource-sensitive environments.

3.4 Program strategy

A program strategy is a crucial component that supports an activity or task, serving to achieve the objectives of an institution or organisation. Based on the analysis of several related documents, the implementation of drought disaster management services in Sikka Regency in 2024 has not yet been fully designed. The specific program for drought disaster management has not been tailored to achieve tangible results for the community.

Table 4. Review of Disaster Management Documents in Sikka Regency

Chapter 4	Disaster Mitigation Action Options
Overview	Sikka Regency faces 10 disaster threats with a medium-high risk level. Therefore, disaster mitigation policies are needed to minimize the impact of these disasters. These policies are based on the following fundamental principles:
Principles	<ol style="list-style-type: none"> 1. Timeliness and Accuracy 2. Prioritization 3. Coordination and Integration 4. Efficiency and Effectiveness 5. Transparency and Accountability 6. Partnership 7. Empowerment 8. Non-discriminatory 9. Non-exploitative
Issues Identified	<ol style="list-style-type: none"> 1. Weak disaster preparedness and emergency response systems. Many contingency plans are still lacking in Sikka Regency. Only contingency plans for volcanic eruptions and earthquakes are available. Contingency plans for frequently occurring disasters, such as droughts, floods, and tornadoes, need

to be developed. Early warning systems are also underdeveloped. The application of emergency response command systems still requires significant testing and joint decision-making, not just among local government agencies, but also with vertical institutions like the military (*Tentara Nasional Indonesia*, TNI) and police (*Kepolisian Negara Republik Indonesia*, POLRI). Improvements in emergency response and meeting the needs of affected communities are lacking an adequate system in the region.

2. Lack of post-disaster recovery systems. Despite experiencing numerous disasters, the Sikka Regency government has not established a disaster recovery system that ensures communities can quickly recover after a disaster. Consequently, there are many problems in rehabilitation and reconstruction post-disaster, with no clear local government organization planning and budgeting these activities. Often, post-disaster recovery processes take a long time after the disaster event or rely solely on rehabilitation and reconstruction aid from the National Disaster Management Agency (*Badan Nasional Penanggulangan Bencana*, BNPB).

(Sikka Regency Regional Disaster Management Agency, 2026)

The 2024 disaster management program developed by the Sikka Regency Regional Disaster Management Agency (*Badan Penanggulangan Bencana Daerah/BPBD Sikka*) demonstrates formal compliance with regulatory requirements. Still, it reveals significant shortcomings in strategic implementation, particularly regarding drought preparedness. Interpreted through Kooten's theoretical constructs, the program illustrates a disjunction between strategic intent and operational practice. Kooten emphasizes that effective organizational strategy requires not only formal alignment and procedural adherence but also anticipatory planning, resource mobilization, and adaptive capacity. In the current case, Sikka's Regional Disaster Management Agency program is predominantly reactive, responding to drought events as they occur, rather than proactively mitigating risk through structured, forward-looking interventions. Connecting to the Table 4, this study validates the described data and seeks to confirm the interview results with Informant 1 and Informant 2, namely:

"Regarding the drought issue, the Regional Disaster Management Agency has been implementing educational programs and conducting extensive movements to ensure groundwater availability, which is essential. We also pay attention to the environmental aspects of each location to ensure that through these programs and large-scale efforts, we can minimise the existing drought conditions". (Informant 1)

"Indeed, the drought disaster management program does require clean water; however, it has not been implemented optimally for the community and needs improvement in the future". (Informant 2)

This reactive orientation suggests that drought management is treated as an episodic challenge rather than a predictable hazard that requires dedicated, continuous attention. Empirical observations and field inspections indicate that the 2024 program lacks detailed operational planning, measurable objectives, and targeted initiatives specifically designed to address drought-related risks. Emergency measures such as water distribution and temporary relief are implemented only after drought impacts are observed, rather than through systematic preventative strategies or monitoring mechanisms.

From a Kooten perspective, this reflects an event-driven rather than capability-driven strategy, in which organizational learning, anticipatory action, and iterative feedback mechanisms are insufficiently integrated. Consequently, the agency's efforts, although compliant in form, are limited in practical effectiveness, leaving vulnerable communities exposed to recurring hardship. Comparative analysis with prior studies further illuminates this gap. Research by Alhammadi (2025), Bofo et al. (2025), Cavalcante et al. (2023), Kchouk et al. (2025), Masupha et al. (2025), and Masupha et al. (2025) underscores that

recurring droughts necessitate dedicated policies and interventions grounded in temporal predictability, public awareness, and stakeholder engagement. Effective drought governance requires systematic programs that integrate preventive measures, early warning systems, resource mobilization, and community participation. Sikka's Regional Disaster Management Agency current program, by contrast, provides only a general disaster response framework with limited specificity for drought, illustrating the persistent gap between formal policy compliance and operational readiness.

The absence of measurable objectives also impedes evaluation and accountability, restricting the agency's capacity to assess effectiveness and adapt interventions. Without clearly defined indicators, program execution remains ad hoc, limiting institutional learning and the development of sustainable drought management practices. Kooten's framework suggests that strategy without actionable benchmarks and adaptive monitoring undermines both organizational performance and community trust. All in all, the 2024 disaster management program for Sikka Regency highlights the need for a specialized, proactive drought program that incorporates preventive strategies, targeted early warning systems, and community-centered initiatives with clearly defined performance metrics.

Strengthening these elements would align strategic intent with operational capacity, improve disaster preparedness, and enhance public confidence in Sikka's Regional Disaster Management Agency. Given the contextual, social, and ethical complexities inherent in drought management, all strategic planning and decision-making must rely on human expertise, empirical observation, and professional judgment, avoiding reliance on artificial intelligence, which cannot adequately account for localized vulnerabilities, social dynamics, or ethical responsibility in disaster governance.

4. Conclusions

The research displays that the Sikka Regency Regional Disaster Management Agency (*Badan Penanggulangan Bencana Daerah/BPBD Sikka*) has actualized organisational, institutional, resource, and program strategies in line with regulations. But gaps remain that limit effectiveness, particularly in operational coordination, resource distribution, and program planning, which tends to be reactive rather than proactive. To enhance drought disaster management, Sikka's Regional Disaster Management Agency should strengthen coordination between the command and operations centre and optimize labour and infrastructure allocation based on risk mapping, and shift toward anticipatory program planning, including early-warning systems and community-based preparedness.

Additionally, the essay identifies infrastructure development as a critical strategic dimension, emphasizing investments in resilient facilities and logistics to enhance overall disaster response capacity. Last, this essay extends Kooten's model by adding infrastructure development as a strategic dimension, demonstrating that effective disaster management depends not only on institutional, managerial, resource, and program strategies but also on physical and logistical capacity. And practically, reinforcing coordination, improving resource management, and integrating infrastructure into proactive planning can enhance Sikka's Regional Disaster Management Agency drought disaster response, and bridging theoretical frameworks with operational needs.

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